

# Shareholder Wealth Effects of Mergers and Acquisitions

by

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## Abstract

This paper examines the wealth creation and redistribution theories of mergers and acquisitions using a Dutch sample in the period 1954 till 1997. It shows that 52 % of the bidding companies have a positive share price reaction at the announcement of a merger or acquisition, while 82 % of the takeover targets show a positive share price performance. The Dutch data allow independent test of many issues addressed in studies of the UK and US mergers and takeovers. The research shows that returns for a bidding corporation are on average lower during a merger wave. Thirty percent of the Dutch mergers were completed with the value of the target being overestimated or the bidding management overestimating itself. Furthermore, payment of the acquisition in cash in comparison to payment in shares provides better returns on average to both the shareholders of the bidding company and the takeover target.

**Key words:** Synergy, agency problems, hubris and bidding strategy

**JEL Classification:** G14 and G34

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## Introduction

This paper presents the results of a research of mergers and acquisitions of Dutch corporations listed on the Amsterdam Stock Exchange in the period 1954-1997. A merger or acquisition is a transaction where two or more companies are combined to become one (Weston & Copeland, 1992). A merger is a transaction between more or less equal partners, while acquisitions are used to denote a transaction where a substantially bigger company (the bidder) takes over a smaller company (the target). In this paper, no distinction is made between mergers and acquisitions and the two notions are treated as one. The aim of the paper is to provide a short summary and synthesis of prior research to the underlying theories concerning the return of merger and acquisitions. Berkovitch and Narayanan (1993)

researched the motives: hubris, agency and synergy. Schwert (1996) seeks the explanation in the mark-up pricing and other researchers named other possible theories that serve to explain the financial returns of merger and acquisitions. In this paper theories and hypotheses are integrated and tested regarding the situation in The Netherlands. The paper is organized as follows. Section 1 describes the value creation and redistribution theories of merger and acquisitions. Next, the selected data and methodology used in this study are explained in section 2. In section 3, the results of merger and acquisitions are analyzed for the shareholders of the bidders and the targets. A regression model is derived from the value creation and redistribution theory as determinants of the abnormal returns. Here the followed bidding strategy is also taken into consideration. These models are estimated and tested using the sample of Dutch merger and acquisitions. Section 4 summarizes the most important conclusions from the research.

## **1. Value creation and redistribution theories**

This paper makes a distinction between value creation and redistribution theories. The *synergy motive* plays a major role in the value creation theories, while *agency* problems or *hubris* play a role in the redistribution theory.

### *1.1. Value creation theories*

Merger and acquisitions make economic sense if the whole is worth more than the sum of its parts, or stated otherwise, if synergy exists. The surplus value of horizontal mergers can be attained by: economies of scale in production and distribution, access to new markets, having a combined maiden office, removal of inefficient management, greater financial possibilities and combined immaterial assets (patents, trademarks and licenses). Vertical mergers shorten the industrial chain and savings can be made in procurement, more efficient communication is possible, as well as production can be more focused to market

developments. A definition of synergy formulated by Sirower (1997) is as follows: *Synergy is the enhanced competitive capacity and consequent greater cashflows in excess of what the individual companies would have attained.*

Sirower states that value-creating mergers are seldom. A merger is worthwhile when the synergy (surplus value) exceeds the incurred merger costs including the takeover premium. Other researchers (Healy, Palepu & Ruback, 1992) are more positive and conclude that in the post-merger phase there are significant improvements in the cashflows compared to other corporations in the industry.

### 1.2. *Redistribution theories*

A merger makes no sense if the additional cashflow is lower than the takeover premium and/or is lower than the costs incurred by integration. There are two major theories that explain the origin of merger activity, the *hubris*- and the *agency* theory.

The *hubris* theory states that management strives for synergy having the goal to maximize profits for shareholders. Unfortunately, managers suffer conceit resulting in less value attained in the form of synergy. From research (Roll, 1986), it seems that synergetic benefits are attained in these mergers, however the pre-calculation of synergy is often too high to justify the takeover premium.

The *agency* theory states that the interests of the shareholders or owners are not parallel to the interests of management. The separation of capital and control induces managers to strive for their own interests. A reason for a merger may be 'Empire Building', where managers strive to expand the size of the company (Mueller, 1989). A big corporation gives more status and managerial salary is positively related to the size of the company. Similarly, a large corporation offers more possibilities for emoluments and management failures of the past are easier to conceal. Part of the *agency* theory is the theory of free

cashflow. Free cashflow is that part of equity for which there are no profitable investments in the organization. These cashflows, which are generally found in the (free) reserves, could be distributed to the shareholders as dividends. However, according to the agency theory, these free reserves are used to fund merger activity that serve to meet the interests of the management. The conclusion of a merger seldom leads to an improvement in the cashflow of the involved corporations (Morck, Schleifer & Vishny, 1990).

The game theory, part of the agency theory, is applied to explain merger waves. The moment a competitor decides to merge, one has to decide whether to counter the attack on the current market position by a similar move. The problem for management is that it does not know what was the driving force of the competitor's move to merge and whether this move was financially sensible. When one decides not to merge and the competitor's move to merge was value creation, then one runs the risk to become a target of a next takeover (Schenk, 1996). According to the game theory a company will make the move that minimizes regret. In other words, one will make the move to merge, even though the possible profit after the merger may be lower than can be attained individually. In the case that the returns of the merger are disappointing, then there is always the excuse that their behavior is no different from the rest of the industry. In this manner management's reputation is not damaged. This is what Keynes mentioned in 1936: *"It is better for reputation to fail conventionally than succeed unconventionally."*

The mergers that follow the leader's merger have a lower chance of success. Due to fierce competition in the merger and acquisition market and the limited time for preparation, the strategic trajectory needed for the determination of the expected synergy is shortened. These "forced mergers" are not highly valued by shareholders and management seems to be the only ones with interest in the transaction. The takeover premium will increase while the potential merger partners in the market are reduced due to speculation in the shares of potential targets. Likewise, corporations that do not want to become a target will take

protective measures, forcing the bidder to increase the takeover premium. The merger wave will contract when resources for engaging in merger activity are depleted. Usually it evolves into a period of divestment and reorganization until a new merger leader breaks the impasse again. Just like in the agency theory, one does not strive to maximize shareholder value. According to the game theory, management is preoccupied with the protection of its own reputation.

De Jong (1998) does not follow this micro-economic explanation of merger waves. A merger is not only completed for the need to reduce insecurity. Leadership in organization and innovation is captured irrespective of the affiliated insecurity. The fact that not all companies participate in a merger wave is not consistent with the *game theory*. Likewise, several industries do not show any tendency of concentration regardless of their oligopolistic nature. De Jong explains merger waves by means of the *market theory*. A corporation passes four distinct phases; namely the pioneer phase, the expansion phase, the mature phase and the declining phase. The moment an organization or the industry reaches the mature phase, overcapacity and strong price competition in combination with lower profit margins arises. In these phases, corporations will engage in horizontal mergers to reduce cost. With persisting stagnation, one will also try to enter new markets through foreign acquisitions. In the decline phase, companies divest and sell off company assets to gather capital for other potential markets or cut losses. Hence, a merger wave is seen as a natural process.

