

M&A in Europe 2000-2007: Layoffs and Their Impact on Post-acquisition Performance

A study of the mediating effect of workforce reductions on the relationship between acquisition premiums and post-acquisition performance

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ABSTRACT

The purpose of this thesis is to examine whether information regarding layoffs as a result of mergers and acquisitions can be used to explain acquirers' post-acquisition performance. I predict that high acquisition premiums result in workforce reductions and that the latter thus lead to lower post-acquisition performance of the new combined firm. This is in line with the growing interest in HR-related theories according to which laying off employees is commonly seen as a fast way of reducing costs, although this strategy is not automatically beneficial. 102 acquisitions made by European firms in the period 2000-2007 are analyzed in order to establish whether the mentioned determinants of post-acquisition performance are statistically significant. This is not found to be the case. Using a four-step mediation model and controlling for eleven other explanations, results suggest that I cannot conclude that workforce reduction plays a mediating role in the hypothesized negative relationship between acquisition premiums and post-acquisition performance; rather other deal-specific characteristics may be regarded as better determinants of post-acquisition performance.

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1. Introduction

In recent decades, many companies have been tempted by the often very promising prospects of achieving growth through mergers and acquisitions (M&As). European firms were for a while not as enthusiastic about this so called *inorganic* path of growth as their US and UK counterparts, but this attitude changed dramatically when M&A activity peaked for European firms in the remarkable merger wave of the 1990's (Martynova and Renneboog, 2006). European M&A even reached levels similar to those observable on the US market. The most commonly cited reasons for this are the introduction of the Euro, globalisation, technological advances, deregulation and privatisation, as well as the favourable state of the financial markets in the 1990's (Martynova and Renneboog, 2006). Growing by engaging in M&A-activity seems to be a trend that is here to stay, although the European M&A-market was slightly cooler in 2004 before peaking again in 2007 (Reuters).

An interesting observation is that the type of M&As that are nowadays pursued has shifted from involving diversifying or conglomerate M&As to being composed of mainly related acquisitions in which the merging firms operate in the same or very similar industries. However, this phenomenon has been suggested to often result in the payment of high acquisition premiums (purchase price over the acquired firm's market value) (Sirower, 1997), leading to the reduction of workforce (Hayward and Hambrick, 1997 and O'Shaughnessy and Flanagan, 1998). Indeed, research has indicated that many firms experience the pressure to compensate high premiums by gains from anticipated synergies, which are not always realized, leaving acquirers with the need for a faster way of reducing costs and achieving economies of scale – workforce reductions are often seen as the solution to this problem. However, laying off staff also means reducing an important source of competitive advantage (Pfeffer, 1994).

According to the dominating HR-theories, presented later in this study, the people in an organization are indeed becoming a more and more significant value-creating base and there is need for research on the topic of workforce reductions as a result of M&As and their effect on long-term post-acquisition performance (Cascio, 2002). Of course, certain types and certain amounts of layoffs may be necessary and helpful for increasing a firm's performance. However, the amount of staff needed to lay off in order to achieve these goals is difficult to estimate and firms often wish to be on the safe side and thus end up ignoring the many alternatives to laying off personnel. Indeed, as shall be discussed later in this paper, one can successfully downsize by

minimizing the number of employees that are dismissed (Allan, 1997). In order to achieve this goal, a careful rethinking of one's current HR-planning is required.

The above mentioned arguments lead me to the purpose of this study. First of all, I am conducting a study similar to the one described in Krishnan et al. (2007), where M&A's in the US are considered. However, I shall be concentrating on transactions made by European firms acquiring other European firms. The goal of this thesis is thus to examine whether workforce reductions mediate the relationship between acquisition premiums and post-acquisition performance.

The relevance of this study is twofold. First of all, I am conducting a study involving the application of HR-theories on post-acquisition performance in Europe, something that to my knowledge has not been done as of yet. Secondly, I am contributing to the research on determinants of post-acquisition performance, an area of research that is experiencing increasing importance given the growing popularity of achieving growth through M&As. Also, no study has to this date found an answer as to what actually characterizes good bidders and where the bad ones go wrong, which leaves this field open for suggestions.

The disposition of this study is as follows. First, I begin by introducing the theoretical background to the topic, which then leads me on to the development and formulation of my hypotheses. Further on, the research method employed (a four-step mediation model) is described and the results are presented and analysed. Finally, I present a critical discussion, suggestions for future research and finish with a short conclusion.

2. Theoretical Discussion

2.1. M&A and the creation/destruction of value

The literature on the topic of M&As has grown to become very rich, resulting in the demand for meta-studies that bring together other studies' results and give an overview of the most important and relevant research papers. Fridolfsson and Stennek (2005) have conveniently enough for all interested in such a study done that and present their main findings in a paper that summarizes the most significant conclusions so far on M&A and value-creation versus value-destruction.

According to the researchers, two main methods of examining the impact of M&As can be observed throughout the available empirical literature. One approach consists of *event studies*, in which stock prices before and after the announcement of a merger are considered. The second method involves analysing *accounting profits* a few years before and after a transaction has occurred. The main findings from event studies suggest that target shareholders benefit and those of the acquiring firms usually break-even. Regarding the studies using the second approach, a robust result is that the merging firm's profitability, compared to a control sample of firms from various industries, significantly declines upon engaging in an M&A activity.

Andrade, Mitchell and Stafford (2001) have performed a similar study to the one mentioned above. They, too, conclude that most event studies have shown that mergers do create value, but that most of the gains are captured by the target company. However, results from studies using the operating performance approach are not as homogeneous as those found in studies taken into account by Fridolfsson and Stennek (2005).

Indeed, two of the most influential papers arrive at contradicting conclusions. In a now classic article, Ravenscraft and Scherer (1988) use data on 2,732 lines of business, i.e. internal corporate business units, operated by U.S manufacturing corporations in order to examine post-acquisition performance. The main findings are that, in general, the profitability of acquired entities declined following mergers and that M&As thus destroy value on average.

The second study mentioned by Andrade, Mitchell and Stafford (2001) is a paper by Healy, Palepu and Ruback (1992) in which the researchers examine the post-merger operating performance for the 50 largest mergers between 1979 and 1984, relative to the industry median. Their conclusion is that merged firms show significant improvements in asset productivity relative to their industries. However, it is important to note that there is only a

relative operating performance improvement, since the study also mentions that the investigated firms' operating cash flows actually dropped from their pre-merger level on average, but that this drop was much more significant for non-merging firms in the same industry.

Should one conclude that M&As represent “wealth destruction on a massive scale?” In a paper with that precise title, Moeller, Schlingemann and Stulz (2005) find that acquiring-firm shareholders lose large amounts of money when their firms engage in M&A-activity. The event studies conducted by the researchers yield the result that each of these shareholders lost 12 cents per dollar spent on M&A transactions, totalling up to \$240 billion in losses for the recent merger wave in the period 1998-2001.

Finally, a third set of researchers composed of King, Dalton, Daily and Covin (2004) has perhaps studied the M&A phenomenon from the closest perspective of all. 93 empirical studies published between 1921 and 2002 are analysed, resulting in the taking into account of data on a total of 206 910 companies. These meta-analyses yield a robust result that, on average, acquiring firms' performance does not positively change as a function of their acquisition activity and is negatively affected to a modest extent.

2.2. In search of an explanation for acquirers' general performance decline

In the majority of the previously mentioned strands of literature, various explanations for why M&As reduce profits can be found. However, no completely satisfactory explanation has yet been proposed. The study by King et al. (2004) uses significant amounts of data in order to conclude that M&As, on average, do not create value, rather they seem to be destroying it to a modest extent. However, these are findings that can be extracted from numerous other studies. What is much more interesting about the paper by King et al. (2004) is the exploration of possible explanations for acquirers' profit drop and performance decline.

King et al. (2004) bring together all explanations encountered throughout their meta-analyses of 93 other studies. Unfortunately, they find that none of the available conditions significantly explain what impacts post-acquisition performance. The resulting cumulated data is analysed by the means of meta-regressions, or the aggregation of results across various studies, in the hope of obtaining the true link between two variables in the population, i.e. the revelation of which conditions characterize “good” versus “bad” bidders (King et al., 2004). However, the main findings of this extensive meta-analysis are rather disappointing. King et al. do find that post-

acquisition performance is moderated (a *moderator variable* being a variable that affects the relationship of the dependent and independent variables), but the variables remain unknown.

In light of the above, one can conclude that M&A-literature has grown to become very extensive, but still leaves us without a clear idea as to what characterizes “good” bidders and where the “bad” ones go wrong. Has one perhaps considered the wrong types of explanations? Are there any left to analyse? In the next section, I present the main theories on M&A and overpayment.

2.3. Systematic overpayment as a common theory

In the following, I present a strand of literature that proposes that acquirers on average overpay. Roll (1986) suggests that *hubris* is what explains why firms engage in M&A activity. In other words, managers make wrong evaluations of potential targets, but when the evaluation is above the true (unobservable) value, they proceed with the transaction and refrain from doing so when their evaluation is below the true value. After empirically testing this hypothesis on U.S. takeovers, Roll (1986) ends up with findings consistent with the extreme (or strong-form market efficiency) version of the hubris hypothesis, i.e. there are no synergistic gains from M&As and the acquisition premium paid by the acquirer is entirely transferred to the acquired firm. However, these results are not confirmed by all researchers. Berkovitch and Narayanan (1993), as well as Firth (1990), find evidence of the moderate version of the hubris hypothesis.

