Examining the Performance of Corporate Acquisitions Based on the Motive for the Acquisition

By

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Mergers and acquisitions are an important economic activity, yet extensive research has shown that acquirers experience, on average, non-positive returns as a result of acquisitions. I address this paradox by differentiating among mergers on the basis of the motives underlying each acquisition. Using merger motives to partition the sample of acquisitions, I distinguish between value-enhancing mergers (conjectured as motivated by synergy) and value-reducing mergers (inferred as motivated by agency). These two merger sub-samples are then analyzed to study the long-term performance of the firms in each group. Results indicate that synergy-motivated acquisitions outperform agency-motivated acquisitions up to three years following the acquisition. Furthermore, I find that the best indicator of the motive for the acquisition is achieved by using a combination of the stock market reaction to the acquisition announcement and ex-ante accounting information.

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1. INTRODUCTION

In 2001, 8,423 merger deals, valued at $704 billion, were announced. This represents 5% of the total market value of firms traded on the NYSE, NASDAQ, and AMEX during that year.[1] However, extensive research has shown that, in the short run, average returns as a result of acquisitions are non-positive.[2] By implication, it is not in the interest of the acquiring company's shareholders to pursue these acquisitions. Furthermore, there is no conclusive evidence about the long-term performance of these firms. Some studies find a negative association between the announcement date returns and long-term performance (for example: Agrawal et al., 1992; DeLong, 2002), whereas others find a positive association (for example: Healy et al., 1992; Andrade et al., 2001).

A potential problem with the extant literature is that the analyses may be overly aggregated. Not all acquisitions are pursued for the same reasons, and therefore should not be treated as a single, homogenous group. For example, in some acquisitions the interests of managers and shareholders of the acquiring firm may be aligned whereas other acquisitions are pursued at the expense of the shareholders of the acquiring firm.[3] "If mergers could be sorted by true underlying motivations, it may be that those which are undertaken for good reasons do benefit acquirers, but in the average statistics, these are canceled out by mergers undertaken for less benign reasons" (Andrade et al., 2001, p. 118).

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[1] Based on information from Mergerstat.Com for US and US cross border mergers.

[2] For example, see Andrade et al. (2001) and Fuller et al. (2002).

[3] Further evidence that managers do not always act in the best interest of shareholders can be found in Bebchuk et al. (2001), who look at executive compensation in the United States. The authors contrast the optimal contracting view vs. the rent extraction view in manager's compensation. After examining a large body of empirical evidence, the authors find evidence consistent with the rent extraction view.

The purpose of this dissertation is to test the proposition presented by Andrade et al. (2001). Instead of averaging results across all mergers and acquisitions, I use the inferred underlying motives for specific acquisitions to analyze the effect of the acquisitions on the acquiring and target firms. Prior literature has identified two main motives or types of acquisitions: synergy and agency.[4] I use the motives for acquisitions to partition the sample of firms in this study. The sub-samples are then analyzed to evaluate the effect of the acquisitions on both the acquiring firms and the target firms.

Theory suggests that takeovers that are motivated by synergy will be in the best interest of the acquiring firms' shareholders. Synergistic mergers occur when the value of the combined firm is larger than the sum of the values of the acquirer and target companies as stand-alone entities. One possible source of these increases in value is tax savings as a result of the acquisition. For example, when a firm acquires a target company with large net operating loss carryforwards, the combined firm may save tax payments, thus producing synergistic gains. Another source for synergistic gains may be financial synergy, such as reducing the acquiring firm's cost of capital. For example, the reduction in the cost of capital can be a result of issuing debt at a lower interest rate because of the target company's unused debt capacity (Ghosh and Jain, 2000).

The stock market reaction to the acquisition announcement reflects the market's estimates of future effect on the value of the acquirer and target firms. Thus, when a synergy-motivated acquisition is announced, the stock market is expected to react positively to the announcement of the acquisition. Several years later, the acquisition can be examined ex-post to determine whether the merged firm's performance reflects the

promised synergies. In a synergy-motivated acquisition, the combined firm's performance should increase over the long term as synergies are realized.[5]

An alternative motive for mergers, suggested in the literature, is agency. In this case, managers acquire firms for their own personal benefit, at the expense of their firm's shareholders. Managerial compensation may increase as a consequence of the acquisition through greater sales (Fauli-Oller and Motta, 1996), or through a reduction in their employment risk through diversification (Amihud and Lev, 1981). In efficient markets, when an agency-motivated acquisition is announced, the stock market should react negatively. Since the acquisition is not motivated by the intention to benefit the acquiring firm's shareholders, the combined firm's value, as well as the firm's performance, should deteriorate over the long run.

Apart from the synergy and agency motives suggested earlier, I also examine acquisitions that may represent cases of hubris. According to the hubris hypothesis, presented by Roll (1986), managers overpay for the target company because they overestimate their own abilities in extracting value from the target firm. Hubris is not a motive for an acquisition; managers do not acquire another company for the sake of overpaying for it. Takeovers that fit the hubris category may be motivated by either synergy or agency, but in either case the acquiring company pays a price greater than the value of the target. Cases of hubris may be the result of difficulties in assessing the target firm's value. For example, firms with large intangible assets are expected to be more

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[4] In agency I refer to managerial agency. The agency motive is sometimes referred to in the literature as managerialism.

[5] The post-acquisition, long-term performance is measured for the combined firm. The effect on post-acquisition long-term performance is examined by comparing the pre- and post-acquisition operating performances.

difficult to value (Ambrose and Megginson, 1992). Another possible source of hubris is a competition for the control of the target company (Varaiya, 1988). Regardless of the underlying motive for the acquisition, since managers of the acquiring company overpay for the target company, there is an eventual loss for acquiring shareholders. Thus, when a hubris acquisition is announced, the stock market is expected to infer the overpayment and react negatively. The combined firm's performance is expected to decrease in the long run because the potential benefits arising from this acquisition are outweighed by the fact that the acquiring firm overpaid for the target company.[6]

In this study, I examine corporate acquisitions at two points in time. The first is on the announcement date before the acquisition actually occurs, and the second is several years after the acquisition has been completed. I identify the motive for the acquisition using ex-ante data available on the merger announcement date (accounting information, the stock market reaction to the acquisition announcement, and a combination of both). The motive for the acquisition is used to form expectations about the future performance and value of the merged firm. Then, I examine the effect of the acquisition on long-term performance several years after the completion of the acquisition.[7] I examine the post-acquisition long-term effect on a company in two ways.

[6] Resources that have been "given away" to target shareholders reduce the value of the combined entity.

[7] The stock market reaction to an acquisition is calculated as the abnormal stock returns that accrue to the acquiring and target companies in the days surrounding the announcement of the acquisition. I calculate the cumulative abnormal returns (CAR) that accrue to the acquiring company, and the total CAR (the sum of the acquirer CAR and target CAR). The acquirer CAR represents the stock market estimate regarding whether the acquisition is in the interest of acquiring shareholders. The total CAR is interpreted as the stock market's estimate of wealth creation (or reduction) resulting from the acquisition.

