

Wealth effects in the sixth M&A wave: A European perspective

MASTER THESIS



MScBA Finance&Investments

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28/08/2009

Preface

I would like to express my sincere gratitude for the outstanding guidance and support that turned my thesis writing process into a perfect experience to my coach, Mr. Michiel Wolfswinkel, and co-reader, Ms. Xanthi Gkougkousi.

I devote this thesis to my husband, Gennadii Donchyts, who was a great help and my best friend during all the study years and always. I also would like to thank my parents, Galina Ostriakova and Dmitriy Masol for their love and support.

Also my special thanks are to Fedor Baart for helping me with statistical concepts during numerous coffee meetings and to my classmates Sergejs Pralya and Romana Jelinkova, Tanya Iskilieva and Elizabeth Pixopolou for being a source of advice and encouragement.

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Executive summary

The aim of this empirical study is to determine the short-term wealth effects of mergers and acquisitions between European companies during the recent merger wave (2003–2008). Additionally, the impact of merger characteristics on announcement returns is analysed. We also provide an overview of recent merger activity in Europe.

The sixth merger wave in Europe is characterised by a high level of consolidation, an absence of hostile activity, the prevalence of cash payment and growing internationalisation. Cross-sectional research of 642 merging companies from 18 European countries demonstrates that mergers in the recent wave are wealth-creating forms of capital investment. Over the six day period surrounding M&A announcement, the cumulative abnormal returns constitute 8% for targets, 0% for the bidder and 1.6% for the combined entity. These and other findings indicate that synergy is the main motive behind the current merger wave.

The main drivers of announcement returns between target and bidder companies were found to be different.

In case of target companies, the most rewarding merger characteristics are cash payment method (which adds 3.5% to the merger gains), manufacturing (5.8%) or service (3.6%) industry affiliation, English (5.6%) or Scandinavian (4.2%) legal origin and participation in a cross-border acquisition (3.2%). In contrast, targets experience diminishing returns in regulated industries (-2.6%).

For acquirers we reliably confirmed the negative effect of stock deals (-2.9%) as well as gains from acquisitions of large targets (an additional 4.95% per one unit increase in the ratio of the target capitalization to the bidder market value) and for acting under English (3.1%) or Scandinavian (2.5%) legal systems.

We have also documented interesting effects which are not confirmed statistically, possibly due to the small sample size and limited time span of this analysis, that are left for further research.

We hope that this research will contribute to the body of European event-study literature and will enable corporate managers to make profitable investment decisions.

Table of contents

Preface.....	2
Executive summary	3
Table of contents.....	4
List of tables and figures.....	6
PART 1: Research problem and questions	8
Chapter 1: Introduction	8
PART II: Theoretical foundations.....	9
Chapter 2: Review of literature.....	9
Merger Motives	9
Merger Waves	10
History of merger waves	10
Reasons for merger waves	11
Determinants of merger returns	11
Chapter Summary	16
Chapter 3: Conceptual framework and hypotheses.....	16
Chapter Summary	18
PART III: Research Methodology	19
Chapter 4: Methodology.....	19
Sample and data description	19
Software used for data acquiring, processing and analysis.....	20
Method.....	20
Model: estimating normal returns and predicting abnormal returns	21
Robustness	23
PART IV: Empirical findings	24
Chapter 5: Results of empirical research	24
Sample description.....	24
Univariate and bivariate analysis	25
H1. Total short-term shareholder returns.....	26
H2. Payment method	32
H3. Industry	33
H4. Market to Book Value of Target	39
H5. Relative Size.....	39
H6. Legal Status of the Parties.....	39

H7. Legal origin	40
H8. Cross –border versus Domestic	41
H9. The Beginning versus the End of the Wave	44
Summary of the Section	45
Multivariate Regressions	46
Total short-term shareholder returns	47
Payment method: sub-samples regressions.....	54
Cross-border and domestic deals: sub-samples regressions	54
First and second part of the wave: sub-samples regressions	54
Acquirers of private targets versus acquirers of public targets: sub-sample regressions	55
Legal systems: sub-samples regressions	55
Period: sub-samples regressions	55
Descriptive analysis of merger wave	55
Merger motives	56
PART V: Discussion, Conclusions and Further Research	58
Chapter 6: Discussion of empirical results.....	58
H1. Total short-term shareholder returns.....	58
H2. Payment method	59
H3 Industry.....	59
H4 Market-to-Book Value.....	60
H5 Relative Size	60
H6. Public status of the target	61
H7 Legal origin	61
H8. Cross –border versus Domestic	61
H9. Beginning versus End of the wave	61
Conclusions.....	62
Suggestions for future research and limitations	63
References	66
Appendix 1 Data validation.....	70
Appendix 2 Multiple regressions by sub-sample.....	72
Appendix 3 Wave description	79

List of tables and figures

Table 1 Distribution of gains according to takeover theories	10
Table 2 Data sources	19
Table 3 Search criteria and missing data filtering.....	20
Table 4 Indices and country groups.....	20
Table 5 Annual deal value and number of deals in the sample.....	24
Table 6 Statistics of the sample for acquirers and targets	24
Table 7 T-values and significance of acquirer and target cumulative abnormal returns	27
Table 8 Analysis of means differences between acquirer and target abnormal returns.....	27
Table 9 Including big loss deals (> 1 bln EUR loss).....	29
Table 10 Excluding big loss deals (> 1 bln EUR loss)	30
Table 11 AAR at day 0 by minimum deal size.....	31
Table 12 Regulated Industries by SIC codes (first two digits).....	34
Table 13 Industry classification using SIC codes.....	34
Table 14 Classification of countries in the sample by legal origin according to LaPorta (1998).....	41
Table 15 Types of the multivariate regressions performed	46
Table 16 Summary table of findings	49
Table 17 Regression results for acquirers, event window = [-3, 3] days.....	51
Table 18 Regression results for targets, event window = [-3, 3] days	52
Table 19 Combined, event window [-3; 3] days	53
Table 20 Count, annual value and percentage of deals for different categories in the wave	56
Table 21 Level of consolidation	56
Table 22 Expected sign of correlation, target versus bidder, and target versus total gain	56
Table 23 Pearson and Spearman correlation of target, bidder and total gains [-3, 3].....	57
Table 24 The deal characteristics by industry	59
Table 25 Regression results, Stock and Cash only, event window = [-3; 3].....	72
Table 26 Regression results, Domestic and Cross border, event window = [-3; 3].....	73
Table 27 Regression results, Beginning and End of M&A wave, event window = [-3; 3].....	74
Table 28 Regression results, acquirers of public targets and acquirers of private targets, event window = [-3; 3]	75
Table 29 Regression results for legal systems, event window = [-3; 3]	76
Table 30 Detecting significant variables for different years and target/acquirers, event window = [-3; 3].....	77
Table 31 Annual deal value and number of deals	79
Table 32 Number of deals in the wave per category	80
Table 33 Number of deals (left) and annual deal value (right) grouped by year and country	81
Table 34 Number of cross-border/domestic deals grouped by year and country; targets (left) and acquirers (right)	82
Table 35 Number of deals per industry grouped by year and country	83
Figure 1 The research framework	18
Figure 2 Typical event study of M&A deals.....	21
Figure 3 Geographical distribution of European M&A deals present in the sample and their market value (mln EUR). .	25
Figure 4 Daily average abnormal returns at merger announcement	26
Figure 5 Cumulative daily average abnormal returns [-20, 20]	26
Figure 6 Frequency of acquirer/target abnormal returns during the period [0] (left), [-3, 3] (middle) and [-5, 5] (right)	27
Figure 7 Total gain for [-20, 20] (above) and its significance for different event windows (below)	28
Figure 8 Acquirers Euro Gains [-3; 3] (left) and their skewness (right) during 2003 – 2008	28
Figure 9 Big loss (> 1 bln) deals as % of sample.....	29

Figure 10 Acquirer euro gains with (left) and without (right) big loss deals	30
Figure 11 Total euro gains with (left) and without (right) big loss deals.....	30
Figure 12 AAR at day 0 by minimum deal size	31
Figure 13 The effect of bid deals (> 15 bln) on acquirer and target returns	31
Figure 14 Daily average abnormal returns for acquirers and targets (Stock and Cash).....	32
Figure 15 Daily average abnormal returns for acquirers and targets (Regulated and Unregulated Industry)	35
Figure 16 Daily average abnormal returns for acquirers and targets (Industries).....	37
Figure 17 Daily average abnormal returns for acquirers of Public and Private Targets.....	39
Figure 18 Daily average abnormal returns [-20, 20] for targets and acquirers by Legal Origin.....	40
Figure 19 Daily average abnormal returns for acquirers and targets (Domestic / Crossborder)	42
Figure 20 Daily average abnormal returns for acquirers and targets (Beginning / End of the Wave)	44
Figure 21 Transformation of market-to-book value variable	51
Figure 22 Box plot showing outliers in the abnormal returns for the period [-3, 3] (targets and acquirers).....	70
Figure 23 Histogram of abnormal returns for targets and acquirers and normal distribution line	70
Figure 24 Normality check plots after winsorising, acquirers (left) and targets (right)	71
Figure 25 Descriptive statistics, before and after correction	71
Figure 26 Test of normality (after correction).....	71
Figure 27 Average industry CAAR [-3; 3] for targets during 2003-2009.....	78
Figure 28 Average industry CAAR [-3; 3] for acquirers during 2003-2009	78
Figure 29 Total number of deals and aggregated deal value during 2003-2009, (Thomson Online).....	79
Figure 30 Percentage of the deals in the wave per category	80

PART 1: Research problem and questions

Chapter 1: Introduction

Mergers and acquisitions are the biggest and most prominent form of corporate investment. According to economic research findings, mergers and acquisitions occur in waves. Academics identify five merger waves which occurred in the 1900s, the 1920s, the 1960s, the 1980s and the 1990s. The last two of these merger waves included Europe (Martynova and Renneboog, 2008). The recent evidence from scientists and business analysts points towards the emergence of a sixth merger wave (Lipton, 2006; Martynova and Renneboog, 2008; Roos, 2007; Saigol, 2008). This wave arose during economic recovery phase of 2003, reached its peak in 2006 when global mergers and acquisitions totaled EUR 1.35 trillion and declined to EUR 1.1 trillion in 2008 as the result of global economic downturn (Saigol, 2008). This wave represents an interesting subject for the study of corporate finance as it is largest by volume in merger history and the second largest by value after the peak wave of 2000 (Kronimus, et al., 2008)

This study is a first attempt at assessing the impact of the new sixth merger wave (2003–2008) on M&A wealth effects in Continental Europe and UK. To achieve this goal we conducted event studies of the short-term announcement effects of domestic and inter-European mergers.

The given research topic is important from academic point of view due to the prominent role of Europe in the global M&A market. European deals account for 29.5% of the worldwide volume (Roos, 2007). Despite this, most research focuses upon takeovers in the USA and very few studies are devoted to the European market and none of these European studies cover the time period from 2003 to 2008. This research will apply M&A theories developed for US market to European M&A's. It will also test whether the conclusions of previous European studies are valid in the case of the recent merger wave.

The study is practically oriented. Analysts predict a turnaround for M&A transactions in Europe. According to a survey of 164 publicly listed companies with made by BCG and UBS, two in five companies consider M&A as an important part of their strategy in the next 5–10 years, while 29% plan to acquire a target with sales of more than EUR 250 mln in 2009–2010 (Kronimus, et al., 2008). Half of the companies expect transformational deals in their sectors caused by the consolidation needs, lower asset prices and deterioration of business conditions. Thus, empirical research regarding the impact of deal characteristics on M&A wealth creation will be interesting to practitioners.

PART II: Theoretical foundations

Chapter 2: Review of literature

Merger phenomena belong to the unsolved questions of corporate finance (Brealey and Myers, 1996). The main questions which interest academics are: why do companies merge and do the mergers create value?

Merger Motives

What is the reason behind company mergers? The three main motives proposed by academic research include: synergy, hubris and agency (Weston, et al., 2007).

Merger theories can be seen from the framework of three assumptions: manager and investor rationality, focus by the managers on shareholder interests and merger wealth creation.

Motive 1: synergy

According to the synergy hypothesis (Bradley, et al., 1988a), the performance of a united company could become larger than that of the sum of two separate parties. Synergies fall into two categories: operating and financial (Ross, et al., 2007). Operating synergies facilitate revenue growth due to strategic decisions and market power. Alternatively, they cause a cost reduction by economies of scale and scope, technology exchange and disposal of bad management. Financial synergies could arise via tax benefits such as loss tax credits and increased debt tax shield. They can also provide access to low-cost capital by means of an internal capital market, improved credit ratings, higher cash flow or a lower probability of bankruptcy for the combined entity.

Synergy is the most favourable of motives for shareholders as it creates positive gains for the target, the acquirer and the combined entity. Synergistic gains have been confirmed by several empirical studies (Bradley, et al., 1988b; Goergen and Renneboog, 2004; Mulherin and Boone, 2000).

Motive 2: agency

The agency theory states that managers pursue personal interests instead of shareholder value. Thus they could use free cash resources for empire building instead of paying them out to stockholders (Jensen, 1986). Managers do this, for example, when their own compensation is linked to company growth. Alternatively, entrenchment is the reason for acquisitions when managers want to increase company dependency on themselves (Shleifer and Vishny, 1989).

If a merger is caused by the agency motive, it results in a decrease of the returns for both the acquirer and the combined company. Confirmation of this theory is found in a study by Mueller and Sirower (2003).

Motive 3: hubris

This hypothesis, developed by Roll (1986), states that overconfidence causes managers to believe in their own abilities to make a target worth more than its market price. This results in overpayment to the target.

As the result of this managerial hubris, the value is transferred from the acquirer to the target. In this situation the bidder's stock price will most likely fall after the merger announcement, and the target's stock price will rise. Thus the total gain from the merger is zero and the acquirer's returns are negative. Confirmation of this effect was found by Moeller (2005).

Thus, we could see that based on the above motivation, only synergy creates wealth for the acquirers, whereas agency and hubris cause negative bidder returns. For the target all three reasons of takeover are beneficial.

	Returns			Correlations between	
Merger Motive	Acquirer	Target	Total	Target gain and Total gain	Target gain and Acquirer gain
Efficiency /Synergy	Positive	Positive	Positive	Positive	Positive
Hubris	Negative	Positive	Zero	Zero	Negative
Agency	Negative	Positive	Negative	Negative	Negative

Table 1 Distribution of gains according to takeover theories¹

Campa and Hernando (2004) established that synergies were the main motivation of the mergers in the European market during the period of 1993–2000.

Merger Waves

History of merger waves

The consensus in the literature is that mergers occur in waves (Andrade, et al., 2001; Harford, 2005; Weston, et al., 2004).

Five merger waves are identified in the history of takeovers and these are expressed as periods of sharp increase in the number and value of deals, the first of which dates back to 1895 (Bruner, 2004).

First wave (1895–1904) was a period of monopoly formation in US which was marked by horizontal mergers mostly in the manufacturing sector.

Second wave (1925–1928) was a period of vertical integration especially by utilities, when companies bought out their partners along the production and supply chains of their primary business.

Third wave (1965–1970) was an era of conglomerate mergers, as firms were acquiring diversifying businesses outside of their core activity in response to anti-trust laws. The oil sector was particularly active.

Forth wave (1981–1987) was characterised by the importance of financial buyers in all industries globally. Leveraged buyouts and hostile mergers proliferated due to financial innovations such as junk bonds and other means of cheap credit.

Fifth wave (1992–2000) saw the dominance of strategic acquirers who were interested in improving efficiency by purchasing related targets. The main cause of mergers was a “decade of deregulation” (Andrade, et al., 2001) and technological change in the banking, technological and healthcare industries. At this time 70% of payment involved stock.

It is interesting to note that these waves have common features such as depending on the market boom, economic growth and low real interest rates. However, there are more differences between the waves than similarities, such as industry composition, types of mergers, hostility, payment methods, etc.

¹ Source: Berkovich, E., & Narayanan, M.P. 1993. Motives for takeovers: an empirical investigation. *Journal of Financial and Quantitative Analysis*, 28: 342-367.

Despite the long history of mergers dating back to 1890, academic research into M&A started almost a century later. The most important questions addressed by these studies are: what are the reasons for merger waves and do they create value for shareholders?

Reasons for merger waves

Two hypotheses exist to explain the driving forces of merger waves: neoclassical and behavioural (Harford, 2005; Rau and Stouraitis, 2009)..

The traditional neoclassical approach explains that mergers happen for efficiency reasons as they allow companies to grow or undertake positive NPV projects. Such opportunities arise both in normal business activity and due to industry-level shocks such as deregulation, supply changes, international competition, new financial innovations, etc. (Andrade, et al., 2001; Gort, 1969; Mitchell and Mulherin, 1996) or technological change that leads to the reallocation of assets to more efficient companies with a high ratio of market value to asset replacement costs (Jovanovic and Rousseau, 2002). These theories assume that mergers maximise shareholder returns and that the market is efficient. The main drawback of neoclassical theories is their inability to explain low short-term and negative long-run returns to the bidder's shareholders. Moreover, in neoclassical wave all forms of financing should be equally represented.

The behavioural, or market misvaluation, hypothesis states that growth and dispersion of valuations in inefficient markets explain the clustering of merger waves and aggregate merger activity. Shleifer and Vishny's (2003) model assumes that managers are rational and pursue personal interests. More overvalued companies acquire relatively less overvalued ones in stock deals. The overvalued stock bidder acquires the real assets of the targets in order to reduce the negative long-run impact of the price correction of its stock. They do so because they have long-term goals due to owning a large amount of company stock or being locked in for other reasons. Target managers accept the overvalued shares because they have short-term horizons and the merger allows them to sell out in case of retirement, to cash out by exercising stock options while the shares are overvalued or to keep their jobs. Rhodes-Kropf et al. (2005) developed a different theory that higher market valuation results in mistakes by the target in evaluating potential merger synergies and thus mistakes in accepting the deal. According to misvaluation theories, cash and stock acquisition waves should occur separately. Moreover, they accept that mergers can destroy value

Empirical evidence exists for both the neoclassical theory (Harford, 2005; Mitchell and Mulherin, 1996) and the misvaluation hypothesis (Ang and Cheng, 2006; Dong, et al., 2006; Rhodes-Kropf, et al., 2005). Rau and Stouraitis (2009) found evidence for both hypotheses and claim that there are different periods during which each one dominates.

Determinants of merger returns

The most reliable information on merger returns comes from the studies of short-term merger announcement effects. In efficient capital markets prices should immediately reflect the expectations of future cash flows resulting from the deal (Andrade, et al., 2001).

Total short-term shareholder returns:

Surveys of mergers before the 1980s (Jensen and Ruback, 1983) and afterwards (Bruner, 2002; Martynova and Renneboog, 2008) have shown that mergers create value, yet most of the returns are accrued by the target shareholders.

Target returns

As a result of extensive research, it is a widely accepted conclusion that target shareholders benefit the most from mergers (Andrade, et al., 2001; Bruner, 2002). In general, abnormal announcement returns for targets constitute

around 20% for the US and UK (Danbolt, et al., 2002; Mulherin and Boone, 2000; Schwert, 2000 ; Servaes, 1991). Andrade et al. (2001), in their review of 4000 US companies during 1973–1998, confirm that target return surrounding announcement day stays at 16% for the whole period, despite the fact that each wave has had different participating industries. To put the things into perspective, that means that in the few days surrounding the merger announcement, targets earn more than the average public company does in 16 months (based on an average annual return of 12%).

In Europe positive target returns are confirmed by most studies (Campa and Hernando, 2004; Danbolt, et al., 2002; Franks and Harris, 1989; Goergen and Renneboog, 2004; Martynova, et al., 2006). These returns constitute an average 10% but vary from 6% to 22% depending on the characteristics of the deal.

The presence of gains for the targets is easy to explain by both the merger premium and the expected synergy effect. The biggest puzzle is why the bidders do not gain from acquisitions.

Acquirer returns

With respect to acquirer returns, the literature is largely divided. Most studies conclude that these returns are small and are not statistically different from zero. Bruner (2002), in an overview of 44 articles concerning the effects of merger on the bidder, concluded that returns are, for the most part, equally distributed between wealth losses, wealth conservation and wealth gains. For the US market there is an almost equal number of studies that report either small negative returns (Andrade, et al., 2001; Asquith, et al., 1983; Franks, et al., 1991; Healy, et al., 1992; Mitchell and Stafford, 2000; Mulherin and Boone, 2000; Walker, 2000) or small positive returns (Bradley, et al., 1988a; Franks, et al., 1991; Higson and Elliott, 1998; Mulherin and Boone, 2000; Schwert, 1996).

Compared to the US, the European market stands out with respect to acquirer returns as mergers here seem to benefit the acquirer's shareholders. For the period between the early 1990s and end of the 20th century Goergen and Renneboog (2004) found announcement returns from 0 % to 4% depending on the mood of the deal and means of payment. Similar conclusions were reached by Faccio et al. (2006) who also include analysis of public and private targets. For the two weeks surrounding a merger event, Martynova and Renneboog (2006) established returns of 1%.

It might be disappointing to admit, but the explanation for lower acquirer returns has remained a challenge in the financial academic world for the 30 years since such research began. The most plausible explanations come from behavioural finance. The acquisitions might signal to the market the firm's lack of positive NPV projects, the overconfidence of its management (Roll, 1986) or agency problems of pursuing growth (Jensen, 1986). A case of especially negative bidder returns represent stock mergers, which will be discussed in the section on payment methods.

Total returns

As targets usually gain and bidders, on average, break even, total merger gains are expected to be positive. Indeed, positive returns, however small, are confirmed by academics. In the US their value constitutes about 1–3% (Andrade, et al., 2001; Bruner, 2002; Mulherin and Boone, 2000). Campa and Hernando (2004) found returns of 1.04% in Europe as well.

Conclusion: M&A studies have reached a consensus that mergers create value. However, the winners are target shareholders who capture most of the gains. The acquirer's returns seem to be either negative or positive but near zero, however the evidence for this is not reliable as statistical values are mostly insignificant. Still, the combined entity has small positive returns. Most studies conclude that merger effects vary significantly depending on the transaction, firm and country characteristics, some of which we will cover in the next sections.

Payment method

A sufficient number of studies have observed that payment method is an important determinant of merger gains. Cash deals generate higher abnormal returns than acquisitions paid by stock or a combination of stock and other payment methods.

According to Andrade (2001) and Asquith (1987), the reason for this is that stock mergers represent both a merger as an investment and an equity issue as financing. The equity issue alone causes negative abnormal returns upon announcement of -2 to -3 %, which masks the positive value of the investment decision.

The dominant theory of stock merger returns is the adverse selection hypothesis of Myers (1984) which assumes asymmetric information between managers and investors. Managers, who are more informed about intrinsic value of their shares, act in the interests of old shareholders and try to maximise the value of existing shares. They finance investment according to pecking order starting from cash and debt and are more likely to issue stock when it is overvalued. As investors cannot verify the true value of shares, stock issues cause the “lemon’s problem” (Akerlof, 1970) thereby new shareholders demand a discount.

The shareholders of targets also have reasons to be cautious about stock deals. First of all, due to information asymmetry, they cannot estimate the true value of the shares and expect them to be overvalued. Secondly, they have less of a chance to become the majority among the acquirer shareholders and this limits their power to influence the value of the stock they receive.

There are exceptions to the rule. When the target is private, the stock mergers cause positive bidder returns since the market for private companies is more illiquid which results in a lower premium or even a discount (Fuller, et al., 2002).

For the European market the higher gains for cash deals are proven by Martynova and Renneboog (2006).

Industry

To our knowledge, there are very few studies that examine the abnormal returns of mergers by comparing them between industry sectors. Out of the three found all were of an empirical character and thus did not provide theoretical explanations for observed differences.

The first such study for European Union indicated that lower returns are observed in the industries which are influenced by regulation or have a substantial degree of government ownership (Campa and Hernando, 2004). When contrasting regulated and non-regulated sectors, the difference is 1–3% for acquirers and 1–5% for targets and is even higher in cross-border deals. The bidders in regulated sectors incur a loss. According to the authors, the reason for this might be obstacles imposed on private investors by policy makers in these sectors.

Different motivation and evidence is presented by Kiyamaz (2008) for EU mergers between 1983 and 2003. They believe that acquirers should have higher returns in regulated industries. According to the authors, the market believes such bidders pursue only profitable acquisitions, since the approval of mergers in regulated industry entails time loss and costs.

For specific industry sectors, the same authors showed that industry type has a significant effect on merger returns. In their study mergers in service industries were less profitable for acquiring firms, while those in manufacturing were the most profitable.

Goergen and Renneboog (2004) also studied merger effects in five industry groups, and found that retail and manufacturing caused the highest CAARs for the short-term windows, followed by services, utilities and banks.

With regards to lower returns of services compared to manufacturing, in the absence of theoretical explanations in merger literature, we can only suggest reasons from strategy studies. It seems that merger synergies are much easier to realise in manufacturing than in the service sector. Services have unique qualities which are hard to control and reproduce (Erramilli and Rao, 1993; Goerzen and Makino, 2007): they are intangible; their production and consumption are inseparable; they are heterogeneous to tailor to consumer tastes; they are perishable as cannot be stored; they are people intensive; and they are idiosyncratic (i.e. require investments in knowledge and training).

With regards to the rest of the sectors, we can only mention more studies on the financial industry as it is always represented as a special area of merger research due to the specifics of regulation and accounting.

Indeed, empirical researchers (DeLong, 2001; Houston, et al., 2001) observed that targets' abnormal returns around announcement are somewhat lower in financial industries than in the overall economy and constitute around 15% as compared to 20–30% economy-wide. Bidders have significant negative CAARs (Houston, et al., 2001) or break even (Becher, 1999).

In contrast to the US, studies of the European banking sector demonstrate that abnormal announcement returns for acquirers are generally positive (Cybo-Ottone and Murgia, 2000). This is explained by higher deregulation and the concentration of banking sector in the EU.

Growth versus Value Targets

Value stocks with low market-to-book value (ME/BV) could stand for low profitability, poor management, hubris or undervaluation. Goergen and Renneboog (2004) state that such value investing should increase the returns of the bidders. According to neoclassical theory, the acquisitions of badly managed, low Tobin Q firms by efficient managers should increase the returns of both parties of the transaction, as proved by research (Lang, et al., 1989; Servaes, 1991). From the other perspective, according to Morck (1990) the acquisition of high growth targets might be caused by the agency problem of bidder management. The goal of such acquisitions is to continue the growth of the bidding firm and thus to ensure continuity of its management. As a result, the authors document the negative bidder returns of such acquisitions.

Relative Size

Small size proxies for better corporate governance (Moeller, et al., 2004), higher stock returns and lower earnings (Fama and French, 1995) and greater information asymmetry (Barry and Brown, 1986). Small firms are less likely to be overvalued, exhaust growth opportunities or suffer from hubris (Moeller, et al., 2004). Also merger arbitrage is less likely for small firms so that the announcement returns will not be diminished by short selling price pressure (Mitchell, et al., 2004). Whichever of these effects is in play, empirical research shows that bidder returns at the announcement negatively correlate with target size (Gondhalekar, 2002 ; Rau and Stouraitis, 2009).

Fuller et al. (2002) found that relative size has an inverse impact on bidder gains if the target is public. The reason for this might be threefold. Firstly, a larger target has a higher impact on the outcome of merger negotiations and the size of the premium which is also argued by Schwert (2000). Secondly, from the synergistic explanation, the post-merger integration becomes more complex the bigger the acquired firm is. Lastly, a large company's stock is more liquid which results in the bidder paying a higher premium or getting less of a discount. The latter hypothesis explains the authors' finding that private target size is positively related to the gains from acquisitions, as the bidder gets a higher discount due to illiquidity.

It is worth noting the contrary opinion that size is positively related to bidder gains. Asquith (1983) confirmed this empirically. In his line of reasoning, if the bidder's equity is ten times larger than that of the target, a return of 1% of the target value is equal to 0.1% of the equity value of the acquirer. Relative size masks true bidder returns and should

be controlled for. However in European studies, Goergen (2004) did not succeed in finding significant results for this determinant.