Many acquisitions are made as a result of calculations indicating that a deal has potential to create large amounts of *synergy* (Hitt et al., 2001). Commonly speaking, synergy occurs when the combined effect of two or more combined forces or agents is larger than the sum of that of each unit. In the context of M&As, the term applies to the achievement of cost reductions or revenue enhancement as a result of merging with or buying another company, achievements that would have been lower on a stand-alone basis, for example. The main sources of synergistic gains or additional value after an M&A-transaction are the increase in operational efficiency, the increase in market power and various forms of financial gain (Seth et al., 2000). Synergy can also be derived from the transfer of intangible assets between merging firms, for example know-how and other resources that are more difficult and costly to acquire from traditional factor markets (Caves, 1982).

High acquisition premiums are often paid as a result of bidding firms counting with a great amount of potential synergies. However, higher premiums require higher returns, in order for the costs of the acquisition to be covered. Acquiring firms will often end up in a *synergy trap*

(Sirower, 1997). Hitt and Pisano (2003) show that even the lowest acquisition premium can be considered to be too high if the planned synergies do not appear. In a study using data on 168 mergers between larger companies, Mueller and Sirower (2003) reject their prediction that M&As create synergistic gains for their full sample and for every identified subsample. They only find support for their hypothesis on synergistic gains for mergers involving firms in one single industry studied. Acquiring firms understanding that they have overpaid or face the risk of not profiting from a recent M&A-transaction, may look for the fastest, simplest and most extensive way of reducing costs (the other type of synergy being revenue enhancement, which is often much more difficult to implement in the short run) (Carey, 2000; Krishnan et al., 2007). Sometimes assets of the target firm are sold off, but this strategy is rarely profitable since the market value of those separate assets often turns out to be below the value had they remained in the buyer's portfolio (Krishnan et al., 2007).

2.4. A link between the acquisition premium and workforce reductions?

It can be a difficult task translating potential future benefits into a concrete figure, but buyers need to do this in order to know what amount to add to the valuation of the target as a stand-alone company – it would otherwise not be easy to justify why a particular level of acquisition premium was chosen. After finally having decided to complete a certain M&A transaction, acquiring firms hope that the valuation that this decision is based on represents as close a reflection as possible of the target's company true value, plus the true value of potential synergies that can be achieved together.

Unfortunately for many firms having engaged in M&A activity during the last decades, research suggests that there is a negative relationship between premiums paid and post-acquisition firm performance (for example Datta et al., 1992; Haunschild, 1994; Hayward and Hambrick, 1997; Varaiaya and Ferris, 1987). What is more, research also suggests that paid acquisition premiums have on average been very high, between 40 and 50 percent (Haunschild, 1994; Hayward and Hambrick, 1997). Indeed, Sirower (1994) finds that paying high acquisition premiums can be devastating since this actually impacts post-acquisition performance negatively, showing that these premiums inversely affect firm performance up to four years after the transaction has taken place.

What is the cause behind this high rate of acquiring firms experiencing the *Winner's Curse* (the fact that one has won a bid only because one overpaid) (Christofferson, 2004)? Literature on the matter offers no concrete explanation yet, but researchers have been particularly interested in

the synergy theory explained earlier in this paper, i.e. the idea that potential synergies are not realized upon completion of an M&A-deal, which would decrease the merged firm's operating performance. Hayward and Hambrick (1997) propose that potential gains from synergies are overestimated as a result of managerial hubris. In a study of 106 large acquisitions, the authors find strong indicators of CEO hubris that are to a large extent associated with the levels of acquisition premiums. The logic that stems out of this thought is that paying a high premium increases the pressure experienced by the buyer to achieve high returns to shareholders that more than cover acquisition costs (Krishnan et al., 2007).

So what strategies do firms mainly employ in order to reduce costs quickly than slowly? A popular alternative is reducing the workforce in the merged firm (Jensen, 1991; Johnson et al., 1993; Nixon et al., 2004; Useem, 1993; Zuckerman, 2000; Vaara et al., 2005). Nixon et al. (2004) confirm observations made by Cascio (2002) and explain this phenomenon in the following way:

"Downsizing¹ occurs even more frequently in difficult economic times because of firms' desire to reduce expenses; human capital costs are variable expenses that are more easily reduced"

(Cascio, 2002).

The arguments presented above lead me to the following hypothesis:

Hypothesis 1: In an M&A-deal, the acquisition premium and post-acquisition workforce reductions in the merged firm are positively related.

2.5. A link between workforce reductions and post-acquisition performance?

In the previous section, I discussed the possible link between high acquisition premiums and subsequent post-acquisition workforce reductions. I shall now examine what previous HR-related literature offers in terms of an answer to the question of whether these workforce reductions have an impact on post-acquisition firm performance and, if they in fact do, whether this effect is of harmful or of beneficial nature.

¹ "Downsizing is the 'conscious use of permanent personnel reductions in an attempt to improve efficiency and/or effectiveness' (Budros 1999)

2.5.1. A new source of competitive advantage?

“Human resources” (HR), “people”, “employees” – these are terms that have experienced an increasing presence in studies exploring what makes a company better than the rest. In a now classic book, Pfeffer (1994) concludes that firm characteristics that used to be regarded as the main sources of competitive advantage are no longer relevant. These sources of sustained success included: product and process technology; protected and regulated markets; access to financial resources; and economies of scale. However, the conditions under which these characteristics were able to give firms a competitive advantage have changed dramatically – the pace of technological innovation has speeded up remarkably and the business environment is no longer the same. Regarding those firms who do experience a competitive advantage - where does it nowadays come from? According to Pfeffer (1994), a significant shift has occurred towards the role played by a company’s workforce and how it is managed. Developing good HR-strategies can help firms create something that is hard to imitate by competitors and can thus enhance firm performance. Pfeffer (1994) recommends the following:

“Achieving competitive success through people (...) means achieving success by working with people, not by replacing them or limiting the scope of their activities. It entails seeing the work force as a source of strategic advantage, not just as a cost to be minimized or avoided.”

(Pfeffer, 1994)

However, Pfeffer’s way requires investments that probably will not be visible in the short-run. The author explains that for firms who want to cut costs fast, there are many other alternatives. One of these is laying off people, an action that can appear profitable in the very short-run, but that will disappear once the firm approaches the long-term horizon, a phenomenon that is discussed in the next section.

2.5.2. Layoffs and key indicators of firm performance

Rather than focusing on the positive outcomes of a strategy that involves investing in one’s employees, other researchers have chosen to study the negative impact of layoffs on firm performance. One of these studies is Brockner et al. (2004). One of the main findings is an explanation of the rationale behind decisions to layoff workers. Namely:

“By reducing costs, executives hope to improve firm profitability. And yet studies show that the effects of layoffs on organizational performance are mixed at best, often, though not always, failing to produce the desired improvements.” (Brockner et al., 2004)

Cascio (1993), also shows that six months to a year after a downsizing, key indicators often do not improve: expense ratios, profits, return-on-investment to shareholders, and stock prices. In a study conducted 1991 and involving 1005 companies, Cascio finds that not more than 46 percent of the firms respond that downsizing by laying off personnel has allowed them to reduce expenses in the longer term. One of the explanations for this is the fact that four out of five companies admitted to having replaced personnel that was originally dismissed. Furthermore, less than one out of three firms responded that their profits had increased as much as they had predicted and merely 21 percent replied that overall firm performance had improved as a result of layoffs. These results indicate that laying off employees often leads to other actual results than the ones that had been predicted.

2.5.3. The *tacit knowledge* theory

Knowledge, present within human assets, can be found at the group, organization, and network levels and is often “bundled” with other resources (Nonaka, 1994). It is therefore not easy to acquire in traditional factor markets (Kogut & Zander 1992, Liebeskind 1996, Mowery et al., 1996). Knowledge-based assets, as well as *tacit knowledge* (as opposed to explicit knowledge that can easily be written down or transferred verbally to another person) are therefore often the key motivation behind corporate acquisitions (Barney 1988, Chi 1994, Haspeslagh and Jemison 1991).

Knowledge is also a key factor in explaining firm performance (Prahalad and Hamel 1990). It is therefore important for firms to identify key employees with the most knowledge and ability to create value. This can, however, be a difficult task since knowledge-based assets are harder to assess than tangible assets (Chi, 1994). When laying off people, there is a chance that valuable human capital that could have helped enhance firm performance is lost. This may occur even when downsizing is done due to a firm having high slack, redundancies and double tasks after an M&A-deal (Love & Nohria, 2005), since information asymmetries make it difficult to successfully pick the right people to let go (Jemison & Sitkin, 1986; Pound, 1992 and Useem, 1993).

2.5.4. The *merger syndrome*

Brockner et al. further investigate the consequences of layoffs and present a set of interesting findings indicating that workforce reductions as a consequence of M&As also have negative effects on those employees that have *not* lost their jobs. Indeed, these “survivors” are found to exhibit reduced organizational commitment or job performance. They are also found to

experience various stress reactions due to the dealing with worst-case rumours and the mourning of a “corporate death”, in line with Marks’ and Mirvis’ (1986) “merger syndrome” (a set of symptoms describing the many negative employee reactions to M&As). Cascio (1993) finds perhaps even more worrying results, indicating that following a downsizing, surviving employees become narrow-minded, self-absorbed, and risk averse.