## **2. Data and methodology**

This study examines share price reactions of merger partners of which both are listed on the Amsterdam Stock Exchange. The period of analysis is from 1954 till 1997 and concerns a sample of 101 mergers. Figure 1 shows the mergers and acquisitions, by industry and by year, respectively.

\*\*\* Insert Figure 1 about here\*\*\*

The market reaction is analyzed at the moment the merger is announced. At the same time, the study attempts to bridge the theories that explain merger activity to the situation in The Netherlands. An increase in the share price suggests positive expectation of the market to the merger. In prior research, the announcement of mergers generally leads to negative share price reactions. A merger announcement leads to falling share prices, specifically for bidding companies. In a research of De Bruin and Van Frederikslust (1994) there is an average decrease of 1.2 percent in the share price of the bidders as a reaction to the merger announcement. Bosveld, Meyer and Vorst (1997) researched 122 Dutch mergers where a slight decline in the share price of the bidder was perceived. The market seems to value mergers differently from the management of the bidding firm.

### *2.1. Data selection*

The corporations included in the sample are listed on the Amsterdam Stock Exchange for at least a year prior to the announcement of the merger bid. The initial sample includes 202 corporations involved in a merger in the period 1954-1997. Excluded from the study are financial institution such as banks and insurance companies and mergers between more than two companies. Mergers where trade in the shares of the target was restricted due to an important (merger) announcement and mergers with foreign corporations were also excluded from the sample. Starting from 170 mergers, 101 remained after the exclusion criteria.

The industry indices are available from the CBS (Central Bureau of Statistics). The index used over the period 1954 till 1979 is the ANP-CBS market index by industry. From 1980 onwards the replacement of the ANP-CBS according to industry is used.

### *2.2. The Cumulative Abnormal Return (CAR)*

Event studies analyze the normalized share prices of the bidder and the target around the time of announcement. The abnormal return is the return exceeding the return expected if

there were no merger announcement. The actual return after the public bid should first be corrected and interpreted. The *Market Model Method* is used to measure the abnormal return (Brown & Warner, 1980).

The share price reaction around the public bid is corrected using this method in order to isolate the abnormal returns that are attributable to the merger announcement. The market model is as follows:

$$R_{jt} = \mathbf{a}_j + \mathbf{b}_j R_{mt} + \mathbf{e}_{jt} \quad (1)$$

The parameters of the model  $\mathbf{a}_j$  and  $\mathbf{b}_j$  were estimated using ordinary least square regression based on observations in the period from 200 days till 41 trading days prior to the bid. This period precedes the bid by 41 days because the share prices tend to increase before the bid is announced (the pre-bid runup). The return of the market is determined using CBS indices. The Student- $t$  test (Brown & Warner, 1980) is used to test for significance.

The abnormal return of the combined merger partners  $TCAR_t$  at time  $t$  is computed as the weighted average of the abnormal returns of the target and bidder. The weight factor is based on the relative share capital of the target and the bidder at  $t = -40$ . The weighing corrects for the difference in size between the bidder and the target. Without this correction, the return of the combined partners would be disproportionate, since the expected return of the target is a lot higher than that of the bidder.

### **3. Results of mergers and acquisitions**

The results of the research of mergers and acquisition are organized as follows. First, the cumulative abnormal returns of the targets and bidders as well as the combined merger partners will be presented in sub-section 3.1. Section 3.2 will explain the regression models used to explain this abnormal return. The estimated functions and testing results are discussed



in section 3.3. In section 3.4 the bidding strategy is also taken in consideration, followed by an analysis of merger motives for managers in section 3.5.

### 3.1. *CAR of targets, bidders and combined merger partners*

Table 1 shows the returns for the targets, bidders and the combined partners over five different intervals. Twelve corporations are removed from the sample after an extensive outlier analysis. Their z-scores and distorting influence were too high. T-tests are used to test for significance of the cumulative abnormal returns for the various intervals.

\*\*\* Insert Table 1 about here \*\*\*

The significance is determined by means of the earlier named T-test (Brown & Warner, 1980). A high positive return is expected for the targets. Hence, a one-tailed test is used for the targets. The expected positive result is due to the bid made by the bidders to obtain all the shares in their possession. For the bidders, the expected returns are not as evident and thus a two-sided t-test is used. The expected returns for the targets are positive, while that of the bidders are not evident. Correspondingly, the expected total CAR of the combined merger partners is expected to be positive. Therefore, a one-tailed T-test is used to measure the significance of the total cumulative abnormal returns (TCAR) over the various intervals. Statistical descriptive of the sample are shown in Table 2.

\*\*\* Insert Table 2 about here \*\*\*

The abnormal returns of the targets are positive, double-digit and significant at the 5 percent level for all intervals. From the sample of 89 targets, 73 show positive cumulative abnormal returns, with a mean of 29.04 percent.

The abnormal returns of the bidders are not significant for any of the intervals. Hence, a merger announcement does not spur shareholders of the bidders to collectively sell

their shares. The return is neither positive depicting a greater demand for the shares of the bidders based on higher expected cashflows after the merger.

For 48 percent of the bidders, the CAR is negative in the period of analysis, with a minimum of -24.27 percent and a mean of -6.83 percent. For the 52 percent of the bidders, for which the CAR was positive, the maximum is 35.93 percent and the mean is 8.2 percent. From the table 2, one can deduce that the mean CAR of the bidders is not significant, since the means level out each other. Table 3 summarizes the results of prior research of the cumulative abnormal returns of targets and bidders.

\*\*\* Insert Table 3 about here \*\*\*

The cumulative abnormal return for the combined merger partners (TCAR) is significantly positive for each interval. Remarkable is the decline of the TCAR for the interval  $t(-1,5)$  in comparison to  $t(-1,0)$ . This shows that there is a decline in the TCAR shortly after the merger announcement. In the period of analysis  $(-40,5)$ , 60 percent of the mergers show a positive return, with a mean of 11.49 percent. The other 40 percent had a negative mean of 4.08 percent.

### 3.1.1. *Graphical representation of the development of CAR*

Before starting with the regression, a graphical representation is provided of the CARs of all bidders and targets in the sample during the entire period of analysis.

\*\*\* Insert Figure 2 about here \*\*\*

Figure 2 shows a sharp increase in the returns of the targets around the merger announcement. It also shows an increase in the returns of the targets 15 days prior to the merger announcement. This increase can be caused by the bidder purchasing shares before making the bid, since the bidding price tends to be higher. Another cause can be leakage of

information prior to the announcement. There is a light decrease the day after the merger announcement.

### 3.2. *Regression models*

Several variables for the named motives are derived to make the relation between the cumulative abnormal returns (CAR) and the merger theories. The influence of these indicators or proxies on CAR provides an insight of the motives determining managerial decision to merge in The Netherlands. The effect of these proxies is studied by means of a regression analysis.