First, I look at the firm's long-term stock abnormal returns; and second, I examine the firm's long-term operating performance.[8,9]

The results indicate that when the motive for the acquisition inferred from the stock market reaction to the acquisition announcement is one of synergies the long-term stock abnormal returns in the year following the acquisition outperform firms whose acquisitions is inferred as agency or as cases of hubris.

When the motive for the acquisitions inferred from both the stock market reaction to the acquisition announcement and accounting information is synergy the long-term stock abnormal returns in the three years following the outperform acquisitions classified as motivated by agency. I also find that synergy-motivated acquisitions outperform agency-motivated acquisitions up to three years following the acquisition when examining changes in post-acquisition, long-term operating performance.

These results not only show the importance of identifying the motive for the acquisition in explaining the post-acquisition, long-term performance, but also demonstrate the importance of accounting numbers in identifying the motives The fact that combining accounting data and stock market data produces a better classification than using the stock market data alone is consistent with the notion of equilibrium price information as in Grossman (1995). Grossman argues that some stock price changes reflect the allocation of resources to their best use. In other words, not all price changes

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[8] It should be noted that long-term abnormal returns have been shown to include corrections to the initial stock market reaction to the acquisition announcement (for example, Agrawal et al., 1992). If this is the case, the operating performance measure that is based on accounting variables, may be a better choice than using long-term stock abnormal returns.

[9] As suggested by Healy et al. (1992), I define operating performance as industry adjusted operating cash flow returns. Operating cash flow returns are operating cash flows divided by the market value of assets. The benefit of using the operating performance method is that the use of cash flow measures mitigates the

result from new information about the firm. Therefore, the combination of both stock information data and accounting data produces a measure that better captures the new information revealed about the firm, producing a better classification of the acquisitions.[10]

This dissertation contributes to the existing literature in several ways. I expand on Healy et al. (1992) by analyzing mergers in terms of the motives for the acquisition.[11] This analysis enables me to divide the merger data into sub-samples, which facilitates a better understanding of the acquisition's effect on the companies involved. I also link the underlying motives for corporate acquisitions to their effect on post-acquisition, long-term performance and to the stock market's reaction to the acquisition announcement. This is important because, instead of analyzing the average effect of corporate acquisitions, it enables me to examine the effect of different types of corporate acquisitions on the firms involved.

The dissertation continues as follows. Section 2 describes the different possible motives for corporate acquisitions and the methods I use to create proxies for those motives. Section 3 outlines my hypotheses development and sample selection. In section 4, I analyze the motives for corporate acquisitions. Section 5 includes the post-acquisition, long-term performance analysis and the link between performance and

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impact of the method of financing of the acquisition and of the accounting method chosen. Furthermore, cash flow represents the actual economic benefits generated by the assets.

[10] Price changes arising from the liquidity or other pressures are referred to in the literature as the consequence of non-information based trading (NIB). Accounting information, being uncorrelated with NIB trading, can help refine the information contained in price data.

[11] Healy et al. (1992) examine the post-acquisition, long-term performance of the 50 largest mergers between 1979 and mid 1984. My sample is substantially larger, and thus may enable me to draw better inferences about corporate acquisitions in general.

motives. Additional tests are presented in Section 6. Concluding remarks and ideas for future research are offered in Section 7.

2. POSSIBLE MOTIVES FOR CORPORATE ACQUISITIONS

In this section, I review different theories about what motivates acquisitions. On the basis of the theories suggested in the literature, I choose firm characteristics and accounting variables to identify and form inferences about the underlying motives of corporate acquisitions. I broadly categorize the motives for acquisitions into two groups: synergy and agency (or managerialism). In addition, I examine the hubris hypothesis, and offer variables that can be used to identify cases of hubris.

2.1 Synergy

The definition of synergy used in this paper is that of value-creation of the combined entity. In other words, the combination of acquirer and target creates an entity whose value is greater than the sum of the acquirer and target separately. A synergy-motivated acquisition suggests that the incentives of managers of the acquiring firms and their shareholders are aligned, and the acquisition is pursued in order to increase the acquiring firm's value. I identify the synergy motive by locating possible sources of synergy, and argue that an acquisition that offers possible synergistic gains is probably motivated by the desire to capture those gains.

2.1.1 Increasing the target's value

One form of synergistic gains can occur when the acquiring firm increases the target's value, thus creating a combined entity whose value is greater than the sum of the acquirer and target separately. Increasing the target's value can happen in several ways: one way is to reduce an agency problem in the target, another way is to decrease the target's management inefficiencies.

2.1.1.1 Correcting an agency problem in the target

One way to create synergy is by correcting an existing agency problem in the target. An agency problem exists when an agent (the manager) is motivated by self-interest and acts at the expense of the shareholders (Baiman, 1990). An agency problem reduces firm value (Jensen and Meckling, 1976). Although managers are expected to manage the firm in a way that maximizes shareholder wealth, the objectives of the managers might be in conflict with those of the shareholders. For example, the payout of cash to shareholders reduces the resources under the manager's control, which reduces the manager's power. The payout of cash to shareholders also makes it more likely that the firm will need outside financing. In that case, the manager would incur the additional cost of monitoring of the capital markets to obtain that financing. Hence, by correcting an existing agency problem in the target, the acquirer can increase the target's value and create synergistic gains.

This possible source of synergy can be detected by identifying an existing agency problem in the target prior to the acquisition. One technique to detect the presence of an agency problem in a company is by examining its free cash flow. Jensen (1986) defines free cash flow as cash flow in excess of the amount needed to finance all projects with positive net present value discounted at the relevant cost of capital. Jensen develops a theory that explains how free cash flow is associated with an agency problem, and how agency costs can be reduced. Following Jensen (1986) and the extensions done by Stulz (1990), and Lang, Stulz and Walkling (1991), an agency problem can be detected by examining the firm's level of cash flow and growth opportunities. High levels of cash flow, and low growth opportunities suggest the existence of an agency problem.

Another method for identifying an agency problem is to analyze the firm's debt. A firm that borrows money is subjected to the lender's examination and monitoring. Therefore, debt can be used as a tool to monitor managers. Debt further reduces the agency costs of free cash flow by reducing the cash flow available for managers to spend (Jensen and Meckling, 1976, and Jensen, 1986). Because of the monitoring effect of debt, finding a firm with a suboptimal debt level may indicate the presence of an agency problem (Jensen and Meckling, 1976, Jensen, 1986, Stulz, 1990, Maloney, McCormick, and Mitchell, 1993, Berger, Ofek and Yermack, 1997).

Levels of ownership by management can also be used to detect an agency problem. As suggested by Jensen and Meckling (1976), and then used in Amihud and Lev (1981), Slusky and Caves (1991), Ambrose and Megginson (1992) and Himmelberg, Hubbard, and Palia (1999), ownership can be used to align the interests of managers and shareholders. Low managerial ownership suggests that managers may not be as concerned with creating shareholder value as they are with obtaining perquisites from the firm, which creates an agency problem.

2.1.1.2 Reducing the target's managerial inefficiency

Another method to increase the target's value and create synergy is to decrease its managerial inefficiencies. An acquiring company can correct an inefficiency problem in the target's management, which increases the target's value and creates synergistic gains. To detect a situation in which the target's management inefficiencies can be improved, the targets' performance prior to the acquisition is examined for inefficient management. The largest synergistic gains are possible when an efficient firm acquires an inefficient firm (Servaes, 1991).