2.5.5. Finding alternatives to layoffs by conducting the right HR-planning

According to Allan (1997), many companies fail since they do not realize that downsizing can be done while minimizing the amounts of employees to lay off. Indeed, numerous firms could avoid the unintended consequences of layoffs (such as costs of training the “survivors” and losses related to their decrease in efficiency, loss of sales because of short staffing, paying for early retirements or resignations, etc.) by reconsidering certain aspects of their HR-strategies. Allan (1997) points out that layoffs are too often the consequences of management problems, rather than employee problems. However, many negative consequences can be avoided by planning and thinking about the following: being careful about adding permanent employees; using overtime when the workload increases temporarily, training current staff and creating multiple skills for other possible future tasks, which creates flexibility and may decrease the number of required employees; outsourcing certain functions and bringing them back in-house when the core business slows down in order to prevent layoffs; increasing seasonal employment that can easily be let go without this affecting the permanent staff (Allan, 1997). The arguments presented above suggest that laying off employees does not automatically improve key indicators of firm performance in the long run and perhaps only in the *very* short run, according to a previously mentioned study of 1005 companies having dismissed personnel in order to downsize (Cascio, 1993). Firms can successfully downsize without laying off large amounts of employees if they carefully reconsider their current HR-planning (Allan, 1997). Furthermore, workforce reductions may lead to unproductive and unmotivated “survivors”, as well as the loss of key personnel bringing valuable assets such as tacit knowledge and a sense for the company culture with them. With this in mind, I propose the following hypotheses:

Hypothesis 2: There is a negative relationship between workforce reduction in the merged firm and post-acquisition performance.

Hypothesis 3: Workforce reduction is a partial mediator in the relationship between the acquisition premium and post-acquisition performance of the merged firm. In other words, the higher the premium paid, the higher the workforce reduction and the lower the post-acquisition performance of the new combined firm.

3. Summary of hypotheses

In the previous section, three hypotheses were formulated. Namely the following:

Hypothesis 1: In an M&A-deal, the acquisition premium and post-acquisition workforce reductions in the merged firm are positively related.

Hypothesis 2: There is a negative relationship between workforce reduction in the merged firm and post-acquisition performance.

Hypothesis 3: Workforce reduction is a partial mediator in the relationship between the acquisition premium and post-acquisition performance of the merged firm. In other words, the higher the premium paid, the higher the workforce reduction and the lower the post-acquisition performance of the new combined firm.

A word of caution

So far, I have mostly stressed previous studies' findings related to the negative effects of workforce reductions on long-term performance. However, it is important to note that certain types and certain amounts of layoffs may be necessary and helpful for increasing a firm's performance. Indeed, horizontal and other related acquisitions, characterized by involving firms of same or similar businesses, may require laying off staff in order for overlapping areas to disappear and for operational synergies to realize thus allowing for economies of scale (Conyon et al., 2002 and O'Shaughnessy and Flanagan, 1998). Indeed, two merging firms may not need to each keep their customer service department, rather some parts of the sum of the two departments may be enough to keep, anything else would be redundant or superfluous. However, layoffs need not be the only way of downsizing (Allan, 1997), as demonstrated earlier, and trying to cut costs after M&As by laying off employees is not automatically beneficial. Krishnan et al. (2007) predict in their study that uses data on 174 US transactions that workforce reductions partially explain why high acquisition premiums lead to lower post-acquisitions performance. Their findings indicate that workforce reductions do not *partially* mediate, rather they *fully* explain the observed negative relationship between premiums and post-acquisition firm performance (statistically significant at the 0,05 level) and that reducing the workforce by 3,5% leads to a performance drop of 1,4 units.

4. Data and sample

The majority of the initial data was collected from the Thomson Reuters Securities Data Corporation (SDC) Platinum Database on International Mergers (IMA). The sample period selected was 2000-2007 and the transactions of interest were those made by European publicly traded firms buying other European firms.

The criteria above left a dataset containing information on a total of 964 transactions. In order for the interpretation of the data on workforce reductions to be correct, only transactions that had been reported as completed and where 100% of the target's shares were owned after the deal had been closed were included. Furthermore, only deals with a minimum value of \$10 million were considered, since acquisition premiums and integration concerns often are more substantial in these cases (Sirower, 1997). Next, those firms that had acquired one or more additional firms during the two years following the year studied were excluded. This was done in order to be certain that layoffs were not due to multiple acquisitions (Krishnan et al., 2007).

Furthermore, firms operating within certain industries had to be eliminated as their types of assets and risk preferences differ from industries in which firms make longer-term investments and plan to integrate acquisitions into their businesses (Krishnan et al., 2007). The excluded firms were thus mostly financial institutions and real estate actors. A list containing the sectors from which transactions were eliminated from the dataset can be found in the appendix of this paper. The action of removing deals involving acquirers (and targets) within the sectors listed above left 178 transactions.

The SDC database was able to provide the following information:

Transaction information: the announcement date, the value of the transaction, the acquisition premium, whether it was a cross-border or related acquisition, the attitude (friendly, neutral or hostile), the number of acquirer advisors, the number of bidders, the type of payment (cash, stock or a combination of the two) and whether the deal began as a rumour.

Acquirer/target information: company name, industry sector, nation, net sales and net income prior to the acquisition and number of employees prior to the acquisition.

Combined firm (post-acquisition) information: net sales and net income one and two years after the acquisition and number of employees.

Since the dataset obtained from SDC contained some missing values, these were collected from other databases. Zephyr and Mint Global were used in order to find information regarding the revenue and the number of employees of the combined firm after the acquisition.

The sample period of 2000-2007 was chosen for a number of reasons. At first, I considered including data from previous years, for example 1992-1998 as in Krishnan et al. (2007). However, this would have reduced the comparability of the results, since the latter period was one of intense M&A activity, both in the US and in Europe reaching a peak in 1999 (according to Merger Stat Review) and the period that I ultimately chose was one of slightly less activity (Thomson Financial). Although the period 2000-2007 cannot be characterized as completely stable, given the slowdown during 2001-2003 and the subsequent period of growth lasting until the end of the sample period (2007), one year before the culmination of the global financial crisis, there is more stability within this period than between the two mentioned ones (Swedish National Institute of Economic Research). My final decision was based on the wish to include more recent data, and choosing to study deals that had only taken place in the 1990's would have contradicted this approach. In order to deal with the fact that the sample period was not one of complete stability, a control variable was used as an attempt to correct as extensively as possible for the impact of an economic boom or bust on the findings. This control variable is further explained in the next section.

Table 1. Summary of data criterions

<i>Data criterion</i>	<i>Nr. of Transactions left after correcting for a certain criterion</i>
Purchase of European firms by European publicly traded firms in the period 2000-2007	964
Transactions reported to be completed and 100% ownership of target's shares upon completion of deal	
Minimum transaction value of \$10 million	
Serial acquirers excluded	
Financial institutions and real estate actors as acquirers excluded	178
Transactions with missing data (after retrieving as much of this data as possible from other sources) excluded	102

The complete dataset allowed me to obtain the necessary primary variables, as well as the control variables. These are further explained in the next section.

Variable definitions

4.1. Primary variables

Independent variable (time t): Four-week acquisition premium

The acquisition premium was defined as the percentage difference between the price paid by the acquirer for purchasing the target firm and the market estimate of the target's value four weeks before the announcement date of the deal. The market value of the target firm corresponded to its market capitalization, i.e. the trading price of the target's stock multiplied by its number of shares outstanding. The purchase price for acquiring the target was provided by the SDC Database. Transactions made with only cash, only stock and a combination of the two were included, which that was corrected for by using a control variable for the type of payment (see corresponding section below). In M&A research, a four-week period is commonly employed in an attempt to as much as possible take into account the price per share of the target before any information regarding the deal has leaked (Krishnan et al., 2007). This approach is in accordance with those frequently used in other studies on the topic of M&A's and acquisition premiums (for example Haunschild, 1994; Hayward and Hambrick, 1997; Sirower, 1997; Slusky and Caves, 1991). The four-week acquisition premium is computed by the SDC database as follows:

$$Premium = \frac{Purchase\ price - Value\ of\ target\ before\ acquisition}{Value\ of\ target\ before\ acquisition}$$

Mediating variable (up to time t + 1): Workforce reduction in the merged firm

The mediating² variable represented by the workforce reduction in the merged firm was computed in a similar fashion as in Krishnan et al. (2007). The authors used two different ways of calculating the workforce reduction. First, they collected information regarding layoff announcements from large national newspapers such as the Wall Street Journal and calculated the ratio of this number to the total workforce in the merged firm. Secondly, the authors obtained data on the total numbers of employees of both the acquiring and the acquired firm in the year prior to the acquisition and of the combined firm one year after the acquisition. I began searching for layoff announcements in large European newspapers, but soon discovered that a large share of the data that I required was not to be found this way. The second approach proposed by Krishnan et al. (2007) allowed me to obtain more complete information, since data on total employment by publicly traded companies and was easily retrieved from company

² For a detailed explanation of the role of a mediating variable, see section 6.

annual reports. Furthermore, Krishnan et al. (2007) discovered no disadvantage in using this method, on the contrary, since the correlation between the workforce reduction variables obtained when first using the one approach and then the other revealed to be positive ($r = 0,33$ significant at $p < 0,01$). Consequently, I used the data provided by various databases to calculate the workforce reduction in the merged firm according to the following formula:

Change in workforce:

$$= \frac{\text{Nr. of employees in combined firm} - \text{Nr. of employees in target and in acquirer before}}{\text{Nr. of employees in target and in acquirer before}}$$

Dependent variable (time $t + 2$, $t + 3$): Post-acquisition performance

The post-acquisition performance was calculated for the combined firm resulting from the acquisition as the two-year average return on sales (ROS), in accordance with previous studies (Hitt et al, 2001) and using the following formula:

$$\text{Return on Sales} = \frac{\text{Net income}}{\text{Sales revenue}}$$

Using ROS, or the *operating profit margin*, as an indicator of post-acquisition performance was deemed as appropriate because it does not take into account any changes in firms' assets or amount of equity, which are both often heavily impacted and sometimes oddly valued after an acquisition has taken place (Hitt et al., 2001). Furthermore, ROS is regarded as a relevant post-acquisition performance measure in the context of M&A's, synergies and workforce reductions as it captures actual performance conditions as opposed to merely expectations by investors (Krishnan et al., 2007). Additionally, this accounting-based measure was chosen over market measures such as bidder stock returns since it is less sensitive to business cycle variations (observed within the sample period chosen as explained earlier) and market information asymmetries, and is a reflection of how effectively internal resources are used by the combined firm (Krishnan et al., 2007).