#### 3.2.1. *Direction of a merger*

In general, a positive market reaction is expected to the horizontal merger and acquisitions due to the apparent possibilities for synergism. The expected surplus value stems from managerial and operational improvements (Eriksson, Högfeltd en Spens, 1998). The market theory (De Jong 1998) considers horizontal mergers as a process to save costs and for entering new markets to make use of overcapacity and reduce competition. These mergers are completed to create synergy. Empirical research of the Dutch situation in the period 1979-1995 (Bosveld, Meyer and Vorst, 1997) shows that both the CAR of the bidder and the target are positive for horizontal mergers.

Even though there are lower costs of procurement (downwards) and higher margins (upwards), synergetic effects are unlikely in vertical mergers due to lack of economies of scale and the problems of integration (Morck *et al.*, 1990). Hence, these mergers are expected to have a negative cumulative abnormal return.

The motive for diagonal mergers is primarily diversification. Being active in different markets spreads risks. A negative market reaction is expected for diagonal mergers since shareholders are already diversifying themselves without incurring the costs that a merger

brings about. Diagonal mergers do not fulfill the purpose of shareholders, but more the purpose of management. The agency motive plays an important role in these mergers. Based on empirical research, these merger and acquisitions provide the lowest returns since there are virtually no synergetic benefits to be achieved (Morck *et al.*, 1990).

In our research, it is not very beneficial to measure the effect of the direction of the merger since 93 percent of the mergers in the sample were horizontal and only 7 percent were vertical. However, based on the market theory of De Jong (1998) it is expected that horizontal mergers in comparable sectors are more prone to provide synergetic benefits than vertical and diagonal mergers.

### 3.2.2. *Method of payment*

The bid on the shares of the target can be in shares, cash or a combination of the two. In the literature, there is no one-sided opinion as to the influence of the method of payment on the expected returns. The advantage of payment using shares is the creation of additional equity by issuing new shares. This does not endanger the firm's liquidity. The chance of a too high takeover premium is limited with the payment in shares since the shareholders of the target are also at risk with a high premium. This is the *contingent pricing effect of stockpayment hypothesis* (Hanson, 1987), which contradicts shareholders selling their shares after the exchange if they are of the opinion that the shares of the acquiring party are overvalued.

An opposing view on the payment in shares is that the payment of an acquisition using equity gives out a signal. These *signaling effects of stock issues* refer to payment in shares giving a negative signal due to information asymmetry. Bidders will opt for payment in shares only if they find their shares overvalued, while on the other hand, the value of cash is easy to establish (Myers & Maljuf, 1984, Berkovitch & Narayanan, 1990). Moreover, the dilution of outstanding shares incurs higher integration costs. The remuneration of managers

can no longer be directly related to their investment decision and strive for synergy is reduced due to these agency problems. The market recognizing such problems, resulting in a falling share price at the moment of the announcement.

In general, payment in cash is expected to have a positive influence because it is independent of the information asymmetry. The price of the acquisition is totally clear and is generally financed by long-term liabilities, which in turn necessitates management to achieve a return that is sufficient to cover the outstanding debt. Contrary to the cost incurred due to financing by equity, one can find the incurred cost of the long-term liability back in the annual report, so that management can be held accountable for their decisions. Paying off loans and interest payable will encourage management to achieve synergetic effects (Sirower, 1997).

### *3.2.3. Market climate*

Several time periods are characterized by strong competition in the market for corporate control. In the period of analysis of the study, there are three merger waves imported from the United States, namely the third wave of 1966-1973, the fourth wave 1984-1989 (Van Duijn, 1992) and the fifth merger wave of 1993-2000. These industrial merger waves originate from a reaction of firms to a changed market. These factors differ per industry. For example, the textile industry in The Netherlands was threatened by cheap imports in the 60's and had to achieve economies of scale to reduce costs. In the same period, many machine manufacturers had to invest in expensive and modern production lines to deal with the competitive forces in Europe. The moment a competitor attempts to improve its market position by means of a merger, others follow with a similar strategy. In these circumstances, a merger is not only easy to defend by management but is also the fastest way to solve problems, because financial and operational economies of scale are easy to obtain (Mitchell & Mulherin, 1996). In this study we included therefore the variable industry as a

determinant for the shareholders wealth effect of mergers and acquisitions. The industries that we used here are: manufacturing, retail and others.

After the first merger has taken place, the share prices of other target candidates tend to rise. Share prices of the target increase due to speculation of shareholders to invest in potential targets or due to the protective measures against takeovers. The takeover premium for the merger consequently exceeds the potential synergetic benefits. There is a high chance that too much will be paid for the merger. The share price of the bidder is negatively influenced at the merger announcement, since that the market does not expect sufficient synergy to cover the premium (Morck *et al.*, 1990). This manner of thinking is alike the *game theory*, whereby merger waves are explained by the extent of condemnation of management to take risks.

### 3.2.5. Control variables

The equity of the bidder can be used as indicator for the quality of its management. A large corporation will have more managerial quality and expertise than a small firm will, and hence the merger is likely to be better prepared. Since this study examines a period of 40 years, the equity is corrected for inflation.<sup>1</sup> The *relative size of the merger* can have influence on the CAR of merger parties. The relative size is computed as the equity of the bidder divided by that of the target. The computation is based on the equity 40 days prior to the merger announcement. It is evident that when this ratio increases, the merger announcement has a lower influence on the return of the bidder. It can have a negative influence on the return of the target because a bigger firm has more negotiation power and experience. Hereby, the bid will be low since synergetic benefits have been deliberated. If the synergy motive is of no importance, the chance of a high return for the target will increase since a small acquisition does not bring a lot of risks to the bidding management, even though the actual value of the

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<sup>1</sup> The correction for inflation takes into account changes in the price index figures in the period of analysis.

acquisition is lower than the sum paid. It is expected that the variable 'relative size' will have little influence on CAR in this study since all companies in the sample are stock enlisted and have a certain level of negotiation power and control at their disposal. The *year of merger* is included as variable in order to compare possible differences of returns in the past. A separate analysis is conducted when there are large discrepancies between the various time periods.

### 3.2.6. *Summary in table form*

For clarification, Table 4 presents the explanatory variables and their expected effect.

\*\*\* Insert Table 4 about here \*\*\*

### 3.3. *Estimated functions and testing results*

In the regression analysis, the cumulative abnormal returns of merger announcements are analyzed using the selected independent variables. Eleven of the independent variables are used to explain the CAR of the target, while 12 of the independent variables are used in the analysis of the CAR of the bidder. In the latter analysis, the variable *premium* is also included. The premium is the value of the takeover bid and this cannot be included in the regression of the CAR of the target since the premium is already included in the share price of the target; a (high) correlation would then give a distorted image. The variable equity of the bidder and the target is included in the regression of the total return. To improve applicability, the natural logarithm of the inflation-corrected equity is chosen: *lncoreqb* is included for the bidder and *lncoreqt* for the target.