As suggested by Palepu (1986), the target's return on equity (ROE) prior to the acquisition can be used as a proxy for the target's management efficiency. Alternatively, the firm's return on assets (ROA) can be used as a proxy for the management's efficiency (DeLong, 2002). ROA has an advantage over ROE because managers can reduce the firm's equity, which increases ROE without increasing the actual return. When comparing firm efficiencies before and after the acquisition, ROE would be a better choice than ROA because of the problems associated with the change in assets resulting from the accounting method used to account for the acquisition.[12] Another possible proxy for the target management's efficiency is Tobin's Q (Lang, Stulz, and Walkling, 1989, and Weston et. al. 2001, p. 143).

Tender offers may also be used to detect possible cases of management inefficiencies in the target firm. A tender offer occurs when the acquiring firm extends an offer to buy shares directly from the target firm's shareholders, effectively bypassing the target's management. Martin and McConnell (1991) find high management turnover in the target following tender offers. Since it is usually more difficult to finalize a deal through a tender offer than through a merger agreement with the target's management, tender offers are usually cases in which a merger agreement could not be reached. One possible reason for not reaching a merger agreement is target management's fear of losing their jobs. I therefore use tender offers to proxy for cases in which the acquiring firm's intent is to replace the target's management. By assuming that the reason for replacing the target's management was that it was inefficient, tender offers can be used to

[12] When using the purchase method to account for an acquisition, the target value is calculated and incorporated at the fair value (including its assets). When using the pooling of interest method, the target is accounted for at book value. This fact would cause acquisitions using the purchase method to have much lower ROA than their counterparts using the pooling method. ROE is unaffected by the accounting method.

proxy for cases in which the acquiring company is alleviating the target firm's management inefficiency.

2.1.2 Synergistic gains from specific combinations of target and acquirer

Some synergies are possible because of specific combinations of target and acquirer. For example, economies of scale would be possible whenever the acquirer and target belong to the same industry. Increased debt capacity as part of financial synergies might occur and would be regarded as advantageous only for specific combinations of acquirer and target (Slusky and Caves, 1991).

2.1.2.1 Economies of scale

A possible source of synergy can arise from economies of scale. The theory of operating synergies assumes that economies of scale exist in an industry, and that the levels of production prior to the acquisition do not capture the full potential of these economies of scale. For example, some economies of scale can be achieved in manufacturing operations or in research and development if the acquirer and target belong to the same industry (Weston et al., 2001). Another area for economies of scale within the same industry is vertical integration, which improves the coordination at different stages of production and reduces communication costs and bargaining (Arrow, 1975 and Klein, Crawford, and Alchian, 1978). Acquisitions in which the acquirer and target belong to the same industry are more likely to be motivated by synergy (Slusky and Caves, 1991). Therefore, one possible method to detect economies of scale is to examine whether the acquirer and target belong to the same industry.

2.1.2.2 Financial synergy

Financial synergy can be achieved by lowering the costs of internal financing (Weston et al., 2001). Acquiring target firms with high levels of cash may be a cost-effective solution for firms looking to lower their cost of capital. Hence, acquisitions that involve targets with high levels of cash are likely to be motivated by synergy.

An additional method to detect possible financial synergies is to look at financial slack, which can be calculated as the difference between the target and acquirer's financial leverage (Slusky and Caves, 1991). A difference in the financial leverages of the target and acquirer may indicate differences in the firms' costs of capital, which suggests that financial synergies may arise from the corporate acquisition.[13]

2.1.2.3 Tax savings

Tax savings can be an additional source of synergy since they represent a case of redistribution of wealth from the government or public to the firm (Weston, et al., 2001). It should be noted that the existing literature has not found the synergies resulting from tax savings sufficiently significant to motivate an acquisition (Auerbach and Reishus, 1988, Hayn, 1989, Ghosh and Jain, 2000, Weston, et al., 2001). This might be a consequence of the tax code that severely limits the use of NOL of the target by the combined new entity.

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[13] Another source of financial synergy is increased debt capacity (as shown recently by Ghosh and Jain, 2000). The increase in debt capacity enables the acquiring firm to increase its value by increasing its financial leverage, thus gaining the tax deduction for the interest on the new debt. In order to detect an increased debt capacity, the pre- and post-acquisition levels of debt should be compared. In this study, I use only ex-ante information to identify the motives for the acquisitions, so this motivation cannot be examined.

2.2 Agency

The second category of incentives for corporate acquisitions is agency or managerialism. This category consists of motives that serve managers, but not shareholders. Managers are the shareholders' agents and have the responsibility to manage the firm and make decisions that are in the best interest of shareholders. In some cases, managers make decisions that are in their own interest, and not necessarily in the interest of shareholders. An agency-motivated acquisition is defined as an acquisition that is pursued by managers in their own interest at the expense of shareholders. For example, managers might increase their compensation through the increase of sales (Fauli-Oller and Motta, 1996) or diversify their employment risk (Amihud and Lev, 1981).

The methods used to identify the agency or managerialism motive for an acquisition include examining whether there is an agency problem in the acquiring firm and detecting diversifying acquisitions.

2.2.1 Detecting an agency problem in the acquirer

In a firm with an agency problem, managerial decisions may not be in the best interest of shareholders. I conjecture that corporate acquisitions made by those managers will also be in their own interest at the shareholders' expense, thus creating an agency-motivated acquisition. Therefore, I identify an agency-motivated acquisition by detecting an agency problem in the acquiring company.

2.2.2 Detecting diversifying acquisitions

Diversifying acquisitions are may also favor managers at the expense of shareholders. Conglomerate mergers are one form of diversifying acquisitions. Conglomerate mergers usually lead to a reduction in risk for the combined entity. The

risk reduction is accomplished by combining the earnings from the different businesses of the merged company.[14] This form of risk reduction is not necessarily in the best interest of shareholders because shareholders can achieve risk reduction by diversifying their own investment portfolios. Amihud and Lev (1981) suggest and test a managerial motive for conglomerate mergers. They hypothesize that managers engage in conglomerate mergers to diversify their otherwise undiversifiable "employment risk", such as the risk of loosing their job, or their reputations. The authors test the hypothesis by examining the association between the level of managerial ownership and the number of conglomerate mergers, and by examining the association between managerial ownership levels and the degree of income diversification. Amihud and Lev (1981) find their results to be consistent with their hypothesis.

Morck, Shleifer, and Vishny (1990) find that three types of acquisitions have systematically lower abnormal stock returns around the time when the acquisition is announced. The three types are: when firms diversify, when the targets are rapidly growing firms, and when the managers of the acquiring firms have performed poorly before the acquisition. Their results are consistent with those acquisitions being driven by managerial objectives.

Thus, Amihud and Lev (1981) and Morck, Shleifer, and Vishny (1990) support the idea that conglomerate or diversifying acquisitions are consistent with being driven by managerial objectives.

[14] If the streams of income were perfectly correlated, no risk reduction would be attained. The largest risk reduction is realized when the incomes are negatively correlated.