4.2. Control variables

Prior performance of acquiring firm

In order to control for the possible impact of the acquirer's pre-acquisition performance, a control variable was used – namely the two-year average ROS (see section on dependent variable for definition and reason for usage) for the acquirer prior to the acquisition. Other

studies have indicated that firms that perform badly before an acquisition are more likely to lay off employees in order to cut costs once the deal has taken place (John et al., 1992; O'Shaughnessy and Flanagan, 1998).

Prior performance of target firm

Acquiring firms that observe bad pre-acquisition performance within target firms are more likely to lay off employees once the combined firm has been formed (O'Shaughnessy and Flanagan, 1998). The two-year average ROS prior to the deal was used as a controlling variable for the prior performance of the target firm.

Relative organizational size

A control variable was introduced in order to control for the effect of the relative organizational size. Indeed, studies have shown that when the acquirer and the target are of similar size there are larger redundancies and often activities that need not be performed twice in the context of one single combined firm, which increases the chances of workforce reductions taking place (Haspeslagh and Jemison, 1991; Hitt et al., 2001). Relative organizational size is measured in the following way:

$$\text{Relative organizational size} = \frac{\text{Acquirer revenues at time of acquisition}}{\text{Target revenues at time of acquisition}}$$

Relatedness

Similarly to the case described above in which the acquirer and the target are of comparable sizes, a high degree of relatedness of the two firms' business activities suggests a higher chance to find redundancies that need to be eliminated and a wish to capture the post-acquisition economies of scale in the combined firm, both of which often lead to workforce reductions (Capron, 1999). I used the approach that has figured in many previous studies, consisting in measuring as 1 if the two firms were denoted as related by the SDC database and 0 if otherwise (Krishnan et al., 2007).

Cross-border versus non cross-border acquisitions

The data used contained deals made by European firms acquiring both domestic and foreign target firms. Of the 102 total transactions, approximately 37 percent were cross-border acquisitions. Since studies have shown that post-acquisition performance can be affected by

the deal being a cross-border one or not (for example Morosini et al., 1998), a control variable taking the value of 1 for cross-border acquisitions and 0 for the opposite case was introduced.

Type of payment

A variable was introduced in order to control for the type of payment, taking the value of 1 when the deal was entirely financed with cash and 0 for cash/stock combinations, in accordance with other studies (for example Brown and Ryngaert, 1991; Kesner et al., 1994). Indeed, it has been noted that paying with cash, as opposed to with stock, often leads to larger workforce reductions (Hitt et al., 2001). This is mostly due to the fact that the cash involved often stems from debt and stock is often used when the acquirer is optimistic with regards to growth prospects (Martin, 1996).

Leverage

The cost of debt has been found to impact firm performance (Hitt et al., 1998). Management may experience pressure to restructure in order for the firm in question to be able to pay high interest expenses, for example (Haynes et al., 2003). Jensen (1991) suggests that workforce reductions commonly occur as a result of firms needing cash to pay back debt. Consequently, leverage was controlled for – measured as the ratio of debt over equity of the combined firm in the year of the acquisition and based on data provided by the SDC database. This approach is in accordance with the one employed in Hitt et al. (2001).

Number of bidders

Several previous studies suggest that the number of bidders may impact the post-acquisition performance of the combined firm, as well as the potential layoffs (for example Beckman and Haunschild, 2002). Regarding the effect of the number of bidders on the acquisition premium paid, numerous researchers have found that the impact of a premium is unrelated enough of the number of bidders to exhibit separate effects (Sirower, 1997). A control variable was introduced represented by the number of bidders for an acquisition, based on the information provided by the SDC database.

Number of acquirer advisors

With M&A advisory becoming an increasingly popular and lucrative business, many researchers have in recent years begun to find interest in studying the effect of employing

advisors on post-acquisition performance. Kale et al. (2003) find that hiring M&A consultants can indeed create more value for the buyer and help avoid making bad deals. In order to correct for the impact of the presence of acquirer advisors, a variable was introduced represented by the number of advisors hired by the buying company.

Deal attitude

A control variable taking the value of 1 for friendly or neutral acquisitions and 0 for hostile acquisitions was introduced. A hostile acquisition or takeover is defined as a deal where the target firm's management does not approve of the deal. It was deemed as reasonable to control for the deal attitude as hostile takeovers may allow the acquirer to cut costs by laying off employees in a much smoother and faster way if workforce reductions occur at all, not bothering to consult with the target's management first.

Boom or bust

Since the sample period chosen (2000-2007) contained both periods of "boom" and of "bust", this needed to be corrected for, the main reason being that post-acquisition performance, computed as the return on sales (ROS) would very likely be affected by changes in the business cycle, and thus not only by the variables acquisition premium and workforce reduction, as proposed by the hypotheses. The approach proposed by Goergen and Renneboog (2003) was used – i.e. a dummy variable was introduced taking the value of 1 if the average of the two years³ following the announcement date was characterized by periods of economic boom and taking the value of 0 in the opposite case (economic bust). Statistics obtained from the Swedish National Institute of Economic Research (NIER) allowed to determine the business cycle tendency during each year of the sample. The "confidence indicator" provided by NIER showed the average perception of the business cycle situation by the actors of the entire Swedish economy having responded to an inquiry. Since European business cycles can be regarded as highly similar and synchronized (Bergman, 2004), Swedish data was deemed to be representative of the business cycle situation in the whole of Europe as well.

³ Instead of a "boom or bust" dummy variable corresponding to the year during which a certain acquisition was announced, the average of the two years following the announcement date was used. This was done in order for the effect of the economic cycle on post-acquisition performance (measured as the average two-year ROS) to be corrected for.

5. Descriptive statistics and sample characteristics

Table 2. Descriptive statistics for variables used in the analyses (N=102)

<i>Variable</i>	<i>Mean (standard deviation)</i>
Acquisition premium	0,39 (0,33)
Change in workforce	0,13 (0,58)
Post-acquisition performance of merged firm	0,03 (0,08)
Prior performance of acquiring firm	0,02 (0,26)
Prior performance of target firm	0,02 (0,11)
Relative organizational size	7,92 (16,82)
Relatedness	0,18 (0,38)
Cross-border versus non cross-border acquisitions	0,40 (0,49)
Type of payment	0,51 (0,50)
Leverage	0,85 (0,99)
Number of bidders	1,11 (0,56)
Number of acquirer advisors	1,43 (0,75)
Deal attitude	1,00 (0,00)
Boom or bust	0,39 (0,49)

Comment:

In the dataset used, the average premium paid was 0,39, which corresponds exactly to the average that has generally been obtained in U.S. studies on acquisition premiums (for example Krishnan et al., 2007; Haunschild, 1994; Hayward and Hambrick, 1997). The standard deviation is 0,33, which is also consistent with the number that has often figured as the premium's standard deviation in the mentioned studies. A surprising observation is the figure corresponding to the change in workforce – there is no evidence of workforce reductions when looking at the sample as a whole and the number of employees has on average increased by 13 percent as a result of M&A-activity. This is in contrast with the findings in Krishnan et al. (2007) where the workforce is found to have decreased by 3,5 percent. Furthermore, I find that the post-acquisition performance measured as the two-year average ROS is better for the firms included in my study compared to the ROS obtained in Krishnan et al. (2007). Indeed, the average post-acquisition ROS that I find is 3 percent, while Krishnan et al. (2007) end up with a large negative number.

Table 3. Descriptive statistics of the primary variables for the quartile with the highest acquisition premiums (N=25)

<i>Variable</i>	<i>Mean (standard deviation)</i>
Acquisition premium	0,82 (0,21)
Change in workforce	-0,10 (0,50)
Post-acquisition performance of merged firm	0,02 (0,32)

Comment:

The table above shows descriptive statistics for the three primary variables employed in this study. This time, only one quartile of the total sample is considered, namely the upper quartile represented by transactions for which the highest acquisition premiums were paid. One notices that workforce reductions are present, as opposed to when the whole sample was analysed. The total workforce of the combined firm is found to have decreased by 10 percent on average. Furthermore, the post-acquisition performance (a ROS of 2 percent) for this group of transactions is slightly lower than for the whole sample where the two-year average ROS was found to be 3 percent.

Table 4. Correlation coefficients (N = 102)

	<i>Variables</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>
1	Acquisition premium	1												
2	Change in workforce	-0,19	1											
3	Post-acquisition performance of merged firm	0,04	-0,14	1										
4	Prior performance of acquiring firm	-0,04	0,05	0,05	1									
5	Prior performance of target firm	-0,01	-0,02	0,16	0,39***	1								
6	Relative organizational size	0,07	-0,03	0,15	-0,02	0,09	1							
7	Relatedness	0,15	-0,09	-0,05	0,02	0,21*	-0,05	1						
8	Cross-border versus non cross-border acquisitions	0,19	-0,28**	0,06	-0,07	0,13	0,19	-0,01	1					
9	Type of payment	0,24*	-0,23*	0,20*	-0,13	0,04	0,26**	-0,01	0,20*	1				
10	Leverage	-0,12	-0,07	0,02	-0,05	-0,10	-0,04	-0,05	-0,15	0,013	1			
11	Number of bidders	0,08	-0,04	0,01	0,01	-0,02	-0,04	0,42***	-0,09	-0,06	-0,04	1		
12	Number of acquirer advisors	-0,28**	0,03	0,01	-0,07	-0,05	-0,13	0,01	0,17	-0,27**	0,07	-0,11	1	
13	Boom or bust	-0,23*	0,27**	-0,07	-0,09	-0,11	-0,09	-0,00	-0,04	-0,30**	-0,02	0,10	0,26**	1

Notes: *p < 0,05, **p < 0,01, ***p < 0,001

Comment:

One notices that post-acquisition performance was not revealed to have a statistically significant relationship to workforce reduction, although the relationship observed (-0,19) was in the direction expected, as in Krishnan et al. (2007) where the corresponding number was found to be -0,41 and significant at the 0,001 level.