Legal Status of the Target

The listing effect—or the difference between returns to acquirers to public and private targets—is a new and interesting topic. Bidder returns are higher in cases where the target is a private company, compared to acquisitions of listed firms (Faccio, et al., 2006; Fuller, et al., 2002 ; Moeller, et al., 2004). There are very many hypotheses as to why this is possible. Fuller (2002) suggests that this is due to the liquidity effect, as private companies are harder to buy and sell than the stock of listed targets. This allows the buyer to capture a discount. Chang (1998) and Fuller (2002) think this is a method of payment effect, as acquirers of private targets have higher returns when paid by stock than by cash. Chang (1998) believes that the market maintains that private acquisitions are more likely to create blockholder (> 5% of shares) in the acquirer's structure, thereby improving the bidder's corporate control. It could also be a size effect (Moeller, et al., 2004), since smaller bidders have larger gains, and smaller bidders are also more frequent buyers of unlisted targets. Another theory is the diversification effect (Hansen and Lot, 1996), whereby shareholders hold diversified portfolios and are indifferent to the gains of public acquirers since the losses of such acquirers are compensated for by the gains of their targets within a diversified portfolio. However, shareholders demand that managers do not overpay for private targets, since their shares are not represented in a diversified portfolio. Another hypothesis is predictability (Faccio, et al., 2006). Since acquisitions of public targets are more well-known than those of unlisted companies, the market may incorporate these expectations before the announcement event so that their announcement returns may seem lower.

Despite the variety of theories, none of them have been proven empirically. Moreover, Faccio (2006) tested each of them in his study and did not find significant results.

Legal Origin

The role of stock markets in the overall economy and investor protection mechanisms differ among European countries. European legal systems are traditionally classified into four families: English, German, French and Scandinavian (La Porta, et al., 1998). Common law countries such as UK have higher investor protection, more efficient law enforcement, better accounting standards, a more developed stock market and lower ownership concentration. Scandinavian countries are similar in this respect. Civil law countries of French legal tradition are much worse in this respect. The middle ground is formed by countries of the German legal origin. Researchers link better shareholder protection to higher takeover premium (Rossi and Volpin, 2004). Indeed, studies of the period from 1993–2001 (Goergen and Renneboog, 2004; Martynova, et al., 2006) demonstrated that UK targets earn twice the abnormal returns of their Continental European counterparts in the week surrounding a merger announcement. For the bidders, the ratio of UK returns to the rest of Europe is 1:1.5.

Cross-border versus Domestic

Cross-border mergers have grown in importance with each merger wave. The reasons for companies to acquire foreign targets are expressed in Dunning's (1988) eclectic paradigm. It states that buying foreign targets provides the advantage of ownership of firm-specific assets, knowledge and product development skills. The second reason is to gain access to foreign markets. Lastly, companies may benefit from internalising transactions in which the market fails and there is opportunistic behaviour on the part of other party. One could also add to these reasons favourable legal and tax rules, and different costs of capital (Goergen and Renneboog, 2004).

Such synergy motives suggest value creation by cross-border deals. Yet the evidence varies. For US targets, studies indeed establish positive cross-border returns (Harris and Ravenscraft, 1991). The same was found for bidders in 1970s–1980s as well (McCabe and Yook, 1996). However Moeller (2005), in a famous study of mergers from 1985–95, discovered lower returns for cross-border acquisitions. By partitioning the sample he saw that these returns are worse for investments into countries with the French legal system, which is in agreement with the theory by La Porta (1998) mentioned below. However, even for UK targets the gains are low, which could mean that the UK's advanced investor rights system and resulting liquid capital market leads to higher competition and lower bidder returns.

The results of European studies are similar for targets but differ in case of bidders. Campa (2004) showed that cross – border deals of bidders produce abnormal returns, lower by 0.5%–4% compared to domestic acquisitions between 1998 and 2000. The negative bidder price reaction cannot be explained by higher merger premium and points to the existence of economic, legal and cultural barriers, governmental control over M&A and takeover defenses. The cross-border penalty of 0.7% for bidders was also found for the period of 1993–2000 by Goergen (2004).

European targets seem to benefit from more cross-border operations. They earn an additional 1% to 5% according to the same studies. In particular, Martynova (2006) shows a difference of 3%, which they explain by the higher percentage of UK targets. Goergen (2004) confirmed 1.4% more gains for cross-border targets. Both studies relate to the fifth merger wave of 1993–2000.

Beginning versus Second Part of the Wave

The reasons that companies perform well in the beginning of a merger wave may include first-mover advantage (Shane, 2005). In relation to M&As, this could mean lower premium due to the higher number of available targets (Mitchell and Mulherin, 1996), the ability to choose the best from a larger pool of available targets, or development of critical capabilities earlier than competitors (Lieberman and Montgomery, 1998). Due to the subsequent scarcity of good targets, the later entrants have to propose higher premiums or make more risky acquisitions. Bidder managers in the second part of the wave are more prone to hubris and pursuing their own interests (Harford, 2005). Also Moeller (2005) showed that the later part of wave increases the agency problem of empire building when companies begin to make bad acquisitions after good ones become limited.

This reasoning is consistent with empirical findings (Harford, 2005; Martynova, et al., 2006; Moeller, et al., 2004).

Chapter Summary

In this section the motives for mergers were discussed. These motives can be divided into value-increasing, value-preserving and value-destroying for the total entity. The main value-increasing motive is synergy. The motive which results in decrease of combined shareholder wealth is agency. Finally hubris is the motive which simply redistributes gains from acquirers to targets. External environment can facilitate mergers for any of the above reasons. Industrial shocks or market misvaluation can cause merger waves.

M&A literature established numerous factors that influence the abnormal returns of the bidder and target. Among them are deal characteristics such as payment method; firm characteristics such as relative size, market value and public status; industry type; market for corporate control; internationalisation and place in a merger wave.

Chapter 3: Conceptual framework and hypotheses

In the course of the current work we would like to address the following research topic:

What is the effect of the mergers and acquisitions in Europe over the period of 2003–2008 on the short-term shareholder returns?

In order to answer this research question this study will address two main research sub-topics:

Q1: What are the typical features of the sixth merger wave (2003–2008) in Europe?

Q2: How do the different firm and deal characteristics during this wave impact the abnormal returns to bidder and target shareholders around M&A announcement?

Based on the academic findings presented in the literature section above, we bring forward the following research hypotheses:

H1. Total short-term shareholder returns:

- a) **During the sixth merger wave in Europe the short term returns to acquirers might be small but are positive and significant.**
- b) **The largest positive returns are experienced by target shareholders.**
- c) **The combined shareholder returns are positive as well.**

The assumption of positive acquirer returns was first proven by Goergen and Renneboog (2004) and Martynova and Renneboog (2006). It is mostly specific for European capital market, since the vast body of M&A research for the USA holds that mergers do not benefit bidder shareholders (Andrade et al, 2001; Muhlerin & Boone, 2000). The positive target returns are confirmed by most European studies such as Dennis and McConnell (1986), Frank and Harris (1989), Danbolt (2004), Campa and Hernando (2004), Goergen and Renneboog (2004) and Martynova and Renneboog (2006).

H2. The choice of the method of payment influences the M&A abnormal returns. Stock offers result in low shareholder returns while cash deals create the most value.

This conclusion is proven by a series of articles for the European market including Faccio (2005).

H3. There is a difference in the abnormal M&A returns between different industry sectors.

The exact direction of announcement effects for various sectors will be established in the course of this study. However, the initial results for the European Union indicate that smaller returns are observed in regulated industries such as energy and services as well as in the non-regulated financial sector (Beitel, et al., 2004; Campa and Hernando, 2004; Cybo-Ottone and Murgia, 2000).

H4. The acquisitions of targets with low Market-to-Book ratio (value targets) cause higher announcement returns to the bidders than the purchase of growth targets.

This conclusion is a matter of consensus in both American (Rau and Vermaelen, 1998) and European (Goergen and Renneboog, 2004) studies.

H5. The relative size of acquirer and target impacts the bidder returns. Acquisitions of smaller targets perform better.

Although accepted in the USA studies (Moeller et al., 2004) this fact still needs confirmation for the European market as an initial study of such effects by Goergen and Renneboog (2004) produced insignificant results.

H6. Legal status of the target: returns to the acquirers of public targets are lower than for private target buyers.

This sub-hypothesis is valid for European M&A as evidenced by Martynova and Renneboog (2006).

H7. Both the acquirers and targets experience higher abnormal returns if they belong to the countries of the English or similar legal tradition which is characterised by a more developed market for corporate control.

By countries of the English legal tradition we mean not only the English common law family but also Scandinavian countries, which, in terms of corporate governance and financial markets, resemble English system (La Porta, et al.,

1998). The first European studies of such type performed by Goergen and Renneboog (2004) and Martynova and Renneboog (2006) for the previous merger waves confirmed this assumption.

H8. The cross-border acquisitions within the European region have different effects than domestic ones:

- a) Cross-border deals result in lower announcement returns for the bidders
- b) Cross-border deals result in higher announcement returns for the targets

Our assumptions are based on research by Moeller and Schlingemann (2005) for the USA, as well as by Martynova and Renneboog (2006) for Europe.

H9. The highest shareholder gains for the bidders occur in the beginning of the merger wave, the second half of the wave appears to destroy value.

This finding is consistent with Harford (2003), Moeller (2004) and Jensen (2004) for the US and Goergen (2004) for the EU.

Figure1 summarises the framework of the study

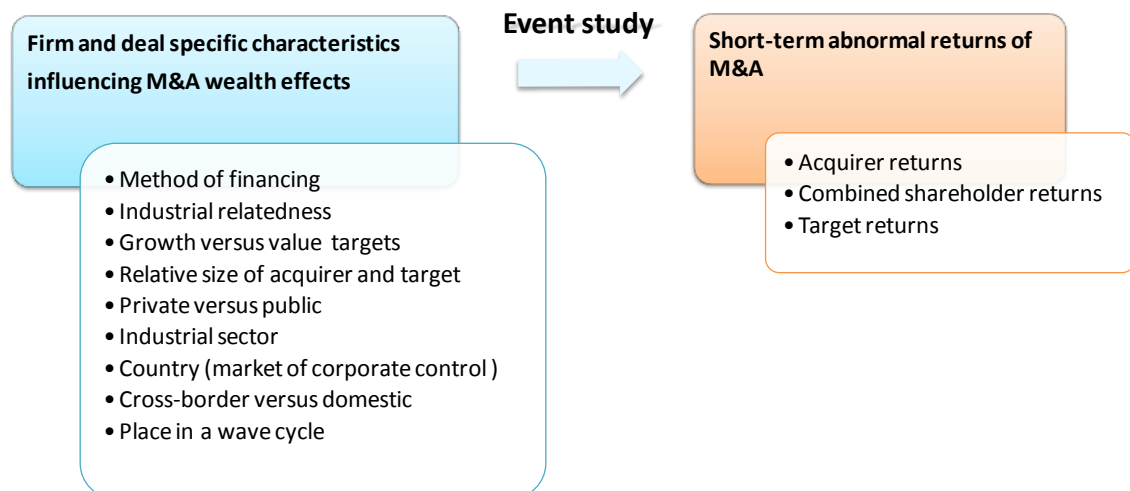


Figure 1 The research framework

Chapter Summary

The current study contributes to the corporate finance literature since it aims to conduct research into the most recent merger wave which has not yet been performed by European academics. It also combines in one study the list of factors covered separately in the several publications on M&As in Europe and the USA (Berkovich and Narayanan 1993; Campa and Hernando, 2004; Faccio, et al., 2006; Fuller, et al., 2002 ; Goergen and Renneboog, 2004; Harford, 2005; La Porta, et al., 1998; Martynova, et al., 2006 ; Moeller, et al., 2005). We would like to test the influence of several firm, transaction, location, period and industry characteristics and we hope this study will be useful from both an academic and a practical perspective.

PART III: Research Methodology

Chapter 4: Methodology

Sample and data description

Data on mergers and acquisitions was collected from Thomson One Banker for the period of 2003–2008. The daily market information was gathered from DataStream. Additional sources were consulted where possible to control for missing information and the absence of overlapping contaminating events.

Data type	Source
Deal information : acquirer and bidder, announcement date, deal value, public status, payment methods, country, industry, SIC codes, etc.	Thomson One Banker, Deals Analysis
Share prices, Market indices, Market value, Market to Book ratios	Datastream
Business information	Factiva (FT), Lexus Nexus

Table 2 Data sources

The selection criteria included:

- 1) European origin of both the bidder and the target
- 2) Bidder listing on a European stock exchange
- 3) More than 51% of target shares are owned by the bidder after the transaction
- 4) Completed deals only

In contrast to previous studies (Goergen and Renneboog, 2004), we did not limit our sample by the acquisition size in order to analyse both large and small deals.

The initial sample comprised 37256 deals, however the final sample was reduced to 642 companies for which the price or market value information was available from the accessible databases.

The sample selection process is presented in Table 3 below.

Request	Description	Results
Acquirer Nation Region (Code)	Western Europe	203643
Target Nation Region (Code)	Western Europe	172288
Percent of Shares Owned after Transaction	51 to HI	107972
Date Announced	01/01/2003 to 08/07/2009	37256
Event with SEDOL		680

Request	Description	Results
Exclude Withdrawn		673
Exclude Where Deal Value is not Available		581
Exclude where price info is not available in Datastream		364
Total number of companies for all events (non-unique)		728
Exclude events where st.dev.(price) is 0		642

Table 3 Search criteria and missing data filtering

Since event study was performed for the European market we chose country specific all-share return indices. The return index is more preferable than price index as it controls for share splits and dividends. The list of indices is presented in Table 4.

Table 4 Indices and country groups

Country	Index	Stock Exchange
Austria	ATX	Oostenrijkse Wiener Börse
Belgium	BEL20	Euronext Brussel
Denmark	OMXC	Copenhagen Stock Exchange
Finland	OMXH25	OMX Nordic Exchange Helsinki
France	CAC 40	Cotation Assistée en Continu
Germany	DAX	Deutsche Börse
Greece	FTSE/Athex 20	Athens Stock Exchange
Iceland	OMX Iceland All-Share	Iceland Stock Exchange
Ireland-Rep	ISEQ Overall Index	Irish Stock Exchange
Italy	FTSE MIB	Borsa Italiana
Luxembourg	LuxX Index	Luxembourg Stock Exchange
Netherlands	AEX	Euronext Amsterdam
Norway	OSLO EXCH ALL SHARE (^OSEAX)	Oslo Bors
Portugal	PSI-20	Euronext Lisbon
Spain	IBEX 35	Bolsa de Madrid
Sweden	OMXSPI	Stockholmsbörsen
Switzerland	SMI	Swiss Exchange
United Kingdom	FTSE All-Share	London Stock Exchange

To check robustness we also used local market price indices, MSCI country indices and Datastream total market indices. The latter two index types allow for better capturing of total market returns in contrast to the exchange indices.

Software used for data acquiring, processing and analysis

- The statistical analysis was performed by SPSS 17.0 for Windows and Microsoft Excel 2007
- Python and ArcGIS were used to produce geographical maps for targets/acquirers

Method

Short-term event studies are, at present, the most statistically reliable methods of studying merger effects (Andrade, et al., 2001). Under the efficient markets hypothesis (Fama, 1970), stock prices should immediately react to new information concerning the deal to reflect the changed expectation about company cash flows.

The main goal of event studies is to measure the reaction of share price to takeover announcement. Event studies usually are performed in a number of steps such as sample selection, identification of the event date, determination of estimation period (before the event window) and event window (surrounding the event). Then abnormal returns are

estimated using one of the market models for event window. Following this, various statistical tests are performed to check the significance of abnormal returns.

Identification of the estimation period, event date and event period

The event window consists of the day on which the event occurred and certain number of days before and after it.

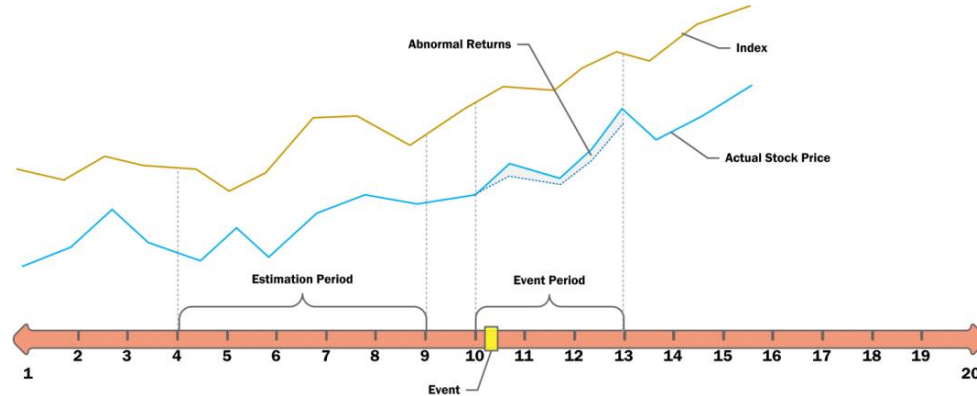


Figure 2 Typical event study of M&A deals

Selection of the event date and period plays an important role in the precision of the test. The estimation period should be relatively large to reduce the sampling error which causes a serial correlation of stock abnormal returns (MacKinlay, 1997).

There is no agreement in the literature as to event window selection. A small window may not capture the leakage effect prior to announcement. A very large window could bias the results upward as bidders often announce acquisitions to use the upward drift of their stock price (Goergen and Renneboog, 2004). In general, we assume that advances of corporate governance in Europe restricted the incidences of insider information leakage, thus broad event windows are not necessary.

Our study used a standard event window from -3 through +3 days to capture possible leakage prior to the public announcement of a merger as well as the slow market adjustment to merger news. For robustness checks we include the commonly used windows of total 2, 10, and 40 days surrounding the announcement day. For the estimation period we chose an interval of 100 days before the event window which is wide enough to capture the relationship between the stock and the market.

Model: estimating normal returns and predicting abnormal returns

We used the Single-Index Market Model mentioned in Seiler (2004) and MacKinlay (1997) to predict the normal returns during the event period. Normal returns in a general form are expressed in terms of the market index R_{mt} as

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

$$E(\varepsilon_{it}) = 0 \quad \text{var}(\varepsilon_{it}) = \sigma_{\varepsilon_i}^2$$

Where R_{it} is a normal return of the firm i on the day t , β_i is a slope coefficient which can be also interpreted as a sensitivity of the return to the market index, α_i is a mean return over the period not explained by the market and ε_{it} is an error which is uncorrelated with R_{mt} and is neither heteroscedastic nor autocorrelated. In case of a simple market model the mean of ε_{it} is assumed to be 0.

In existing literature most of the event studies assume that the pre-deal stock performance of the bidder and target firms persists. Under this assumption we can obtain the regression estimates of the α_i and β_i and $\sigma_{\varepsilon_i}^2$ from equation (1), denoted as $\hat{\alpha}_i$ and $\hat{\beta}_i$, by means of ordinary least square (OLS) regression performed over the estimation period.

$$\hat{\beta}_i = \frac{\sum_{\tau=T_0+1}^{T_1} (R_{it\tau} - \hat{\mu}_i) * (R_{m\tau} - \hat{\mu}_m)}{\sum_{\tau=T_0+1}^{T_1} (R_{m\tau} - \hat{\mu}_m)^2} \quad (2)$$

$$\hat{\alpha}_i = \hat{\mu}_i - \hat{\beta}_i \hat{\mu}_m \quad (3)$$

Where

$$\hat{\mu}_i = \frac{1}{L_1} \sum_{\tau=T_0+1}^{T_1} R_{it\tau} \quad (4)$$

$$\hat{\mu}_m = \frac{1}{L_1} \sum_{\tau=T_0+1}^{T_1} R_{m\tau} \quad (5)$$

Here the event day is defined as $\tau = 0$, $\tau \in [T_1 + 1, T_2]$ is the event window and $\tau \in [T_0 + 1, T_1]$ is the estimation period. The length of the estimation period is $L_1 = T_1 - T_0$ and $L_2 = T_2 - T_1$ is the length of the event window.

The advantage of market model is the reduction of the abnormal return variance due to controlling for part of return which is correlated with market return. This increases the chance of finding abnormal return behaviour (MacKinlay, 1997).

The index model is similar to CAPM, however they differ in two aspects. The index model replaces the all-inclusive market portfolio rarely observed in practice with the well determined market index. Also α_i in the market model is not $\alpha_i = r_f * (1 - \beta_i)$ in CAPM. The justification for this is that the intercept of CAPM appears to be too small compared to empirically fitted values (Litner, 1965; Miller and Scholes 1972).

The description of indices which proxy for market portfolio are presented in Data section above.

For the event period abnormal returns are defined as a difference between actual returns and predicted normal returns:

$$\widehat{AR}_\tau = R_{it\tau} - \alpha_i + \beta_i R_{m\tau} \quad (6)$$

Respectively, cumulative abnormal return for each security:

$$\widehat{CAR}_{(\tau_1, \tau_2)} = \sum_{\tau=\tau_1}^{\tau_2} \widehat{AR}_{(\tau)} \quad (7)$$

The cumulative average abnormal return (CAAR) adds the returns of the individual stocks for time interval:

$$\overline{CAR}_{(\tau_1, \tau_2)} = \sum_{\tau=\tau_1}^{\tau_2} \overline{AR}_{(\tau)} \quad (8)$$

where

$$\overline{AR}_{(\tau)} = \frac{1}{N} \sum_{i=1}^N \widehat{AR}_\tau \quad (9)$$

The total gain from the merger, that is the $\overline{CAR}_{(\tau_1, \tau_2)}$ for the total entity is computed by the formula mentioned in Goergen (2004):

$$\overline{CAR}_{(\tau_1, \tau_2)}^{Total} = \frac{\overline{CAR}_{\tau_1, \tau_2}^{Target} * MV_{\tau_0}^{Target} + \overline{CAR}_{\tau_1, \tau_2}^{Acquirer} * MV_{\tau_0}^{Acquirer}}{MV_{\tau_0}^{Target} + MV_{\tau_0}^{Acquirer}} \quad (10)$$

Under the null hypothesis \widehat{AR}_τ and \widehat{CAR}_τ follow a normal distribution with the mean equal to 0.

We test the null hypothesis of zero average abnormal return at any day τ during the event window by the method developed by Brown (1985):

$$t_{\tau} = \frac{\overline{AR}_{\tau}}{\sqrt{\frac{1}{L_1} * \sum_{\tau=\tau_0}^{\tau_1} (\overline{AR}_{\tau} - \frac{1}{L_1} \sum_{\tau=\tau_0}^{\tau_1} \overline{AR}_{\tau})^2}} \quad (11)$$

where $\tau_0 + 1$ and τ_1 are the starting and ending days of the estimation period.

To test the significance of $\overline{CAR}_{(\tau_1, \tau_2)}$ we use time-series standard deviation test developed by Brown (1980):

$$t_{\tau_1, \tau_2} = \frac{\overline{CAR}_{(\tau_1, \tau_2)}}{\sqrt{L_2} \sqrt{\frac{1}{L_1} * \sum_{\tau=\tau_0}^{\tau_1} (\overline{AR}_{\tau} - \frac{1}{L_1} \sum_{\tau=\tau_0}^{\tau_1} \overline{AR}_{\tau})^2}} \quad (12)$$

The advantage of this test is the absence of the negative effects of cross-correlations of stock returns. The drawback is its limited robustness in case of heterogeneous variances of returns (Cowan, 2007). However, the use of the tests which assume cross-sectional dependence entails large costs as they are “half as powerful and not better specified than those employed assuming independence” (Brown and Warner, 1985).

In addition to the univariate t-tests we will perform bivariate difference-of-the-means tests and multivariate regressions. Univariate t-tests are aimed at proving the existence of abnormal returns, whereas bivariate tests and multivariate regressions should confirm the difference in returns between groups of companies (t-tests, regressions) and their impact on the abnormal returns (regressions).

The specifications for the bivariate tests and descriptions of multivariate regression models will be mentioned in the following Empirical Findings section.

We will conduct analyses for seven return windows, however most attention will be given to window [-3;3] which, in our opinion, should incorporate the main effects of announcement, leakage and post-event correction provided that the markets are semi-strong efficient and that insider trading rules in the EU are enforced. With the same logic, the second and third most important event windows will be [-1;0] and [-5;5] .

Robustness

To check our results we performed a calculation of cumulative abnormal returns in 7 event windows : [-1;0], [-2;2], [-3;3], [-5;5], [-10;10], [-20;20], [-20;0] that allows us to incorporate the leakage of information and subsequent price adjustment if market realises its overreaction. Additionally, we also used non-parametric tests of means and correlations to accommodate the not perfect normality of the data. We also applied four types of indices: local return indices, local price indices, total market index for each country calculated by Datastream, and the MSCI country index. The latter two indices were used to measure whether returns are abnormal in comparison to the whole market and not just to the exchange index. The returns are, in general, robust to index changes, thus because of space limitations we present only the calculations with local return indices, which include stock splits and dividends. The rest of the calculations can be presented upon request.

PART IV: Empirical findings

Chapter 5: Results of empirical research

Sample description

Table 5 Annual deal value and number of deals in the sample

	Deal value (mln.)		Number of deals
2003	€	53,169	65
2004	€	122,709	67
2005	€	91,092	70
2006	€	113,839	68
2007	€	105,583	69
2008	€	30,561	21
2009	€	676	4
Grand Total	€	517,628	364

The distribution of merger deal values and numbers allows us to denote the end of year 2006 as the break-point between the first and second parts of the wave, which we will use in tests of hypothesis H9.

Below we present the brief statistics of the sample for acquirers (A) and targets (T), where values represent number of deals.

Table 6 Statistics of the sample for acquirers and targets

	A	T		A	T
Payment method			Legal system		
Cash only	112	112	English	63	66
Stock only	70	70	French	129	132
Other	133	133	German	63	63
Regulation			Scandinavian	46	44
Unregulated	209	232	Internationalisation		
Regulated	96	75	Cross-border	122	124
Industry			Domestic	183	185
financial	77	71	Legal status of target		
manufacturing	91	91	Public target		301
energy/utility	28	24	Private target		10
retail	18	12			
services	94	105			
Part of the wave					
First	76	74			
Second	229	235			

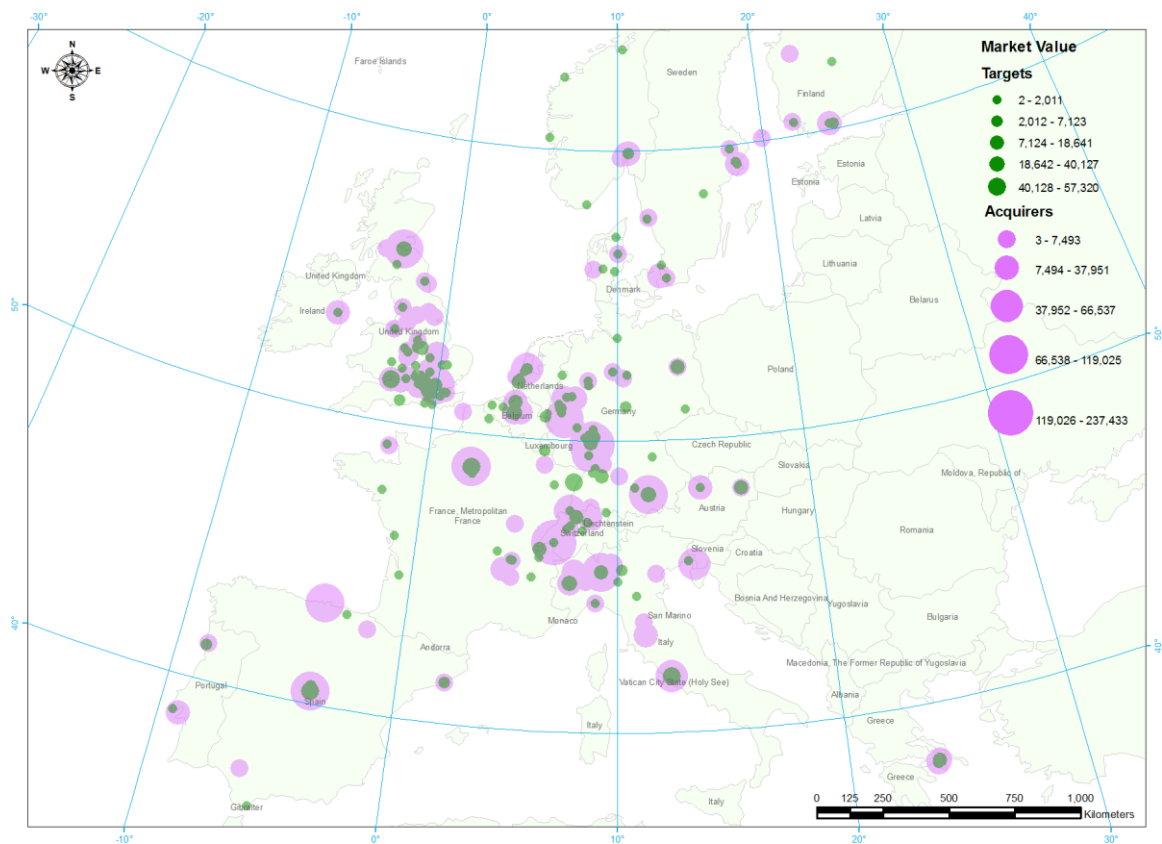


Figure 3 Geographical distribution of European M&A deals present in the sample and their market value (mln EUR).