2.3 Hubris

Apart from the motives suggested earlier, I also examine acquisitions that may represent cases of hubris. Hubris is not a motive for an acquisition; managers do not acquire another company for the sake of overpaying for it. Takeovers that can be explained by hubris may be motivated by either synergy or agency, but whenever the acquiring company over-pays, we have a case of hubris.[15] In this section I review the hubris hypothesis and offer variables that can be used to identify cases of hubris. The hubris hypotheses presented by Roll (1986) suggests that managers of acquiring firms overpay for an acquisition because of an over confidence in their own abilities. Hubris can occur either because of objective difficulties in the valuation of the target or because of other factors such as competition for the control of the target.

2.3.1 Difficulties in the valuation of the target

An objective problem in valuing the target might cause a case of hubris. Ambrose and Megginson (1992) extend the Palepu (1986) model to predict the likelihood of acquisition by including tangible and intangible assets structure, managerial ownership, and takeover defenses. Ambrose and Megginson (1992) state that fixed assets are easier to value than growth opportunities since the realization of growth opportunities depends on the current managers' human capital. Therefore, the acquisition of a target firm with a higher proportion of intangible assets is more likely to result in a misevaluation of the target. The target may also be difficult to value in the case of a target firm with high

[15] It should be noted that a mistake in the evaluation of the target could occur in either direction. In a case of under-evaluation, the value attached to the target by the acquiring firm is lower than the true (market) value. This will result in the acquiring firm refusing to bid for the target, or the bid being rejected. These cases are unobservable, so we are left with a truncated distribution of the evaluations in which only the over-evaluations are observable (Roll, 1986).

levels of research and development (R&D) expenses. Like intangible assets, R&D expenses are difficult to value since their outcome is unclear.

2.3.2 Multiple bidders

Competition for control of the target may also contribute to a case of hubris. Varaiya (1988) studies factors associated with cases of overestimation of targets in corporate takeovers. The factors found to be associated with overestimation were the pre-acquisition profitability of the acquirer (consistent with Hayward and Hambrick, 1997) and the degree of competition for control of the target firm. Based on the theory of order statistics, Varaiya explains that the larger the number of bidders, the greater the expected value of the winning bid. Hence, the likelihood that the winning bid will overestimate the value of the target, which creates a case of hubris, increases with the degree of competition.

3. HYPOTHESES DEVELOPMENT AND SAMPLE SELECTION

3.1 Hypotheses development

In the previous section, I summarized and categorized different reasons for corporate acquisitions. These reasons were divided into two categories: synergy and agency. I also identified another aspect of acquisitions, namely, cases of hubris. Hubris is a special case of synergy or agency in which the acquirer overpaid for the target. In this study, I first identify the type of acquisition, and then examine the effect of each acquisition on post-acquisition, long-term performance. Testable hypotheses regarding the association between the type of acquisition and its effect on post-acquisition, long-term performance are tested. Synergy-motivated acquisitions are hypothesized to be in the interest of the acquiring shareholders, and to create value. I therefore expect that these acquisitions have a positive effect on the firms' post-acquisition, long-term performance. Agency-motivated acquisitions are conjectured to be in the interest of acquiring firm's management, but not in the interest of its shareholders. In fact, these acquisitions are expected to destroy firm value. Therefore, agency-motivated acquisitions are hypothesized to be associated with a negative effect on firms' post-acquisition, long-term performance. Since cases of hubris are hypothesized not to be in the interest of acquiring shareholders, I expect that they will also be associated with a negative effect on the firms' post-acquisition, long-term performance.

3.2 Sample selection

The analysis in this study is based on a sample of all completed mergers of US public companies between 1981 and 1999. I use only completed mergers because I test the merger's effect on the post-acquisition, long-term performance. Table 1 shows that

4,268 mergers are identified using the Securities Data Company (*SDC*) database. After excluding all mergers involving firms in the financial sector (SIC code 6XXX) I am left with 2,554 mergers. Stock price data was taken from the Center for Research in Security Prices (*CRSP*) database, and the financial statement data was obtained from *COMPUSTAT*. Some firms were not found in the *CRSP* and *COMPUSTAT* databases, reducing the sample by 509 mergers. Finally, in some mergers, there was insufficient data to calculate the stock market reaction to the announcement. Those mergers were discarded, which reduced the final sample to 1,987 mergers.

3.3 Descriptive statistics

3.3.1 Temporal distribution of mergers

The frequency distribution of the mergers in my sample over time is presented in Table 2, Panel A. The examination of the temporal distribution of mergers is important to analyze the possibility of merger waves. The idea of merger waves is that mergers do not occur equally over time, but rather are concentrated over periods of a few years. Andrade et al. (2001) suggest that there have been three distinct merger waves in recent times: in the 1960's, in the 1980's, and in the 1990's. The results in Table 2, Panel A confirm an increase in merger activity in the 1990's. In fact, mergers in the period from 1995 to 1999 account for more than half of the sample. Controlling for an increase in the number of publicly traded firms, Figure 1 shows the number of mergers in the sample as a percentage of the number of firms included in CRSP. Even after controlling for overall growth in the number of publicly traded companies, there is an increase in the merger activity in the 1990's. These findings are consistent with Mitchell and Mulherin (1996), Schwert (2000). Andrade et al. (2001) reporting similar patterns in merger activity.

3.3.2 Distribution of mergers by industry

Panel B of Table 2 presents the five industries that had the most mergers each year. The table includes a summary of the distribution for the 1980's and 1990's, as well as the whole period from 1981 to 1999. The distribution of mergers in the different industries is important in order to examine the industry shock argument presented by Mitchell and Mulherin (1996). This argument suggests that mergers are caused by shocks to the industry. A concentration of mergers in a certain industry within a relatively short period of time would be regarded as evidence to support this argument.

The results in Table 2, Panel B show that in the 1980's, the industries with the most mergers include Chemical and Allied Products (SIC code 28), Industrial and Commercial Machinery, and Computer Equipment (SIC code 35), and Measuring, Analyzing, and Controlling Instruments; Photographic, Medical and Optical Goods; Watches and Clocks (SIC code 38). The mergers in these industries still occur frequently in the 1990's, but less often than before. Mergers in the Business Services Industry (SIC code 73) are common in the late 1980's, and occur even more frequently in the 1990's. The Communication Industry (SIC code 48) appears in both periods.

The results are difficult to compare to the results presented by Mitchell and Mulherin (1996), and Andrade et al. (2001) since their papers do not use the SIC code to classify firms. Nevertheless, some similarities can be observed in the results, specifically the appearance of the communication industry (SIC code 48) and the oil and gas industry (SIC code 13).

4. ANALYZING THE MOTIVES FOR CORPORATE ACQUISITIONS

Analyzing the motive for acquisition and the type of acquisition can be done in two ways. The first is to examine the stock market reaction to the acquisition announcement. The second is to use a combination of the stock market reaction to the announcement and the accounting information and firm characteristics at the time of the merger announcement.[16] In section 5, these motive classifications will be validated by examining the post-acquisition, long-term performance for each motive.