Since 93 percent of the mergers in the sample are horizontal, it is not useful to estimate the effect of the direction of the merger on the CAR and hence this variable is excluded from the analysis.

Not all of the created dichotomy variables can be included since their relative correlation can lead to multicollinearity. For method of payment the variables *shares* and *cash* are included. *Mergerwave* is included as variable of the influence of market climate. The influence of industry is measured using the variables: manufacturing and retail.

The ratio variables included in the analysis are: the year of merger, equity ratio, the natural logarithm of the corrected equity, the share price of the bidder and that of the target before the bid. The variable premium is included for the regression analysis of the bidder.

### 3.3.1. *Regression results of the target*

Table 5 shows that the CAR of the targets is significantly determined by two variables. The ratio of equity (equity of bidder / equity of target) is significant at the 5 percent level for all periods. A high ratio of the equity leads to a significantly higher return for the target. Furthermore, the variable payment in shares is significant in three periods. As expected, payment in shares results in lower CAR. The other variables are not significant, however they do give an indication. The variables share price of the bidder and of the target before the bid both have a very high standard deviation in almost all periods of the regression and hence have no influence on the return of the target. Regarding the F values, all estimated functions are significant at a 5 or 10 percent level.

\*\*\* Insert Table 5 about here \*\*\*

### 3.3.2. *Regression results of the bidder*

Table 6 shows that *Incorreq* has significant values in two periods, but only for the period (-1,0) is the standard deviation acceptable. As expected, payment in cash is positively related for three periods. Payment in cash results in higher returns for the bidder than other forms of payment. The variable merger wave is also significant in three periods. A merger wave results in lower returns for the bidder. This is in accordance to the *game theory*. The



year of the merger shows a significant positive influence on CAR in two periods. Using the F-test, four of the five estimated models are significant at the 5 or 10 percent level.

\*\*\* Insert Table 6 about here \*\*\*

### 3.3.3. *Regression results for the total*

We have estimated similar regressions for the formed combinations based on the total cumulative abnormal returns (TCAR). The regression shows that the variable *Incoreqt* and *Incoreqb* are both significant for the period (-10,5). The corrected equity of the target has a positive influence on TCAR, while that of the bidder has a negative influence on TCAR. This relation can be explained by the fact that the CAR of the targets are high and positive, while that of the CAR of the bidders are low and negative in the considered period. The influence of payment in shares is negative and significant for the periods (-1,0) and (-1,5). Payment in cash provides a significant positive influence for the period (-20,5). Besides one period (-40,5), the estimated functions are significant at the 5 and 10 percent level.

### 3.4. *Bidding strategy*

The pre-bid premium is the increase in the share price of the target before a public bid is announced. This market reaction is caused by several factors. One such factor is the bidder declaring the intention of a merger or acquisition, but it can also be due to a statement by an analyst concerning the expected strategy of the company, or when there is trade with insider information. There are two hypotheses (Schwert, 1996) that explain the influence of pre-bid premiums in a situation where only the bidder and/or target have information concerning the merger in the future.

\*\*\* Insert Figure 3 about here \*\*\*

For the *substitution hypothesis*, the bidder does not deviate from the premium negotiated prior to the merger. The negotiating parties assume that they possess more relevant information than the market. Every pre-bid share price movement is compensated by a low markup so that the total premium paid remains the same. The bidding corporation has already determined what needs to be bidden to ensure that the expected *synergy* outweighs the sum paid. Managers striving for optimal *synergy* will follow this bidding strategy to avoid paying too much, disregarding the risk that the bid is not accepted.

With the *markup-pricing hypothesis*, a sudden share price movement before announcement is taken into account in the bidding strategy. The negotiation parties do not know what valuable information other traders possess. It is possible that a competitor may also make a bid for the shares of the target. This lack of information leads to the bid being adapted. A higher pre-bid premium and a constant markup premium will thus lead to a higher takeover premium. When one no longer takes the takeover premium into account and the merger is being pursued at all costs, there is evidence of an *agency* problem, specifically *hubris* plays a key role. Regardless of the predetermined synergetic benefits, managers believe they can achieve the additional profit needed to justify the higher takeover premium (Sirower, 1997). The share price of the bidder declines when the premium is too high. This drop can be attributed to the shareholders' reaction and lack of confidence in the possibilities for synergy. Corporations with a bad bidding strategy even run the risk of becoming a takeover candidate themselves (Mitchell & Lehn, 1990).

The relation between the pre-bid runup and the takeover premium is analyzed using regression analysis. When there is no correlation between the pre-bid runup and the premium, substitute pricing prevails. In this case, the bidding party does not deviate from the intended bid and the takeover premium remains constant. There will be a strong relation with markup pricing where agency problems play a role. Using the following regression model, the relation will be analyzed.

$$\text{Premium}_i = a + b\text{Runup}_i + \mu \quad (2)$$

The substitution hypothesis states that the total premium is not influenced by the prebid-runup, i.e. the regression-coefficient  $a$  is equal to zero. When the coefficient  $\beta$  is equal to 1, markup pricing prevails, where the premium is adapted to the prebid runup. There is partial substitution when the regression coefficient is between zero and 1; part of the runup is added to the premium. In the regression model,  $a$  is the constant and  $\mu$  is the error term.

The regression results in Table 7 show a coefficient of 1.078, which provides evidence of markup pricing. The coefficient is 1.270 for bidders with a negative return, while it is 0.807 for bidders with a positive CAR; i.e. there is partial substitution. From the results, one can deduce that the lower returns of the bidder go hand in hand with a higher runup coefficient. Hence, the hypothesis is accepted. Agency problems played a larger role for the bidders with a negative CAR than for the bidders with a positive CAR. Furthermore, the premium is less likely to be adapted to the runup when payment is in cash than when payment is in shares or a combination of the two. This is in accordance with the expectation that the payment in cash has a positive influence on CAR and goes together with the synergy motive. The combined payment that mostly consists of payment in cash and shares is the most adapted method of payment.

\*\*\* Insert Table 7 about here \*\*\*

### 3.5. *Merger motives for managers*

The development of the cumulative averaged abnormal return gives an image of the market perception of a merger. This cumulative return which is computed for both the target and the bidder can explain the motives of managers to engage in merger activity.