Geographical coordinates were obtained using companies' city names and market values available in the Thomson Online Database. After that, a geocoding tool written in Python was used to obtain geographical coordinates from the Google Maps database. The results were then processed using GIS mapping software.

Univariate and bivariate analysis

Approach

In order to justify the use of parametric t-tests, we first verified data met the tests assumptions: normal distribution, homogeneous variance, interval data and independence (Field, 2005). Such checks were made for each subsample of abnormal returns. From these, the normality of CAAR and AAR distribution posed the only concern. The fact that daily stock data is not normally distributed is well known (Brown and Warner, 1985). Our solution was first to eliminate major outliers and obvious errors by 99% winsorisation of the whole sample. This substantially improved the normality of returns as evidenced in the example of CAARs [-3;3] in Appendix 1 Data validation. For reasons of brevity we omit the other subsamples' analysis of normality, but they can be presented upon request. However, even after correction, the data exhibited moderate levels of skewness and leptokurtosis with the absolute value of each almost never higher than 1. The Kolmogorov-Smirnov tests seldom showed that the data was normal, still we could also attribute this to the growing inaccuracy of this test with the increase in sample size (Field, 2005). On the other side, looking at the histograms and Normal Q-Q plots in Appendix 1 produced the impression of normality. Also the Central Limit Theorem states that "for significantly non-normal distributions the sum of more than 50 observations approaches normality. For moderately non-normal distributions this approximation is good with 10 to 20 observations" (Bock, 1975: 111). Thus, we decided to proceed with the use of univariate t-tests for normality of the returns due to the wide-spread application of specific types of such tests in event studies and for the sake of comparability with the results of existing

research. However, for the usual statistical bivariate analysis and correlations we used both parametric and non-parametric approaches.

In all tests the significance is denoted as *-10%, **-5% and ***-1%.

H1. Total short-term shareholder returns

Stock price around merger announcement as depicted in Figure 4 confirms that markets do react to such news, with the effect being most prominent in the case of targets.

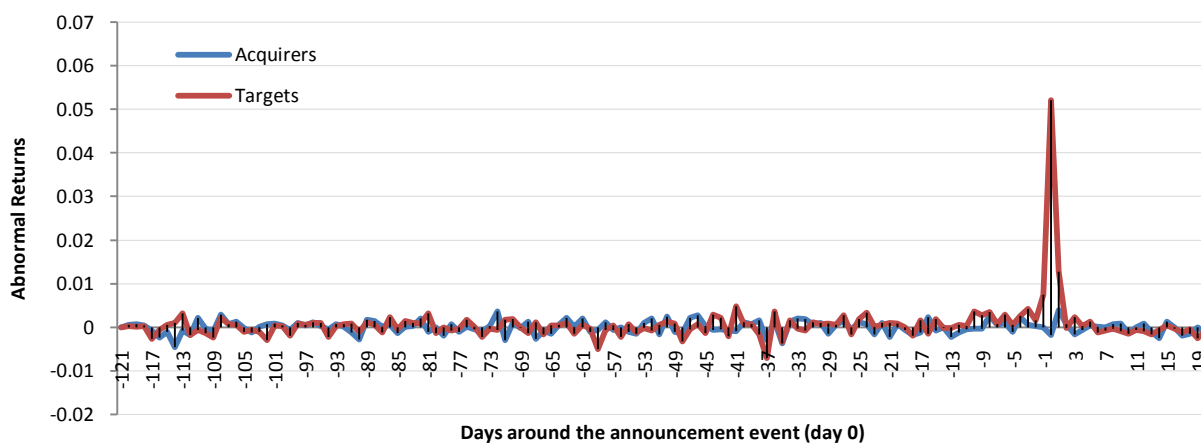


Figure 4 Daily average abnormal returns at merger announcement

Average abnormal returns for days[-3;3] range between -0.02–0.04% for acquirers and 0.00–5.2% for targets. It is clear that targets benefit most from the event, while the returns of the acquirers are around zero and are mostly insignificant.

	Targets	t	Acquirers	t
-3	0,0042	2,39 **	0,0005	0,35
-2	0,0015	0,86	0,0003	0,19
-1	0,0075	4,20 ***	-0,0001	-0,08
0	0,0522	29,40 ***	-0,0018	-1,18
1	0,0128	7,21 ***	0,0040	2,64 ***
2	-0,0003	-0,16	0,0006	0,43
3	0,0023	1,28	-0,0017	-1,13

Cumulative returns show a price run-up starting about two weeks before the announcement, and subsequent price correction till one month after the event.

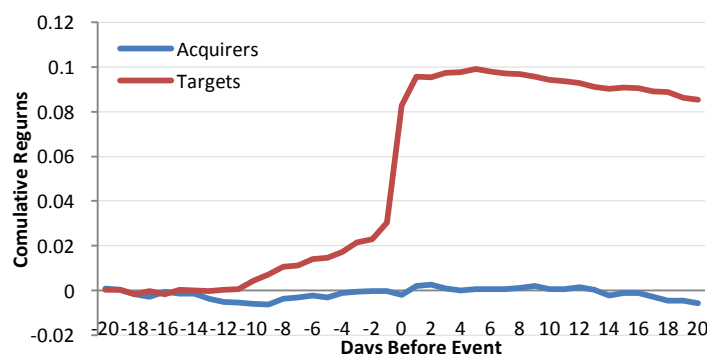


Figure 5 Cumulative daily average abnormal returns [-20, 20]

Table 7 T-values and significance of acquirer and target cumulative abnormal returns

	Targets	t	Acquirers	t
[-20, 20]	0,09	7,54 ***	-0,006	-0,61
[-10, 10]	0,09	11,50 ***	0,006	0,91
[-5, 5]	0,08	14,43 ***	0,003	0,52
[-2,2]	0,07	18,57 ***	0,003	0,89
[-20, 0]	0,08	10,21 ***	-0,002	-0,32
[-1, 0]	0,06	23,77 ***	-0,002	-0,89
[-3, 3]	0,08	17,08 ***	0,002	0,46

Thus, CARS of targets range between 6% around announcement day and 8.5% during the two weeks surrounding the announcement. It can be seen that news about mergers leak to the market a month in advance, and most of the return adjustment to the news happens within the 20 trading days around the event. However, acquirer returns at announcement are near zero on both the negative and positive side, yet none are significant. Thus we could not claim that acquirers earn abnormal merger returns in our sample.

The test of difference between the abnormal returns of targets and acquirers is performed using t-tests, and for robustness check also using the non-parametric Mann-Whitney approach, which compares difference between ranks. As we had a directional hypothesis of acquirer returns being smaller than those of targets, the tests were applied one-tailed. Both tests showed a significant difference, with CAARs of targets exceeding those of acquirers by the amount of 6.2% immediately after the merger to 9.2% in the two months around the announcement.

Table 8 Analysis of means differences between acquirer and target abnormal returns

	Acquirer	Target	Mean Difference	T -test	Sign.	Mann-Whitney test (Z)	Sign
[-20, 20]	-0,006	0,086	-0,092	-6,001	***0,000	-7,093	***0,000
[-10, 10]	0,006	0,094	-0,087	-8,613	***0,000	-8,404	***0,000
[-5, 5]	0,003	0,085	-0,082	-10,156	***0,000	-9,302	***0,000
[-2, 2]	0,003	0,074	-0,071	-10,431	***0,000	-9,580	***0,000
[-20, 0]	-0,002	0,083	-0,085	-7,579	***0,000	-7,970	***0,000
[-1, 0]	-0,002	0,060	-0,062	-10,455	***0,000	-9,553	***0,000
[-3, 3]	0,002	0,080	-0,078	-10,809	***0,000	-9,652	***0,000

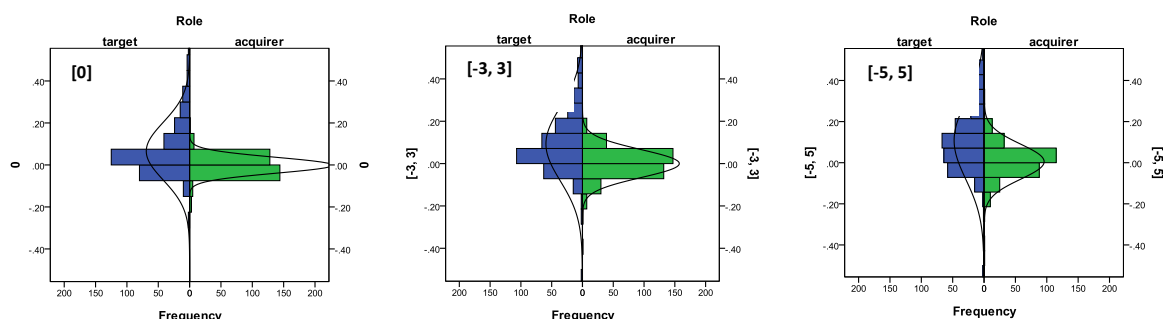


Figure 6 Frequency of acquirer/target abnormal returns during the period [0] (left), [-3, 3] (middle) and [-5, 5] (right)

Combined returns

The total returns of the bidder and target is the value-weighted sum of their returns divided by the sum of their market values before the event period. The formula (10) is given in Methodology section.

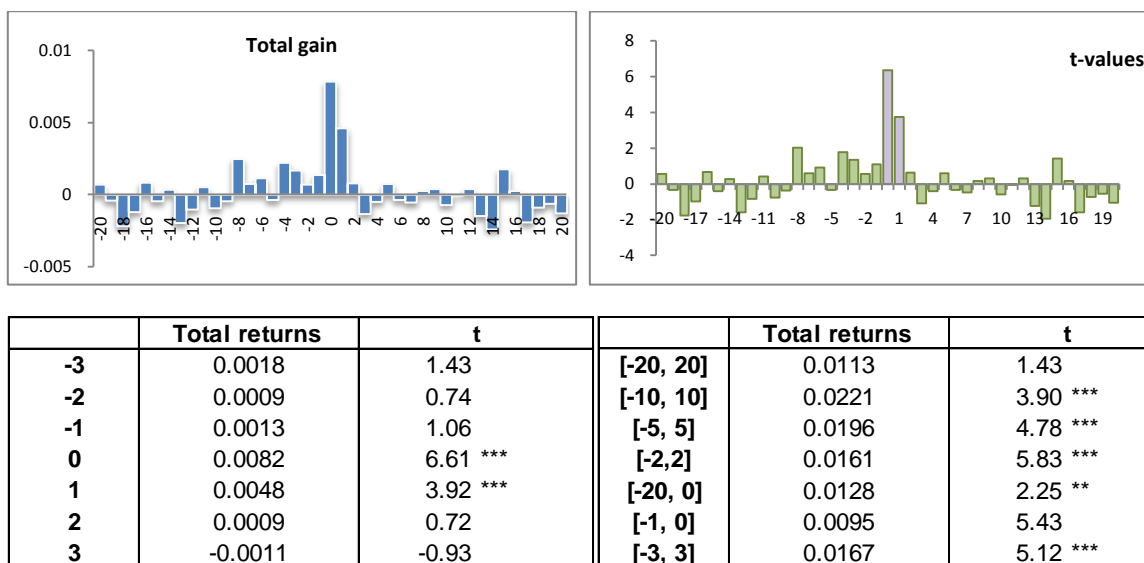


Figure 7 Total gain for [-20, 20] (above) and its significance for different event windows (below)

Both daily and cumulative abnormal returns in our sample are positive and significant. In the 20 trading surrounding announcement, merger gains to both parties are 2.21%, out of which 1% was already on day 0.

Euro wealth gains

From the abnormal returns which are large and positive for targets, almost zero and insignificant for acquirers and small but significantly positive for total entity, it looks as if mergers in Europe create value. But is this still the case if we measure their returns not in percentages, but in the Euro currency?

We follow approach presented by for US companies by Moeller (2005) and in the European region verified for Dutch acquisitions by De Jong et al. (2007).

First, we look at the acquirer gains. Distribution of acquirer euro gains for the window [-3, 3] and their skewness (Figure 8) tell us that returns are negatively skewed in most of the years, thus the probability of large losses is higher than normally.

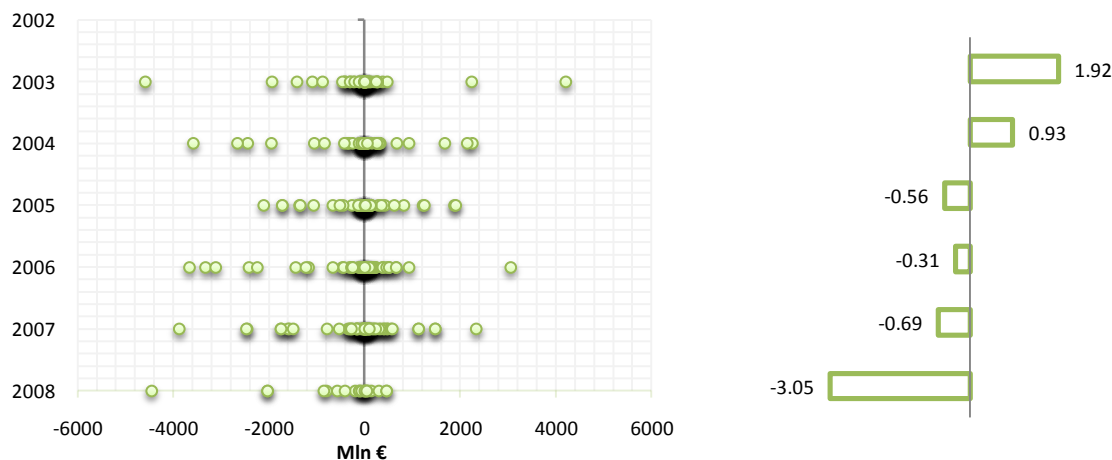


Figure 8 Acquirers Euro Gains [-3; 3] (left) and their skewness (right) during 2003 – 2008

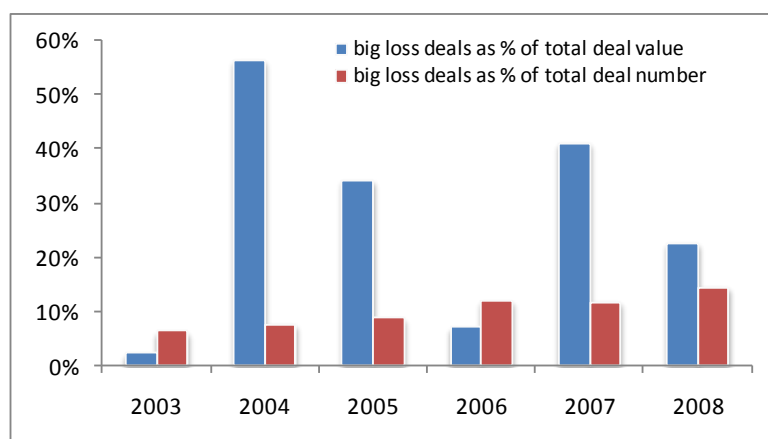


Figure 9 Big loss (> 1 bln) deals as % of sample

Moeller (2005) suggested that it is mostly large, overvalued firms who are doing big-loss acquisitions, consistent with the hubris or agency hypothesis. This could significantly distort the picture given by CAARS. The reason for this is that CAARS give equal weight to returns of both big and small companies. To calculate aggregate bidder euro gain we weight CAARS by market values of bidders. Suddenly we see how big aggregate euro losses on the part of acquirers are masked by the almost zero CAARS presented earlier (Column Total gains in Table 9).

Table 9 and Table 10 show the effect of the big loss deals on the sample.

To briefly describe the tables presented: average dollar return per M&A is acquirer gains divided by deal value, i.e. return per € 1 of investment. Total gains/losses in euro is the CAAR [-3,3] of the acquirer multiplied by its market value at day -3. Total market value is the sum of acquirer market capitalisations per year. The synergy section shows the combined returns of bidder and target. Abnormal return gain is the CAAR of the total entity for the period [-3,3]. Aggregate euro gain is the product of Abnormal return gain and the sum of the market values of the bidder and the target at day -3.

Table 9 shows that negative gains of acquirers result in losses from 5 to 30 cents on each euro invested in acquisition. Also it is seen that CAARS are a misleading indicator of merger gains, as they are positive for bidders yet their return per 1 euro of market value of equity is negative. Luckily, it seems synergy gains are still present in our sample as aggregate euro gain for the whole sample is still positive. Thus, it seems that the losses of the acquirers are compensated by the gains of the targets, except for during the second part of the wave, which also happened to be crisis years. Yet again, the abnormal return gain column shows that CAARS can be misleading, as same values result in totally different gains: such as a 2.2% CAAR causes € 6 bln gain but -2.6% CAAR creates twice as much loss at € 12 bln.

[-3, 3]	N	Bidder						Synergy	
		Total Gains	Total deal value	Average dollar return per M&A	Total Market Value	Total Gain / Total Market Value	Average CAR	Aggregate Euro Gain	Abnormal Return Gain
2003	65	€ (3,157)	€ 53,169	-5.9%	€ 494,376	-0.6%	0.2%	€ 5,831	2.1%
2004	67	€ (3,563)	€ 122,709	-2.9%	€ 743,344	-0.5%	0.3%	€ 9,539	1.7%
2005	70	€ (2,324)	€ 91,092	-2.6%	€ 776,007	-0.3%	0.3%	€ 6,921	2.2%
2006	68	€ (11,790)	€ 113,839	-10.4%	€ 923,760	-1.3%	-0.6%	€ 2,047	1.0%
2007	69	€ (6,927)	€ 105,583	-6.6%	€ 1,122,778	-0.6%	1.0%	€ 6,343	1.8%
2008	21	€ (9,912)	€ 30,561	-32.4%	€ 236,390	-4.2%	-2.9%	€ (12,765)	-2.6%
Total	360	€ (37,674)	€ 516,952	-10.1%	€ 4,296,655	-1.3%	-0.3%	€ 17,915	1.0%

Table 9 Including big loss deals (> 1 bln EUR loss).

The most important effect can be observed in Table 10. We separate deals with losses more than 1 bln euro into a “big loss deals” group and exclude them from the sample. There are 34 of such deals out of 360. Table 10 shows a striking result: that exclusion of 9% of deals transforms the total acquirer losses into gains for almost all the years. Both return per 1 € of acquisition and return per 1 € of market value of equity become positive. Acquirer CAARs grow as well. Figure 10 and Figure 11 demonstrate visually the results of the exclusion of big loss deals on the acquirer and synergy returns.

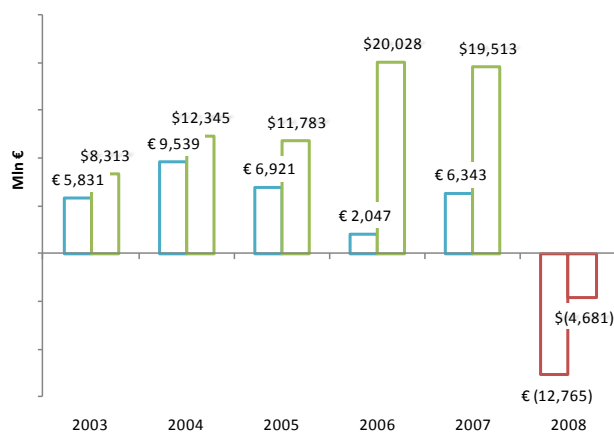


Figure 10 Acquirer euro gains with (left) and without (right) big loss deals



Figure 11 Total euro gains with (left) and without (right) big loss deals

[-3, 3]	N	Bidder						Synergy	
		Total Gains	Total deal value	Average dollar return per M&A	Total Market Value	Total Gain / Total Market Value	Average CAR	Aggregate Euro Gain	Abnormal Return Gain
2003	61	€ 5,367	€ 44,958	11.9%	€ 311,361	1.7%	0.6%	€ 8,313	2.4%
2004	62	€ 7,233	€ 37,978	19.0%	€ 521,532	1.4%	0.8%	€ 12,345	1.9%
2005	64	€ 6,577	€ 54,182	12.1%	€ 525,723	1.3%	0.7%	€ 11,783	2.6%
2006	60	€ 5,744	€ 105,885	5.4%	€ 523,593	1.1%	0.0%	€ 20,028	1.8%
2007	61	€ 8,872	€ 62,221	14.3%	€ 632,137	1.4%	2.0%	€ 19,513	2.5%
2008	18	€ (1,618)	€ 23,778	-6.8%	€ 174,556	-0.9%	-0.9%	€ (4,681)	-1.9%
Total	326	€ 32,175	€ 329,002	9.3%	€ 2,688,902	1.0%	0.5%	€ 67,301	1.6%

Table 10 Excluding big loss deals (> 1 bln EUR loss)

In addition, we also analysed just big deals which were, in our sample, deals higher than € 15 bln and their impact on the acquirer and target returns. The motivation was their impact on the event day AARs presented in Table 11.

The purpose of this was to further investigate the hubris hypothesis of overconfident managers of large companies that make big acquisitions. The average AAR for targets in Figure 10 is negative if only big deals are included, and becomes more positive as smaller deals are added.

Mimumum deal size (m EUR)	Targets	Acquirers	Number of firms
1	0.058	-0.003	720
10	0.065	-0.002	668
20	0.065	-0.003	604
50	0.067	-0.004	514
100	0.068	-0.004	426
500	0.066	-0.006	234
1000	0.067	-0.006	172
2000	0.052	-0.009	116
5000	0.039	-0.009	64
10000	0.017	-0.001	34
15000	0.008	-0.007	22
20000	-0.029	-0.004	16

Table 11 AAR at day 0 by minimum deal size

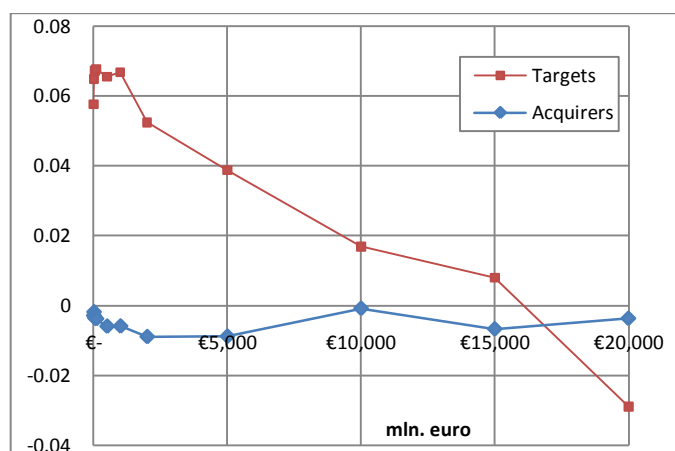


Figure 12 AAR at day 0 by minimum deal size

From Figure 13 it appears that although exclusion of such deals improves the returns of acquirers by a large part (green), it also reduces CAARs of the targets for the greater amount (blue) in four years, so exclusion based on big deal size is not justified.

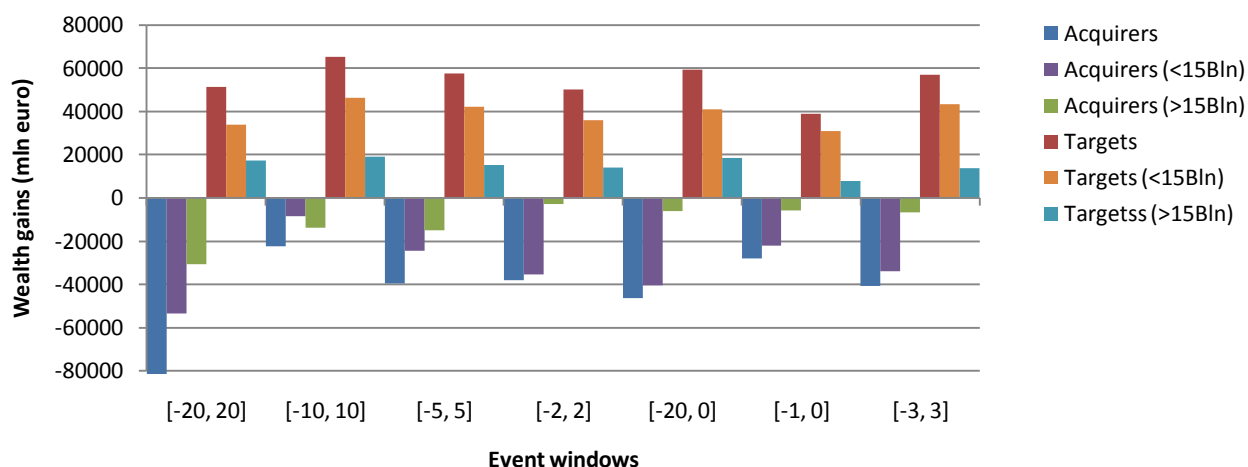


Figure 13 The effect of bid deals (> 15 bln) on acquirer and target returns

Summary:

In this sub-section we saw that in European acquisitions targets obtain maximum cumulative gains of 6–9%. Contrary to previous research on European M&A, the gains of acquirers are almost zero and not statistically reliable. The total entity gains about 1.3–2%, which suggests synergy as motive of mergers. However, the percentage CAARS should be interpreted with caution, as in euro terms acquirers lose € 38 bln for the entire period. Attention should be given to the distribution of the acquirer returns, as in our sample the exclusion of 8.5% of deals which had losses of more than € 1 bln transformed the total loss of € 38 bln of the sample into the a gain of € 32 bln. This means that our hypotheses:

H1. Total short-term shareholder returns:

During the sixth merger wave in Europe the short term returns to acquirers might be small but are positive and significant. **-REJECTED**

The largest positive returns are experienced by target shareholders. -ACCEPTED

The combined shareholder returns are positive as well. -ACCEPTED

H2. Payment method

As expected from the literature, announcements of cash deals are more positively received by the market.

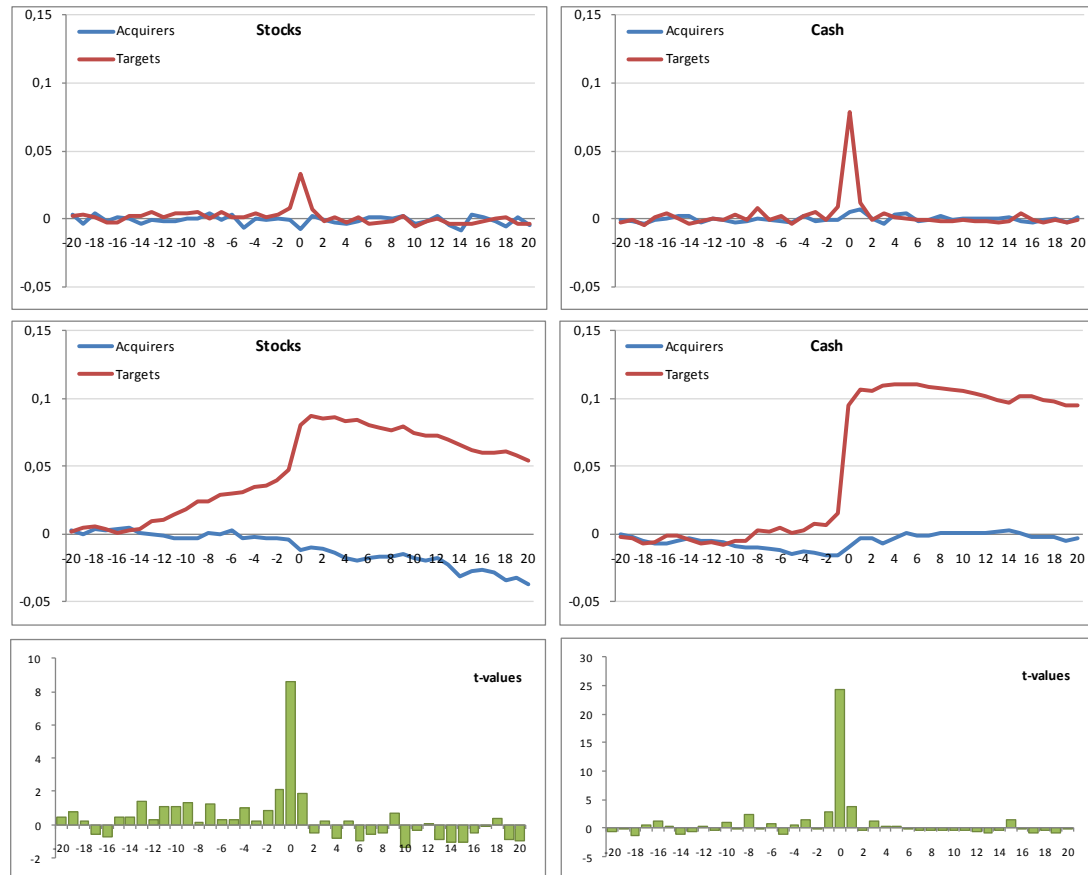


Figure 14 Daily average abnormal returns for acquirers and targets (Stock and Cash)

Figure 14 shows AAR (above) and CAAR (middle) of the deals paid by cash and stock. T-values (below) are given for targets only.