4.1 Using the stock market reaction to the acquisition announcement

In order to use the stock market reaction to the acquisition announcement to identify the motive or type of the acquisition, I examine the cumulative abnormal returns (CAR) that accrue to the acquirer firms and target firms around the announcement. The acquirer (target) CAR is interpreted as the stock market estimate of whether the acquisition is in the interest of the acquirer (target) shareholders. The total CAR (the sum of the acquirer CAR and the target CAR) is interpreted as the stock market estimate of whether wealth is created or destroyed as a result of the acquisition.

I use the following criteria to classify the type of acquisition based on both the acquirer CAR and the total CAR. An acquisition in which both the acquirer CAR and the total CAR are positive suggests that the acquisition is in the interest of the acquiring shareholders, and that acquisition creates value.[17] This type of acquisition is classified as

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[16] Accounting data alone is used to identify the motive or type of acquisition in section 6.1. I also use the accounting variables without the stock market reaction to the announcement information to examine the association between the accounting variables and the acquisition effect on post-acquisition long-term performance.

[17] A summary of the criteria is presented in Table 3.

being motivated by synergy. An acquisition in which the acquirer's CAR and the total CAR are negative is classified as being motivated by agency, since the stock market reaction to the acquisition announcement suggests that the acquisition destroys value, and is not in the interest of the acquiring firm's shareholders. A combination of negative CAR accruing to the acquirer, and total positive CAR, suggests that the stock market estimates that the acquisition is not in the interest of acquiring shareholders. Even though the acquisition creates value (a case of synergy), it is consistent with the hubris hypothesis in which the managers of the acquiring firm have overpaid for the acquisition. In this case, the target captures all gains resulting from the future synergy, as well as some additional value. In the final type of acquisition, the acquirer accrues positive CAR, and the total CAR is negative. I offer no theoretical explanation consistent with this situation, so I label these acquisitions as undefined.

4.1.1 Calculating the stock market reaction to the acquisition announcement

Daily stock market abnormal returns (AR) are calculated to obtain the stock market's reaction to the merger announcement.[18] *EVENTUS* is used to calculate the AR based on the market model using an equally weighted index.[19] The model is estimated over 200 trading days ending just before the event window. Cumulative abnormal returns (CAR) are calculated for the acquirer (ACQCAR) and the target (TRCAR) over the event window. The two are then combined to obtain the total CAR (TTLCAR). TTLCAR are

[18] The announcement date is taken from the *SDC* database and represents the first date in which the acquirer or target made a public announcement that it held negotiations, or received a formal proposal to combine, acquire etc.

[19] The *Eventus* system is available through the Wharton Research Data Services. *Eventus* performs event studies using data read directly from CRSP stock databases or pre-extracted from any source.

calculated as a weighted average of the ACQCAR and TRCAR using the firms' market value of equity as weights (similar to DeLong, 2001).

4.1.2 Descriptive statistics of the stock market reaction to the merger announcement

Cumulative abnormal returns (CAR) are calculated over different event windows (as shown in Table 4). I calculate the CAR both for the acquirer and the target. Total CAR are calculated as a sum of the acquirer CAR and the target CAR using their market values as weights taken 30 days prior to the acquisition announcement for event windows (-30,30), (-20,5), and (-20,1), and 6 days prior to the merger announcement for windows (-5,5), (-3,3), and (-1,1). The CAR over the different event windows are calculated to examine whether there is a significant difference between the windows. All CAR are significantly different from zero at the 1% level, and all CAR show the same pattern of negative CAR for the acquirer, positive CAR for the target and positive total CAR.

4.1.2.1 Acquirer's cumulative abnormal returns

Data was obtained for acquirers in 1,895 mergers.[20] Overall, the acquirers in about 45% of the mergers have positive abnormal returns following the merger announcement, ranging from 47% in the (-30,30) window to 44% in the (-1,1) window. The positive CAR is interpreted as suggesting that the market estimates that those mergers are in the interest of the acquiring shareholders.

All mean and median acquirer CARs are negative and statistically different from zero, suggesting that the market estimates that on average the acquisitions are not in the interest of the acquiring firm shareholders. As shown in the table, there is a noteworthy

[20] Sufficient data was not available for 92 acquirers, thus reducing the sample of acquirers to 1,895.

difference between the CAR in the longest window (-30,30) and the shortest window (-1,1). By examining the other CAR over the other windows presented, we can observe that most of the abnormal returns accrue over the window of (-5,5). The average CAR for the acquirer for an event window of five days prior to the announcement to five day after the announcement (CAR(-5,5)) was -0.91%. The average CAR for a three day window around the announcement day (CAR(-1,1)) the result was equal to -0.63%.[21]

4.1.2.2 Target's cumulative abnormal returns

CARs were calculated for 1,801 targets.[22] Over 80% of targets had positive CARs. All mean and median CAR are positive and significant. Thus, the market estimates that on average the acquisition is in the interest of the target's shareholders. The mean (median) CAR ranges from 27.48% (24.42%) for the period of 30 days prior to the merger announcement to 30 days after the announcement to 19.95% (15.65%) for the three day event window surrounding the announcement day.[23]

4.1.2.3 Total cumulative abnormal returns

Total CARs are calculated by adding the acquirer CAR and the target CAR, using the market value of each firm as weights. The market values are calculated thirty days prior to the announcement for event windows (-30,30), (-20,5), and (-20,1), and six days prior to the merger announcement for windows (-5,5), (-3,3), and (-1,1). Data were

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[21] By examining CAR(-20,5), CAR(-20,1) and CAR(-1,1), we can see that not only the news about the merger is leaked to the market before the official announcement (the difference between CAR(-20,1) and CAR(-1,1)), but also the market does not quickly incorporate the news into the stock prices (the difference between CAR(-20,5) and CAR(-20,1).

[22] Sufficient data was not available for 186 targets, thus reducing the sample of targets to 1,801.

[23] The fact that there is almost no difference between CAR(-20,5) and CAR(-20,1) suggests that, unlike in the acquirers' case, the news about the acquisition seems to be incorporated quickly into the targets' stock prices. By examining the different CAR we can see that 4% to 5% abnormal returns accrue to the targets between days –20 and –5 (day zero is defined as the announcement day).

obtained for 1,708 mergers.[24] The drop in the number of observation is a result of requiring both data about the target and data about the acquirer to calculate the total CAR.

More than half of the mergers have positive total CARs. Positive total CARs are interpreted as if the market estimates that there are synergies, or value creation, resulting from the merger. Both the mean and median total CAR over all event windows are positive and statistically different from zero.

4.1.2.4 Overview of the Cumulative Abnormal Returns

The results in Table 4 are consistent with results presented in earlier summary papers by Jensen and Ruback (1983) and Andrade, Mitchell, and Stafford (2001). The positive total CAR indicates that on average the market estimates that the acquisition would create value (a synergy motivated acquisition according to my interpretation). The fact that the average CAR for the target is positive, and the mean acquirers' CAR is negative suggests that the acquisition gains accrue entirely to the targets, while the acquirers seem to be subsidizing the acquisitions.

4.1.3 Descriptive results about classification using stock market reaction

I use the event window of five days before the announcement to five after the announcement as the proxy for the market reaction to the acquisition announcement.[25] Following the criteria presented in Table 1, I classify the acquisitions based on the identified motive. The results of this classification are presented in Table 5. I classify 745 mergers (40% of the sample) as motivated by synergy, 263 mergers as cases of hubris

[24] Since the calculation of total CAR requires data for both the acquirer and the target in each acquisition, and data was not obtained for all acquirer and all targets, data was available for only 1,708 acquisitions.