6. Method: Explanation of the four-step mediation model

The common definition of a *mediator variable* is that it is what explains the relationship between an independent variable and a dependent variable (MacKinnon, 2008). A mediation model uses the hypothesis that an independent variable affects a mediator variable, which in turn affects the dependent variable. These relationships are illustrated in the following figure:

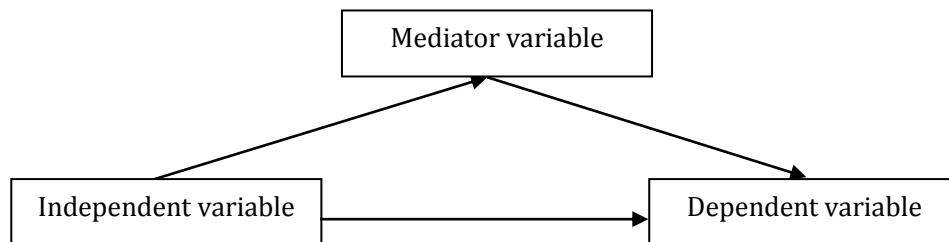


Figure 1. Illustration of the role played by a mediator variable

Inserting the relevant variable names for this study, as well as an illustration of the direct effect of the relation between the premium and the post-acquisition performance yields the following two figures:

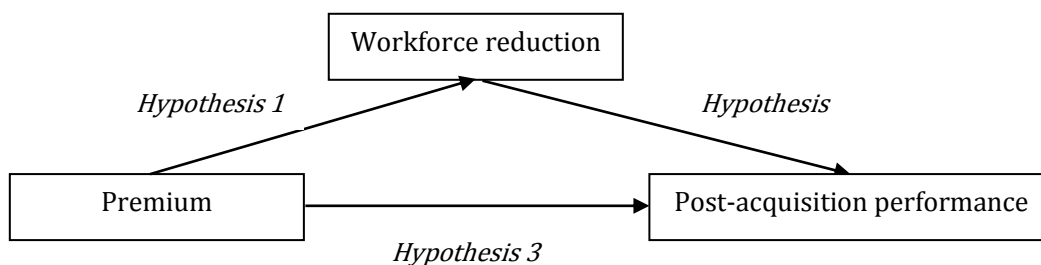


Figure 2. Illustration of the mediated relationship studied

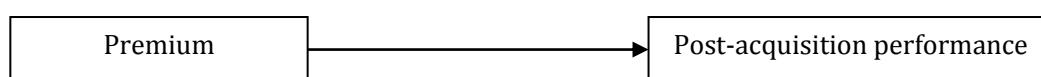


Figure 3. Illustration of the direct relationship studied

In order to find out whether workforce reduction mediates the relationship between the premium paid and the post-acquisition performance of the combined firm, as proposed in the

hypotheses, a four-step framework similar to the one presented in Krishnan et al. (2007) is used. Below is a description of the four steps followed and the method employed in each one of these.

Step 1

In this step, I am interested in finding out whether the acquisition premium has significant impact on post-acquisition performance in order to find out whether there is a direct relationship between the two variables. The method employed to investigate this potential link is performing an Ordinary Least Square regression with the following estimated linear equation:

$$Y = cX + \varepsilon_t \quad (1)$$

where:

Y is the post-acquisition performance of the combined firm

X is the acquisition premium paid by the acquirer

c represents the direct path between the premium and the post-acquisition performance, illustrated in figure 4 (see p.28)

Step 2

The second step of the mediation model involves examining whether the premium significantly impacts the potential mediator variable, i.e. workforce reduction. Here, the workforce reduction in the combined firm is the dependent variable and the acquisition premium is the independent variable. The following estimated linear equation is applied:

$$W = aX + \varepsilon_t \quad (2)$$

where:

W is the workforce reduction in the combined firm

X is the acquisition premium paid by the acquirer

a represents the path between the premium and the workforce reduction in the combined firm, illustrated in figure 4.

Steps 3 and 4

The third step of the model includes analysing the effect of the mediator variable, i.e. workforce reduction, on the dependent variable, represented by the post-acquisition performance in the

combined firm. The regression performed has post-acquisition performance as the dependent variable, and the acquisition premium and workforce reduction of the combined firm as independent variables or predictors. In the fourth and final step of the mediation model, I am interested in the potential impact of the acquisition premium paid by the acquirer on the post-acquisition performance of the combined firm, while controlling for the effect of the workforce reduction. The aims of both steps 3 and 4 are brought together in the following estimated linear equation:

$$Y = kX + bW + \varepsilon_t \quad (3)$$

where:

Y is the post-acquisition performance of the combined firm

X is the acquisition premium paid by the acquirer

W is the workforce reduction in the combined firm

b represents the path between the workforce reduction in the combined firm and the post-acquisition performance of the combined firm, illustrated in figure 4.

k represents the path between the premium and the post-acquisition performance of the combined firm (while controlling for the effect of the workforce reduction in the combined firm) illustrated in figure 4.

The mediation model described above is used in order to find out whether the workforce reduction in the combined firm mediates the relationship between the premium paid and the post-acquisition performance of the combined firm.

One can conclude that mediation exists if the path “c” representing the relation between the acquisition premium and the post-acquisition performance of the combined firm is less significant or not significant at all once path “b” (the path between the workforce reduction in the combined firm and the post-acquisition performance of the combined firm) and its respective regression coefficient is corrected for by using it as a control variable. The result of a successful mediation is path “k” in figure 4.

7. Results and Analysis

Tables 5 and 6 present the results from the mediated regression analysis.

Results exhibited in table 5

Model (1)

This model contains the results from the regression in which workforce reduction is entered as the dependent variable and all control variables are used as predictors. The adjusted R-squared value for this model is found to be 0,0996, meaning that the control variables are found to account for approximately 10 percent of the variance once the number of predictors is accounted for. The model is statistically significant at the 0,05 level since the p-value is equal to 0,0308. However, only two of the predictor variables entered into the model are revealed to have a significant relationship with workforce reduction. Indeed, the variable “cross-border versus non cross-border deals” has a significant relationship at the 0,1 level and the “boom or bust” predictor is significant at the 0,05 level. The remaining eight predictor variables do not have significant relationships with workforce reduction in the combined firm, which is in contrast to the expected effect after having researched previous studies’ main findings on the control variables included in this model.

Model (2)

The other section of table 5 presents the results from the regression in which workforce reduction is again the dependent variable, but in which both the control variables and the acquisition premium paid by the acquirer are now the predictors. There is no significant relationship between the acquisition premium paid and the workforce reduction in the combined firm, which indicates that there is no support for Hypothesis 1.

Hypothesis 1: In an M&A-deal, the acquisition premium and post-acquisition workforce reductions in the merged firm are positively related. REJECTED

Results exhibited in table 6

Model (3)

The results represent the outcome from the regression analysis in which the post-acquisition performance in the combined firm is treated as the dependent variable and the control variables and acquisition premium are entered as predictors.

Model (4)

This section of the table represents a test of both hypotheses 2 and 3. Post-acquisition performance is once again the dependent variable and the acquisition premium and control variables are used as predictors. The results do not reveal a statistically significant impact of workforce reductions in the combined firm on the post-acquisition performance at any of the levels investigated, i.e. 0,05, 0,01 or 0,001. These results indicate that there is no support for Hypothesis 2.

Hypothesis 2: There is a negative relationship between workforce reduction in the merged firm and post-acquisition performance. REJECTED

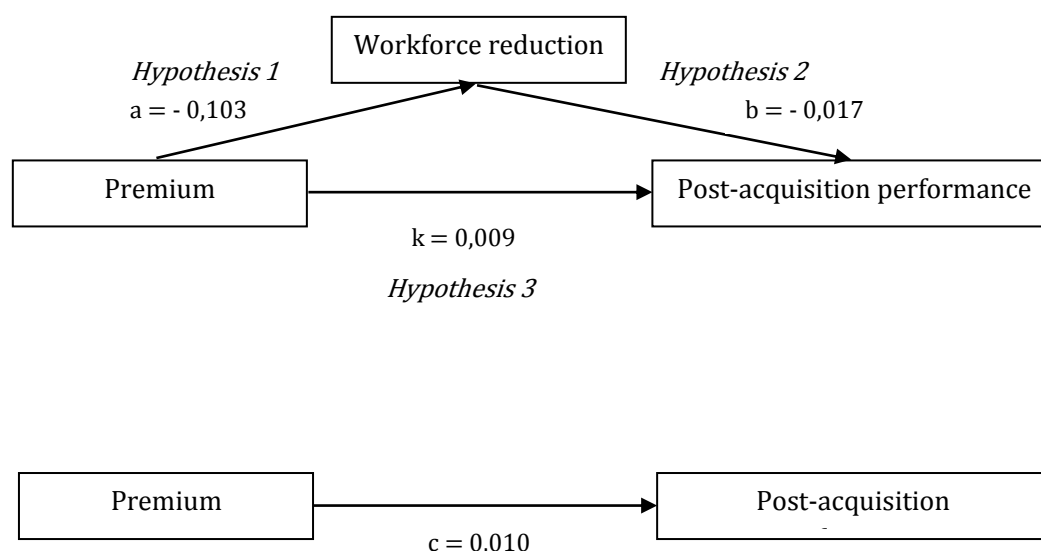


Figure 4. Mediation of workforce reduction on the relationship between the acquisition premium and post-acquisition performance of the combined firm statistically not significant at 0,05 level or less

Notes: * $p < 0,05$, ** $p < 0,01$, *** $p < 0,001$

Numbers represent unstandardized estimates from the regression analyses reported in tables 5 and 6.