On day 0 the payment method effect is statistically reliable for both targets and bidders. Targets gain 3% in stock deals versus 8% in cash ones, whereas acquirers lose 1% in stock mergers and gain 1% in cash deals.

	Acquirers				Targets			
	Cash	t	Stock	t	Cash	t	Stock	t
-3	0,00	-0,72	0,00	-0,19	0,00	1,48 *	0,00	0,24
-2	0,00	-0,62	0,00	-0,01	0,00	-0,27	0,00	0,85
-1	0,00	-0,19	0,00	-0,13	0,01	2,78 ***	0,01	2,15 **
0	0,01	3,00 ***	-0,01	-1,76 **	0,08	24,31 ***	0,03	8,63 ***
1	0,01	4,08 ***	0,00	0,43	0,01	3,66 ***	0,01	1,87 **
2	0,00	0,01	0,00	-0,26	0,00	-0,29	0,00	-0,51
3	0,00	-2,11 **	0,00	-0,62	0,00	1,16	0,00	0,25

Cumulative returns are always significant for targets. For bidders cumulative abnormal returns for cash are significant in only three cases, and for stock they are never confirmed. The direction of returns shows the negative reaction of the market to stock-financed deals by acquirer.

	Acquirers				Targets			
	Cash	t	Stock	t	Cash	t	Stock	t
[-20, 20]	0,00	-0,32	-0,04	-1,31	0,09	4,53 ***	0,05	2,22 **
[-10, 10]	0,01	0,81	-0,02	-0,76	0,11	7,57 ***	0,06	3,41 ***
[-5, 5]	0,01	2,20 **	-0,02	-1,56	0,11	9,88 ***	0,05	4,30 ***
[-2, 2]	0,01	2,81 ***	-0,01	-0,78	0,10	13,50 ***	0,05	5,80 ***
[-20, 0]	-0,01	-1,28	-0,01	-0,59	0,09	6,36 ***	0,08	4,60 ***
[-1, 0]	0,01	1,99 **	-0,01	-1,34	0,09	19,15 ***	0,04	7,62 ***
[-3, 3]	0,01	1,30	-0,01	-0,96	0,11	12,41 ***	0,05	5,09 ***

Both types of tests for mean differences further confirm that targets gain about a 5% advantage in cash deals compared to stock deals. For acquirers the difference is between 0% and 3.6% depending on the window.

		Cash	Stock	Mean Difference	T -test	Sign.	Mann-Whitney test (Z)	Sign
Target CAAR	[-20, 20]	0,094	0,054	0,040	1,190	0,118	-,875	0,191
	[-10, 10]	0,113	0,060	0,053	2,271	*0,012	-1,996	*0,023
	[-5, 5]	0,107	0,054	0,052	2,718	***0,004	-2,654	***0,004
	[-2, 2]	0,098	0,049	0,049	2,845	***0,002	-2,645	***0,004
	[-20, 0]	0,095	0,080	0,015	,545	0,293	-,771	0,220
	[-1, 0]	0,088	0,041	0,047	3,197	***0,001	-2,609	***0,005
	[-3, 3]	0,107	0,051	0,055	3,093	***0,001	-3,082	***0,001
Acquirer CAAR	[-20, 20]	-0,004	-0,037	0,033	,939	0,175	-2,513	***0,006
	[-10, 10]	0,007	-0,015	0,022	1,119	0,133	-1,762	*0,039
	[-5, 5]	0,013	-0,023	0,036	3,009	***0,001	-2,987	***0,001
	[-2, 2]	0,011	-0,008	0,019	2,071	*0,020	-2,603	***0,005
	[-20, 0]	-0,010	-0,012	0,001	,072	0,471	-,943	0,173
	[-1, 0]	0,005	-0,008	0,013	1,874	*0,032	-2,939	***0,002
	[-3, 3]	0,006	-0,011	0,017	1,691	*0,046	-2,303	*0,011
Total CAAR	[-20, 20]	0,013	-0,009	0,023	,748	0,228	-2,138	*0,016
	[-10, 10]	0,025	0,005	0,019	1,100	0,136	-1,563	*0,059
	[-5, 5]	0,028	0,005	0,022	1,349	*0,090	-2,096	*0,018
	[-2, 2]	0,024	0,009	0,015	1,274	0,102	-1,726	*0,042
	[-20, 0]	0,008	0,008	0,000	,016	0,494	-1,179	0,119
	[-1, 0]	0,016	0,007	0,010	,910	0,183	-2,006	*0,022
	[-3, 3]	0,021	0,010	0,011	,798	0,213	-1,353	*0,088

Based on the univariate and bivariate tests so far:

H2. The choice of the method of payment influences the M&A abnormal returns. The stock offers result in low shareholder returns while cash deals create the most value. –ACCEPTED

H3. Industry

Approach

We grouped industries by means of two classifications:

- 1) Regulated versus Unregulated groups based on SIC codes provided by Campa and Hernando (2004). Regulated industries had a two-digit SIC as presented in Table 12:

SIC 2 digit code	Industry group
10	Metal mining
13	Oil and gas extraction
33	Primary metal industries
40	Railroads
44	Water transportation
45	Transportation by air
48	Communications
49	Electric, gas, and sanitary services
60	Depository institutions
61	Nondepository credit institutions
80	Health services

Table 12 Regulated Industries by SIC codes (first two digits)

- 2) Five industry groups as mentioned in Martynova (2006). As SIC codes were not provided in the article, we partly used the classification in Kiymaz (2008), and partly applied own grouping.

	Natural resources/Energy/Utility
10	Metal mining
12	Coal mining
13	Oil and gas extraction
14	Nonmetallic minerals, except fuels
49	Electric, gas, and sanitary services
	Manufacturing
20-21	Food and tobacco
22-25	Textile / Furniture
26	Paper
28	Chemicals and allied products
30-39	Rubber/Leather/Metal Products/Machinery / Equipment/Instruments/Other
	Services
72-73	Personal and business services
75	Automotive repair, services, and parking
76	Miscellaneous repair services
87	Engineering and management services
89	Miscellaneous services
	Retail/Hotels/ Cafés
52-57	Stores
58	Eating and drinking places
59	Miscellaneous retail
70	Hotels and other
	Financial institutions
60-61	Depository/Nondepository institutions
63	Insurance
67	Holding and other investment offices

Table 13 Industry classification using SIC codes

Results for Regulated vs. Unregulated Industries

The results of univariate tests show the expected direction for targets, with unregulated industries having higher returns than regulated industries. However, the opposite situation exists for acquirers.

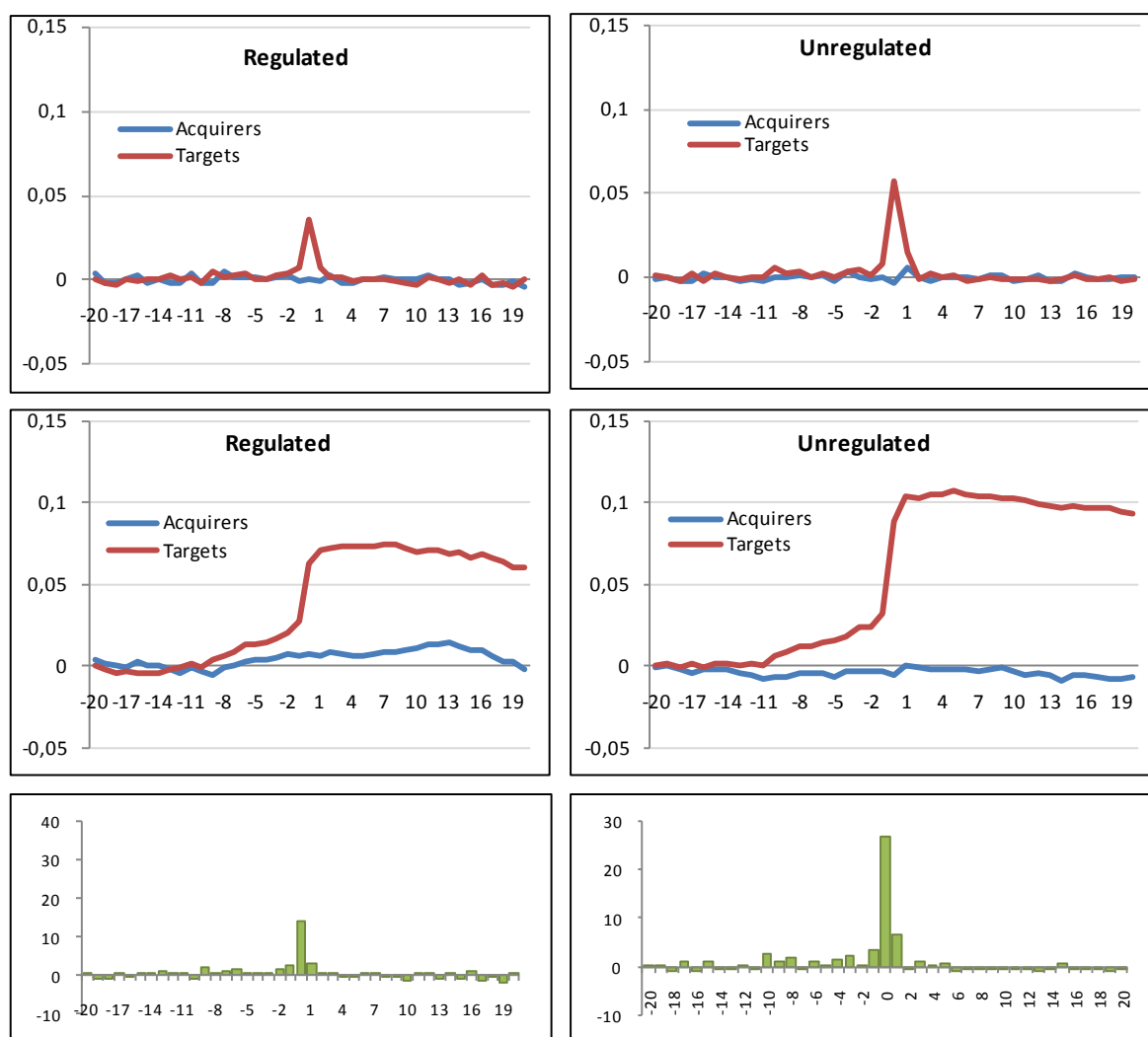


Figure 15 Daily average abnormal returns for acquirers and targets (Regulated and Unregulated Industry)

For targets the existence of abnormal returns in each industry can be assured with certainty. Regulated industries deliver CAARS of around 6% while unregulated returns are about 9%.

For acquirers the only significant confirmation is for unregulated industries, which have a positive 1% AAR on day 1 and the AAR on day 0 which is zero. Other bidder AARs and CAARS are either zero or negative, but not reliably.

	Acquirers				Targets			
	Regulated	t	Unregulated	t	Regulated	t	Unregulated	t
[-20, 20]	0,00	-0,16	-0,01	-0,62	0,06	3,70 ***	0,09	6,81 ***
[-10, 10]	0,01	1,04	0,00	0,44	0,07	5,85 ***	0,10	10,32 ***
[-5, 5]	0,00	0,52	0,00	0,30	0,06	7,09 ***	0,09	13,04 ***
[-2, 2]	0,00	0,83	0,00	0,56	0,06	9,78 ***	0,08	16,54 ***
[-20, 0]	0,01	0,61	-0,01	-0,74	0,06	5,37 ***	0,09	9,10 ***
[-1, 0]	0,00	-0,13	0,00	-0,97	0,04	11,77 ***	0,06	21,44 ***
[-3, 3]	0,00	0,63	0,00	0,17	0,06	8,77 ***	0,09	15,29 ***

	Acquirers				Targets			
	Regulated	t	Unregulated	t	Regulated	t	Unregulated	t
-3	0,00	0,45	0,00	0,14	0,00	0,86	0,00	2,28 **
-2	0,00	1,17	0,00	-0,48	0,00	1,68 **	0,00	0,32
-1	0,00	-0,45	0,00	0,17	0,01	2,80 ***	0,01	3,53 ***
0	0,00	0,26	0,00	-1,54 *	0,04	13,84 ***	0,06	26,79 ***
1	0,00	-0,09	0,01	3,16 ***	0,01	2,92 ***	0,01	6,74 ***
2	0,00	0,95	0,00	-0,07	0,00	0,62	0,00	-0,40
3	0,00	-0,64	0,00	-0,94	0,00	0,49	0,00	1,21

Finally, bivariate comparisons show that the difference between regulated and unregulated industries is true only in the case of targets. Being in an unregulated industry adds 3% more to the abnormal gains of the target.

		Industry Regulated	Industry Unregulated	Mean Difference	T -test	Sign.	Mann-Whitney test (Z)	Sign
Target CAAR	[-20, 20]	0,060	0,093	-0,033	-1,247	0,107	-1,247	0,106
	[-10, 10]	0,068	0,101	-0,033	-1,735	*0,042	-1,819	**0,034
	[-5, 5]	0,060	0,093	-0,033	-2,042	*0,021	-2,016	*0,022
	[-2, 2]	0,056	0,079	-0,024	-1,662	*0,049	-2,027	*0,021
	[-20, 0]	0,063	0,089	-0,027	-1,257	0,105	-1,275	0,101
	[-1, 0]	0,042	0,065	-0,023	-1,757	*0,040	-1,945	**0,026
	[-3, 3]	0,059	0,087	-0,028	-1,850	*0,033	-1,891	**0,029
Acquirer CAAR	[-20, 20]	-0,002	-0,008	0,005	,233	0,408	-,416	0,339
	[-10, 10]	0,011	0,004	0,008	,576	0,282	-,211	0,416
	[-5, 5]	0,004	0,002	0,002	,236	0,407	-,310	0,378
	[-2, 2]	0,004	0,002	0,002	,308	0,379	-,323	0,373
	[-20, 0]	0,007	-0,006	0,013	,905	0,183	-,620	0,268
	[-1, 0]	0,000	-0,003	0,002	,452	0,326	-,188	0,425
	[-3, 3]	0,004	0,001	0,003	,413	0,340	-,439	0,330
Total CAAR	[-20, 20]	0,008	0,013	-0,005	-,219	0,413	-1,170	0,121
	[-10, 10]	0,021	0,022	-0,001	-,065	0,474	-,870	0,192
	[-5, 5]	0,014	0,022	-0,008	-,752	0,226	-,669	0,252
	[-2, 2]	0,012	0,018	-0,006	-,708	0,240	-,495	0,310
	[-20, 0]	0,015	0,012	0,004	,258	0,398	-,358	0,360
	[-1, 0]	0,005	0,011	-0,006	-1,012	0,156	-1,117	0,132
	[-3, 3]	0,013	0,018	-0,005	-,551	0,291	-,299	0,383

Results for the five industry groups are shown graphically and using univariate t-tests. The difference between them will be tested in multiple regressions

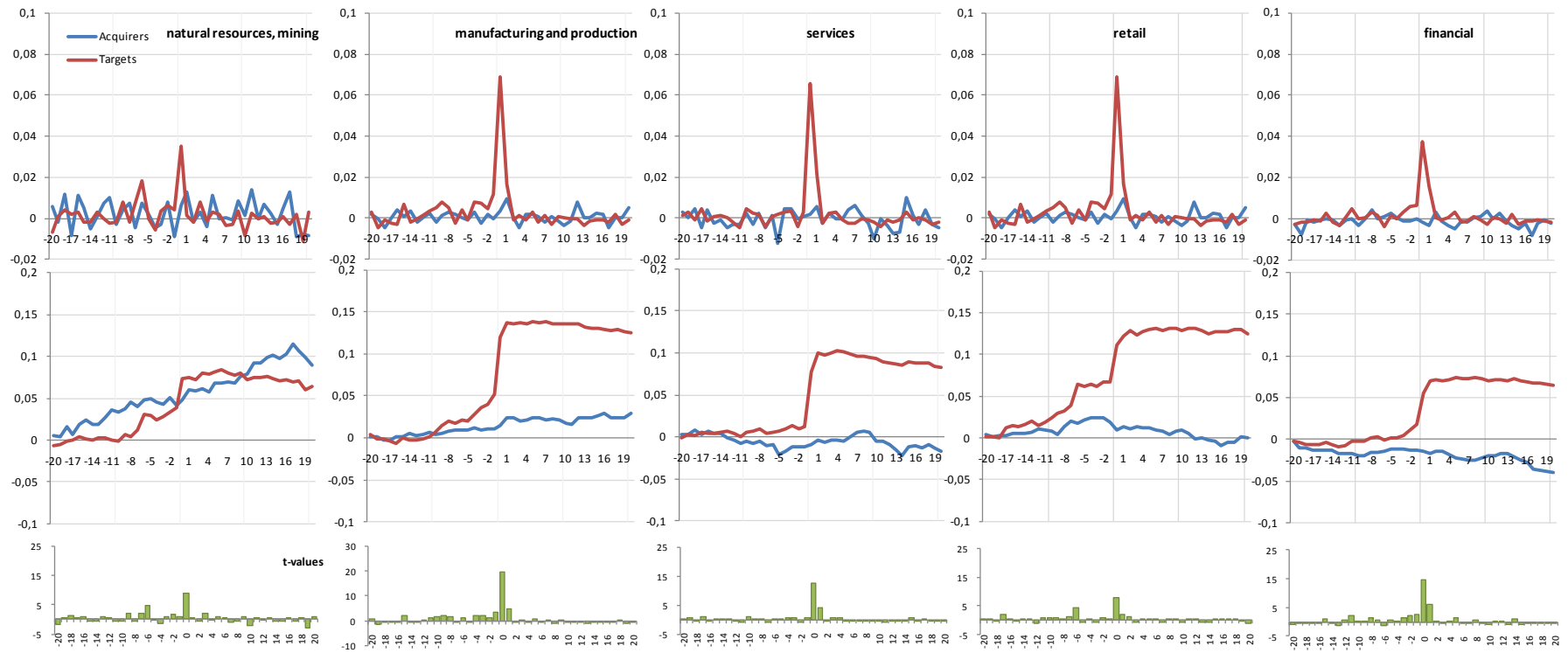


Figure 16 Daily average abnormal returns for acquirers and targets (Industries)

The results for targets show that we can be certain that industries exhibit abnormal returns, as all CAARs are statistically significant. The industries are ranked in terms of returns from highest to lowest: manufacturing (about 6–17%), retail (4–13%), services (7–9%), energy/utilities (4–7%) and banking/insurance (4–7%). The same ordering was also observed by Goergen and Renneboog (2004).

Targets, CAAR										
	Energy, Utilities	t	Manufacturing	t	Services	t	Retail , Hotels	t	Banking, Insurance	t
[-20, 20]	0.064	2.60 **	0.125	5.58 ***	0.084	2.49 **	0.125	3.49 ***	0.065	3.98 ***
[-10, 10]	0.072	4.12 ***	0.135	8.42 ***	0.093	3.83 ***	0.109	4.26 ***	0.073	6.29 ***
[-5, 5]	0.051	4.03 ***	0.118	10.16 ***	0.096	5.46 ***	0.066	3.59 ***	0.075	8.92 ***
[-2, 2]	0.045	5.20 ***	0.100	12.83 ***	0.083	7.02 ***	0.067	5.36 ***	0.066	11.65 ***
[-20, 0]	0.073	4.18 ***	0.120	7.50 ***	0.080	3.29 ***	0.111	4.32 ***	0.055	4.72 ***
[-1, 0]	0.039	7.23 ***	0.081	16.31 ***	0.069	9.17 ***	0.044	5.54 ***	0.044	12.26 ***
[-3, 3]	0.056	5.51 ***	0.109	11.79 ***	0.089	6.36 ***	0.060	4.04 ***	0.069	10.26 ***
Targets, AAR										
	Energy, Utilities	t	Manufacturing	t	Services	t	Retail , Hotels	t	Banking, Insurance	t
-3	0.003	0.90	0.007	2.13 **	0.003	0.65	-0.003	-0.53	0.003	1.31 *
-2	0.006	1.62 *	0.004	1.25	-0.004	-0.82	0.006	1.02	0.006	2.28 **
-1	0.004	1.10	0.004	3.40 ***	0.003	0.59	0.001	0.14	0.006	2.55 ***
0	0.035	9.12 ***	0.069	19.66 ***	0.065	12.37 ***	0.043	7.70 ***	0.037	14.79 ***
1	0.001	0.32	0.016	4.69 ***	0.021	4.04 ***	0.011	2.02 **	0.016	6.16 ***
2	-0.002	-0.53	-0.001	-0.31	-0.003	-0.49	0.006	1.11	0.001	0.26
3	0.008	2.04 **	0.001	0.39	0.003	0.49	-0.004	-0.75	-0.001	-0.21

In contrast, acquirers show different ranking of sectors in terms of CAARS, which are mostly insignificant: utilities (0–9%), manufacturing (0–3%), and retail (-1–1 %), services (-2–1%) and banking/insurance (-4–0%).

Acquirers, CAAR										
	Energy, Utilities	t	Manufacturing	t	Services	t	Retail , Hotels	t	Banking, Insurance	t
[-20, 20]	0.090	1.91 *	0.029	1.49	-0.018	-0.61	0.000	-0.01	-0.040	-2.97 ***
[-10, 10]	0.042	1.24	0.011	0.80	0.002	0.11	0.001	0.06	-0.002	-0.21
[-5, 5]	0.021	0.86	0.014	1.33	0.005	0.30	-0.005	-0.45	-0.008	-1.16
[-2, 2]	0.016	0.99	0.015	2.17 **	0.005	0.51	-0.014	-1.74 *	-0.002	-0.39
[-20, 0]	0.048	1.42	0.014	1.01	-0.010	-0.47	0.010	0.60	-0.014	-1.47
[-1, 0]	-0.003	-0.25	0.003	0.75	0.002	0.38	-0.014	-2.78 ***	-0.001	-0.42
[-3, 3]	0.016	0.82	0.008	0.94	0.012	1.01	-0.011	-1.16	-0.004	-0.65
Acquirers, AAR										
	Energy, Utilities	t	Manufacturing	t	Services	t	Retail , Hotels	t	Banking, Insurance	t
-3	-0.003	-0.43	-0.003	-0.88	0.005	1.03	0.000	0.09	-0.001	-0.38
-2	0.008	1.07	0.002	0.63	0.000	-0.06	0.000	-0.13	-0.001	-0.47
-1	-0.009	-1.23	0.000	-0.05	0.001	0.13	-0.004	-1.27	0.000	0.07
0	0.006	0.88	0.003	1.11	0.002	0.41	-0.009	-2.66 ***	-0.001	-0.67
1	0.013	1.77 **	0.009	3.03 ***	0.006	1.22	0.003	0.84	-0.003	-1.40 *
2	-0.002	-0.27	0.000	0.15	-0.003	-0.56	-0.002	-0.67	0.003	1.59 *
3	0.003	0.38	-0.005	-1.51 *	0.002	0.49	0.003	0.72	-0.001	-0.46

We will compare differences between industry sectors in the multivariate regression section, thus, regarding our hypotheses:

H3. There is a difference in the abnormal M&A returns between different industry sectors. -ACCEPTED only for TARGETS in case of difference between Regulated/Unregulated Industries.

H4. Market to Book Value of Target

This hypothesis can be best tested by means of multivariate regressions—see next Section.

H5. Relative Size

This hypothesis can be best tested by means of multivariate regressions—see next Section.

H6. Legal Status of the Parties

The problem of studying this very interesting hypothesis is that in our sample of 642 companies only 10 were private targets. Nevertheless, we made such an attempt. In Figure 17 we compare returns between acquirers of public and private targets. Although the data for AARs appears to be very noisy, the CAARs indeed show that acquirers of private targets obtain much better returns than the buyers of public companies, as described in the literature.

However, we could not reliably confirm that this difference exists, as the mean difference is significant in only one case around the announcement day, and only in a non-parametric test.

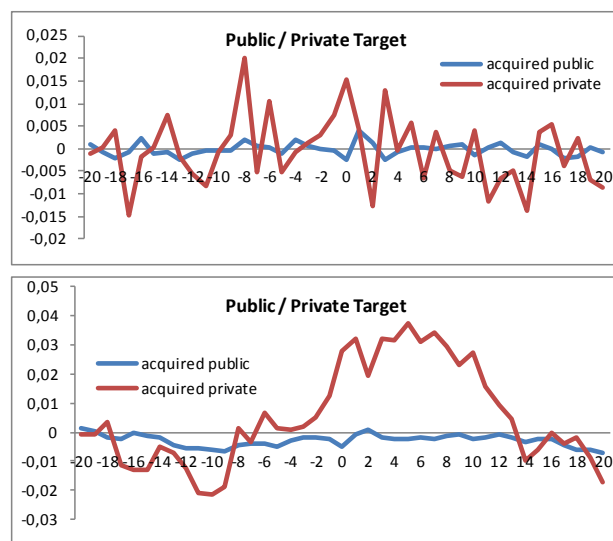


Figure 17 Daily average abnormal returns for acquirers of Public and Private Targets

	Target is Private	Target is Public	Mean Difference	T -test	Sign.	Mann-Whitney test (Z)	Sign
[-20, 20]	-0.017	-0.007	-0.010	.175	0.861	-.723	0.470
[-10, 10]	0.048	0.004	0.044	-1.279	0.202	-1.323	0.186
[-5, 5]	0.031	0.001	0.029	-1.176	0.240	-.439	0.661
[-2, 2]	0.017	0.003	0.015	-.816	0.415	-.293	0.770
[-20, 0]	0.028	-0.005	0.032	-.837	0.403	-1.579	0.114
[-1, 0]	0.023	-0.003	0.026	-1.018	0.335	-1.653	*0.098
[-3, 3]	0.031	0.001	0.030	-1.495	0.136	-.815	0.415

Also the existence of abnormal returns cannot be statistically confirmed.

	Target Type			
	Private	t	Public	t
[-20, 20]	-0,02	-0,32	-0,01	-0,71
[-10, 10]	0,05	1,22	0,00	0,51
[-5, 5]	0,03	1,07	0,00	0,28
[-2,2]	0,02	0,89	0,00	0,79
[-20, 0]	0,03	0,70	-0,01	-0,69
[-1, 0]	0,02	1,87	0,00	-1,26
[-3, 3]	0,03	1,37	0,00	0,28

Thus, in conclusion:

H6. Legal status of the target: The returns to the acquirers of public targets are lower than for private target buyers.
-NO EVIDENCE

H7. Legal origin

We divided countries into four legal families according to La Porta, (1998). The classification is given in Table 14 .

The results from the graphs show that it is mostly targets, whose CAARS follow the direction predicted by our hypothesis with countries of the English common law system being the biggest winners, and French civil law countries having the lowest returns. For acquirers it is actually those of the Scandinavian system that experience the biggest losses.