(15% of the sample), 679 mergers (44% of the sample) as motivated by agency, and only 21 mergers (1% of the sample) are labeled undefined.

4.2 Using stock market and accounting information

Identification of the merger motive utilizes stock market information. However, this information may be incomplete. Thus, I investigate a second method to identify the type of acquisition that combines the stock market reaction to the acquisition announcement with ex-ante accounting data. The accounting data is selected as to proxy for the possible motives for corporate acquisitions described in section 2. This method consists of performing multiple discriminant analysis (MDA) using the following model:

$$\textit{Type of acquisition} = \Sigma\beta_i \textit{ Accounting variables} + \Sigma\beta_j \textit{ Control variables} + \varepsilon \quad (1)$$

Where the type of acquisition is determined based on the stock market reaction to the acquisition announcement. Since the type of acquisition is a nominal and not an ordinal variable, it can have only two levels. I therefore include, when using the combination of stock market data and accounting data, only two types of acquisitions. Taking into account both frequency, and theoretical considerations I concentrate on acquisitions that are identified as being motivated by synergy or agency. This analysis excludes acquisitions identified as cases of hubris, or those labeled undefined.

The need for both stock market data and firm specific information substantially reduces my sample to 341 mergers. I randomly divide my sample into two halves. I use the multiple discriminant analysis model to estimate a discriminant function on one half

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[25] The choice of event window is consistent with Berkovitch and Narayanan (1993). The use of different event windows in the study has produced similar results.

(171 mergers). Using the discriminant function I calculate a score for each observation in the other half of my sample (including 170 mergers). I name this score an "A" score.

Since both the stock market reaction to the acquisition announcement and the accounting variables are obtained prior to the acquisition itself the A score effectively represents ex-ante information.

I now present the accounting variables and firm characteristics used to proxy for the different motives for the acquisitions presented in detail in section 2. A summary of the variables used and their operational definitions are presented in Table 6.

4.2.1 Variables used to identify the synergy motive

The synergy motive consists of acquisitions that are in the acquiring shareholders' interest and the acquisition is expected to create value. These variables reflect potential sources of synergy resulting from the acquisition.

4.2.1.1 Correcting an agency problem in the target

By correcting an agency problem in the target, an acquirer is able to increase the target's value and create synergy. To detect an agency problem in the target I examine free cash flow. I look at both the target firms' cash and the growth opportunities to proxy for the free cash flow (Jensen (1986), Stulz (1990), and Lang, Stulz and Walkling (1991)).

I estimate the target's growth opportunities by calculating Tobin's Q (as in Lang, Stulz and Walkling, 1991). To calculate Tobin's Q, I use the approximation modified by Chung and Pruitt (1994).[26] The calculation consists of:

[26] Tobin's Q is defined as the ratio of the market value of a firm to the replacements costs of its assets. In the Chung and Pruitt (1994) the replacements costs of a firm's assets is approximated by the firm's book value of assets. The firm's market value is approximated by the sum of the firm's market value of equity, and its book value of preferred stock and debt.

$$TRQ = (MVE + PS + DEBT)/TA \quad (2)$$

Where TRQ is the target's Tobin's Q, and MVE is the firm's market value of equity as calculated using the stock's price 30 days prior to the acquisition announcement multiplied by the number of outstanding shares. PS is the liquidation value of the preferred stock (data item 10 in *Compustat*). DEBT is the value of short-term liabilities (data item 5 in *Compustat*) net of short-term assets (data item 4 in *Compustat*), plus the firm's long-term debt (data item 9 in *Compustat*). TA is the book value of the total assets of the firm (data item 6 in *Compustat*).

To test the target's levels of cash (TRCASH), as in Lang, Stulz and Walkling (1991), I add cash and short-term investment (data item 1 in *Compustat*) divided by the book value of total assets (data item 6 in *Compustat*). The agency problem is detected by examining the interaction between the level of cash and the Tobin's Q (TRCASH*TRQ).

A second measure consistent with an agency problem in the target firm makes use of the target's ex-ante level of debt. A low or sub-optimal level of debt would suggest the possible existence of an agency problem.[27] The target's debt (TRDDEBT) is calculated as the sum of long-term debt (data item 9 in *Compustat*) and short-term debt (data item 44 in *Compustat*), divided by the firm's book value of assets (data item 6 in *Compustat*). Sub-optimal levels of debt are calculated as the difference between the firm's debt and the industry median debt, where the industry median debt is used as a proxy for the optimal level of debt (for a summary of the literature see Hull, 1999).[28,29]

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[27] Ceteris paribus a low or sub-optimal level of debt suggests that the managers are subject to less monitoring by debt holders, and that after paying the interest on debt more funds are left at their disposal (Jensen and Meckling, 1976)

[28] The industry is defined as the firm's primary a two-digit SIC code.

4.2.1.2 Reducing the target's management inefficiency

An acquirer can also increase the target's value by lessening the target's management inefficiency thus creating synergy. One method to detect management inefficiency is by examining the target's return on equity (ROE). ROE is calculated for the target companies by dividing income before extraordinary items (*Compustat* data item 18) by common equity (*Compustat* data item 11). The return on equity is calculated for the year before the merger announcement (TRROE1). Following Palepu (1986) I also calculate the ROE as an average of the four years prior to the announcement (TRROE4). For those targets where data is not available for the whole four years prior to the announcement, I calculate the average with the available data.

Return on assets (ROA) can also be used to uncover management inefficiency. ROA is calculated by dividing income before extraordinary items (*Compustat* data item 18) by the total assets of the firm (data item 6 in *Compustat*). The return of assets is calculated for the year before the merger announcement (TRROA).

An additional proxy for management inefficiency is Tobin's Q (as in Lang, Stulz, and Walkling, 1989, Servaes, 1991, and Weston et al., 2001, p. 144). Low levels of Tobin's Q are defined as a value of less than one (Lang, Stulz, and Walkling, 1989). Low levels of Tobin's Q would indicate an inefficient management.

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[29] An agency problem can further be uncovered by examining the levels of managerial ownership (TROWNER). A low level of managerial ownership would suggest that an agency problem might exist in the company. I was able to collect limited data about the managerial ownership; including the variable in my study significantly reduces the sample. I hence use the managerial ownership data as a sensitivity test (presented in section 6.2), and find that the results are qualitatively the same with or without the use of this data.