The *synergy* theory sees managers as those that serve the interests of shareholders, with the creation of value as only motive. Management will only merge when it leads to a surplus value for the shareholders. This is valid for both the managers of the target and of the bidders. In a synergy-driven merger, the target is able to negotiate a higher takeover price since the surplus value of synergy is also visible for the shareholders of the bidder. A positive CAR is expected for the target and for the bidder considering the expected synergy, hence both returns will be positively correlated with the total return (Berkovitch & Narayanan, 1993). The *agency theory* states that managers tend to merge for private interests and at the cost of the interests of shareholders. With these mergers, only the CAR of the target will increase, dependent on the perseverance of the managers of the bidding company. The target will resist and raise the price because no synergy is expected and thus try to capture some of the profits that the managers of the bidding company are thinking of making. Shareholders of the bidder will sell since little return is expected. A negative relation is expected between the CAR of the bidder and that of the targets when agency problems reside. Furthermore, the combined CAR can be negative if the shareholders of the bidder lose confidence. The *hubris theory* states that managers overestimate themselves or the value of the target, causing them to engage in merger activity where no synergy is achievable (Sirower, 1997). Intend to achieve *synergy* and serve the shareholder is only present when this is not achieved by self-overestimation or valuation mistakes of management. The *hubris theory* is not convinced of *synergy* and views a merger solely as the transfer between owners. With *hubris* one does not expect a correlation between the CAR of the target and the total results. A higher acquisition price will lead to a lower return of the bidder and the reverse, but the total return will be about zero. Table 8 summarizes the relation of the CAR and the corresponding hypothesis and theories.

\*\*\* Insert Table 8 about here \*\*\*

The results in Table 9 show that hypothesis one does not hold. The relation between the return of the target and the bidder is negative for all three regressions. In other words, there is little evidence of a synergy motive. The relation between the return of the target and that of the total is analysed to see which motives are of importance to the Dutch situation. The regression for the whole and that of only positive total CAR, provide a significant positive relation. For these two regression the null hypotheses, stating that *agency* and *synergy* exists, is rejected. Only hypothesis 3 is applicable to mergers with a negative total CAR. The  $\beta$  for this group is very low and not significant having a large standard error. Hence, the null hypothesis, stating that *hubris* exists, is not rejected. Hypothesis 3 is of importance since there is barely a relation between the total return and that of the target. In the sample, there is *hubris* for 26 of the 88 companies. Unfortunately, nothing can be said about the other motives using this method.

\*\*\* Insert Table 9 about here \*\*\*

#### **4. Summary**

In the research, 60 percent of the merger partners had a positive total return, with an average of 4.8 percent. Especially the method of payment has a large influence on performance. Payment in shares has a significant negative relation, while payment in cash has a positive influence on the total return. This relation between method of payment and return is consistent with prior research in The Netherlands and elsewhere.

The return of the bidders is less favorable. A little over half (52 percent) achieves a positive return in the period of analysis. The average return is 0.94 percent. The return is positively influenced by the method of payment and negatively by the existence of merger waves. Eighty two percent of the CAR of targets was positive with an average of 22.6 percent. The relation between the market value of the equity of the bidder and the target shows a positive influence to the return. Relative large bidders pay larger acquisition

premiums. The payment in shares is not appreciated by the shareholders of the target regarding the negative influence it has on CAR.

These results are relatively more positive than earlier published work. An explanation may be that 93 percent of the mergers in the sample are horizontal, for which synergy is easier to achieve than for vertical or diagonal mergers.

Regarding the merger motives, it appears that the market is more convinced of possibilities for synergy in new combinations when the bidder finances the acquisition in cash. Not only the shareholders of the bidder prefer this method of payment, but also the shareholders of the target. Payment in shares is generally negatively valued by the shareholders of the bidder and hence the return declines.

In a period with a lot of mergers (merger wave), the return for the bidders is a lot lower than in other periods. Hence, it can be argued that the *game theory* is applicable to the Dutch situation.

Evidence is found for the statement that markup pricing has a negative influence on the return of the bidders in The Netherlands, which is consistent to similar finding in the American market. Even though markup pricing is applicable for the total, it appears that the regression coefficient for bidders with a negative return is significantly higher than for bidders with a positive return. Partial substitution prevails for bidders with a positive return. Hence, markup pricing can be seen as an *agency* problem. This bidding strategy is especially common for payment with shares or a combination of the payment. This is consistent with the results, where payment in cash positively influences the CAR and corresponds with the *synergy* motive. The analysis of the correlation of the various returns shows that *hubris* prevails for thirty percent of the mergers. Like the situation in the US, overestimation of the value of the target or self-overestimation of managers of the bidding company plays a role in The Netherlands.

## References

- Berkovitch, E., Narayanan, M., 1993. Motives for takeovers: An empirical investigation, *Journal of Financial and Quantitative Analysis* 28, 347-363.
- Bosveld, R., Meyer, P., Vorst, T., 1997. Takeover premiums in The Netherlands. In: Spronk, J., et al, *Financieringen en beleggingen deel 20*. Erasmus Universiteit Rotterdam, pp. 125-158
- Brown, S., Warner, J., 1980. Measuring security price performance. *Journal of Financial Economics* 8, 205-258.
- Bruin de, D., Frederikslust, R. van, 1994. Financiële resultaten van fusies en acquisities. In Bartel, J., et al, *Fusies en acquisities*. Stenfert Kroese, Houten, pp. 99-122
- Duijn van, J., 1992. Fusies en overnames en de aandelen belegger. In: Van Duijn, J., et al, *Fusies en overnames*. Academic Service, Schoonhoven, pp. 19-34.
- Eriksson, J., Högfeldt, P., Spens J., 1998. Bidder share price reactions following takeover announcements, working paper.
- Franks, J., Harris, R., 1989. Shareholder wealth effects of corporate takeovers. *Journal of Financial Economics* 23, 1513-1525.
- Hansen, R., 1987. A theory for the choice of exchange medium in mergers and acquisitions. *Journal of Business* 60, 75-95.
- Healy, P., Palepu, K., Ruback, R., 1992. Do mergers improve corporate finance? *Journal of Financial Economics* 31, 135-175.
- De Jong, H., 1998. Fusiegolven: theorie en empirie. *Tijdschrift voor Bedrijfsadministratie*, 1218, 446-451.
- Kemna, A., Kloek, T., Pieterse, A., December 1994. Een empirische verklaring voor de vermogensstructuur van Nederlandse ondernemingen. *Maandblad voor Accountancy en Bedrijfseconomie*, 737-750.

Keynes, J., 1936. The general theory of employment, interest, and money. Macmillan, London.

Mitchell, M., Lehn, K., 1990. Do bad bidders make good targets. *Journal of Political Economy* 98, 372-398.

Mitchell, M., Mulherin, J., 1996. The impact of industry shocks on takeover and restructuring activity. *Journal of Financial Economics* 41,193-229.

Morck, R., Schleifer, A., Vishny, R., 1990. Do managerial objectives drive bad acquisitions? *Journal of Finance* 45, 31-48.

Mueller, D., 1989. Mergers: Causes, effects and policies. *International Journal of Industrial Organization* 7, 1-10.

Myers, S., Maljuf, N., 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13, 187-221.

Roll, R., 1986. The hubris hypothesis of corporate takeovers. *Journal of Business* 59, 197-216.

Schenk, H., 1996. Bandwagon mergers, international competitiveness and government policy. *Empirica, Journal of Applied Economics and Economic Policy* 23: 255-278.

Schenk, H., 1994. Fusies als economisch en strategisch verschijnsel; reële of ogenschijnlijke paradoxen. In: Bartel, J., et al, *Fusies en acquisities*. Stenfert Kroese, Houten, pp. 33-90.