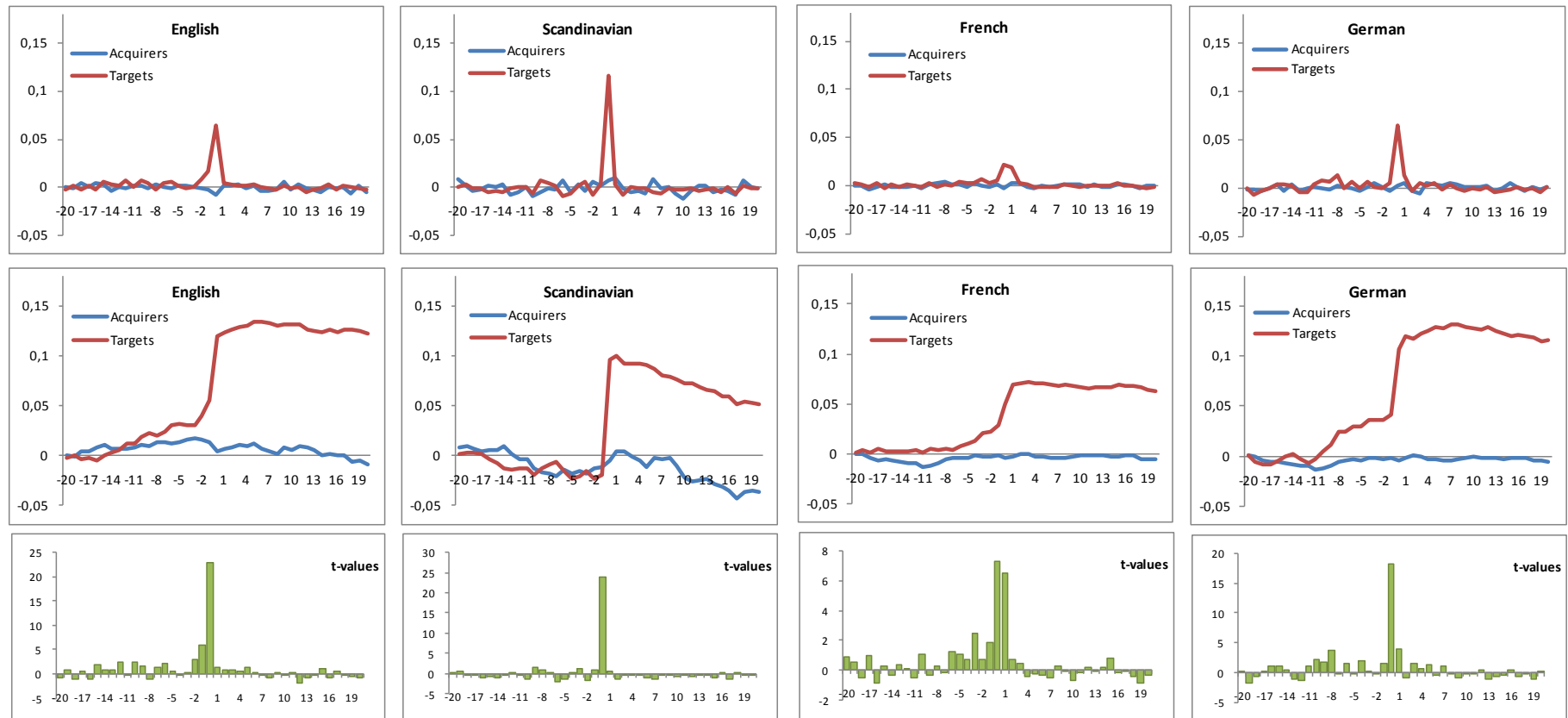


Figure 18 Daily average abnormal returns [-20, 20] for targets and acquirers by Legal Origin

The t-tests of target CAARs and AARs confirm the existence of abnormal returns. The ranking of countries by CAARs depends on the period and their returns have the following values: English (8–12%), Scandinavian (5–12%), German (8–13%), French (3–7%). Thus we see a big improvement for German countries when compared to the results of 2.3% of Martynova (2006).

Table 14 Classification of countries in the sample by legal origin according to LaPorta (1998).

Republic of Ireland United Kingdom	English
Belgium France Greece Italy Luxembourg Netherlands Portugal Spain	French
Austria Germany Switzerland	German
Denmark Finland Iceland Norway Sweden	Scandinavian

The result, which differs from existing literature (Martynova, 2006) in case of targets, is that we could not say that the English legal system dominates the other legal systems at this time. In Martynova's study English-style countries took the first place at 23% followed by Scandinavian countries (21%) which have a legal system, corporate governance and financial markets similar to those in the UK. Germany (2.3%) and France (1.7%) were the last. The only legal system which continuously exhibited the lowest returns for the second M&A wave is that of French legal tradition, which should point to areas of improvement needed at the macro level. The strong dominance of English-style countries is also a result documented by Goergen (2004). In his study English-style countries had even higher returns of 12% around the announcement day [-1, 0] and 17–30 % during run-up period.

Targets, CAAR								
	English	t	Scandina	t	French	t	German	t
[-20, 20]	0.123	6.76 ***	0.051	1.64	0.064	3.39 ***	0.116	5.03 ***
[-10, 10]	0.120	9.23 ***	0.087	3.88 ***	0.065	4.78 ***	0.131	7.97 ***
[-5, 5]	0.104	11.07 ***	0.107	6.63 ***	0.062	6.37 ***	0.100	8.40 ***
[-2, 2]	0.096	15.18 ***	0.107	9.86 ***	0.050	7.64 ***	0.081	10.05 ***
[-20, 0]	0.120	9.28 ***	0.096	4.31 ***	0.051	3.74 ***	0.107	6.49 ***
[-1, 0]	0.081	20.30 ***	0.120	17.38 ***	0.027	6.50 ***	0.070	13.88 ***
[-3, 3]	0.098	13.13 ***	0.113	8.79 ***	0.059	7.57 ***	0.087	9.17 ***
Targets, AAR								
	English	t	Scandina	t	French	t	German	t
-3	0.000	0.12	0.006	1.21	0.007	2.48 ***	0.001	0.19
-2	0.008	2.96 ***	-0.008	-1.66 *	0.002	0.73	0.000	-0.06
-1	0.017	5.96 ***	0.004	0.77	0.006	1.89 **	0.005	1.42 *
0	0.064	22.75 ***	0.116	23.82 ***	0.022	7.31 ***	0.065	18.20 ***
1	0.004	1.35 *	0.003	0.62	0.019	6.47 ***	0.014	3.83 ***
2	0.003	0.91	-0.007	-1.49 *	0.002	0.69	-0.003	-0.92
3	0.002	0.68	0.000	-0.01	0.001	0.45	0.006	1.59 *

Acquirers CAARs could not be significantly confirmed, and appear to be almost zero on the announcement day.

Acquirers, CAAR								
	English	t	Scandina	t	French	t	German	t
[-20, 20]	-0.009	-0.49	-0.037	-1.01	-0.006	-0.54	0.019	1.11
[-10, 10]	-0.003	-0.21	-0.019	-0.73	0.012	1.62	0.021	1.72 *
[-5, 5]	0.000	-0.03	0.003	0.15	0.001	0.14	0.009	1.05
[-2, 2]	-0.009	-1.29	0.022	1.76 *	0.003	0.74	0.002	0.41
[-20, 0]	0.005	0.34	-0.005	-0.18	-0.005	-0.68	-0.001	-0.12
[-1, 0]	-0.011	-2.54 **	0.009	1.09	-0.001	-0.61	-0.001	-0.25
[-3, 3]	-0.006	-0.70	0.014	0.90	0.002	0.36	0.002	0.28
Acquirers, AAR								
	English	t	Scandina	t	French	t	German	t
-3	0.001	0.22	-0.004	-0.62	0.000	-0.23	0.005	1.90 **
-2	-0.001	-0.49	0.005	0.93	-0.001	-0.53	0.001	0.39
-1	-0.003	-0.88	0.001	0.20	0.002	1.22	-0.003	-1.03
0	-0.008	-2.70 ***	0.008	1.34 *	-0.003	-2.08 **	0.002	0.68
1	0.002	0.70	0.009	1.64 *	0.002	1.42 *	0.006	2.11 **
2	0.001	0.48	-0.001	-0.18	0.003	1.63 *	-0.003	-1.22
3	0.003	0.83	-0.005	-0.91	-0.001	-0.48	-0.006	-2.08 **

Comparison of the differences between legal origins is found in the multivariate regression section.

H8. Cross -border versus Domestic

The pattern of cumulative abnormal returns shows that cross-border deals are clearly more profitable for targets. For bidders this effect is unclear, although domestic deals have a faster downward correction following the event.

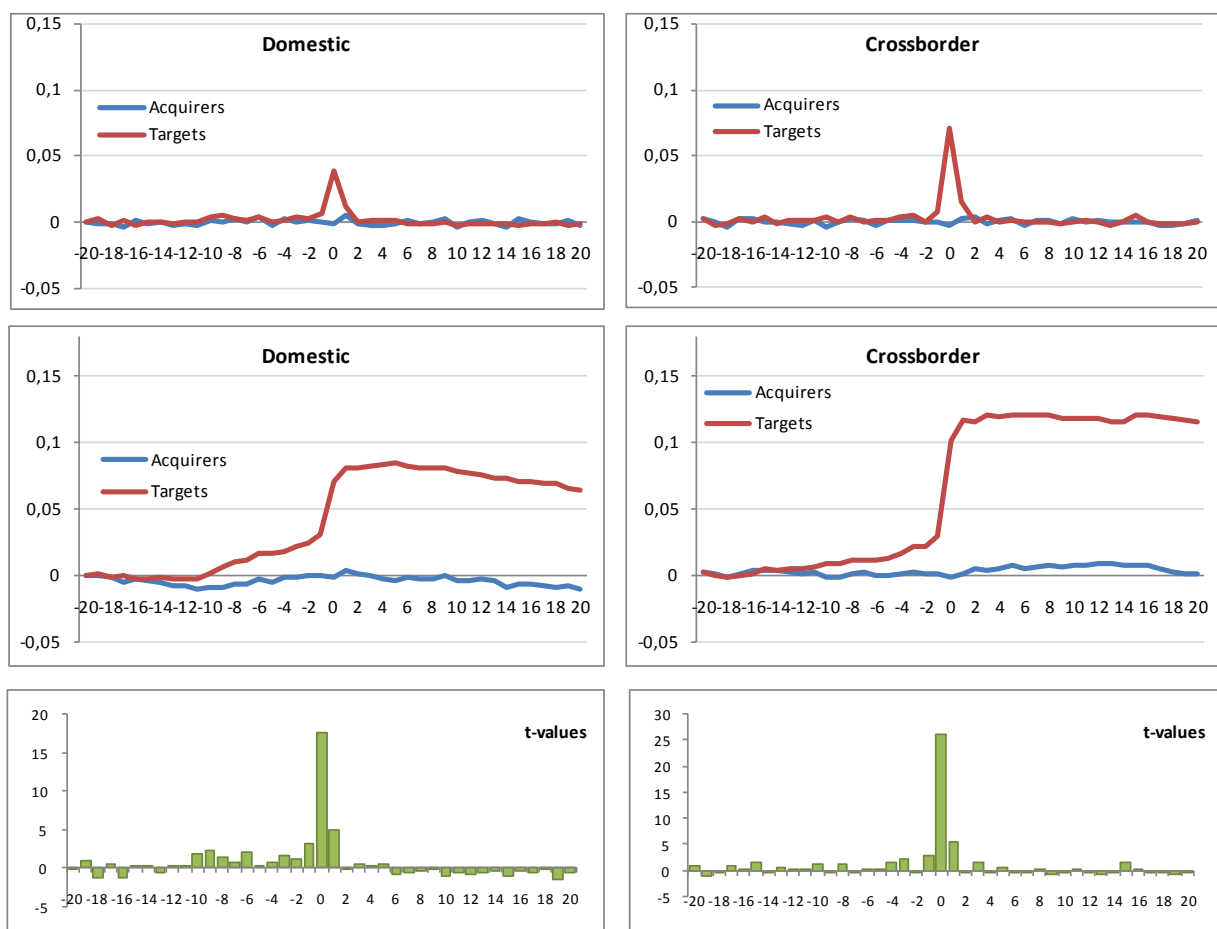


Figure 19 Daily average abnormal returns for acquirers and targets (Domestic / Crossborder)

The t-tests strongly confirm the existence of abnormal returns for targets. The returns of cross border deals are 8-12% and domestic returns range around 5–8%. None of the CAARs are significant for acquirers.

	Acquirers				Targets			
	Domestic	t	Crossborder	t	Domestic	t	Crossborder	t
[-20, 20]	-0,01	-0,82	0,00	0,12	0,06	4,62 ***	0,12	6,58 ***
[-10, 10]	0,01	0,73	0,01	0,62	0,08	8,03 ***	0,11	8,90 ***
[-5, 5]	0,00	-0,13	0,01	1,24	0,07	9,38 ***	0,11	11,97 ***
[-2, 2]	0,00	0,71	0,00	0,63	0,06	12,13 ***	0,09	15,35 ***
[-20, 0]	0,00	-0,24	0,00	-0,25	0,07	7,02 ***	0,10	8,04 ***
[-1, 0]	0,00	-0,32	0,00	-1,25	0,05	14,73 ***	0,08	20,56 ***
[-3, 3]	0,00	0,28	0,00	0,46	0,06	10,99 ***	0,10	14,31 ***

	Acquirers				Targets			
	Domestic	t	Crossborder	t	Domestic	t	Crossborder	t
-3	0,00	0,09	0,00	0,55	0,00	1,52 *	0,01	2,02 **
-2	0,00	0,48	0,00	-0,40	0,00	1,24	0,00	-0,07
-1	0,00	0,00	0,00	-0,17	0,01	3,18 ***	0,01	2,97 ***
0	0,00	-0,45	0,00	-1,60 *	0,04	17,66 ***	0,07	26,10 ***
1	0,00	2,36 **	0,00	1,43 *	0,01	5,06 ***	0,02	5,55 ***
2	0,00	-0,81	0,00	2,15 **	0,00	-0,02	0,00	-0,22
3	0,00	-0,92	0,00	-0,75	0,00	0,44	0,00	1,51 *

Bivariate comparisons also clearly confirm that cross-border deals create 3–4% more profits for targets than domestic ones. No difference is seen for bidders.

		Domestic	Crossborder	Mean	T -test	Sign.	Mann-Whitney	Sign
Target CAAR	[-20, 20]	0,065	0,116	-0,051	-2,224	**0,027	-2,103	**0,035
	[-10, 10]	0,081	0,112	-0,031	-1,902	*0,058	-1,547	0,122
	[-5, 5]	0,068	0,109	-0,041	-2,959	***0,003	-2,605	***0,009
	[-2, 2]	0,060	0,094	-0,035	-2,868	***0,004	-2,464	**0,014
	[-20, 0]	0,071	0,101	-0,031	-1,674	*0,095	-1,875	*0,061
	[-1, 0]	0,046	0,080	-0,034	-2,970	***0,003	-2,069	**0,039
	[-3, 3]	0,064	0,104	-0,040	-3,156	***0,002	-2,899	***0,004
Acquirer CAAR	[-20, 20]	-0,011	0,001	-0,012	-,580	0,563	-1,024	0,306
	[-10, 10]	0,007	0,005	0,001	,118	0,906	-,013	0,989
	[-5, 5]	-0,001	0,008	-0,009	-,975	0,330	-,763	0,445
	[-2, 2]	0,003	0,003	0,001	,088	0,930	-,034	0,973
	[-20, 0]	-0,002	-0,002	0,000	-,002	0,998	-,042	0,967
	[-1, 0]	-0,001	-0,003	0,002	,582	0,561	-,491	0,624
	[-3, 3]	0,002	0,002	-0,001	-,106	0,916	-,048	0,962
Total CAAR	[-20, 20]	0,007	0,017	-0,010	-,480	0,631	-1,023	0,306
	[-10, 10]	0,023	0,021	0,001	,092	0,927	-,131	0,896
	[-5, 5]	0,018	0,022	-0,003	-,337	0,736	-,218	0,827
	[-2, 2]	0,016	0,016	0,001	,078	0,938	-,140	0,889
	[-20, 0]	0,012	0,015	-0,003	-,228	0,820	-,351	0,726
	[-1, 0]	0,010	0,009	0,000	,017	0,986	-,232	0,817
	[-3, 3]	0,017	0,016	0,001	,100	0,920	-,283	0,777

Conclusion:

H8. The cross-border acquisitions within the European region have different effects than domestic ones:

- Cross-border deals result in lower announcement returns for the bidder. -**NO EVIDENCE**
- Cross-border deals result in higher announcement returns for the targets. -**ACCEPTED**

H9. The Beginning versus the End of the Wave

The expectation that later entrants gain less in a merger wave than first movers seems to be reflected in the pattern of CAARs for the targets. The situation is reversed for bidders.

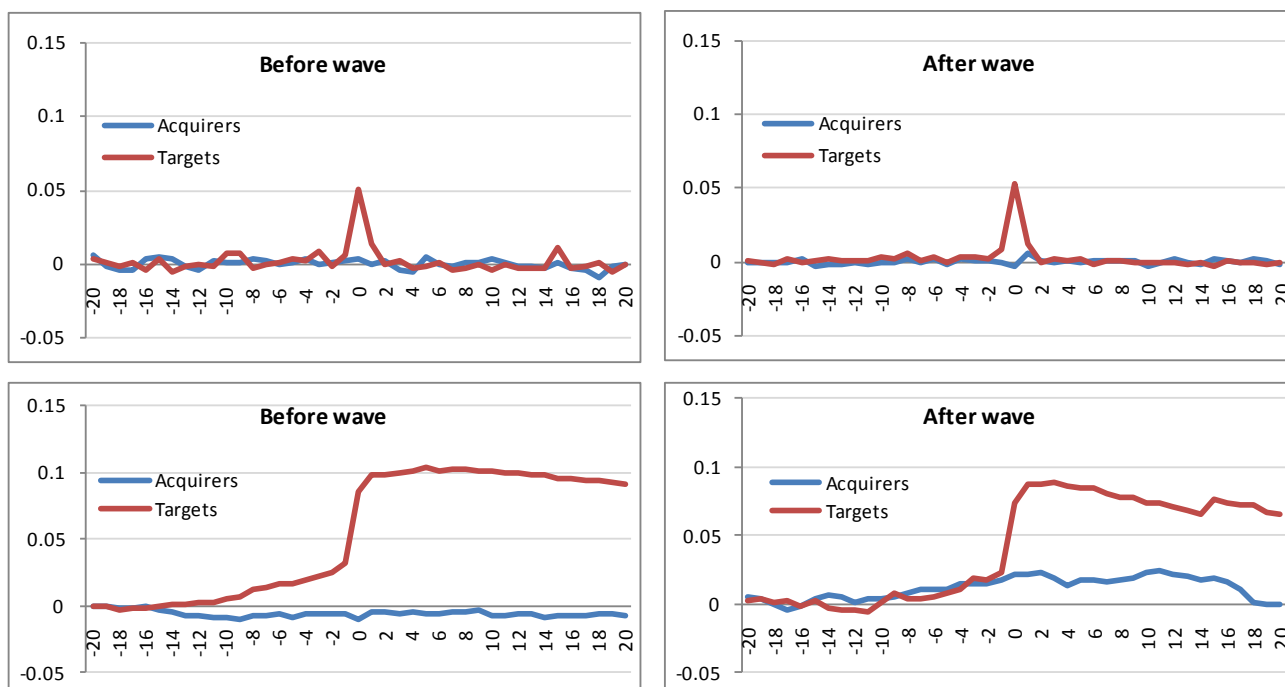


Figure 20 Daily average abnormal returns for acquirers and targets (Beginning / End of the Wave)

Results of the t-tests, however, could not confirm the existence of abnormal cumulative returns before and after the wave for the bidders at all. For targets returns before the wave are 9–10% and 6–8% after wave.

	Acquirers				Targets			
	BeforeWave	t	AfterWave	t	BeforeWave	t	AfterWave	t
[-20, 20]	-0,01	-0,82	0,00	0,01	0,09	7,40 ***	0,07	2,29 **
[-10, 10]	0,00	0,26	0,02	1,34	0,10	11,05 ***	0,08	3,81 ***
[-5, 5]	0,00	0,21	0,01	0,69	0,09	13,55 ***	0,08	5,20 ***
[-2, 2]	0,00	0,31	0,01	1,25	0,08	17,45 ***	0,07	6,69 ***
[-20, 0]	-0,01	-1,47	0,02	1,47	0,09	9,65 ***	0,08	3,60 ***
[-1, 0]	0,00	-2,16 **	0,01	1,37	0,06	22,20 ***	0,06	8,74 ***
[-3, 3]	0,00	0,28	0,00	0,48	0,08	15,79 ***	0,08	6,50 ***

	Acquirers				Targets			
	BeforeWave	t	AfterWave	t	BeforeWave	t	AfterWave	t
-3	0,00	0,58	0,00	-0,16	0,00	1,58 *	0,01	1,76 **
-2	0,00	0,07	0,00	0,26	0,00	1,19	0,00	-0,21
-1	0,00	-0,58	0,00	0,66	0,01	4,14 ***	0,01	1,25
0	0,00	-2,47 ***	0,00	1,28	0,05	27,25 ***	0,05	11,11 ***
1	0,01	3,55 ***	0,00	-0,04	0,01	6,49 ***	0,01	2,97 ***
2	0,00	0,13	0,00	0,62	0,00	-0,07	0,00	-0,16
3	0,00	-0,55	0,00	-1,34 *	0,00	1,18	0,00	0,48

The comparison of means does not show that higher profits in the first part of the wave are significant for targets. For bidders the opposite effect is found. Beginning-of-wave deals create less value than end-of-wave ones. The difference ranges between 0% and 3%.

		Before Wave	After Wave	Mean Difference	T -test	Sign.	Mann-Whitney test (Z)	Sign
Target CAAR	[-20, 20]	0,091	0,067	0,024	,923	0,178	-1,060	0,289
	[-10, 10]	0,098	0,080	0,018	,933	0,176	-1,137	0,255
	[-5, 5]	0,087	0,079	0,008	,483	0,315	-,503	0,615
	[-2, 2]	0,075	0,069	0,007	,481	0,315	-,581	0,561
	[-20, 0]	0,085	0,075	0,010	,469	0,320	-,459	0,646
	[-1, 0]	0,061	0,057	0,004	,314	0,377	-,638	0,524
	[-3, 3]	0,081	0,079	0,002	,126	0,450	-,101	0,919
Acquirer CAAR	[-20, 20]	-0,008	0,000	-0,008	-,339	0,735	-,539	0,590
	[-10, 10]	0,002	0,019	-0,018	-1,252	0,211	-,702	0,483
	[-5, 5]	0,001	0,007	-0,006	-,612	0,541	-,673	0,501
	[-2, 2]	0,001	0,009	-0,008	-,918	0,360	-,906	0,365
	[-20, 0]	-0,010	0,021	-0,031	-2,026	**0,044	-1,517	0,129
	[-1, 0]	-0,005	0,006	-0,011	-2,131	**0,034	-2,073	**0,038
	[-3, 3]	0,001	0,004	-0,003	-,309	0,758	-,433	0,665
Total CAAR	[-20, 20]	0,015	0,000	0,015	,634	0,527	-1,196	0,232
	[-10, 10]	0,022	0,022	0,001	,049	0,961	-,348	0,728
	[-5, 5]	0,022	0,014	0,008	,725	0,469	-,411	0,681
	[-2, 2]	0,017	0,012	0,005	,580	0,562	-,055	0,956
	[-20, 0]	0,010	0,021	-0,010	-,691	0,490	-,399	0,690
	[-1, 0]	0,010	0,008	0,003	,393	0,695	-,942	0,346
	[-3, 3]	0,019	0,011	0,008	,793	0,428	-,100	0,921

Conclusion:

H9. The highest shareholder gains for the bidders occur in the beginning of the merger waves, the second half of the wave appears to destroy value. -REJECTED

Summary of the Section

On the basis of univariate and bivariate tests we came to the following conclusions so far:

Accepted hypotheses:

H1.b. Total short-term shareholder returns: the largest positive returns are experienced by target shareholders

H1.c. Total short-term shareholder returns: the combined shareholder returns are positive as well

H2. The choice of the method of payment influences the M&A abnormal returns. Stock offers result in low shareholder returns while cash deals create the most value.

H3. There is a difference in the abnormal M&A returns between different industry sectors. -accepted only for targets in the case of difference between regulated and unregulated Industries.

H8.b. The cross-border acquisitions within the European region have different effects than domestic ones: cross-border deals result in higher announcement returns for the targets -

Rejected hypotheses:

H1.a. Total short-term shareholder returns: during the sixth merger wave in Europe the short term returns to acquirers might be small but are positive and significant.-

H9. The highest shareholder gains for the bidders occur at the beginning of the merger waves, the second half of the wave appears to destroy value.

Hypotheses for which further evidence is needed or which are better addressed in multivariate regressions:

H4. The acquisitions of targets with low Market-to-Book ratio (value targets) cause higher announcement returns to the bidders than the purchase of growth targets.

H5. The relative size of acquirer and target impacts the bidder returns. Acquisitions of smaller targets perform better.

H6. Legal status of the target: the returns to the acquirers of public targets are lower than for private target buyers.

H7. Both the acquirers and targets experience higher abnormal returns if they belong to the countries of English or similar legal system which is characterised by a more developed market for corporate control.

H8.a. The cross-border acquisitions within European region have different effects than domestic ones: cross-border deals result in lower announcement returns for the bidders.

We will now analyse all of these hypotheses by means of OLS regression analysis to be able to reach final conclusions.

Multivariate Regressions

We regressed cumulative abnormal returns at the vector of binomial and continuous variables which represented determinants of abnormal gains according to the hypotheses.

We performed 7 groups of regressions where the dependent variable is CAAR [-3; 3]: total sample (separately for acquirers, targets and total entity); cross-border and domestic deals; beginning of the wave and end of the wave; acquirers of private targets versus acquirers of public targets; by legal origin and by year of acquisition.

For the total sample 9 models were developed, some of which are used for sub-samples:

Table 15 Types of the multivariate regressions performed

Model number	Predictors
1	DEAL CHARACTERISTICS. The Binomial variables of <i>Cash only</i> and <i>Stock only</i> are compared to the omitted variable <i>Other forms of payment</i>
2	DEAL CHARACTERISTICS+INDUSTRY. In INDUSTRY five binomial variables of industry groups (<i>Energy/Utilities, Manufacturing, Services, Retail</i> and <i>Finance</i>) are compared to <i>Other Industries</i>
3	DEAL CHARACTERISTICS+INDUSTRY+COUNTRY. In COUNTRY binomial variables of English or Scandinavian legal origin are compared to those of the Germanic and French law families. Binomial predictor <i>Cross-border</i> deals is compared to omitted category of <i>Domestic</i> deals.
4	DEAL CHARACTERISTICS+INDUSTRY+COUNTRY+PERIOD. In PERIOD, <i>After Wave</i> deals are contrasted to <i>Before Wave</i> ones. <i>After Wave</i> and <i>Before Wave</i> denote beginning-of-wave and end-of-wave deals, respectively.
5	DEAL CHARACTERISTICS +INDUSTRY +COUNTRY +PERIOD +FIRM CHARACTERISTICS. FIRM CHARACTERISTICS include: continuous variable of <i>Market-to-Book Target</i> value of which proxies for value/growth companies; continuous variable <i>Relative Size</i> of target measured as ratio of target market value to acquirer market value; the

	binomial variable <i>Target Private</i> which is compared to the omitted category of <i>Target Public</i> .
6	DEAL CHARACTERISTICS+INDUSTRY (<i>Regulated</i>). Same as model 2, except that in INDUSTRY the binomial variable of <i>Regulated</i> industries group is compared to <i>Unregulated</i> industries group
7	Model 3, with regulated industry group replacing the five industry groups
8	Model 4, with regulated industry replacing the five industry groups
9	Model 5, with regulated industry replacing the five industry groups

In our sample of M&As, we checked main assumptions of the regression model (Keller, 2005; Verbeek, 2004). Firstly, there should be no multicollinearity between predictors as determined by checking their variance inflation factors (VIF). The moderate VIFs show that variance is not a problem in our set. The second check is made for normally distributed residuals. The analysis is done by means of normal probability plots which exhibit no clear pattern. The third check for the linear relationship between outcome and predictor and is made by scatter plots.