Tender offers can further be used to identify the target's management inefficiency since tender offers suggest the acquirer's intent to replace the target's management. The identification of a tender offer is done based on an indicator in the *SDC* database.[30]

4.2.1.3 Economies of scale

Economies of scale represent an additional source of synergy. Economies of scale can be achieved in cases were there is high relatedness between the target and acquirer. The relatedness can be detected by examining whether the two companies involved in the acquisition belong to the same industry.[31]

To examine whether the two companies involved in the acquisition belong to the same industry I look at their primary SIC code as recorded in the *SDC* database. The examination is done based on both a two digit SIC code and on a four digit SIC code. I create a dummy variable that equals one if the acquirer and target belong to the same industry based on the two digit SIC code and equals zero otherwise (SAMEIND2), and another dummy variable that equals one if they belong to the same industry based on the four digit SIC code (SAMEIND4). Since if SAMEIND4 equals one SAMEIND2 would surely equal one, to create two mutually exclusive variables, I generate a new dummy

[30] This indicator highlights any acquisition that started as a tender offer, regardless of whether a subsequent merger agreement was reached or not. Yet, the *SDC* database actually contains two indicators for tender offers. The first indicator identifies tender offers, and the other flags those acquisitions where a tender offer was launched to acquire control of the target, and the offer was later followed by a merger agreement (TENOFF, and TENOFFMER, respectively). To isolate the tender offers that did not result in a merger agreement I create a dummy variable that equals one if the acquisition is in a form of a tender offer and it was not followed by a merger agreement and equals zero otherwise (TENNMER). Using TENOFFMER and TENNMER did not result in any significant differences. I therefore include in this study just the variable TENOFF.

[31] The firms' relatedness can also be examined by looking at the correlation between the companies' returns. As in Morck, Shleifer, and Vishny (1990), I measure the acquirer and target relatedness as the correlation coefficient of their monthly stock returns over the three years prior to the acquisition announcement (CORR). This measure requires stock data for both the acquirer and the target for three years before the acquisition. Including this variable substantially reduces my sample. I hence use it as sensitivity analysis (not reported) and find no substantial difference in the results.

variable that equals one if the firms belong to the same industry based on the two digit SIC code but not based on the four digit SIC code (SIND2N4).

4.2.1.4 Financial synergy

One source of financial synergy is attained by lowering the cost of capital. This is possible by acquiring a target with high levels of cash (TRCASH).[32] I therefore examine the target's levels of cash (as explained in section 4.2.1.1).

An additional method to detect financial synergy is by examining financial slack. The financial slack can be examined by looking at the difference between the acquirer and target's financial leverages. The financial leverage is calculated as the ratio of long-term debt (data item 9 in *Compustat*) to the market value of assets, where the market value of assets is calculated as the sum of debt (data item 9 and 44 in *Compustat*), market value of equity as calculated 30 days prior to the acquisition announcement, and the liquidation value of preferred stock (data item 10 in *Compustat*). Financial slack is then calculated both as the arithmetic and absolute difference between the acquirer and the target's financial leverages (DLEV, and ABSDLEV respectively).

4.2.1.5 Tax savings

Tax savings can be an additional source of synergy. I examine two potential tax savings: the target's pre-acquisition Net Operating Losses (NOL) and its pre-acquisition Investment Tax Credits (ITC) carryovers. To measure the target's unused pre-acquisition net operating loss carry forwards I use data item 52 in *Compustat* divided by the total

[32] An acquiring firm may use the target's cash as financial resources instead of obtaining the funds in the financial markets. Avoiding the financial markets may be a less expensive way to obtain financial resources.

market value of both firms 30 days prior to the announcement (NOLTOMKT).[33] To determine the target's pre-acquisition investment tax credits I use data item 51 in *Compustat* divided by the total market value of both firms 30 days prior to the announcement (ITCTOMKT).

4.2.2 Variables used to identify the managerial agency motive

The agency or managerialism motive consists of acquisitions that are not in the interest of acquiring shareholders, and are expected to benefit managers. I detect this motive by either detecting an agency problem in the acquiring firm, or by finding acquisitions that are expected to benefit the acquiring firm's management.

4.2.2.1 Detecting an agency problem in the acquirer

The method used to detect the agency problem in the acquirer is similar to the one used to detect the agency problem in the target (presented in section 2.1.1.1). I examine the interaction between the acquirer's level of cash and the acquirer's Tobin's Q (ACQCASH*ACQQ), the acquirer's industry adjusted level of debt (ACQDDEBT), and the acquirer's managerial ownership (ACQOWNER).[34]

4.2.2.2 Diversifying acquisitions

Diversifying acquisitions are regarded as beneficial for the acquirer's management and not for the acquirer's shareholders (as explained in section 2.2.2). The variables used to identify diversifying acquisitions are the same as those used to identify

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[33] It should be noted that a limit on the annual use of the net operating loss carry forwards (NOL) is imposed by the tax reform act of 1986 if there is a change in ownership of more than 50% in a firm in a loss, within a three-year period. The amount of NOL that may be used is limited to the value of the loss of the firm at the date of the purchase multiplied by the long-term tax-exempt bond rate (Weston, et al., 2001, p. 99).

[34] As in the case of the managerial ownership in the target, only limited data was obtained for this and is therefore included in the study only as a separate test in section 6.2.

the firms' relatedness. I examine whether the acquirer and target belong to the same industry, and I examine the correlation between the companies' returns.

I create a dummy variable that equals one if the acquirer and target belong to the same industry based on the two digit SIC code and equals zero otherwise (SAMEIND2), and another dummy variable that equals one if they belong to the same industry based on the four digit SIC code (SAMEIND4). If SAMEIND4 equals one, SAMEIND2, by construction, would equal one. To create two mutually exclusive variables, I generate a new dummy variable that equals one if the firms belong to the same industry based on the two digit SIC code but not based on the four digit SIC code (SIND2N4).

I measure the acquirer and target relatedness as the correlation coefficient of their monthly stock returns over the three years prior to the acquisition announcement (CORR).

4.2.3 Variables used to identify cases of hubris[35]

Hubris is in essence a mistake in the valuation of the target. Difficulties in valuating the target can be caused by the target having high levels of research and development, and by the firm having a large portion of intangible assets.

Levels of research and development expenses are calculated by using data item 46 in *Compustat* and divided by the firm's book value of total assets (data item 6). R&D expenses are calculated for the target for the year prior the merger announcement (TRRD).

To proxy for asset structure and the proportion of tangible and intangible assets out of the total assets, I use net property, plant and equipment (data item 8 in *Compustat*)

as a fraction of total assets (data item 6, as in Ambrose and Magginson, 1992). The variable is calculated in the year before the merger announcement (TRPPE).

The competition between multiple bidders is also expected to lead to cases of hubris. The identification of multiple bidders is done based on a flag in the *SDC* database identifying mergers that had competing bids (COMBID).

4.2.4 Control variables

Studies have found many different variables to be significant in explaining the change in post-acquisition long-term performance. I could not attribute those variables to specific motives for acquisitions. I therefore control for the effect of those variables by including them in my model without associating them with a specific motive or explanation for the acquisition.

4.2.4.1 Industry shocks

Many papers have advocated the importance of industry shocks in explaining corporate acquisitions. Mitchell and Mulherin (1996) focus on the impact of industry shocks on the takeover and restructuring activity during the 1980s (1982-1989). The authors study the industry level patterns of the takeover and restructuring activity, and find significant differences between industries in both the rate and time clustering of those activities. Mitchell and Mulherin argue that the patterns found are related to industry shocks borne by the industries in the sample. The authors' concept of an industry shock is any factor that alters the industry structure whether it is expected or unexpected. These shocks may include a change in the number of firms in the industry, changes in government policy concerning that industry, and changes in demand and supply

[35] As a robustness test I estimate the A score without the variables used to proxy for cases of hubris (not

conditions. Examples of shocks to the industries presented in this paper are: deregulation, changes in input costs, and changes in technology that either induce or enable changes in the structure of the industry. According to the authors, takeovers are often the least-cost means for the industry to respond to the shocks borne by it.