Schwert, W., 1996. Markup pricing in mergers and acquisitions. *Journal of Financial Economics* 41, 153-192.

Sirower, M., 1997. *De valstrik van synergie*. Contact, Amsterdam.

Weston, J., Copeland, T., 1992. *Managerial Finance*. The Dryden Press , New York.



**Table 1****Returns of targets, bidders and combined merger partners for several intervals**

Table 1 shows the cumulative abnormal returns of takeover targets, bidders and of the combined merger partners. The sample is based on 89 merger announcements between 1954 and 1997. Results are shown for selected intervals surrounding the event date, day 0, the date of the merger announcement. Cumulative abnormal returns are computed by means of the market-model approach and significance is tested using a one-tailed test for the takeover targets and the combined merger partners and a two-tailed t-test for the bidders. The cumulative abnormal returns of the combined merger partners (TCAR) are computed as the weighted average of the abnormal returns of the target and bidder. The weight factor is based on the relative share capital of the target and the bidder 40 days before the merger announcement.

Interval	Targets		Bidders		Combined	
	CAR	T-value	CAR	T-value	TCAR	T-value
day -1, 0	11.94%	6.623*	0.25%	0.998	2.73%	4.047**
day -1, +5	11.02%	5.490*	-0.81%	-1.324	1.47%	2.023*
day -10, +5	16.76%	6.578*	-0.21%	-0.299	3.35%	3.134**
day -20, +5	19.18%	6.776*	0.06%	0.064	3.99%	3.279**
day -40, +5	22.59%	7.488*	0.94%	0.780	4.80%	3.066**

CAR = Cumulative abnormal returns

\* significant at the 5 percent level

**Table 2****Descriptives of CAR of targets, bidders and combined merger partners**

This table shows statistical descriptives of the cumulative abnormal returns of the takeover targets, the bidders and of the combined merger partners. The descriptives of the sample of 89 merger announcements are distinguished by those with negative CAR and those with positive CAR. The cumulative abnormal returns of the combined merger partners (TCAR) are computed as the weighted average of the abnormal returns of the target and bidder. The weight factor is based on the relative share capital of the target and the bidder 40 days before the merger announcement.

	Targets		Bidders		Combined	
	negative CAR	positive CAR	negative CAR	positive CAR	negative CAR	positive CAR
Number	16	73	43	46	36	53
Minimum CAR	-22.40 %	1.78 %	-24.27 %	0.2 %	-17.63 %	0.44 %
Maximum CAR	-0.87 %	79.73 %	-0.78 %	35.93 %	-0.11 %	34.05 %
Mean	-6.61 %	29.04 %	-6.83 %	8.2 %	-4.08 %	11.49 %
Median	-5.41 %	26.59 %	-5.56 %	5.27 %	-3.05 %	8.57 %

CAR = Cumulative abnormal returns

**Table 3**  
**Summary of prior research of the return of the targets and bidders**

Table 3 summarizes prior event studies analyzing the effect of a merger announcement on the returns of targets and bidders. The period of analysis, sample size, country on which the study is based and the CAR of the targets and bidders are reported for the different event studies. Information of TCAR was mostly not available.

Research	Period of analysis	Sample size	Country	Period	CAR target	CAR bidder
Van Frederikslust , Van der Wal and Westdijk (1999)	1954 – 1997	101	NL	(-1, 0)	11.94%	.25%
Bosveld, Meyer and Vorst (1997)	1970 - 1994	122	NL	(-1, 0)	2.39%	-.01%
Sirower (1994)	1979 - 1990	168	US	(-1, +1)	n.a	-2.3%
De Bruijn and Van Frederikslust (1994)	1980 - 1993	39	NL	(-1, +1)	28.04%	-1.8%
Morck, Schleifer and Vishny (1990)	1980 - 1987	172	US	(-1, +1)	n.a.	-1.78%
Schwert (1996)	1975-1991	1814	US	(-1,0)	10.1%	n.a
Berkovitch and Narayanan (1993)	1963 - 1988	330	US	(-5, +5)	31.5%	-.3%
Franks and Harris (1989)	1955 –1985	1048	UK	(-1, 0)	n.a.	1%
Bradley, Desai and Kim (1988)	1981 - 1984	52	US	(-5, +5)	n.a.	-2.9%

Notes:  
CAR = Cumulative abnormal returns  
NL = The Netherlands  
US = United States  
UK = United Kingdom

**Table 4**  
**Summary of explanatory variables and their expected effect**

Table 4 summarizes the explanatory variables of the abnormal returns at the announcement of a merger. It presents the studies and corresponding theories, the proxies used and the expected influence the variable have on cumulative abnormal returns (CAR). A distinction is made between value creating theories and redistribution theories.

**Value creating theories**

Variables	Authors	Proxy	Expected influence on CAR
Direction of the merger	Eriksson, Högfeldt, Spens, Bosveld, Meyer & Vorst, De Jong.	Horizontal	+
Method of payment	Srower, Meyers, Maljuf, Berkovitch, Narayanan & Fishman	Cash	+
Market climate	Morck, Schleifer, Vishny, Mitchel & Mulherin	No merger waves	+

**Redistribution theories**

Variables	Authors	Proxy	Theory	Expected influence on CAR
Direction of the merger	Eriksson, Högfeldt, Spens, Bosveld, Meyer & Vorst	Vertical	Agency / Hubris	-
Method of payment	Srower, Fishman	Shares	Agency	-
		Combination	Agency	+/-
Market climate	Morck, Schleifer, Vishny, Mitchel & Mulherin	Merger waves	Agency/Game	+
		Industry		+/-

**Table 5**  
**Regression results for targets**

Table 5 shows the regression results for the takeover targets. In the analysis there are 89 targets in the period 1954 till 1997. The regression model for CAR of targets is as follows:

$$CAR(t_1, t_2) = a + b_1 \ln\text{correq} + b_2 \text{eqratio} + b_3 \text{cash} + b_4 \text{shares} + b_5 \text{mergerwave} + b_6 \text{retail} + b_7 \text{manufacturing} + b_8 \text{tprebid} + b_9 \text{bprebid} + b_{10} \text{mergeryr} + e \quad e \sim (0, s)$$

$CAR(t_1, t_2)$  is the cumulative abnormal return in an interval starting at  $t_1$  till  $t_2$  and is the dependent variable in the model. The constant in the model is  $a$  and the independent variables are multiplied by  $b_i$ .  $\ln\text{correq}$  is the natural logarithm of the inflation-corrected equity.  $\text{Eqratio}$  is the equity of the bidder divided by the equity of the target.  $\text{Cash}$  and  $\text{shares}$  are dummy variables for the method of payment.  $\text{Mergerwave}$  is a dummy variable for if there was a merger wave or not.  $\text{Retail}$  and  $\text{manufacturing}$  industry are dummy variables for the sector.  $\text{Tprebid}$  and  $\text{bprebid}$  are the share price movements of the target and the bidder in the period prior to the merger announcement. The period of time is from 100 days till 41 days prior to the public bid. The  $\text{mergeryr}$  is the year of merger exceeding the year 1900. The estimated function is tested using the F-test. The explanatory variables are tested for multicollinearity using the VIF-test and are all included in the model. Standard errors of the estimated regression coefficients are in parantheses.