The fact that CAAR data are not perfectly normal should not constitute a problem for univariate and multivariate regressions. For ANOVA both skewness and leptokurtosis have slight effect on the level of significance, although the impact of kurtosis is higher. However, the platykurtic distributions reduce the test power (Glass, et al., 1972). With respect to multivariate normality, not only the normality of each variable but also the multivariate normality is important. However, robustness of Type I error to skewness and leptokurtosis should extend to the multivariate regressions as well (Stevens, 1992).

Total short-term shareholder returns

Acquirers

The results of regressions for acquirers (Table 17) show that model with highest adjusted R^2 is model 5. However, it explains only 8% of variance in the sample (and 3% adjusted). Such low values can still be found in event studies, which have adjusted R^2 between 3% and 30% (Moeller 2004, Goergen & Renneboog, 2004). The adjusted R^2 rises when we divide the sample into sub-groups.

The significant results from the models are:

-Negative impact of stock deals on acquirer returns. The stock only payment reduces CAARs by 3% compared to other means of payment except cash-only	confirms H2.
-Natural resources/energy utility group adds 3% to acquirer returns.	confirms H3
-Services sectors provides additional 2.6% benefits	confirms H3
-Relative size positively influences acquirer returns.	rejects H5

We will briefly cover other variables that are not statistically reliable. It seems that payment by cash only does not always positively influence acquirers' returns. The ranking of the most profitable industries in descending order is energy, services, manufacturing, banking and retail. Among them, only retail is negative. This result contradicts the order found by Goergen (2004) where manufacturing/retail were the best, and energy/utilities the worst. Regarding legal origin, the effect of Scandinavian countries is almost zero and in English-style countries it is negative, which contradicts the findings of Martynova (2006) which found higher returns in the countries with better governance and financial markets. After-wave returns are lower, as expected. Also the negative sign on the M/B value of the target confirms the theory that value targets improve returns, and growth ones may result in overpayment or overoptimistic expectations. Acquisitions of private targets also seem to create gains.

Targets

The regression results for targets are presented in Table 18. Models are significant and have an adjusted R^2 around 10%.

The important results with statistical significance:

-Cash payment method improves the returns by 3%	confirms H2.
-Manufacturing has 5% additional returns, followed by services at 3.6% - regulated industries reduce value (-2.6%)	confirm H3
-Returns increase by 5.6% when the target comes from the English legal tradition. Which is an effect often mentioned by Goergen (2004) and Martynova (2006) for 1993–2000. Also Scandinavian targets enjoy 4% higher gains.	confirms H7
-Cross-border deals create more gains for targets than domestic ones. This confirms the findings of Campa (2004) and Martynova (2006) for the previous M&A wave.	confirms H8

Result worth noting which is however not statistically confirmed is the “proper” order of industry sectors in terms of returns as found by Goergen and Renneboog (2004) for previous periods. From highest to lowest are: manufacturing (5.8%), retail (2.1%), banking (2%) and energy (1.1%). The only exception is services which, in this wave, came to second place by producing 3.6% more returns compared to the “other” category. As we postulated earlier, end-of-wave deals seem to produce lower returns.

Total Returns

The regression of the cumulative abnormal returns of the combined entity (Table 19) shows few significant results. Stock deals seem to influence total gains negatively, whereas cash offers increase the value as do acquisitions of bigger targets.

Conclusion:

Our study confirms many hypotheses, but mostly in case of targets:

Table 16 Summary table of findings

Hypothesis	Variable	Expected Sign	Actual Sign	Finding
H2. The choice of method of payment influences M&A abnormal returns. Stock offers result in low shareholder returns while cash deals create the most value.	Cash	+	+	Accepted
	Stock	-	-	Accepted
H3 There is a difference in the abnormal M&A returns between different industry sectors.	Energy/Utility	+	+	Not significant
	Manufacturing	+	+	Accepted only for targets
	Services	+	+	Accepted for both
	Retail	+	"-" for acquirers, "+" for targets	Not significant
	Banking	+	+	Not significant
	Regulated	-	-	Accepted
H4. The acquisitions of targets with a low Market-to-Book ratio (value targets) cause higher announcement returns to the bidders than the purchase of growth targets.	Market to Book value of targets	-	-	Not significant
H5. The relative size of the acquirer and the target impacts bidder returns. Acquisitions of smaller targets perform better.	Relative size	-	+	Rejected
H6. Legal status of the target: the returns to the acquirers of public targets are lower than for private target buyers.	Targets Private	+	+	Not significant
H7. Both the acquirers and targets experience higher abnormal returns if they belong to the countries of the English or similar legal tradition which are characterised by a more	English	+	"+" for targets, "-" for acquirers	Accepted only for targets
	Scandinavian	+	+	Accepted only

Hypothesis	Variable	Expected Sign	Actual Sign	Finding
developed market for corporate control.				for targets
H8a. Cross-border deals result in lower announcement returns for the bidder	Cross Border	-	-	Not significant
H8b. Cross-border deals result in higher announcement returns for the targets	Cross Border	+	+	Accepted
H9. The highest shareholder gains for the bidders occur in the beginning of the merger waves, the second half of the wave appears to destroy value.	After wave	-	-	Not significant

An additional achievement of this study is the production of reliable results for industry groups, which were insignificant in regressions by Goergen (2004).

Table 17 Regression results for acquirers, event window = [-3, 3] days²

Group	Variable	1	2	3	4	5	6	7	8	9
Regression	Intercept	0,006 <i>0,272</i>	-0,003 <i>0,730</i>	0,002 <i>0,875</i>	0,003 <i>0,790</i>	0,000 <i>0,986</i>	0,004 <i>0,489</i>	0,008 <i>0,271</i>	0,009 <i>0,219</i>	0,002 <i>0,883</i>
	Paid by Stock Only	-0,026 ***0,007	-0,027 ***0,005	-0,029 ***0,004	-0,029 ***0,003	-0,032 ***0,002	-0,026 ***0,007	-0,028 ***0,004	-0,028 ***0,004	-0,031 ***0,002
Deal Characteristics	Paid by Cash Only	-0,003 <i>0,729</i>	-0,002 <i>0,778</i>	-0,003 <i>0,733</i>	-0,003 <i>0,743</i>	0,000 <i>0,991</i>	-0,004 <i>0,669</i>	-0,004 <i>0,653</i>	-0,004 <i>0,661</i>	-0,001 <i>0,875</i>
Industry	Energy, Natural Resources and Utilities		0,031 *0,068	0,030 *0,077	0,031 *0,070	0,027 <i>0,111</i>				
	Manufacturing and Production		0,011 <i>0,263</i>	0,010 <i>0,331</i>	0,010 <i>0,330</i>	0,009 <i>0,400</i>				
	Services		0,026 ***0,023	0,026 ***0,028	0,025 ***0,031	0,026 ***0,027				
	Retail, Stores and Hotels		-0,002 <i>0,900</i>	-0,002 <i>0,925</i>	-0,002 <i>0,912</i>	-0,003 <i>0,881</i>				
	Banking and Insurance		0,003 <i>0,785</i>	0,002 <i>0,879</i>	0,002 <i>0,856</i>	0,000 <i>0,992</i>				
	Regulated						0,007 <i>0,365</i>	0,005 <i>0,543</i>	0,005 <i>0,519</i>	0,006 <i>0,449</i>
Location	Country, English			-0,012 <i>0,235</i>	-0,011 <i>0,260</i>	-0,010 <i>0,320</i>		-0,009 <i>0,336</i>	-0,009 <i>0,366</i>	-0,007 <i>0,477</i>
	Country, Scandinavian			0,009 <i>0,388</i>	0,009 <i>0,410</i>	0,010 <i>0,368</i>		0,011 <i>0,276</i>	0,011 <i>0,301</i>	0,012 <i>0,261</i>
	Cross Border			-0,006 <i>0,457</i>	-0,005 <i>0,492</i>	-0,002 <i>0,794</i>		-0,006 <i>0,404</i>	-0,006 <i>0,440</i>	-0,003 <i>0,739</i>
Period	After Wave				-0,006 <i>0,493</i>	-0,006 <i>0,510</i>			-0,006 <i>0,467</i>	-0,007 <i>0,443</i>
Firm Characteristics	Market to Book Value of Targets ^a					-0,010 <i>0,556</i>				-0,003 <i>0,838</i>
	Relative Size ^a					0,049 *0,060				0,049 *0,059
	Target is Private					0,011 <i>0,626</i>				0,019 <i>0,412</i>
Statistics	R ²	0,026	0,054	0,065	0,066	0,079	0,029	0,040	0,041	0,056
	R ² adjusted	○ 0,020	● 0,031	● 0,032	● 0,030	● 0,034	○ 0,019	○ 0,020	○ 0,018	● 0,023
	F	4,006 ***0,019	2,380 ***0,022	1,988 ***0,035	1,846 ***0,046	1,749 ***0,046	2,943 ***0,033	2,003 *0,065	1,790 *0,089	1,698 *0,081
	N	299	299	299	299	299	299	299	299	299

*, ** and *** denote significance at 10%, 5% and 1%

^a - transformed variable using LG10(X)

Even though predictors in multiple regression need not be normal, regression gave much better results when Market-to-Book Value and Relative Size were transformed using the log10 function. Figure 21 shows the distribution of the MV/BV variable before and after transformation.

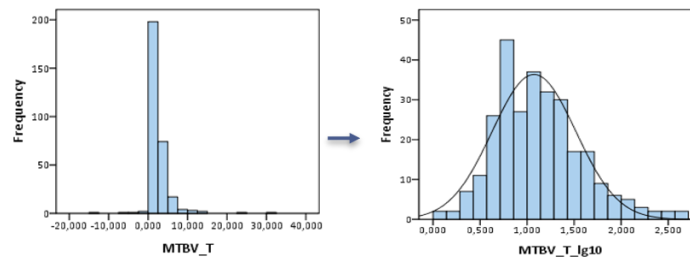


Figure 21 Transformation of market-to-book value variable

² The values in the cells opposite each variable denote regression slope estimates (above) and p-value (in italic below).

Table 18 Regression results for targets, event window = [-3, 3] days

Group	Variable	1	2	3	4	5	6	7	8	8
Regression	Intercept	0,075 ***0,000	0,051 ***0,002	0,015 0,406	0,016 0,382	0,028 0,173	0,080 ***0,000	0,051 ***0,000	0,052 ***0,000	0,062 ***0,000
Deal Characteristics	Paid by Stock Only	-0,024 0,157	-0,021 0,222	-0,017 0,315	-0,017 0,313	-0,016 0,356	-0,021 0,220	-0,017 0,320	-0,017 0,318	-0,015 0,372
	Paid by Cash Only	0,036 ***0,015	0,036 ***0,013	0,031 ***0,030	0,031 ***0,030	0,029 ***0,043	0,038 ***0,010	0,032 ***0,029	0,032 ***0,029	0,029 ***0,042
Industry	Energy, Natural Resources and Utilities		0,002 0,936	0,011 0,700	0,011 0,699	0,014 0,633				
	Manufacturing and Production		0,053 ***0,006	0,059 ***0,002	0,058 ***0,002	0,058 ***0,002				
	Services		0,028 0,141	0,036 *0,058	0,036 *0,059	0,031 0,105				
	Retail, Stores and Hotels		0,011 0,760	0,022 0,523	0,021 0,550	0,021 0,542				
	Banking and Insurance		0,010 0,621	0,020 0,309	0,020 0,325	0,019 0,331				
	Regulated						-0,028 *0,070	-0,026 *0,084	-0,026 *0,083	-0,023 0,118
Location	Country, English			0,056 ***0,001	0,056 ***0,001	0,056 ***0,001		0,051 ***0,002	0,051 ***0,002	0,051 ***0,002
	Country, Scandinavian			0,042 ***0,028	0,042 ***0,031	0,042 ***0,031		0,042 ***0,030	0,041 ***0,033	0,041 ***0,035
	Cross Border			0,035 ***0,011	0,035 ***0,010	0,032 ***0,023		0,036 ***0,008	0,036 ***0,008	0,033 ***0,018
Period	After Wave				-0,004 0,777	-0,004 0,762			-0,005 0,726	-0,006 0,703
Firm Characteristics	Relative Size ^a					-0,063 0,166				-0,064 0,155
Statistics	R ²	0,042	0,073	0,132	0,132	0,102	0,052	0,107	0,108	0,114
	R ² adjusted	○ 0,035	○ 0,051	● 0,102	● 0,099	● 0,099	○ 0,043	● 0,089	● 0,086	● 0,089
	F	6,373 ***0,002	3,273 ***0,002	4,357 ***0,000	3,955 ***0,000	3,798 ***0,000	5,384 ***0,001	5,818 ***0,000	4,990 ***0,000	4,635 ***0,000
	N	297	297	297	297	297	297	297	297	297

*, ** and *** denote significance at 10%, 5% and 1%

^a - transformed variable using LG10(X)

Table 19 Combined, event window [-3; 3] days

Group	Variable	1	2	3	4	5	6
Regression	Intercept	0,018 *** 0,002	0,013 0,117	0,014 0,125	0,017 * 0,094	0,016 0,121	0,004 0,726
Deal Characteristics	Paid by Stock Only	-0,016 0,103	-0,018 * 0,075	-0,018 * 0,077	-0,019 * 0,061	-0,019 * 0,061	-0,021 ** 0,041
	Paid by Cash Only	0,016 * 0,077	0,013 0,141	0,013 0,161	0,013 0,142	0,013 0,153	0,015 0,107
Industry	Energy, Natural Resources and Utilities		0,016 0,374	0,016 0,384	0,014 0,433	0,014 0,453	0,011 0,531
	Manufacturing and Production		0,017 0,114	0,016 0,139	0,017 0,126	0,017 0,120	0,016 0,132
	Services		0,009 0,429	0,009 0,440	0,009 0,445	0,010 0,421	0,012 0,296
	Retail, Stores and Hotels		-0,009 0,609	-0,009 0,609	-0,010 0,573	-0,010 0,578	-0,009 0,581
	Banking and Insurance		-0,005 0,660	-0,006 0,625	-0,006 0,613	-0,007 0,584	-0,007 0,574
Location	Country, English			-0,003 0,769	-0,004 0,705	-0,004 0,671	-0,003 0,724
	Country, Scandinavian			0,001 0,926	0,001 0,936	0,002 0,882	0,004 0,754
	Cross Border				-0,006 0,492	-0,007 0,450	-0,002 0,800
Period	After Wave					0,005 0,559	0,007 0,474
Firm Characteristics	Relative Size ^a						0,070 *** 0,009
Statistics	R ²	0,033	0,053	0,054	0,055	0,057	0,082
	R ² adjusted	● 0,026	● 0,028	● 0,021	○ 0,019	○ 0,016	● 0,038
	F	4,574 *** 0,011	2,095 *** 0,044	1,631 0,107	1,512 0,135	1,402 0,172	1,894 *** 0,035
	N	269	269	269	269	269	269

*, ** and *** denote significance at 10%, 5% and 1%

^a - transformed variable using LG10(X)

T

Payment method: sub-samples regressions

We separate the sample into *Cash-only* and *Stock-only* financed deals. The results are presented in Table 25 of the Appendix. For targets *Manufacturing* has a positive effect on cash deals and a negative effect on stock ones. English legal tradition and the similar Scandinavian tradition show a positive impact. If the target is private, it positively affects stock deals.

For acquirers, only cash deals have significant results. In line with previous findings relative size and being in the services sector provide additional gains.

Cross-border and domestic deals: sub-samples regressions

The sample is divided into cross-border and domestic deals. Results are given in Table 26 in the Appendix.

Targets

For targets in both cross-border and domestic deals, a significant effect is found for legal systems with high investor protection: namely the English and the Scandinavian systems. Targets from these countries exhibit higher returns both in cross-border deals (5–10%) and domestic acquisitions (4%).

The variables specific only for targets in domestic deals are stock payment (+ 3.7% effect) and being in the latter part of the wave (-3%). For targets in cross-border M&As the most beneficial are mergers in the manufacturing (+10%) and services (+1%) sectors.

We cannot contrast returns of targets between cross-border and domestic deals because of the lack of variables which are significant (S) for both groups. However, some insignificant (NS) results may present opportunities for further research. Stock deals seem to have higher a higher positive impact on domestic acquisitions (S) compared to cross-border ones (NS). Almost all industry groups, such as manufacturing, services, retail and banking have a negative impact on domestic acquisitions (NS) but a positive impact on cross border ones (S only for manufacturing and services).

The results for acquirers in foreign mergers show the negative effect of cash which is surprising. The absence of the positive effect of cash in cross-border deals was observed before; our intuition told us that targets are reluctant to accept foreign currency. Indeed there are several countries in our sample who still have not adopted euro, so this might be a reason.

Both targets and acquirers

It should be noted that manufacturing and services show a significant positive effect for both targets and acquirers only in cross-border deals. This could add evidence to the foreign direct investment theory that claims additional benefits for internationalisation due to the advantages of different factor markets.

First and second part of the wave: sub-samples regressions

The results are presented in Table 27 in the Appendix.

Targets

A positive effect is as usual found for cash payments and for countries of the English legal tradition in the first part of the wave (2003-2006) and the Scandinavian legal origin and cross-border deals in the second part (2007-2008). Although only the result for the manufacturing is significant, gains are positive for all industries in the first part of wave and negative in the second part.

Acquirers

Significant results in the first part of the wave are the negative effect of stock payments and the positive effect of the services sector. In the second part of the wave, banking and insurance have a significant negative effect which can be seen as the logical consequence of the sub-prime crisis. From non-reliable results it was observed that, in contrast to targets, two industries do not have negative returns and create gains in the second part of the wave—utilities and retail.

Acquirers of private targets versus acquirers of public targets: sub-sample regressions

Results are given in Table 28 in the Appendix.

We regret that our sample of 321 deals only includes 10 involving private targets. Thus the important results we wanted to see with regards to private targets are insignificant. In particular, we observed that acquirers of private targets experience a positive effect through stock payment, however this effect is not statistically significant. This could point to a very important finding in the recent literature: that the negative effect of stock payment does not signal that acquirers are overvalued but it simply shows that bidders overpay for public targets.

Legal systems: sub-samples regressions

Results are given in Table 29 in the Appendix.

We found that different variables are significant for each law family. The English and French law countries benefit from smaller targets as predicted by our hypothesis. They also prefer cash deals. The Scandinavian family of law has high positive impact on deals involving manufacturing (22%) and banking (17%)—the only time these point estimates approach the values found by Martynova (2006) for the previous wave. All other countries, however, show losses in banking mergers, although non-reliably.

The other results for acquires and targets confirm already accepted hypotheses.

Period: sub-samples regressions

Results are in Table 30 in the Appendix.

We attempted to find significant effects for all years by means of step-wise regressions. We are not sure if this method is fully welcome as it finds significant variables by purely mathematical methods, selecting the ones which contribute the most to the unexplained variance of the dependent variable. Still, step-wise regressions help to detect the most statistically viable predictors, so we used it in this experiment.

The most important variables in case of targets are: for 2003: manufacturing and retail (+); for 2004: stock (-); for 2005: cash/manufacturing/English (+); for 2006: manufacturing/Scandinavian (+); and for 2006: Scandinavian (+).

For acquirers the reliable predictors are: for 2003: retail (-11%); for 2005-stock/cross-border (-) and relative size (+); for 2006: services (+); and for 2007: banking (-) which again points to the crisis and Scandinavian legal system (+).

Descriptive analysis of merger wave

We analyse the merger wave based on the available information from Thomson One Banker and Datastream. In total 37 thousand of the deals that were available for the period 2003–2008 involved a public acquirer.

The results point to the following as the set of features of the sixth merger wave (2003–2008) in Europe:

- consolidation (47%) caused by economies of scale as well as by encouragement of local governments (Lipton, 2006)
- International expansion (31% of cross-border deals)
- Significant number of cash-only financed deals (17%) due to the large amount of free cash flow reserves during the first part of the wave (Roos, 2007)
- Very low hostile takeover activity (almost 0% in our sample). A more positive attitude towards hostile takeovers as they are expected to facilitate consolidation (Ross, et al., 2007)

Table 20 Count, annual value and percentage of deals for different categories in the wave

Year	Count	Deal Value (mln)	Cash Only	Stock Only	Crossborder	Domestic	Private Target	Public Target
2003	4577	€ 275,159	17%	2%	29%	71%	6%	46%
2004	5126	€ 391,360	14%	2%	28%	72%	4%	51%
2005	6080	€ 481,685	17%	1%	32%	68%	5%	55%
2006	6429	€ 648,147	15%	2%	32%	68%	5%	57%
2007	6939	€ 724,043	14%	1%	34%	66%	5%	61%
2008	5925	€ 293,769	13%	1%	32%	68%	4%	62%
2009	2180	€ 21,724	9%	1%	25%	75%	2%	57%
Grand Total	37256	€ 2,835,886	15%	1%	31%	69%	5%	56%

Table 21 Level of consolidation

Year	Friendly	Neutral	Hostile	Same Industry (2-digit SIC)	Diversified	% Consolidated
2003	0.960	0.030	0.000	4577	2221	49%
2004	0.960	0.030	0.000	5126	2353	46%
2005	0.960	0.040	0.001	6080	2776	46%
2006	0.960	0.030	0.000	6429	2853	44%
2007	0.970	0.020	0.000	6939	3241	47%
2008	0.980	0.010	0.000	5925	2899	49%
2009	0.980	0.020	0.000	2180	1120	51%
Grand Total	0.97	0.03	0.0002	37256	17463	47%

Merger motives

We used the approach of Berkovich and Narayanan (1993) and Goergen and Renneboog (2004) to analyse the motives behind this merger wave.

As explained in the literature review, the theory predicts following relationships between abnormal returns of the target, bidder and combined equity for each of the three main merger motives:

Table 22 Expected sign of correlation, target versus bidder, and target versus total gain

	Target vs Total gain	Target vs Bidder
Synergy	+	+
Agency	-	-
Hubris	0	-

We found the following relationships by means of correlation analysis using both parametric (Pearson) and non-parametric (Spearman) methods:

Table 23 Pearson and Spearman correlation of target, bidder and total gains [-3, 3]

[-3, 3]	Target vs Total gain		Target vs Bidder		N	% of sample
	Pearson correlation	Spearman correlation	Pearson correlation	Spearman correlation		
Total Sample	,448**	,480**	,150**	,191**	304	100%
Positive gains subsample	,365**	,393**	-0.120	-0.096	133	44%
Negative gains subsample	0.073	0.155	-0.101	-,274**	171	56%

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The positive correlations between all types of abnormal returns for the whole sample describe the synergy motive behind M&As in the research period. Also, for the negative gains subsample, the hubris motivation is suggested due to the absence of a correlation between target gains and total returns, and a negative correlation between target and bidder gains. The last result, however, differs depending whether we consider our data normal or not if we take into account the slight negative skewness and leptokurtosis.

PART V: Discussion, Conclusions and Further Research

Chapter 6: Discussion of empirical results

H1. Total short-term shareholder returns

Targets

The target returns found in this study correspond to those of the previous wave studies. We demonstrated once again that targets are the winners in the merger process. Our target CAARs for the window [-3; 3] are 8–9%. They look a bit lower than the values of Goergen (2004): 13% in window [-2; 2] for 1993–2001. The effect of the sub-prime crisis cannot explain the lower CAARs, as the values in the first part of the wave (8–10%) are almost the same as in the second part (6–8%). However, in the literature it was noted that abnormal returns tend to diminish with each merger wave (Anrade, 2001).

Bidders

The main obstacle remains: the unexplainable zero values of bidder prices reactions. From a practical point of view, it shows that it is not easy for managers to make profitable investments. However, other investment announcements (R&D, capital investments) deliver abnormal returns of about 1% as well which could make our merger results comparable (Burton, et al., 1999). Still, from an academic perspective, zero returns contradict the synergy effect of mergers, which we found in previous section. Each party should benefit from the deal. However, capital markets do not seem to incorporate these gains in expectations of the future bidder cash flows. One way to resolve this challenge would be to separate the mergers by bidder motivations: such as synergy, hubris and agency problems.

We also looked at the big transactions with losses of >1 bln in line with Moeller's (2005) findings that big loss deals skew the bidder returns distributions. The removal of these deals would increase the abnormal returns of the bidders from -0.3% to 0.5%. The results are presented in Table 9 and Table 10.

Another explanation of zero percentage returns for the acquirers compared to high returns for the targets might lie in the relative size of the parties. The median market value of acquirers in our sample is 3.75 times larger than that of the acquired companies, thus the same monetary gains from the merger result in lower bidder percentage returns.

Total

The total gain from mergers is slightly positive, around 1%, in accordance with previous studies (Martynova 2006; Goergen and Renneboog, 2004)

Euro wealth effects

In analysing the effect of mergers one should not stop at CAARs. These returns are equally weighted with small firms having the same impact as large ones. For acquirers, such abnormal returns are almost zero, so we might think that bidders earn their normal rate of return. However, when we weight individual CAARs by the market values of the bidders we see that for the entire wave bidders lost about € 37 bln. Yet, this situation is not a negative verdict on the merger phenomenon. Removal of 9% of big loss deals resulted in a total gain of € 32 mln for the remaining acquirers. This effect was first discovered by Moeller (2004) who found that some large mergers lost most of their value in 1998–2000.

The impact of value weighting should always be kept in mind, as change in CAARs by the same percentage could, with equal chances, mean either gain or loss.

H2. Payment method

The most often cited negative effect of stock mergers, found in our study as well, is traditionally explained by the fact that such deals combine positive merger announcement and negative common stock financing (Asquith, et al., 1987). The stock issue sends an overvaluation signal according to the adverse selection theory of Myers and Majluf (1984).

However, a new stream of research represented by Mitchell et al. (2004) has shown that negative returns are caused by the trading behaviour of merger arbitrageurs. On a sample of 2000 M&As in the US between 1994 and 2000 Mitchell et al. proved that half of all negative announcement reaction on stock mergers (fixed-ratio deals and collars) was caused by price pressure from short-sellers. They also found that index fund rebalancing caused by new stock issues drove price run-ups. It is advisable for further research to control for effects of trading price pressure and inelastic demand curves (Scholes, 1972). However, in the present study we found out that short interest data for the European market is not available in the EUR databases.

Another reason for the negative stock effect is overpayment. We found confirmation for this from the results of the OLS regressions for private targets. The values of stock coefficients are positive, however insignificant. We attribute the insignificance to the very small size of the sample, as Fuller et al. (2002) found a positive effect for the stock bidders of private targets and a negative effect for the same bidders that buy public targets. Since bidders have a lower risk of overpaying for private targets due to the lower liquidity of the latter, the negative stock effect maybe the overpayment effect for public targets which represent the majority of our sample.

H3 Industry

With respect to the industry we observed a different situation as compared to the study by Goergen (2004) for the period of 1993–2000. The most important industry effect we recorded is the rise of the service sector. This industry contributes an additional 3.6% and 2.6% to targets' and acquirers' gains, respectively. This is the only sector which is significant in the OLS regressions of the total sample, and it also shows a positive effect on cross-border deals and M&As in the first part of the wave. This improvement from the middle ranks in Goergen and Rennebog (2004) may be the result of the prominent role of services in our current economic life. At the beginning of this century all highly developed countries became service economies (Schettkat, 2003). Also the characteristics of the deals in this sector (Table 24) in our sample may contribute to its effect: low market value of acquirer (Moeller, 2005), largest number of deals in the first part of the wave, 35% of domestic deals which is good for acquirers (Martynova, 2006), largest number of English law countries which is beneficial for targets (La Porta, 1998).

Another sector that seems to rise is the energy/natural resources/utilities in case of acquirers, which was one of the last in the study by Goergen and Rennebog (2004). The reason may be growing popularity of energy sector or success in deregulation of utilities started by the EU.

Table 24 The deal characteristics by industry

Industry	Market Value of Target	Market Value of Acquirer	First Part of the Wave	Second Part of the Wave	Cross-border	Domestic	English	Scandinavian	French	German	Cash	Stock
Energy	€ 7,464.00	€ 15,069.00	16	6	8	14	4	4	11	3	32%	32%
Manufacturing	€ 2,709.00	€ 22,193.00	65	21	45	41	12	15	31	28	16%	44%
Services	€ 286.00	€ 3,044.00	43	9	17	35	16	11	13	12	25%	31%
Retail	€ 936.00	€ 8,116.00	17	7	7	17	5	0	19	0	13%	21%
Banking	€ 5,727.00	€ 27,254.00	55	25	38	42	9	9	46	16	21%	28%
Other	€ 4,700.00	€ 15,395.00	74	26	39	61	30	15	44	11	20%	40%
Grand Total	€ 3,690.00	€ 17,166.00	270	94	154	210	76	54	164	70		

The values are number of deals, unless indicated otherwise.