In order to investigate whether the hypothesized mediation exists or not, the post-acquisition performance of the combined firm is regressed on the acquisition premium and all control variables.

If the mediation effect of workforce reduction is indeed significant, one would find that:

- 1) The relation between the acquisition premium and the post-acquisition performance without accounting for the workforce reduction in the combined firm, illustrated by path “c” in figure 4 is statistically significant; and
- 2) After adding the variable representing workforce reduction to the analysis, the relationship between the acquisition premium and the post-acquisition performance in the combined firm denoted by “k” in figure 4 is no longer significant due to the workforce reduction now being entered as a control variable correcting for its proven mediating effect. At the same time, paths “a” and “b” should remain significant.

The potential mediating effect of the workforce reduction in the combined firm has been tested in this study in order to establish whether the two conditions above are met or not. However, results from the regression analyses indicate that paths “a”, “b” and “c” are not significant. Neither is “k”, which is irrelevant since its insignificance would only be important had the remaining conditions indicated in 1) and 2) been met, i.e. had “c” been statistically significant, as well as “a” and “b”.

In order to further test for the potential statistical significance of the mediation by the workforce reduction variable, a Sobel-Goodman test for mediation was performed. Ideally, one wants to find that the mediator variable explains the relationship between the independent and the dependent variable as close to 100 percent as possible, which was not the case with the data employed in this study, since the Sobel-Goodman proportion of the total effect that is mediated was found to be close to 0.

The results indicate that I have no statistically significant evidence at the 0,05 level or less that the workforce reduction in the combined firm is a mediator variable in the relationship between the acquisition premium and the post-acquisition performance of the combined firm. Hypothesis 3 must therefore be rejected as well.

Hypothesis 3: Workforce reduction is a partial mediator in the relationship between the acquisition premium and post-acquisition performance of the merged firm. In other words, the higher the premium paid, the higher the workforce reduction and the lower the post-acquisition performance of the new combined firm. REJECTED

Table 5. Results of regression analysis (1) with workforce reductions as the dependent variable

<i>Predictor table 1</i>	<i>(Model 1) Control variables</i>		<i>(Model 2) Full model</i>	
		<i>t=</i>		<i>t=</i>
Intercept	0,3446 (0,2071)	1,66	0,3954 (0,2274)	1,74
Prior performance of acquiring firm	0,0497 (0,2297)	0,22	0,0484 (0,2306)	0,21
Prior performance of target firm	0,1795 (0,5632)	0,32	0,1460 (0,5687)	0,26
Relative organizational size	0,0023 (0,0034)	0,68	0,0023 (0,0034)	0,66
Relatedness	-0,1109 (0,1622)	-0,68	-0,0959 (0,1651)	-0,58
Cross-border versus non cross-border deals	-0,3395 (0,1211)	-2,80**	-0,3246 (0,1246)	-2,60*
Type of payment	-0,1330 (0,0562)	-1,07	-0,1263 (0,1253)	-1,01
Leverage	-0,0642 (0,0562)	-1,15	-0,0669 (0,0566)	-1,18
Number of bidders	-0,0695 (0,1097)	-0,63	-0,0690 (0,1101)	-0,63
Number of acquirer advisors	0,0022 (0,0813)	0,03	-0,0093 (0,0843)	-0,11
Boom or bust	0,2783 (0,1205)	2,31*	0,2686 (0,1222)	2,20*
Acquisition premium			-0,1031 (0,1870)	-0,55
R-squared	0,1887		0,1914	
Adjusted R-squared	0,0996		0,0926	
F value	2,12*		1,94*	
Prob > F	0,0308		0,0446	
N	102		102	

Notes. *p < 0,05, **p < 0,01, ***p < 0,001
Unstandardized estimates (standard errors)

Table 6. Results of regression analysis (2) with post-acquisition performance as the dependent variable

<i>Predictor table 2</i>	<i>(Model 3) Control variables</i>		<i>(Model 4) Full model</i>	
		<i>t=</i>		<i>t=</i>
Intercept	-0,0185 (0,0344)	-0,54	-0,0118 (0,0349)	-0,34
Prior performance of acquiring firm	0,0059 (0,0349)	0,17	0,0068 (0,0348)	0,19
Prior performance of target firm	0,1272 (0,0860)	1,48	0,1297 (0,0859)	1,51
Relative organizational size	0,0005 (0,0005)	0,93	0,0005 (0,0005)	1,00
Relatedness	-0,0254 (0,0250)	-1,02	-0,0271 (0,0250)	-1,08
Cross-border versus non cross-border deals	-0,0061 (0,0188)	-0,32	-0,0116 (0,0195)	-0,60
Type of payment	0,0318 (0,0189)	1,68	0,0297 (0,0190)	1,56
Leverage	0,0022 (0,0086)	0,26	0,0011 (0,0086)	0,13
Number of bidders	0,0125 (0,0167)	0,75	0,0113 (0,0167)	0,68
Number of acquirer advisors	0,0126 (0,0127)	0,99	0,0124 (0,0127)	0,98
Boom or bust	-0,0021 (0,0185)	-0,12	0,0024 (0,0189)	0,13
Acquisition premium	0,0103 (0,0283)	0,36	0,0086 (0,0283)	0,30
Change in workforce			-0,0170 (0,0159)	-1,07
R-squared	0,0895		0,101	
Adjusted R-squared	-0,0217		-0,0202	
F value	0,8		0,83	
Prob > F	0,6351		0,6159	
N	102		102	

Notes. *p < 0,05, **p < 0,01, ***p < 0,001
Unstandardized estimates (standard errors)

8. Critical discussion and suggestions for future research

In the section of this thesis concerned with the development of the hypotheses, I argued that value-creation through the means of engaging in M&A activity is often a great challenge for firms that decide to pursue the path of inorganic growth. Indeed, an extensive study conducted by King et al. (2004) involving data on more than two hundred thousand transactions undertaken during 1921-2002 showed that acquiring firms' performance on average does not positively change as a function of their acquisition activity, and is negatively affected to a modest extent. With this in mind, I further argued that paying a high acquisition premium is perhaps what can explain non-satisfactory post-acquisition performance, as proposed in Hitt and Pisano (2003) where the authors find that even a small acquisition premium can cause damage if the predicted synergies do not appear. Finally, I argued that a consequence of this is reducing the workforce in the combined firm in the hope of cutting costs fast (Nixon et al., 2004), which however destroys even more value since this undertaking will not lead to longer-term improvement for the acquirer, rather the victims of layoffs will take with them much of the value-creating potential (Krishnan et al., 2007).

Three hypotheses were thus formulated and the thesis had set out on a mission to investigate whether workforce reductions could indeed be regarded as a mediating variable in the relationship between acquisition premium and post-acquisition performance of the combined firm. The results, however, revealed no statistically significant evidence on the 0,05 level or less of the suggested links, which is explained in greater detail in the results section where I present all findings and all steps of the four-step framework for mediation testing employed.

The lack of statistically significant results lead me to ponder about what could have been done differently in terms of data collection and methodology in order to obtain other, more satisfactory results. One of the most important and most obvious issues is that of the limited data set. Namely, complete data was obtained on 102 transactions, which is less than the 174 acquisitions studied in Krishnan et al. (2007), a similar study conducted on the US market where significant findings are presented. Indeed, the paper confirms a positive relationship between the acquisition premium and the workforce reduction and finds that the mediating effect of workforce reduction is significant, explaining the negative effect of acquisition premiums on post-acquisition performance. Since I chose the whole of Europe as the market of interest, a greater number of transactions would perhaps have been preferable. Furthermore, the sample period of 2000-2007 was in retrospective rather limited and, most importantly, was not

completely stable in terms of business cycles, which may have impacted the results. An attempt was made, however, to correct for this by the introduction of a “boom or bust”-variable. Also, the market that I chose to study contained many different countries, something that I did not correct for but should probably have done. Furthermore, the combination of the eleven control variables employed may not have been the optimal mix for eliminating the effect of outside parameters. For example, some control variables used in Krishnan et al. (2007) were not possible to use in this study because of practical reasons and the lack of availability – these include *acquisition motives* and *board composition*, two variables found to have significant effects on workforce reduction according to previous studies (Krishnan et al., 2007). Another possible explanation could be the use of the workforce reduction variable as the only potentially mediating variable – indeed, this variable need not be the only link between the acquisition premium and post-acquisition performance and other potential links are not taken into account in this study, in line with the approach presented in Krishnan et al. (2007).

Regarding the methodology in this thesis, there are perhaps some areas that may be held responsible as well. For example, I chose only to use an accounting-based measure of post-acquisition performance, namely ROS. I could have extended this to employing several more measures of the type or even considered bidder stock returns. Regarding data obtained on workforce reductions, I chose to use annual reports as my main source of information, whereas gathering data from announcements presented in newspaper articles may have resulted in completely different numbers – a method that was used in Krishnan et al. (2007) for example, but that I did not use since proceeding in this fashion would not have given complete data on layoffs for the European transactions that I chose to study. Glancing back at the method employed, I realize that an interesting approach could have been using a *piecewise linear regression* model that would perhaps have allowed me to examine step by step how certain levels of workforce reductions impact post-acquisition performance. This method of analysis is commonly employed in order to find optimal levels of for example stock ownership by management that maximizes firm value (Morck, 1988).