Variable	CAR(-1,0)	CAR(-1,5)	CAR(-10,5)	CAR(-20,5)	CAR(-40,5)
<i>Constant</i>	106.395** (11.570)	108.867** (12.867)	98.537** (16.828)	102.014** (18.992)	95.466** (19.480)
<i>Lncorreq</i>	1.048 (1.371)	1.542 (1.525)	3.414* (1.994)	3.438 (2.251)	3.711 (2.309)
<i>Eqratio</i>	.685** (.297)	.769** (.330)	1.077** (.431)	1.195** (.487)	1.511** (.499)
<i>Cash</i>	-.577 (3.670)	.771 (4.081)	4.586 (5.337)	4.476 (6.024)	4.346 (6.178)
<i>Shares</i>	-9.461** (3.101)	-11.268** (3.449)	-6.831 (4.511)	-9.699* (5.091)	-8.356 (5.221)
<i>Mergerwave</i>	-.677 (2.691)	.161 (2.993)	.932 (3.914)	3.316 (4.417)	1.480 (4.531)
<i>Retail</i>	1.973 (4.659)	2.469 (5.181)	5.339 (6.775)	3.103 (7.647)	10.333 (7.843)
<i>Manufacturing</i>	-1.280 (3.561)	-1.090 (3.910)	.570 (5.113)	-.002 (5.771)	1.668 (5.919)
<i>Tprebid</i>	-.037 (.171)	.095 (.190)	.111 (.249)	.035 (.281)	-.029 (.288)
<i>Bprebid</i>	-.038 (.155)	-.057 (.173)	-.001 (.226)	.070 (.255)	-.157 (.261)
<i>Mergeryr</i>	.075 (.144)	.004 (.160)	.086 (.209)	.076 (.236)	.165 (.242)
$R^2$	.229	.251	.176	.188	.233
F	2.312**	2.620**	1.671*	1.801*	2.365**

\*\* significant at the 5 percent level

\* significant at the 10 percent level

**Table 6**

**Regression results for bidders**

Table 6 shows the regression results for the bidders. In the analysis there are 89 bidders in the period 1954 till 1997. An extra variable is included for the regression model of the bidder, namely the premium. The regression model for CAR of bidders is as follows:

$$CAR(t_1, t_2) = a + b_1 \ln correq + b_2 eqratio + b_3 cash + b_4 shares + b_5 mergerwave + b_6 retail + b_7 manufacturing + b_8 tprebid + b_9 bprebid + b_{10} mergeryr + b_{11} premie + e \quad e \sim (0, \sigma)$$

$CAR(t_1, t_2)$  is the cumulative abnormal return in an interval starting at  $t_1$  till  $t_2$  and is the dependent variable in the model. The constant in the model is  $a$  and the independent variables are multiplied by  $b_i$ .  $Lncorreq$  is the natural logarithm of the inflation-corrected equity.  $Eqratio$  is the equity of the bidder divided by the equity of the target.  $Cash$  and  $shares$  are dummy variables for the method of payment.  $Mergerwave$  is a dummy variable for if there was a merger wave or not.  $Retail$  and  $manufacturing$  industry are dummy variables for the sector.  $Tprebid$  and  $bprebid$  are the share pricemovements of the target and the bidder in the period prior to the merger announcement. The period of time is from 100 days till 41 days prior to the public bid. The  $mergeryr$  is the year of merger exceeding the year 1900. The variable  $premium$  is the value of the successful bid. The estimated function is tested using the F-test. The explanatory variables are tested for multicollinearity using the VIF-test and are all included in the model. Standard errors of the estimated regression coefficients are in parantheses.

Variable	CAR(-1,0)	CAR(-1,5)	CAR(-10,5)	CAR(-20,5)	CAR(-40,5)
<i>Constane</i>	95.968** (3.783)	100.682** (8.804)	104.602** (11.139)	97.934** (14.377)	88.195** (18.649)
<i>Lncorreq</i>	-.489** (.215)	-.854* (.500)	-.970 (.632)	-1.351 (.816)	-1.703 (1.059)
<i>Eqratio</i>	.036 (.049)	.206* (.115)	.041 (.145)	.199 (.188)	-.003 (.244)
<i>Cash</i>	-.404 (.610)	2.841** (1.419)	4.057** (1.795)	5.359** (2.317)	4.753 (3.005)
<i>Shares</i>	.169 (.542)	.217 (1.260)	1.031 (1.595)	1.109 (2.058)	3.496 (2.670)
<i>Mergerwave</i>	-.958** (.448)	-.989 (1.042)	-1.753 (1.319)	-2.587* (1.702)	-4.017* (2.208)
<i>Retail</i>	.728 (.780)	3.341* (1.816)	1.581 (2.297)	1.139 (2.965)	4.315 (3.846)
<i>Manufacturing</i>	.332 (.586)	-.013 (1.364)	.895 (1.726)	1.796 (2.227)	1.603 (2.889)
<i>Tprebid</i>	-.005 (.029)	.033 (.068)	-.022 (.086)	.128 (.111)	.104 (.144)
<i>Bprebid</i>	.029 (.026)	-.054 (.059)	-.020 (.075)	-.152 (.097)	-.122 (.126)
<i>Megeryr</i>	.055** (.024)	.039 (.056)	.014 (.071)	.086 (.092)	.224* (.119)
<i>Premium</i>	-.020 (.014)	-.057* (.032)	.005 (.041)	.028 (.053)	.107 (.068)
$R^2$	.222	.239	.148	.213	.206
F	1.966**	2.166**	1.203	1.874*	1.796*

\*\* significant at the 5 percent level

\* significant at the 10 percent level

**Table 7**  
**Regression results for markup pricing**

Table 7 shows the regression results for markup pricing. 87 bidders are included in the regression analysis. The relation is analyzed for the period (-40,+1) using the following model:

$$\text{Premium}_i = \alpha + \beta \text{Runup}_i + \epsilon$$

In the regression model  $\alpha$  is a constant,  $\beta$  the regression coefficient and  $\epsilon$  is the error term of the regression. The variable premium (CAR -40, +1) is the dependent variable and is the CAR of the target for the period ranging from forty days prior to the announcement to one day after the announcement. The independent variable runup is CAR (-40, -1) before the announcement of the successful bid. The estimated function is tested using the F-test. Standard errors of the estimated regression coefficients are in parentheses.