Manufacturing continues to be strong. It has a positive effect on target returns in the first part of the wave (7.5%) and in Scandinavian countries (22%) where it approaches the values found by Goergen and Rennebog (2004).

Banking, although insignificant in total sample, seems to have a medium size return. The same effect could be seen in the US (De Long, 2003) and in the EU (Cybo-Ottone and Murgia, 2000). The reason for banking not to be highly profitable may be difficulty of integration; the fact that banks' deals are most often paid by stock (Houston, 2001) which is also the case in our sample (28% of deals in our sample are stock-only); the high presence of cross-border transactions with different national regulations; and, of course, the sub-prime crisis as evidenced by significant negative effect of banking on the CAARs of acquirers in the second part of the wave (-6.3%). Also big bank mergers are most often known and expected by the market and this makes abnormal returns around the announcement day lower. An additional reason might be that investors are upset that the firm has low chance to be bought in future.

Yet, banking has a significant and large positive effect on targets in Scandinavian countries, which might be caused by the more developed financial system there.

The fate of retail is remarkable. Although again statistically insignificantly, retail seems to turn from being the winners in 1993–2000 (Goergen and Rennebog, 2004) into the losers in this wave. The reason for this might be high consolidation in this sector as well as the prevalence of French law countries which usually have the lowest returns due to poor investor protection (La Porta, 1998).

H4 Market-to-Book Value

The results for the Market-to-Book value of targets are not significant. Yet, their signs point to the direction predicted by our hypotheses. In accordance to the synergy theory, takeovers should improve the returns of the less profitable, poorly managed “value” targets. Besides it is less probable that bidders with agency problems (Shleifer and Vishny, 1989) will buy companies to maintain their growth related remuneration.

H5 Relative Size

For the variable Relative Size (target market value divided by bidder market capitalisation) we found an opposite significant effect of what was expected. The bidder gains more the larger the target. This finding seems to contradict a number of empirical studies mentioned in the literature review. The difficulty might lie in the fact that relative size proxies for many aspects. One can find studies where this relationship is positive as well. They cite mathematical considerations, synergy or merger premium as possible reasons.

First of all, this finding further supports the synergy motivation of mergers found in our correlation analysis. Synergy and behavioural theories make contrasting predictions about abnormal returns and size of the target. Behavioral theories (Schleifer and Vishny, 1989) predict that large purchases increase entrenchment of the management and reduce shareholder value. The synergy hypothesis (Coase 1937; Mulherin and Boone 2000) states that the purchase of a large target signals efficiency as firms correctly change their size by means of acquisitions as a response to changing economic conditions.

There are also other explanations for the positive effect of relative size in the literature. Asquith (1983) maintain that controlling for size shows that both bidders and targets, in fact, have similar absolute returns, which become even smaller for bidders when expressed in percentage terms, since equity value used in the denominator is higher for buyers than for targets.

Another motive of merger premium size seems counterintuitive at the first glance, as larger size should enable the target to negotiate a higher premium. Houston and Ryngaert (1994) explain this in a way that bidders' usual overpayment for targets is lower in the case of larger targets, since it will be harder for acquirers to justify large

premiums for bigger targets in the face of the always negative market reaction to overpayment. However, similar to our initial null hypothesis, the authors also do not rule out the negative effect of relative size on bidder price, as a smaller percentage of premium for larger targets can still be large. Fuller et al. (2002) offer a more detailed analysis of the relative size effect by partitioning the targets into public and private. Their results for public acquisitions are in line with our initial hypothesis of a negative effect. For private deals, the effect of the relative size on the private deals is positive. The authors explain this by liquidity, in that the less liquid private targets are bought at discount which is more perceptible the larger the target size. Because in our sample deals with private targets constitute a very small number (10 out of 321) we could not use this argument to explain our findings.

H6. Public status of the target

The effects for acquirers of private targets were unfortunately impossible to prove reliably due to the very small sub-sample size. Yet the signs of the regression coefficients point in the expected direction. Moreover, private targets have a positive effect on abnormal returns for Scandinavian countries and in the difference-of-means test for the entire sample. The reasons for gains in acquiring private targets are extensively covered in the literature section and include: the liquidity effect (Fuller, et al., 2002), the creation of the large block holder (Chang, 1998), the size effect (Moeller, et al., 2004), diversification (Hansen and Lot, 1996), and predictability (Faccio, et al., 2006).

H7 Legal origin

Results for English-style and Scandinavian countries confirm the findings of Goergen and Rennebog (2004) and Martynova (2006) for previous merger wave. The UK common law system is known for high investor protection (La Porta, 1998) and developed financial markets. The Scandinavian legal family approaches these subjects in the same way (Martynova, et al., 2006). We find significant confirmation of a positive effect of an English or Scandinavian origin for targets in the whole sample. This effect is also present in cross-border, domestic, stock and cash deals. This effect confirms that targets in countries with higher shareholder protection obtain a better takeover premium (Rossi and Volpin, 2004).

For acquirers we do not find positive returns for English-style and Scandinavian countries. This may point towards another side of developed financial markets. It might be that higher competition in these markets reduces bidder returns.

H8. Cross -border versus Domestic

This study confirms that targets gain in cross-border acquisitions. Their returns increase by 3.2% compared to domestic deals. This supports our synergistic explanation of the current merger wave as well as theories of internationalisation (Dunning, 1988) which predicts higher cross-border returns due to the differences in product and factor markets.

Yet, the absence of benefits for cross-border deals by acquirers is worrying. In fact they might have lower returns compared to domestic acquisitions as evidenced by the difference-of-means tests and signs of the regression coefficients. One could have easily explained the negative returns by differences in regulatory framework, business environment and culture between countries. Still, the fact that targets benefit from the same type of the cross-border deals may be because bidders overpay for targets due to worse negotiating position and less knowledge of foreign market.

H9. Beginning versus End of the wave

The results of multivariate analysis do not produce significant estimates of late entry effect. The signs of the slope coefficients point towards the negative impact of later-phase deals on abnormal returns. However, the tests of the mean differences, which were significant for two out of seven event windows, have shown that bidder returns are lower in the first than in the last part of the wave. Thus, it might be true that late movers outperform the first movers.

The reasons for this may be the uncertainty about the correct prices of targets at the beginning of acquisition wave. Also, it might be that the companies which start the waves are the ones who do so because of agency problems, since they want to acquire first in order not to be acquired themselves (Gorton et al., 2005). Finally, also the market may become more trusting or even over-optimistic about mergers at the later stage of the wave.

Conclusions

The aim of this research was to give a comprehensive overview of the announcement effects of recent mergers and acquisitions in the European region. In addition, the study examined determinants of targets' and acquirers' merger returns.

The problem statement that guided this work is:

What is the effect of the mergers and acquisitions in Europe over the period of 2003–2008 on the short-term shareholder returns?

After performing a detailed analysis of 642 participants of M&A deals in 18 European countries over the period of 2003–2008 we determined that cumulative abnormal returns to shareholders over the 6-day period surrounding merger announcement constitute 8% for targets, 0% for acquirers and 1.6% for combined entity.

Furthermore, the study established the existence of positive correlations between targets' and bidders' returns and total gains. This indicates that synergy was the main motive of current merger wave.

Evidence for the synergy effects and value creation in previous M&A waves were found by Andrade (2001), Bruner (2002) and Goergen (2004).

In addition, this work showed the recent wave was marked by consolidation, growth of cross-border operations, prevalence of cash payments and an absence of hostility.

The second research objective of the current study was to determine which characteristics influenced merger returns.

Eight hypotheses were formulated which included deal characteristics (method of payment); industry characteristics (five industry types plus classification into regulated and unregulated); legal origin which proxies for the level of investor protection and capital market development; comparison of cross-border and domestic operations; firm characteristics of the target (relative size compared to the bidder, market value and public status); and period in the merger wave.

The result of the t-tests and OLS regressions show different return determinants for targets and bidders.

In case of targets it was established with certainty that cash deals create additional returns (+3.1%), regulated industries destroy value (-2.6%), manufacturing and services increase profitability (+ 5.8% and +3.1%, respectively) and so does a legal system of English (+5.6%) or Scandinavian (+4.2%) origin, and cross-border operations create wealth (+3.2%).

For acquirers, stock deals result in value losing acquisitions (-2.8%), energy and services are the most rewarding sectors (+3.1% and +2.5%, respectively) and the bigger size of the target increases returns (+4.9%).

These results are confirmation for the most part of the previous research for different time periods either in the EU or the US.

Thus, a positive effect of cash and negative impact of stock payment is linked to signaling under information asymmetry (Myers and Majluf, 1984); stock trading by merger arbitrageurs (Mitchell, et al., 2004) or bidder overpayment (Fuller, et al., 2002). The negative impact of M&As in regulated industries in Europe is motivated by the remaining legal barriers and governmental control (Campa and Hernando, 2004). English and Scandinavian origin proxy for highly developed markets of corporate control and financial system development (La Porta, et al., 1998) which allows targets to extract a higher premium (Rossi and Volpin, 2004). Cross-border operations are related to the synergistic benefits of acting in differentiated factor and product markets (Dunning, 1988; Harris and Ravenscraft, 1991).

The effects that remain unexplained in the theoretical literature are industry returns. In empirical studies for the EU and the US manufacturing has always played an important role (Campa and Hernando, 2004; Kiymaz and Baker, 2008). However, the rise of the services and energy/utility sectors seemed unpredictable based on previous research. In Goergen's (2004) study of the European area in 1993-2000 these two industries were among the less important ones in terms of merger gains. We can only hypothesise that the growing role of services is linked to these industries becoming a major driver of developed economies in the post-industrial era (Drucker, 1994; Schettkat and Yocarini, 2003). That benefits of energy and utility sectors are seen exclusively for bidders could mean that acquirers in these mergers should exhibit high profitability and efficiently to fulfil governmental requirements and participate in a lengthy and costly merger process (Kiymaz and Baker, 2008).

The effect of the targets' size was not expected to be seen in the of increasing merger returns for the bidder. The studies we based our hypothesis upon held the agency view that acquisitions of large targets increase managerial entrenchment (Shleifer and Vishny, 1989). However, it seems that merger synergies are indeed the case in current wave. The acquisition of big firms signals an efficient adjustment of the company size to the changed economic environment (Coase, 1937; Muhlerin and Boone, 2000).

With respect to the theoretical underpinnings of the recent wave we think that synergy is the main motive as displayed by the positive combined merger gains, benefits of relative size, rewards of regulated M&A for bidders, and positive cross-border target returns. Also, the statistically not significant results point in this direction. One is profitability of the latter part of the wave for bidders which excludes the agency motive of empire-building (Moeller, et al., 2005) or resulting from hubris overpayment (Harford, 2005). Another is the positive effect of value-firm purchases which excludes the agency motive of buying growth targets in order to increase management entrenchment (Morck, et al., 1990) and growth-related compensation. The same effect implies synergistic gains from being able to improve the operations and management of low profit targets (Servaes, 1991).

We believe that our current findings can contribute to empirical research by determining the nature of the last eight years of M&A activity and checking which theoretical assumptions are still applicable to the current merger wave in Europe.

We also hope that the current study will be useful for practitioners to help them make investment decisions that maximise shareholder gains.

The only thing to keep in mind is the changing role of M&A return determinants which depend on the company location, legal origin, public status, and time period as demonstrated by the results of the sub-sample multivariate regressions.

Suggestions for future research and limitations

Due to the fact that the current wave is a recent phenomenon which is still in progress and because of the time, data and methodology limitations we leave many interesting questions to subsequent research:

Empirical questions:

- Is the stock payment effect in Europe indeed a matter of overvaluation or it is due to either overpayment or the price pressure effect? Overpayment could be proven by obtaining significant results on private M&A deals by the same public acquirers who acquire listed companies as was performed in the US by Fuller (2005). The price pressure effect (Mitchell et al., 2004) could be established by analysing short sales of acquirers stock in fixed-ratio mergers in the month following the announcement. We had this in mind, yet short interest for Europe was impossible to find via the EUR resources as well as the Bloomberg database.

There are series of effects that seem to be in play in the recent European wave according to abnormal return calculations and univariate t-tests, but which did not show statistical reliability in OLS regressions:

- Why same deals result in different effect for targets and their buyers? The deals that seemingly lead to target gains and buyer losses are cross-border acquisition and English legal origin. The distribution of gains is reversed in regulated industries, where buyers gain and targets have been seen to have negative returns.
- Why bidder and target shareholders react to the industry M&As in opposite order. The most profitable industries for targets are manufacturing, services, retail, banking and energy. Yet for buyers this ranking is reversed to energy, services, manufacturing, banking and retail.
- What is the cause of negative returns in the retail industry in this wave compared to its success in the previous wave (Goergen and Renneboog, 2004)?
- Why does the French legal system continue to hamper returns as it has for decades in exact conformity to LaPorta's (1998) classification, and is there any corporate control progress at all?
- What are the reasons of the rise of the Scandinavian region, which has announcement effects higher than those in the highly-praised English investor protection system (Campa and Hernando, 2004; La Porta, 1998; Martynova and Renneboog, 2006) and why banking merger returns in this area had a positive effect throughout the whole wave including the sub-prime crisis?
- Lastly, the study of the theories of merger effects in private target acquisitions similar to the one done by Faccio et al., (2006) for the US market, as well as finding and explaining such mergers' determinants would be very welcome in the European terrain as well.

Data availability

- The study could not cover the entire population of European mergers between 2003-2008 due to the market price and market value data availability in databases used
- The comparison of hostile and friendly acquisitions was not performed due to the limited number of hostile deals (4) in our sample
- During sample selection it is very important to make a correct choice on how to select events so that they will represent the population of the M&A deals that we are interested in. Classical event studies (Brown and Warner, 1985) are performed on randomly selected samples that allow for the use of simple models to estimate abnormal returns such as market, market-adjusted and mean-adjusted models. In our study the limitations on the availability of SEDOLs, price and market value information, did not allow for random sample selection. Since we are also interested in the analysis of the specific groupings of firms (by industry, size, etc.), the use of simple methods may produce incorrect statistics and, as a result, wrong conclusions. However, in some cases these problems can be avoided by use of the non-parametric tests instead of simple t-tests (Ahern, 2008; Khotari and Warner, 2006).

Statistical aspects

- Violations of assumptions in event-study models, which mostly assume stationarity and normal distribution of returns. The distributions of cumulative abnormal returns were, in the strict sense, non-normal although not gravely so and not fully applicable for the usual transformations due to the negative values. This reflects the

general problem of the Gauss distribution which is rarely encountered in real life (see Taleb, 2007 for references). We had to compromise by using standard parametric test after the outliers were trimmed. An even better decision at that point would have been to apply non-parametric event study tests, which according to Campbell and Wasley (1996) are the most powerful test statistics for different test conditions such as multi-day event windows, events clustering and variance increase at the event day.

- The fundamental assumption of market efficiency in event studies (the fast and unbiased share price reaction) might not be true in real life
- The beta's in our study are supposed to remain constant, however new information about a merger might cause investors to reassess the riskiness of the participating companies due to expected changes in profitability, capital structure and assets.
- More advanced models, such as multifactor models (Fama-French three-factor, Carhart four-factor) or Generalized Autoregressive Conditional Heteroskedasticity Model (Bollerslev, 1986) might have produced more accurate results.
- Correct estimation of event windows to use as a benchmark has no single standard in the literature
- Valuation and accounting policy can cause problems in case of using MV/BV estimations

Methodological issues

The study did not consider the long-term returns and operating effects of mergers.

- Long-run returns are not covered due to the short historical period but, most importantly, because of their association with a number of methodological problems such as joint tests of abnormal returns and return models, skewness of share prices in the long-run, event overlapping and thin trading
- Accounting performance evaluation is absent as it is susceptible to manipulation by managers through accounting policies and earnings management and is difficult to compare. The inclusion of properly adjusted accounting measures could possibly improved the percentage of variance in the abnormal returns explained by the model

Comprehensiveness of research

- As event study methodology is based on share price reactions, the study did not cover the merger effects for private equity bidders. Besides the very very low number of such companies in the full population we got from Thomson Financial Database was quite strange, as some publications indicted that there funds were increasingly active in the current merger wave (Martynova, 2006; Kronimus, 2008).
- The cross border deals should ideally account for the differences in corporate law, governance, stock exchange regulations and accounting rules, which would fell beyond the time limits of the current study
- The challenges of negative or insignificant acquirer returns remain the a promising area for theoretical explanations.
- An ideal study of wealth effects should have combined many disciplines such as strategy, behavioural science, operations, corporate governance and cultural research.
- This study proved that mergers result in value creation in the capital markets, yet the real causes of the merger gains remain unknown
- The evidence that acquisitions continue to produce negative returns despite 30 years of studies probably means that acquisition performance is moderated by "variables unspecified in existing research" (King et al, 2004, p. 188)

Further research into such areas would bring fruitful results.

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Appendix 1 Data validation

Assumptions of parametric tests:

1. Normally distributed
2. Homogeneity of variance
3. Interval data
4. Independence

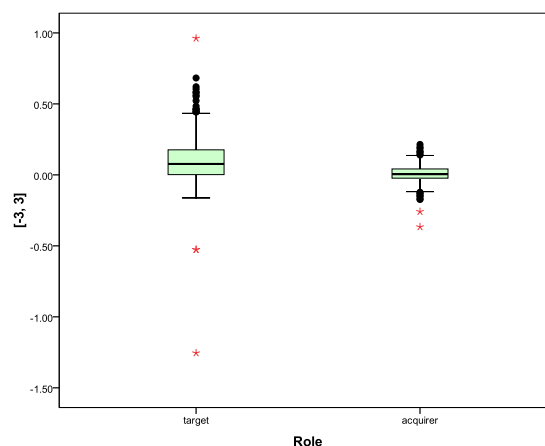


Figure 22 Box plot showing outliers in the abnormal returns for the period $[-3, 3]$ (targets and acquirers)

The effect of a few the outliers present in the sample shouldn't be underestimated, at least when using the multiple linear regression tool in SPSS v17.0. Sometimes outliers can make regression results difficult to interpret. An example is provided below. This should be done with a caution since, in some cases, an important effect in the sample can be simply missed. We used a semi-automated procedure by defining a macro in SPSS. The macro allows for the detection of outliers only for a selected set of cases (e.g. time window $[-3, 3]$, acquirers) based on the standard deviation of the data. After that, 99% winsorising was applied to each CAAR variable before regression was performed. After excluding outliers and missing data:

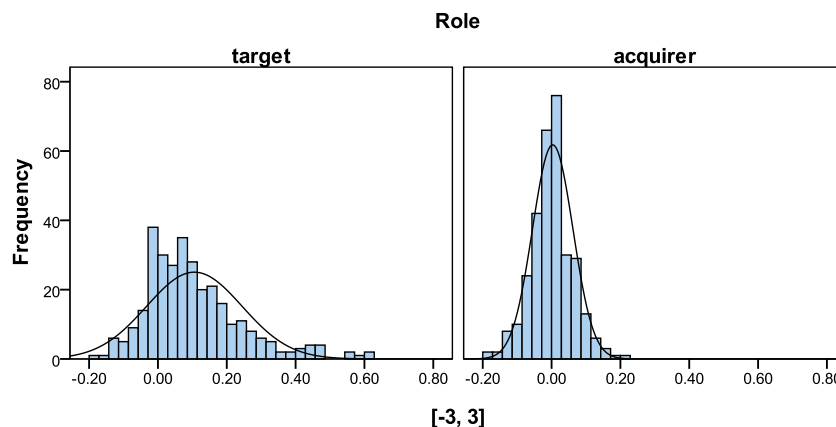


Figure 23 Histogram of abnormal returns for targets and acquirers and normal distribution line

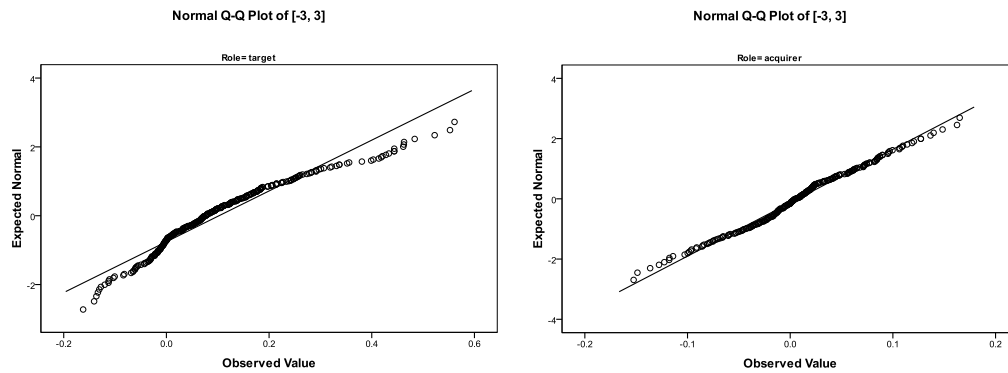


Figure 24 Normality check plots after winsorising, acquirers (left) and targets (right)

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Error	Kurtosis	Error	
Target	321	2.217	-1.255	0.962	0.103	0.182	0.033	-0.542	0.136	11.707	0.271	before correction
Acquirer	321	0.581	-0.366	0.214	-0.001	0.067	0.005	-0.491	0.136	3.333	0.271	
Target	312	0.792	-0.231	0.561	0.101	0.137	0.019	0.884	0.138	0.903	0.275	after correction
Acquirer	316	0.337	-0.172	0.165	-0.001	0.060	0.004	-0.078	0.137	0.378	0.273	

Figure 25 Descriptive statistics, before and after correction

Kolmogorov-Smirnov				Shapiro-Wilk			
	Statistic	df	Sig.		Statistic	df	Sig.
Target	.090	312	.000	Target	.948	312	.000
Acquirer	.062	316	.006	Acquirer	.992	316	.077

Figure 26 Test of normality (after correction)

Appendix 2 Multiple regressions by sub-sample

The values in each cell against the variables represent regression slope coefficients (above), and p-values (in *Italic* below).

Table 25 Regression results, Stock and Cash only, event window = [-3; 3]





Group	Variable	Targets		Acquirers	
		Paid by Cash	Paid by Stock	Paid by Cash	Paid by Stock
Regression	Intercept	0,054 <i>0,102</i>	0,067 *0,095	-0,023 *0,076	-0,006 <i>0,830</i>
Industry	Energy, Natural Resources and Utilities	0,055 <i>0,334</i>	-0,033 <i>0,542</i>	0,034 <i>0,192</i>	-0,001 <i>0,987</i>
	Manufacturing and Production	0,061 *0,062	-0,113 *0,037	0,017 <i>0,209</i>	-0,021 <i>0,503</i>
	Services	0,032 <i>0,333</i>	-0,071 <i>0,155</i>	0,061 ***0,000	-0,045 <i>0,217</i>
	Retail, Stores and Hotels	-0,020 <i>0,869</i>	0,026 <i>0,711</i>	0,034 <i>0,193</i>	-0,098 <i>0,130</i>
	Banking and Insurance	0,016 <i>0,646</i>	-0,017 <i>0,692</i>	0,008 <i>0,639</i>	-0,022 <i>0,483</i>
Location	Country, English	0,111 ***0,000	0,066 *0,064	-0,004 <i>0,790</i>	-0,021 <i>0,426</i>
	Country, Scandinavian	0,063 *0,052	0,090 *0,055	0,013 <i>0,368</i>	0,021 <i>0,509</i>
	Cross Border	0,013 <i>0,608</i>	0,004 <i>0,929</i>	-0,004 <i>0,717</i>	-0,028 <i>0,409</i>
Period	After Wave	0,013 <i>0,632</i>	-0,041 <i>0,270</i>	-0,007 <i>0,582</i>	0,001 <i>0,980</i>
Firm Characteristics	Relative Size ^a	-0,118 <i>0,298</i>	-0,107 <i>0,333</i>	0,128 ***0,014	0,073 <i>0,343</i>
	Target is Private		0,154 *0,058	0,076 <i>0,176</i>	0,082 <i>0,177</i>
Statistics	R ²	0,194	0,211	0,192	0,140
	R ² adjusted	● 0,107	● 0,050	● 0,104	○ -0,017
	F	2,238 ***0,022	1,311 <i>0,244</i>	2,181 ***0,021	0,890 <i>0,555</i>
	N	104	66	113	72

*, ** and *** denote significance at 10%, 5% and 1%

^a - transformed variable using LG10(X)

Table 26 Regression results, Domestic and Cross border, event window = [-3; 3]

The values in each cell against the variables represent regression slope coefficients (above), and p-values (in *Italic* below).