My advice for those interested in further investigating the matter would be to pursue the same path as this thesis but with slight data and methodology changes and improvements, or to examine closely linked research topics. Research according to the first scenario could involve collecting a larger data set; looking at a broader time period; studying a larger market or several markets and then comparing them to one another; spending a substantial amount of time on constructing high quality control variables; using the method of piecewise linear regressions,

etc. The second suggested scenario could be finding other potentially mediating variables than workforce reductions in the merged firm. Here, previous studies have to this date focused on an almost uncountable number of explanations, but unexplored explanations for post-acquisition performance still remain. In a similar spirit as the HR-based arguments presented in this thesis, i.e. combining finance with its softer sibling-disciplines, looking at gender issues and post-acquisition financial performance could lead to interesting research questions.

9. Conclusion

The purpose of this thesis has been to investigate whether there is a link between the acquisition premium paid in an M&A-deal and the post-acquisition performance of the resulting combined firm. In other words, the aim has been to determine whether there exists a mediating variable in the relationship between the premium paid and the post-acquisition performance. Inspired by a study conducted on the US market by Krishnan et al. (2007), I chose to examine the potentially mediating effect of workforce reduction in the resulting combined firm after an M&A-deal has taken place. However, I decided to study deals involving European buying and selling firms. The sample period chosen was 2000 to 2007 which, together with a number of other conditions, yielded a total sample of 102 transactions.

Three hypotheses were formulated in the beginning of this thesis. First of all, I proposed that the acquisition premium and the post-acquisition workforce reduction in the combined firm are positively related. Secondly, I hypothesized that there is a negative relationship between the workforce reduction and post-acquisition performance of the combined firm. Finally, I predicted that workforce reduction is a partial mediator in the relationship between acquisition premium and post-acquisition performance of the combined firm, i.e. the higher the acquisition premium, the higher the workforce reduction and the lower the post-acquisition performance of the combined firm.

In order to determine whether the workforce reduction in the combined firm is indeed a mediator variable or not in the relationship between the premium and the post-acquisition performance, a four-step mediation framework was followed, as proposed in Krishnan et al. (2007) involving mediated regression analysis and other testing. The results indicated that I have no statistically significant evidence at the 0,05 level or less that the workforce reduction is a mediator variable in the mentioned relationship.

In conclusion, various explanations can be proposed for the lack of statistically significant results presented in this thesis. These weaknesses are mentioned in the previous section, where I stress the role played by having too few observations, too limited a sample period and perhaps not the right control variables. This section also provides suggestions for future research and demonstrates that those who are tempted to further explore the hypothesized links will notice that with enough data and with the possibility to construct high quality control variables, great potential lies ahead for obtaining interesting findings in this growing field of research on post-acquisition performance.

10. References

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11. Appendix

11.1. Sample business sectors excluded/included in the study

Deals made by acquirers from the following business sectors were *excluded*:

Commercial banks and holding companies
Credit institutions
Holding companies except banks
Insurance companies
Investment and commodity firms, dealers, exchanges
Real estate, mortgage bankers and brokers

Deals made by acquirers from the following business sectors were *included*:

Advertising Services
Agriculture, Forestry, and Fishing
Air Transportation and Shipping
Amusement and Recreation Services
Business Services
Chemicals and Allied Products
Construction Firms
Drugs
Electric, Gas, and Water Distribution
Electronic and Electrical Equipment
Food and Kindred Products
Hotels and Casinos
Machinery
Measuring, Medical, Photo Equipment; Clocks
Metal and Metal Products
Miscellaneous Retail Trade
Motion Picture Production and Distribution
Oil and Gas; Petroleum Refining
Personal Services
Prepackaged Software
Printing, Publishing, and Allied Services
Radio and Television Broadcasting Stations
Retail Trade-Eating and Drinking Places
Retail Trade-Food Stores
Retail Trade-General Merchandise and Apparel
Retail Trade-Home Furnishings
Rubber and Miscellaneous Plastic Products
Soaps, Cosmetics, and Personal-Care Products
Stone, Clay, Glass, and Concrete Products
Telecommunications
Transportation and Shipping (except air)
Transportation Equipment
Wholesale Trade-Durable Goods
Wholesale Trade-Nondurable Goods

<i>Date Announced</i>	<i>Acquiror Name</i>	<i>Acquiror Nation</i>	<i>Target Name</i>	<i>Target Nation</i>	<i>Value of Deal (\$mil)</i>	<i>Four-week acquisition premium</i>	<i>Change in workforce</i>	<i>Post-acquisition performance of merged firm (ROS)</i>
12-20-2007	Arriva PLC	United Kingdom	Tellings Golden Miller Grp PLC	United Kingdom	20	41%	23%	4%
12-20-2007	Real Software NV	Belgium	Dolmen Computer Application NV	Belgium	217	61%	-2%	0%
11-30-2007	Randstad Holding NV	Netherlands	Vedior NV	Netherlands	5058	20%	44%	4%
11-29-2007	Finmeccanica SpA	Italy	VEGA Group PLC	United Kingdom	127	34%	25%	4%
11-19-2007	SABMiller PLC	United Kingdom	Koninklijke Grolsch NV	Netherlands	1198	97%	-100%	7%
10-08-2007	Asseco Poland SA	Poland	Prokom Software SA	Poland	788	10%	55%	1%
10-02-2007	Cookson Group PLC	United Kingdom	Foseco PLC	United Kingdom	1002	37%	-9%	4%
10-02-2007	Groupe Norbert Dentressangle	France	Christian Salvesen PLC	United Kingdom	498	80%	-8%	2%
10-01-2007	Stockmann Oyj	Finland	Lindex AB	Sweden	1237	12%	6%	5%
09-14-2007	Optimisa PLC	United Kingdom	eq group PLC	United Kingdom	13	64%	26%	6%
07-30-2007	Koninklijke KPN NV	Netherlands	Getronics NV	Netherlands	1065	-16%	-31%	12%
06-24-2007	Norddeutsche Affinerie AG	Germany	Cumerio NV/SA	Belgium	1039	25%	0%	3%
06-18-2007	Akzo Nobel NV	Netherlands	ICI PLC	United Kingdom	16258	72%	-35%	6%
05-08-2007	SSP Holdings PLC	United Kingdom	Sirius Financial Solutions PLC	United Kingdom	82	39%	-45%	5%
03-26-2007	Taylor Woodrow PLC	United Kingdom	George Wimpey PLC	United Kingdom	5515	14%	-66%	16%
03-05-2007	Mears Group PLC	United Kingdom	Careforce Group PLC	United Kingdom	43	41%	80%	3%
01-18-2007	Phoenix IT Group PLC	United Kingdom	ICM Computer Group PLC	United Kingdom	216	65%	-88%	8%
12-15-2006	Inchcape PLC	United Kingdom	European Motor Holdings PLC	United Kingdom	516	10%	9%	3%
12-14-2006	Fonebak PLC	United Kingdom	CRC Group PLC	United Kingdom	24	52%	-14%	1%
12-04-2006	Premier Foods PLC	United Kingdom	RHM PLC	United Kingdom	2432	32%	-16%	2%
11-28-2006	Iberdrola SA	Spain	Scottish Power PLC	United Kingdom	22210	14%	43%	5%
10-20-2006	Datamonitor PLC	United Kingdom	Ovum PLC	United Kingdom	70	72%	28%	10%
08-29-2006	Buhrmann NV	Netherlands	Andvord Tybring-Gjedde ASA	Norway	317	41%	-3%	0%
08-21-2006	LogicaCMG PLC	United Kingdom	WM-data AB	Sweden	1628	16%	28%	3%
07-17-2006	Euromoney Institutional Inv	United Kingdom	Metal Bulletin PLC	United Kingdom	407	31%	6%	9%
05-02-2006	Interserve PLC	United Kingdom	MacLellan Group PLC	United Kingdom	211	4%	10%	2%
03-31-2006	Clapham House Group PLC	United Kingdom	Urban Dining PLC	United Kingdom	44	9%	42%	-1%

<i>Date Announced</i>	<i>Acquiror Name</i>	<i>Acquiror Nation</i>	<i>Target Name</i>	<i>Target Nation</i>	<i>Value of Deal (\$mil)</i>	<i>Four-week acquisition premium</i>	<i>Change in workforce</i>	<i>Post-acquisition performance of merged firm (ROS)</i>
03-17-2006	L'Oreal SA	France	Body Shop International PLC	United Kingdom	1147	37%	8%	11%
02-01-2006	THUS Group PLC	United Kingdom	Legend Communications PLC	United Kingdom	20	-6%	13%	-9%
01-25-2006	Linde AG	Germany	BOC Group PLC	United Kingdom	14052	36%	-33%	4%
12-21-2005	DSV A/S	Denmark	Koninklijke Frans Maas Groep	Netherlands	512	31%	25%	13%
12-19-2005	Delta Holding SA	Greece	Chipita International SA	Greece	203	16%	28%	2%
12-01-2005	Crucell NV	Netherlands	Berna Biotech AG	Switzerland	447	18%	12%	-10%
10-31-2005	Telefonica SA	Spain	O2 PLC	United Kingdom	31659	24%	37%	7%
10-03-2005	Boots Group PLC	United Kingdom	Alliance UniChem PLC	United Kingdom	5135	4%	-13%	3%
09-19-2005	Deutsche Post AG	Germany	Exel PLC	United Kingdom	6553	29%	-7%	3%
09-09-2005	Sika AG	Switzerland	Sarna Kunststoff Holding AG	Switzerland	334	17%	-4%	3%
09-08-2005	HMV Group PLC	United Kingdom	Ottakar's PLC	United Kingdom	118	-1%	-8%	4%
08-21-2005	TUI AG	Germany	CP Ships Ltd	United Kingdom	1972	19%	18%	2%
06-28-2005	House of Fraser PLC	United Kingdom	James Beattie PLC	United Kingdom	124	51%	-12%	7%
05-11-2005	AP Moller Maersk AS	Denmark	Koninklijke P&O Nedlloyd NV	Netherlands	2970	27%	53%	60%
04-19-2005	Fenner PLC	United Kingdom	Wellington Holdings PLC	United Kingdom	85	6%	15%	2%
01-12-2005	Holcim Ltd	Switzerland	Aggregate Industries PLC	United Kingdom	3398	37%	46%	4%
12-22-2004	Nocom AB	Sweden	TurnIT AB	Sweden	25	89%	-44%	1%
12-16-2004	Serco Group PLC	United Kingdom	ITNET PLC	United Kingdom	479	17%	101%	1%
11-01-2004	Getronics NV	Netherlands	PinkRoccade NV	Netherlands	451	41%	-15%	-1%
10-28-2004	Royal Dutch Petroleum Co	Netherlands	Shell Transport & Trading Co	United Kingdom	74559	4%	-52%	4%
09-14-2004	TDC A/S	Denmark	Song Networks Holding AB	Sweden	746	106%	-44%	5%
06-17-2004	Grafton Group PLC	Ireland-Rep	Heiton Group PLC	Ireland-Rep	396	30%	19%	3%
03-29-2004	Continental AG	Germany	Phoenix AG	Germany	276	13%	71%	2%
03-02-2004	Informa Group PLC	United Kingdom	Taylor & Francis Group PLC	United Kingdom	994	25%	144%	0%