Bidders	Number	Runup coefficient ( $\beta$ )	T-value	Constant ( $\alpha$ )	T-value	$R^2$	F-value
Total	87	1.078* (.146)	7.385	12.082* (1.858)	6.502	.388	54.536*
Negative CAR	42	1.270* (.193)	6.581	10.655* (2.440)	4.368	.514	43.308*
Positive CAR	45	.807* (.226)	3.507	14.786* (2.981)	4.961	.226	12.296*
Payment in shares	41	.992* (.192)	2.196	7.675* (2.348)	3.268	.406	26.603*
Payment in cash	19	.632* (.288)	5.158	19.845* (3.875)	5.121	.211	4.822*
Combined payment	27	1.397* (.264)	5.300	14.596* (3.410)	4.280	.529	28.087*

\* significant at the 5 percent level

**Table 8**  
**Relation of CAR, hypothesis and theories**

This table shows the expected effect of the relation of CAR of target and bidder, as well as the relation of CAR of the target and TCAR. The various hypothesized expected effects are based on the indicated theory.

	Relation CAR target and bidder	Relation CAR target and TCAR	Theory
<i>Hypothesis 1</i>	<i>Positive</i>	<i>positive</i>	<i>Synergy</i>
<i>Hypothesis 2</i>	<i>Negative</i>	<i>negative</i>	<i>Agency</i>
<i>Hypothesis 3</i>	<i>Negative</i>	<i>none</i>	<i>Hubris</i>



**Table 9**  
**Regression results**

Table 9 shows the regression results of  $CAR_{target} = \alpha + \beta CAR_{bidder}$  and  $CAR_{target} = \alpha + \beta TCAR$ . In comparison with the research by Berkovitch and Narayanan (1993), the chosen period of CAR and TCAR is from ten days prior to the bid till five days after the bid. 88 non-influential mergers are included in the regression analysis. The estimated function is tested using the F-test. Standard errors of the estimated regression coefficients are in parentheses.

$CAR_{target} = \alpha + \beta CAR_{bidder}$

	N	<b><i>b</i></b>	Effect	<i>T</i>	<b><i>a</i></b>	<i>T</i>	$R^2$	<i>F</i>
Total sample TCAR	88	-.264* (.160)	-	-1.654	228.908** (52.089)	4.395	.030	2.736*
Only positive TCAR	62	-.523** (.222)	-	-2.361	352.257** (66.896)	5.266	.084	5.573**
Only negative TCAR	26	-.615** (.127)	-	-4.857	-128.160** (47.837)	-2.679	.496	23.588**

$CAR_{target} = \alpha + \beta TCAR$

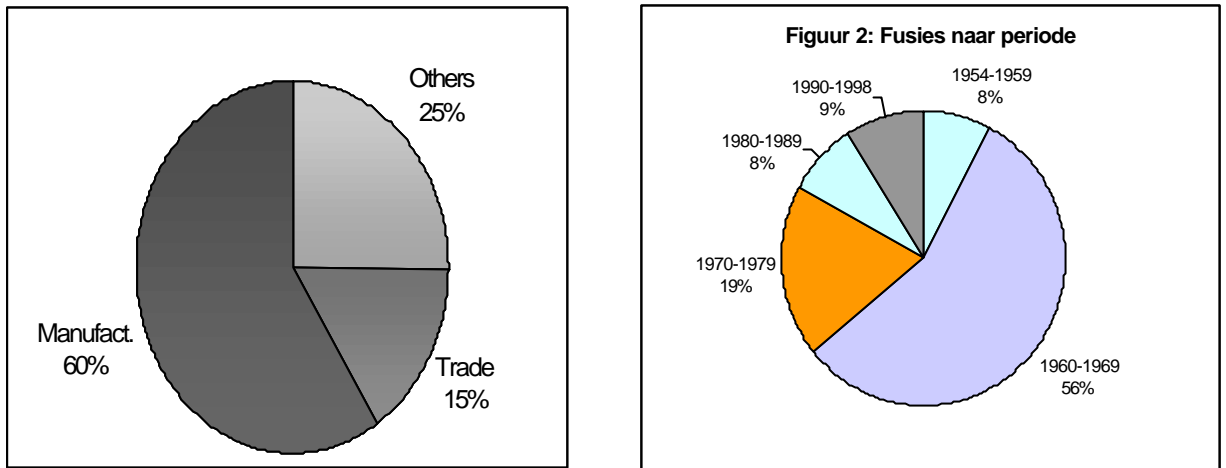
	N	<b><i>b</i></b>	Effect	<i>T</i>	<b><i>a</i></b>	<i>T</i>	$R^2$	<i>F</i>
Total sample TCAR	88	.734** (.058)	+	12.688	92.393** (33.191)	2.784	.649	160.989**
Only positive TCAR	62	.852** (.069)	+	12.396	4.672 (44.926)	.104	.716	153.665**
Only negative TCAR	26	.277 (.237)	None	1.165	93.023 (72.238)	1.288	.054	1.358

\* significant at the 10 percent level

\*\* significant at the 5 percent level

**figure 1**

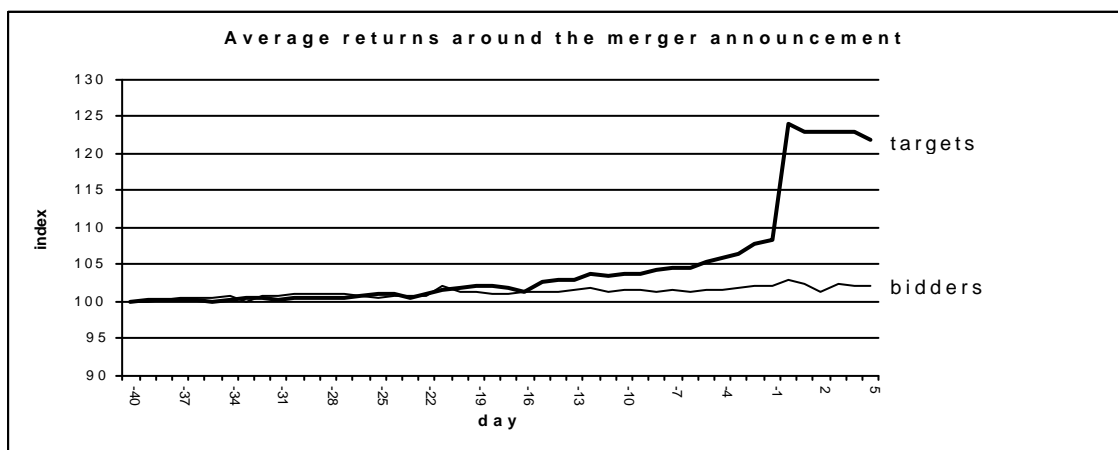
Figure 1 shows de distribution by industry and by years



**Figure 2**

**Overview of CAR of bidders and targets from day -40 till 5 days after the bid**

Figure 2 displays the cumulative abnormal returns of the bidders and the targets. The CAR are shown from 40 days prior to the announcement till 5 days after the bid was made. Day 0 is the date of the merger announcement. The sample is based on 101 merger announcements between 1954 and 1997.



**Figure 3**

**The takeover premium in perspective**

This figure shows the constitutes of the takeover premium on a time scale. A distinction is made between the pre-bid runup and the markup.