Group	Variable	Targets		Acquirers	
		Domestic	Cross border	Domestic	Cross border
Regression	Intercept	0,063 <i>**0,014</i>	0,033 <i>0,302</i>	0,004 <i>0,779</i>	-0,014 <i>0,321</i>
Deal Characteristics	Paid by Stock Only	0,037 <i>*0,071</i>	0,007 <i>0,741</i>	0,006 <i>0,648</i>	-0,012 <i>0,267</i>
	Paid by Cash Only	-0,009 <i>0,638</i>	-0,027 <i>0,486</i>	-0,017 <i>0,182</i>	-0,044 <i>**0,022</i>
Industry	Energy, Natural Resources and Utilities	-0,020 <i>0,571</i>	0,071 <i>0,236</i>	0,009 <i>0,678</i>	0,054 <i>0,114</i>
	Manufacturing and Production	0,020 <i>0,441</i>	0,104 <i>***0,001</i>	-0,006 <i>0,702</i>	0,027 <i>**0,038</i>
	Services	-0,015 <i>0,570</i>	0,070 <i>*0,036</i>	0,000 <i>0,982</i>	0,045 <i>***0,008</i>
	Retail, Stores and Hotels	-0,005 <i>0,897</i>	0,032 <i>0,694</i>	-0,016 <i>0,467</i>	0,011 <i>0,680</i>
	Banking and Insurance	-0,004 <i>0,874</i>	0,048 <i>0,115</i>	-0,009 <i>0,564</i>	0,009 <i>0,546</i>
Location	Country, English	0,038 <i>*0,052</i>	0,106 <i>***0,001</i>	-0,019 <i>0,125</i>	-0,002 <i>0,918</i>
	Country, Scandinavian	0,048 <i>*0,079</i>	0,052 <i>*0,078</i>	0,008 <i>0,622</i>	0,011 <i>0,460</i>
Period	After Wave	-0,036 <i>*0,078</i>	0,033 <i>0,156</i>	-0,005 <i>0,695</i>	0,005 <i>0,656</i>
Firm Characteristics	Relative Size ^a	-0,064 <i>0,217</i>	-0,178 <i>*0,093</i>	0,051 <i>0,116</i>	0,025 <i>0,637</i>
	Target is Private	0,016 <i>0,715</i>		0,006 <i>0,844</i>	0,076 <i>0,173</i>
Statistics	R ²	0,099	0,239	0,052	0,163
	R ² adjusted	 0,033	 0,161	 -0,012	 0,076
	F	1,497 <i>0,130</i>	3,080 <i>***0,001</i>	0,810 <i>0,640</i>	1,868 <i>**0,046</i>
	N	177	120	192	128

*, ** and *** denote significance at 10%, 5% and 1%

^a - transformed variable using LG10(X)

Table 27 Regression results, Beginning and End of M&A wave, event window = [-3; 3]

Group	Variable	Targets		Acquirers	
		Before Wave	After Wave	Before Wave	After Wave
Regression	Intercept	0,019 0,399	0,082 **0,047	-0,006 0,609	0,019 0,482
Deal Characteristics	Paid by Stock Only	-0,019 0,312	-0,023 0,588	-0,026 ***0,008	-0,031 0,270
	Paid by Cash Only	0,029 *0,075	0,003 0,916	0,004 0,627	-0,036 0,125
Industry	Energy, Natural Resources and Utilities	0,025 0,471	-0,011 0,853	0,015 0,425	0,023 0,572
	Manufacturing and Production	0,075 ***0,001	-0,013 0,751	0,010 0,338	-0,006 0,833
	Services	0,033 0,137	-0,007 0,860	0,023 **0,046	-0,004 0,898
	Retail, Stores and Hotels	0,024 0,494		-0,013 0,449	0,015 0,745
	Banking and Insurance	0,036 0,102	-0,034 0,461	0,017 0,119	-0,063 ***0,019
Location	Country, English	0,071 ***0,000	0,001 0,980	-0,007 0,489	-0,025 0,270
	Country, Scandinavian	0,034 0,104	0,121 ***0,026	0,000 0,976	0,045 0,201
	Cross Border	0,017 0,277	0,060 *0,055	-0,007 0,387	0,014 0,499
Firm Characteristics	Relative Size ^a	-0,041 0,400	-0,216 *0,094	0,039 0,120	0,098 0,268
	Target is Private	0,031 0,622	-0,027 0,664	0,008 0,782	-0,014 0,745
Statistics	R ²	0,157	0,281	0,076	0,180
	R ² adjusted	● 0,110	● 0,147	○ 0,027	○ 0,035
	F	3,317 ***0,000	2,095 ***0,035	1,556 0,106	1,240 0,275
	N	226	71	239	81

*, ** and *** denote significance at 10%, 5% and 1%

^a - transformed variable using LG10(X)

Table 28 Regression results, acquirers of public targets and acquirers of private targets, event window = [-3; 3]

Group	Variable	1		2		3	
		public target	private target	public target	private target	public target	private target
Regression	Intercept	0,008 0,166	-0,035 0,505	0,006 0,312	-0,055 0,417	0,009 0,200	-0,014 0,541
Deal Characteristics	Paid by Stock Only	-0,028 ***0,003	0,102 0,231	-0,028 ***0,003	0,122 0,228	-0,030 ***0,002	0,007 0,809
	Paid by Cash Only	-0,005 0,548	0,095 0,427	-0,005 0,507	0,037 0,816	-0,005 0,539	0,037 0,434
Industry	Energy, Natural Resources and Utilities						
	Manufacturing and Production						
	Services						
	Retail, Stores and Hotels						
	Banking and Insurance						
	Regulated			0,006 0,443	0,078 0,556	0,005 0,556	0,037 0,378
Location	Country, English					-0,002 0,803	-0,123 *0,065
	Country, Scandinavian					0,007 0,497	0,221 ***0,021
	Cross Border					-0,008 0,315	
Statistics	R ²	0,031	0,295	0,033	0,361	0,038	0,979
	R ² adjusted	○ 0,024	○ 0,013	○ 0,023	○ -0,119	○ 0,018	● 0,927
	F	4,569 **0,011	1,046 0,417	3,238 **0,023	0,753 0,575	1,875 *0,085	18,702 *0,052
	N						

*, ** and *** denote significance at 10%, 5% and 1%

^a - transformed variable using LG10(X)

Table 29 Regression results for legal systems, event window = [-3; 3]

Group	Variable	Targets				Acquirers			
		English	Scandinavian	French	German	English	Scandinavian	French	German
Regression	Intercept	0,087 ** 0,044	0,014 0,870	0,091 *** 0,000	0,047 0,459	0,020 0,359	-0,062 0,114	0,009 0,504	-0,001 0,952
Deal Characteristics	Paid by Stock Only	0,055 0,233	-0,065 0,334	-0,026 0,198	-0,093 * 0,066	-0,031 0,176	-0,012 0,742	-0,020 0,116	-0,073 ** 0,027
	Paid by Cash Only	0,096 ** 0,038	0,008 0,862	-0,021 0,237	0,022 0,502	-0,009 0,690	0,016 0,563	0,001 0,935	-0,011 0,506
Industry	Energy, Natural Resources and Utilities	0,018 0,784	0,097 0,495	-0,018 0,588	0,000 0,999	0,025 0,513	-0,003 0,959	0,017 0,471	0,079 * 0,083
	Manufacturing and Production	0,016 0,745	0,228 *** 0,001	0,007 0,793	0,007 0,907	-0,037 0,155	0,028 0,391	0,028 * 0,077	0,007 0,743
	Services	0,016 0,745	0,100 0,127	-0,014 0,545	0,064 0,335	-0,010 0,657	0,022 0,541	0,009 0,654	0,027 0,317
	Retail, Stores and Hotels	0,115 0,104		-0,056 0,104		-0,052 0,149		0,001 0,957	
	Banking and Insurance	-0,048 0,458	0,178 ** 0,021	-0,019 0,385	-0,027 0,695	-0,023 0,441	0,037 0,375	-0,007 0,597	-0,014 0,590
Location	Cross Border	0,063 0,211	0,013 0,840	0,017 0,289	0,046 0,132	0,015 0,554	0,030 0,325	-0,014 0,195	-0,002 0,885
Period	After Wave	-0,049 0,262	0,064 0,336	-0,002 0,926	0,025 0,497	-0,018 0,420	-0,005 0,893	-0,002 0,895	-0,017 0,419
Firm Characteristics	Relative Size ^a	-0,240 * 0,075	-0,249 0,274	-0,121 ** 0,045	0,035 0,689	-0,019 0,806	0,269 ** 0,017	-0,016 0,690	0,074 * 0,078
	Target is Private	-0,118 0,391	0,176 0,216	0,089 0,154	-0,051 0,502	-0,133 * 0,077	0,189 ** 0,028	0,014 0,749	0,018 0,574
Statistics	R ²	0,362	0,457	0,110	0,217	0,171	0,390	0,079	0,157
	R ² adjusted	● 0,216	● 0,256	○ 0,029	● 0,077	○ 0,011	● 0,211	○ 0,000	○ 0,003
	F	2,477 ** 0,015	2,275 ** 0,044	1,355 0,203	1,553 0,145	1,068 0,403	2,177 ** 0,045	0,998 0,452	1,022 0,438
	N	60	38	132	67	69	45	140	66

*, ** and *** denote significance at 10%, 5% and 1%

^a - transformed variable using LG10(X)

Table 30 Detecting significant variables for different years and target/acquirers, event window = [-3; 3]

Group	Variable	Targets					Acquirers				
		2003	2004	2005	2006	2007	2003	2004	2005	2006	2007
Regression	Intercept	0,102 *** 0,012	0,092 *** 0,000	-0,042 0,431	-0,013 0,756	0,061 *** 0,030	-0,013 0,318		0,020 0,274	-0,027 ** 0,088	-0,005 0,818
Deal Characteristics	Paid by Stock Only	-0,034 0,370	-0,080 *** 0,035	0,025 0,516	-0,031 0,333	0,022 0,477			-0,029 ** 0,100	-0,042 *** 0,026	0,006 0,826
	Paid by Cash Only			0,081 *** 0,025	0,001 0,963				0,013 0,406		
Industry	Energy, Natural Resources and Utilities			0,081 0,254	0,058 0,253				0,021 0,477		0,027 0,448
	Manufacturing and Production	0,118 *** 0,006		0,095 *** 0,039	0,094 *** 0,015				-0,016 0,273	0,009 0,637	0,015 0,539
	Services	0,008 0,848	0,040 0,212	0,085 0,102	0,012 0,754		0,025 0,305			0,044 *** 0,021	
	Retail, Stores and Hotels	0,224 *** 0,026		0,066 0,304	-0,017 0,748		-0,115 *** 0,035		-0,019 0,458	0,024 0,387	0,024 0,566
	Banking and Insurance			0,068 0,153	0,034 0,421		0,040 0,104			0,015 0,462	-0,043 *** 0,065
Location	Country, English	0,022 0,663		0,104 *** 0,002	0,057 0,148				-0,024 0,141		0,008 0,686
	Country, Scandinavian	0,038 0,394		-0,027 0,630	0,077 *** 0,029	0,091 ** 0,074				-0,025 0,221	0,072 *** 0,025
	Cross Border	-0,052 0,202		0,032 0,338	0,035 0,183	0,042 0,174			-0,035 *** 0,024	0,016 0,277	-0,011 0,540
Firm Characteristics	Relative Size ^a	-0,310 *** 0,027		-0,072 0,526	0,105 0,271	-0,167 0,168	0,096 0,134		0,083 ** 0,084	0,081 0,129	0,098 0,228
Statistics	R ²	0,300	0,125	0,325	0,339	0,168	0,159		0,240	0,239	0,248
	R ² adjusted	● 0,173	○ 0,087	● 0,173	● 0,194	○ 0,105	○ 0,095		● 0,128	● 0,126	● 0,120
	F	2,361 *** 0,033	3,348 *** 0,044	2,142 *** 0,034	2,334 *** 0,021	2,670 *** 0,042	2,464 ** 0,056		2,134 *** 0,048	2,119 ** 0,050	1,939 ** 0,066
	N	52	49	60	61	57	56	55	62	62	62

*, ** and *** denote significance at 10%, 5% and 1%

^a - transformed variable using LG10(X)

Note, that the regressions shown in Table 30 were performed using a stepwise regression algorithm which is frequently criticised in the literature. The main problem is that the algorithm works by performing a series of F-tests to control exclusion of the variables but, as the F-tests they are carried out on the same data so the tests are biased. On the other hand regression results seem to repeat most significant effects happening during a specific year, see aggregated CAAR on Figure 27 and Figure 28 (e.g. negative returns for retail acquirers in 2003, highest beta for English target companies in 2005).

In order to catch all effects, a more detailed analysis has to be performed.

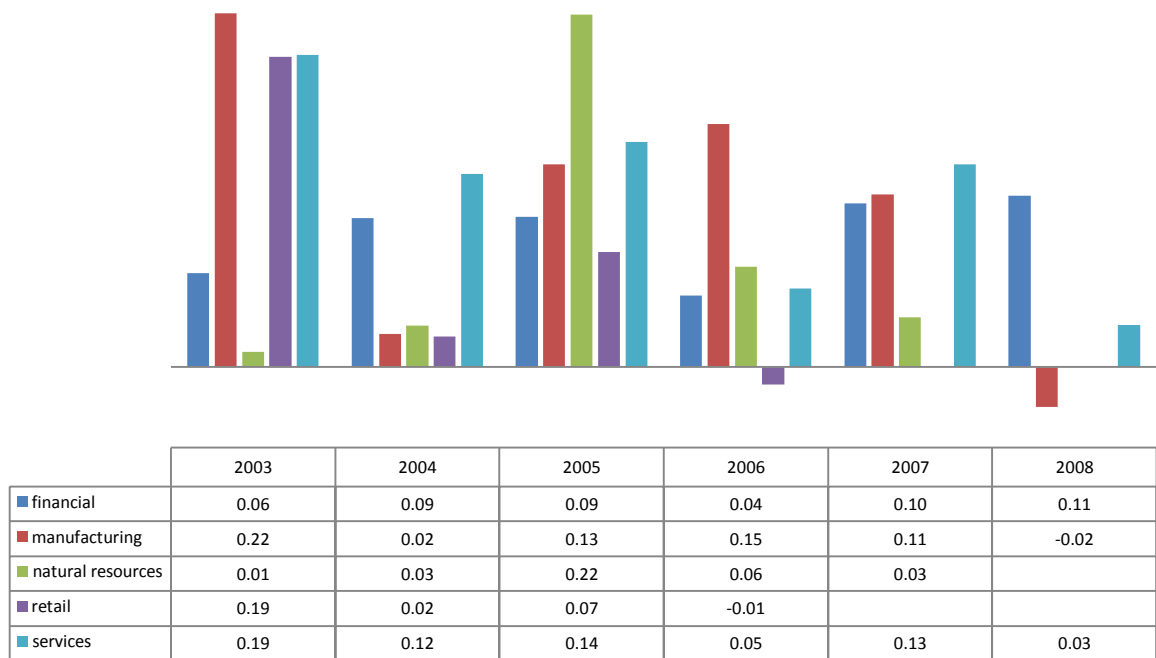


Figure 27 Average industry CAAR [-3; 3] for targets during 2003-2009

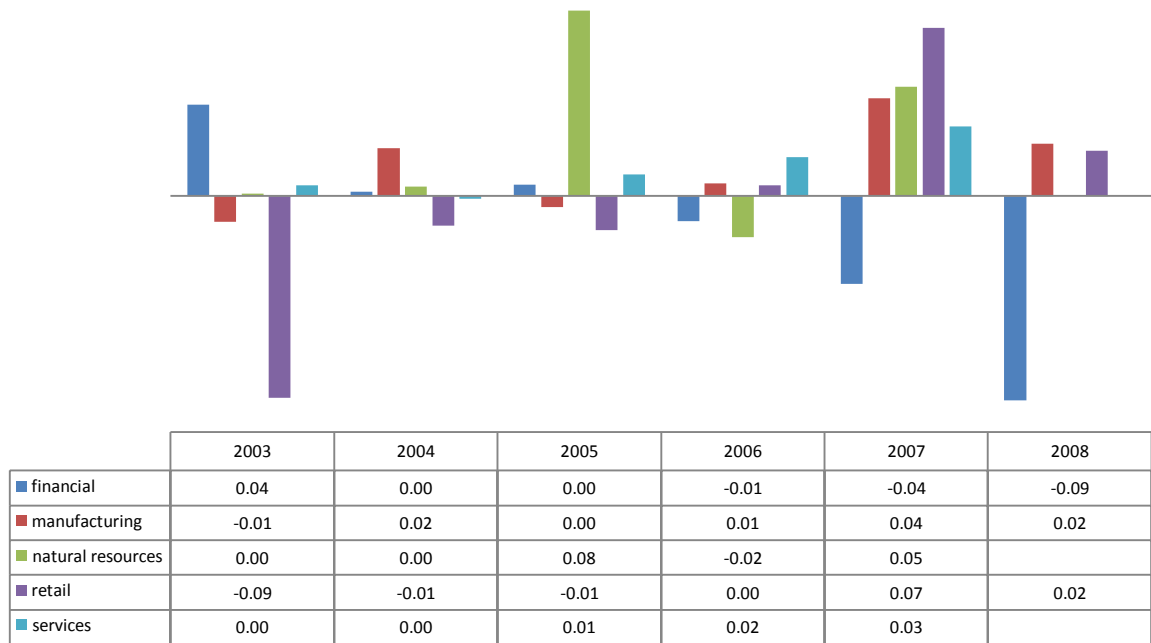


Figure 28 Average industry CAAR [-3; 3] for acquirers during 2003-2009

Appendix 3 Wave description

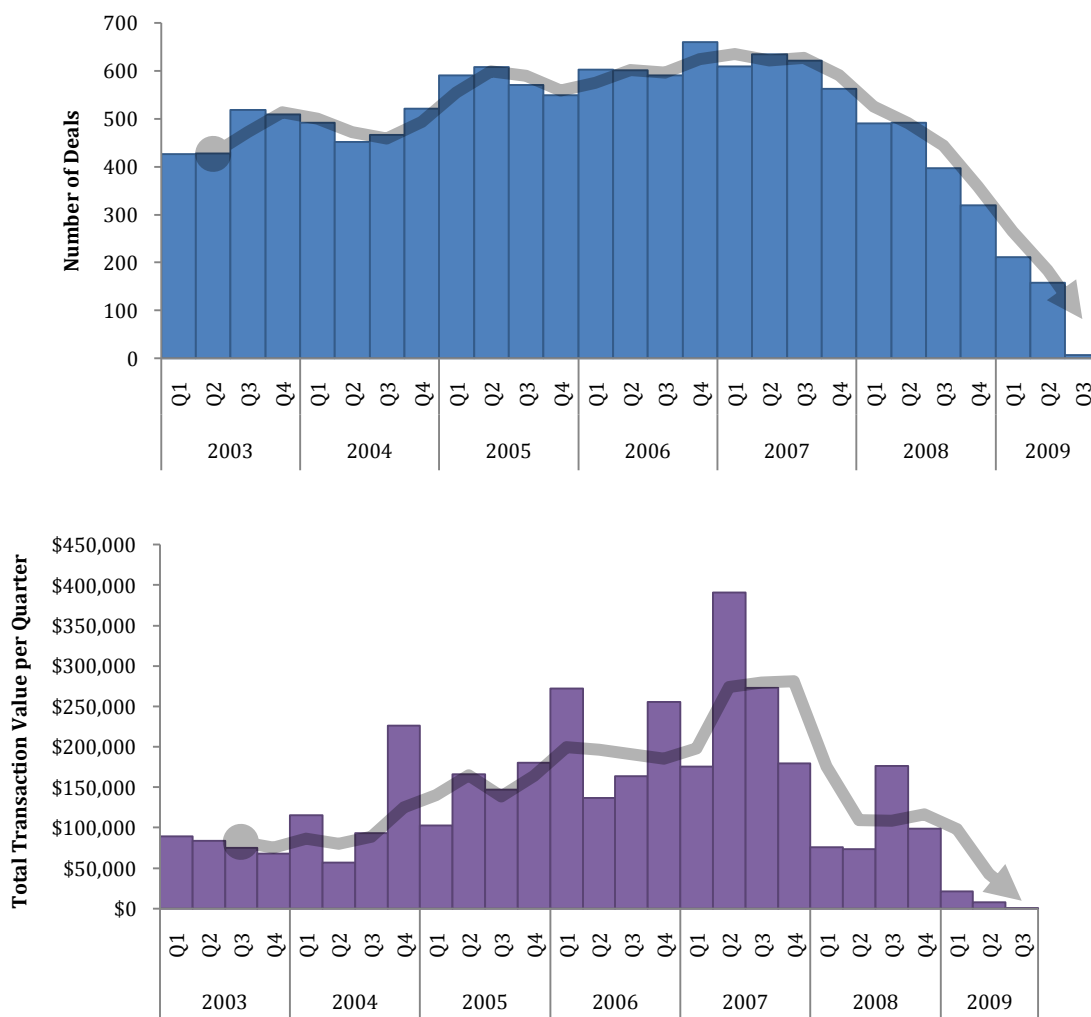


Figure 29 Total number of deals and aggregated deal value during 2003-2009, (Thomson Online)

Table 31 Annual deal value and number of deals³

	Deal Value (mln.)	Count
2003	€275,159	1881
2004	€391,360	1932
2005	€481,685	2319
2006	€648,147	2456
2007	€724,043	2429
2008	€293,769	1699
2009	€21,724	375
Grand Total	€2,835,886	13091

³ The table was created using only deals where deal value is present in Thomson Online database

Table 32 Number of deals in the wave per category

	Cash Only	Stock Only	Friendly	Hostile	Neutral	Public Target	Private Target	Domestic	Crossborder
2003	770	80	4402	2	150	276	2123	3247	1330
2004	706	77	4914	1	171	199	2602	3696	1430
2005	1009	87	5810	3	218	320	3339	4111	1969
2006	976	101	6188	0	195	295	3666	4360	2069
2007	974	79	6752	1	156	335	4239	4572	2367
2008	795	51	5819	2	80	214	3666	4041	1884
2009	196	21	2136	0	40	42	1236	1632	548
Grand Total	5426	496	36021	9	1010	1681	20871	25659	11597

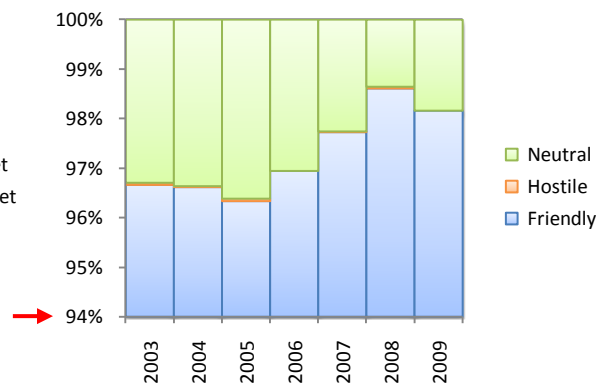
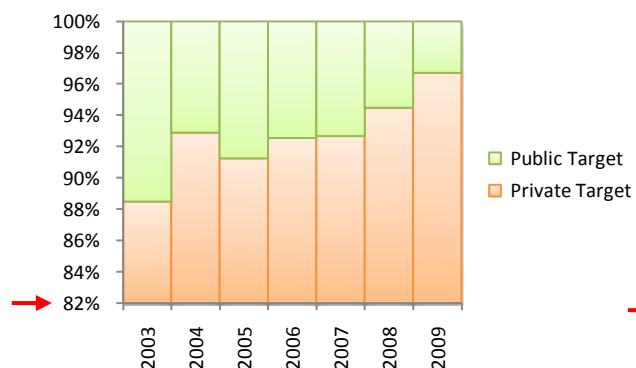
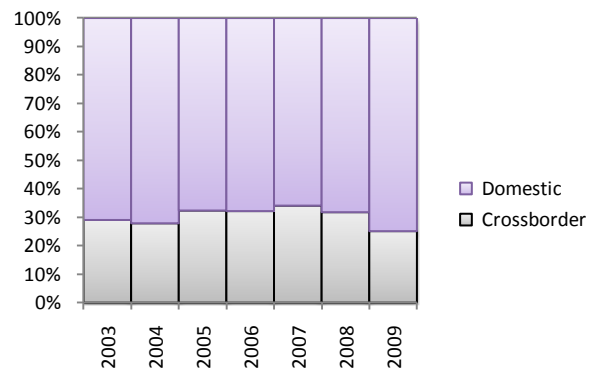
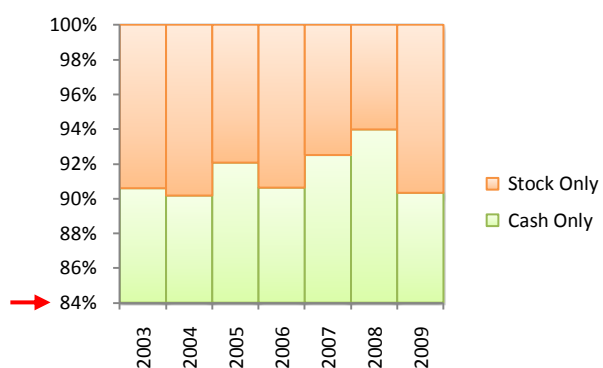


Figure 30 Percentage of the deals in the wave per category

Table 33 Number of deals (left) and annual deal value (right) grouped by year and country

	Targets				
	english	french	german	scandinavian	Grand Total
2003	1688	1533	810	527	4558
english	1566	112	56	27	1761
french	63	1299	69	31	1462
german	31	88	663	21	803
scandinavian	28	34	22	448	532
2004	1765	1674	917	743	5099
english	1664	118	60	46	1888
french	45	1434	90	37	1606
german	34	83	739	29	885
scandinavian	22	39	28	631	720
2005	1992	2089	1089	878	6048
english	1816	154	80	49	2099
french	79	1775	114	33	2001
german	48	96	843	41	1028
scandinavian	49	64	52	755	920
2006	2027	2248	1158	941	6374
english	1846	128	97	61	2132
french	91	1978	146	42	2257
german	48	84	859	21	1012
scandinavian	42	58	56	817	973
2007	2196	2403	1164	1106	6869
english	1973	168	101	62	2304
french	111	2042	145	50	2348
german	56	126	877	34	1093
scandinavian	56	67	41	960	1124
2008	1688	2225	997	962	5872
english	1475	109	57	42	1683
french	121	1950	110	45	2226
german	47	102	796	43	988
scandinavian	45	64	34	832	975
2009	531	869	414	346	2160
english	498	27	13	7	545
french	14	790	35	10	849
german	11	39	353	11	414
scandinavian	8	13	13	318	352
Grand Total	11887	13041	6549	5503	36980

Acquirers

Acquirers

Table 34 Number of cross-border/domestic deals grouped by year and country; targets (left) and acquirers (right)

	Domestic	Crossborder	Grand Total
Acquirers	2003	1323	3240
	english	360	1404
	french	449	1015
	german	298	505
	scandinavian	216	316
	2004	1423	3684
	english	391	1502
	french	458	1151
	german	310	575
	scandinavian	264	456
	2005	1956	4104
	english	492	1611
	french	665	1341
	german	394	635
	scandinavian	405	517
	2006	2035	4352
	english	500	1639
	french	768	1492
	german	359	656
	scandinavian	408	565
	2007	2327	4563
	english	580	1738
	french	817	1535
	german	468	627
	scandinavian	462	663
	2008	1853	4037
	english	441	1251
	french	703	1531
	german	344	645
	scandinavian	365	610
	2009	537	1628
	english	94	453
	french	196	656
	german	132	282
	scandinavian	115	237
	Grand Total	11454	25608

	Domestic	Crossborder	Grand Total
Targets	2003	1325	3241
	english	284	1410
	french	523	1011
	german	306	505
	scandinavian	212	315
	2004	1422	3684
	english	268	1501
	french	523	1152
	german	342	577
	scandinavian	289	454
	2005	1957	4105
	english	386	1614
	french	753	1338
	german	457	636
	scandinavian	361	517
	2006	2053	4352
	english	402	1637
	french	767	1489
	german	509	658
	scandinavian	375	568
	2007	2344	4565
	english	470	1740
	french	879	1526
	german	547	636
	scandinavian	448	663
	2008	1861	4037
	english	446	1253
	french	703	1530
	german	359	643
	scandinavian	353	611
	2009	540	1628
	english	81	453
	french	219	655
	german	131	283
	scandinavian	109	237
	Grand Total	11502	25612

Table 35 Number of deals per industry grouped by year and country

		Consumer Products and Services	Consumer Staples	Energy and Power	Financials	Government and Agencies	Healthcare	High Technology	Industrials	Materials	Media and Entertainment	Real Estate	Retail	Telecommunications	Grand Total
Targets	2003	557	423	190	483	3	197	583	733	373	424	170	286	144	4566
	english	281	120	60	188	3	68	197	226	106	183	75	148	39	1694
	french	148	196	66	168		62	174	246	147	142	54	74	57	1534
	german	62	67	33	95		46	127	165	78	57	15	41	25	811
	scandinavian	66	40	31	32		21	85	96	42	42	26	23	23	527
	2004	613	415	219	508	2	200	653	876	435	503	246	311	125	5106
	english	266	121	72	212	1	66	175	271	127	200	81	137	40	1769
	french	201	159	79	162	1	63	193	280	138	178	91	95	35	1675
	german	71	83	32	90		52	128	177	111	80	32	40	23	919
	scandinavian	75	52	36	44		19	157	148	59	45	42	39	27	743
	2005	830	510	247	470	5	281	748	1067	458	596	306	381	163	6062
	english	322	136	64	203	1	95	209	294	127	224	107	169	49	2000
	french	270	226	89	157	2	81	244	366	169	199	107	113	68	2091
	german	120	80	58	76	1	63	138	246	99	91	50	51	20	1093
	scandinavian	118	68	36	34	1	42	157	161	63	82	42	48	26	878
	2006	915	457	261	478	1	331	740	1174	448	595	482	373	150	6405
	english	372	117	73	186		99	231	305	102	249	115	152	38	2039
	french	266	213	105	166	1	97	266	426	176	195	165	118	62	2256
	german	155	70	44	88		76	123	238	105	82	118	40	28	1167
	scandinavian	122	57	39	38		59	120	205	65	69	84	63	22	943
	2007	1027	514	283	502	6	347	791	1245	509	633	479	413	160	6909
	english	417	138	89	199	4	109	229	363	131	234	99	159	39	2210
	french	301	223	98	184	2	129	262	407	203	240	167	136	53	2405
	german	150	78	52	71		64	139	233	93	81	129	63	30	1183
	scandinavian	159	75	44	48		45	161	242	82	78	84	55	38	1111
	2008	862	406	272	533	2	299	669	1175	433	506	304	329	108	5898
	english	305	72	68	221		84	214	288	106	155	58	103	25	1699
	french	308	223	131	187	1	103	203	416	171	189	136	125	40	2233
	german	124	55	38	73		63	147	227	79	80	47	52	17	1002
	scandinavian	125	56	35	52	1	49	105	244	77	82	63	49	26	964
	2009	331	144	110	161	2	117	264	369	156	239	94	148	33	2168
	english	117	31	18	65	1	25	67	63	28	56	18	36	9	534
	french	123	75	54	40	1	52	93	139	65	105	51	69	7	874
	german	44	22	26	27		27	58	86	32	41	18	27	6	414
	scandinavian	47	16	12	29		13	46	81	31	37	7	16	11	346
	Grand Total	5135	2869	1582	3135	21	1772	4448	6639	2812	3496	2081	2241	883	37114