<i>Date Announced</i>	<i>Acquiror Name</i>	<i>Acquiror Nation</i>	<i>Target Name</i>	<i>Target Nation</i>	<i>Value of Deal (\$mil)</i>	<i>Four-week acquisition premium</i>	<i>Change in workforce</i>	<i>Post-acquisition performance of merged firm (ROS)</i>
12-12-2003	Vestas Wind Systems A/S	Denmark	NEG Micon A/S	Denmark	404	42%	145%	1%
10-29-2003	WM-data AB	Sweden	Novo Group Oyj	Finland	237	41%	-7%	-21%
10-23-2003	TripleArc PLC	United Kingdom	Access Plus PLC	United Kingdom	68	50%	109%	-5%
09-30-2003	Groupe Air France SA	France	KLM	Netherlands	806	33%	5%	0%
07-22-2003	iSOFT Group PLC	United Kingdom	Torex PLC	United Kingdom	526	23%	22%	6%
06-19-2003	WPP Group PLC	United Kingdom	Cordiant Communications Group	United Kingdom	314	-91%	55%	1%
05-30-2003	Hellenic Petroleum SA	Greece	Petrola Hellas SA	Greece	331	10%	-2%	1%
01-09-2003	Wm Morrison Supermarkets PLC	United Kingdom	Safeway PLC	United Kingdom	5178	36%	42%	1%
11-05-2002	Logica PLC	United Kingdom	CMG PLC	United Kingdom	802	38%	53%	2%
10-30-2002	Tesco PLC	United Kingdom	T&S Stores PLC	United Kingdom	827	36%	150%	2%
10-16-2002	Granada PLC	United Kingdom	Carlton Communications PLC	United Kingdom	1665	13%	-37%	-12%
06-25-2002	HIT Entertainment PLC	United Kingdom	Gullane Entertainment PLC	United Kingdom	209	20%	36%	0%
06-06-2002	Spector Photo Group NV	Belgium	Photo Hall SA	Belgium	32	11%	-64%	-4%
05-23-2002	Berna Biotech AG	Switzerland	Rhein Biotech NV	Netherlands	257	63%	-30%	23%
05-20-2002	ACESA	Spain	Aurea	Spain	1593	11%	208%	3%
03-22-2002	RWE AG	Germany	Innogy Holdings PLC	United Kingdom	7396	36%	-56%	2%
03-22-2002	Davis Service Group PLC	United Kingdom	Sophus Berendsen A/S	Denmark	608	20%	-17%	5%
03-06-2002	Devoteam SA	France	Siticom	France	42	27%	175%	1%
02-05-2002	Dragados y Construcciones SA	Spain	Hollandsche Beton Groep NV	Netherlands	662	54%	-16%	3%
01-14-2002	Oystertec PLC	United Kingdom	Europower PLC	United Kingdom	18	114%	110%	-9%
11-29-2001	Redrow PLC	United Kingdom	Tay Homes PLC	United Kingdom	43	39%	-38%	5%
04-23-2001	Hilton Group PLC	United Kingdom	Scandic Hotels AB	Sweden	948	28%	-74%	10%
04-12-2001	Findel PLC	United Kingdom	Novara PLC	United Kingdom	45	36%	17%	2%

<i>Date Announced</i>	<i>Acquiror Name</i>	<i>Acquiror Nation</i>	<i>Target Name</i>	<i>Target Nation</i>	<i>Value of Deal (\$mil)</i>	<i>Four-week acquisition premium</i>	<i>Change in workforce</i>	<i>Post-acquisition performance of merged firm (ROS)</i>
04-09-2001	E ON AG	Germany	PowerGen PLC	United Kingdom	7372	26%	-46%	4%
03-08-2001	British Airways PLC	United Kingdom	British Regional Airlines Grp	United Kingdom	113	112%	-28%	5%
12-04-2000	EMS-Chemie Holding AG	Switzerland	Axantis Holding AG	Switzerland	336	1%	-32%	11%
11-10-2000	Koninklijke Vopak NV	Netherlands	Ellis & Everard PLC	United Kingdom	444	118%	-69%	15%
11-10-2000	Greencore Group PLC	Ireland-Rep	Hazlewood Foods PLC	United Kingdom	369	26%	-70%	0%
10-27-2000	Trinity Mirror PLC	United Kingdom	Southnews PLC	United Kingdom	398	59%	-24%	8%
09-25-2000	RWE AG	Germany	Thames Water PLC	United Kingdom	6256	40%	-60%	2%
09-22-2000	Wyevale Garden Centres PLC	United Kingdom	Country Gardens PLC	United Kingdom	162	99%	24%	5%
09-18-2000	Smiths Industries PLC	United Kingdom	TI Group PLC	United Kingdom	2700	4%	-59%	7%
09-13-2000	Hill & Smith Holdings PLC	United Kingdom	Ash & Lacy PLC	United Kingdom	98	40%	44%	1%
09-11-2000	Bryggerigruppen A/S	Denmark	Albani Bryggerierne	Denmark	52	78%	51%	4%
08-31-2000	Veidekke ASA	Norway	Hoffmann & Sonner A/S	Denmark	47	122%	-12%	1%
08-24-2000	Anglian Water PLC	United Kingdom	Morrison PLC	United Kingdom	390	66%	5%	8%
08-22-2000	Galliford PLC	United Kingdom	Try Group PLC	United Kingdom	38	30%	135%	0%
08-02-2000	Unit 4 Agresso NV	Netherlands	Agresso Group ASA	Norway	159	37%	81%	2%
07-18-2000	National Express Group PLC	United Kingdom	Prism Rail PLC	United Kingdom	248	61%	78%	2%
07-14-2000	Homestyle Group PLC	United Kingdom	Harveys Furnishing PLC	United Kingdom	204	78%	-43%	-3%
06-21-2000	Metso Oyj	Finland	Svedala Industri AB	Sweden	1030	58%	-17%	0%
06-20-2000	Publicis SA	France	Saatchi & Saatchi PLC	United Kingdom	1800	81%	75%	1%
06-15-2000	Tofas Turk Otomobil Fabrikasi	Turkey	Tofas Oto Ticaret	Turkey	45	-60%	32%	1%
06-13-2000	Hagemeyer NV	Netherlands	WF Electrical PLC	United Kingdom	138	84%	-5%	3%
05-25-2000	Bloomsbury Publishing PLC	United Kingdom	A&C Black PLC	United Kingdom	24	134%	94%	1%
05-15-2000	Preussag AG	Germany	Thomson Travel Group PLC	United Kingdom	2731	106%	-22%	1%
05-10-2000	Luminar PLC	United Kingdom	Northern Leisure PLC	United Kingdom	743	15%	39%	3%

<i>Date Announced</i>	<i>Acquiror Name</i>	<i>Acquiror Nation</i>	<i>Target Name</i>	<i>Target Nation</i>	<i>Value of Deal (\$mil)</i>	<i>Four-week acquisition premium</i>	<i>Change in workfo rce</i>	<i>Post- acquisition performance of merged firm (ROS)</i>
04-13-2000	Skanska AB	Sweden	Selmer ASA	Norway	287	15%	6%	3%
03-31-2000	Pearson PLC	United Kingdom	Dorling Kindersley Holdings	United Kingdom	496	7%	48%	7%
03-16-2000	YJL PLC	United Kingdom	Britannia Group PLC	United Kingdom	19	22%	-18%	2%
03-06-2000	Sportsworld Media Group PLC	United Kingdom	Sports & Outdoor Media Intl	United Kingdom	85	76%	7%	9%
03-02-2000	First Technology PLC	United Kingdom	City Technology Holdings PLC	United Kingdom	159	45%	221%	6%
01-28-2000	Johnson Service Group PLC	United Kingdom	Semara Holdings PLC	United Kingdom	155	56%	-31%	5%
01-27-2000	Telewest Communications PLC	United Kingdom	Flextech PLC	United Kingdom	3700	46%	77%	-22%
01-25-2000	William Demant Holdings AS	Denmark	Hidden Hearing Intl Plc	United Kingdom	38	46%	104%	4%
01-24-2000	Clariant AG	Switzerland	BTP PLC	United Kingdom	1739	83%	-45%	6%

Table I. Selected data items for the transactions included in the analysed sample