A firm can respond to an industry shock either internally or externally. For example, we might see a change in technology that triggers an increase in firm size. This change in the optimal size of the firm may be a result of economies of scale that didn't exist before the change in the technology. This change in technology may cause the managers to increase their investments and assets internally, or may cause them to takeover another firm and increase their firm size externally. According to the Mitchell and Mulherin's view, the merger activity is often the least-cost method to respond to the changes. The paper provides the banking industry as an example to this argument. Following the government's removal of regulations, the banking industry experienced a significant takeover activity. The takeovers were the banks way to expand rapidly and efficiently.

Takeover activity is not necessarily a result of just positive shocks. A sharp decline in demand, which is interpreted as a negative shock to the industry, may induce firms to reduce costs. As explained earlier, the shock can cause firms to reduce costs internally, or may cause firms in the industry to merge and by merging to eliminate duplicate costs. Jensen (1993) suggests that the ongoing consolidation and organizational change in many industries can be traced to the alteration in input costs that stemmed from the oil price shocks of the 1970s.

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reported). The score estimated without these variables is perfectly correlated with the original A score (r =

Andrade et al. (2001) expand on Mitchell and Mulherin (1996) and examine mergers over three decades (1973-1998). As in Mitchell and Mulherin, Andrade et al. (2001) find that the merger activity clusters by industry. Deregulation was found to be an important shock in explaining the merger activity.

Maksimovic and Philips (2001) also argue for the importance of macro-economic effects in explaining corporate asset sales, where mergers are one of the ways assets change ownership. The authors find that less productive firms sell assets in times of industry expansion.

More evidence for the importance of industry shocks can be found in the Palepu (1986) model that predicts takeover targets. Palepu (1986) includes in his model the industry disturbance hypothesis, which states that firms that are in an industry subjected to 'economic disturbances' are likely acquisition targets. In his model, an industry dummy variable is assigned a value 1 if at least one acquisition occurred in a firm's four digits SIC during the year prior to the year of observation. The industry dummy is found to be significant. Ambrose and Megginson (1992) expand Palepu's model. To test the industry effect, the authors test if there is an association between the firm's one-digit SIC code and its likelihood of receiving a takeover bid. Ambrose and Megginson do not reject the null hypothesis of no association.

Following the logic presented in Mitchell and Mulherin (1996) as to possible types of industry shocks I use three different variables to proxy for industry shocks: the first is used to detect a shock on the demand in the industry, the second is intended to

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0.9999, $p < 0.0001$).

reveal a shock on the supply side, and the third is a more general variable used as proxy for other shocks such as deregulation. The variables are not mutually exclusive.

To proxy for industry shocks on the demand for products in the industry I look at changes in median sales in the industry for both the acquirer and the target.[36] I first calculate the change in median sales (data item 12 in *Compustat*) from the year prior the announcement to the year of the announcement. I then flag those firms that belong to the industries with the highest change of 10% or lowest change of 10%. The variables are calculated both for the acquirer and target (ACQSSALES, and TRSSALES respectively).

To detect an industry shock on the supply side I follow the same procedure as in the demand shock but with the cost of good sold (data item 41 in *Compustat*). As in the previous case, I then identify those firms that belong to the industries with the highest 10% of change or lowest 10% of change. The variables are calculated both for the acquirer and target (ACQSCOGS, and TRSCOGS respectively).

Just identifying the industries in the top and bottom 10% may not convey all the available information about the industry shock. The effect of a positive shock and a negative shock may be different, and the level of the shock might also be important, I therefore include the raw measure of change in median sales (cost of goods sold) from the year prior to the announcement up to the year following the announcement as variables in the model. The changes are calculated both for the acquirer and target (ACQCHMSL and ACQCHMCOGS for the acquirer, and TRCHMSL and TRCHMCOGS for the target).

[36] An industry is classified based on the firm's primary two digit SIC code.

The third proxy I use is similar to Palepu (1986) the variable MAIND2 is equal to one if a merger has occurred in the firm's industry in the year before the acquisition announcement, and equals zero otherwise. This variable is calculated for the acquirer and target (ACQMAIND2, and TRMAIND2, respectively). In this case, as in Palepu (1986), industry is based on the firm's two digit SIC code. I calculate a similar variable based on a four digit SIC code for the acquirer and target (ACQMAIND4, and TRMAIND4, respectively). Since if MAIND4 equals one MAIND2 equals one as well, I create a new dummy variable that equals one if a merger has occurred in the firm's industry in the year before the acquisition announcement based on the two digit SIC code but not based on the four digit SIC code. The variable is calculated for the acquirer and target (ACQMAIND2N4, and TRMAIND2N4, respectively).

4.2.4.2 Method of payment

Some papers have found the method of payment (stock or cash) to be significant in explaining the abnormal returns accruing surrounding the acquisition announcement, and the post-acquisition long-term performance. Andrade et al. (2001) study the effect of the method of payment on a sample of U.S. mergers from 1973 to 1998 and find that the abnormal returns accruing to the acquirer and the target surrounding the announcement are lower when stock is used to finance the acquisition. The authors' explanation to this phenomenon is that a stock financed acquisition is like an acquisition plus an equity issue. Equity issuers usually experience negative abnormal returns surrounding the equity issue (as explained by the model developed by Myers and Majluf (1984)), hence, a stock financed acquisition would experience on average lower abnormal returns than an acquisition financed by cash.

Loughran and Vijh (1997) provide further evidence for the importance of the method of payment in corporate acquisitions. Loughran and Vijh examine acquirers' long-term performance by calculating the stocks' long-term abnormal returns using a U.S. sample of acquisitions between 1970 and 1989. The authors find that firms that complete stock acquisitions earn significantly lower abnormal return over the period of five years following the acquisition than firms' financing their acquisitions using cash.[37]

On other hand, Sharma and Ho (2002) do not find the method of payment to be important. The authors examine post-acquisition long-term performance using Australian data about 36 acquisitions, and find that the method of payment has no effect on the performance.

The choice of method of payment may be related to other factors. Amihud et al. (1990) argue that managers who value control would prefer to pay in cash for a corporate acquisition in order not to dilute their ownership by issuing stock as a method of payment. Amihud et al. (1990) find that the larger the fraction of managerial ownership of the acquiring firm, the more likely the use of cash financing.

Martin (1996) studies the motives underlying the method of payment in corporate acquisitions, and finds that the method of payment is related, among others, to the acquirer's growth opportunities and cash availability. Martin (1996) also finds an association between the method of payment and managerial ownership (also used to detect agency problem) and pre-acquisition stock returns (used in identifying hubris).

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[37] Loughran and Vijh (1997) examine both the mode of acquisition and the form of payment. The authors find the largest difference in the abnormal returns between firms completing stock mergers and firms completing cash tender offers. Since I include the mode of acquisition as one of the variable in identifying the motive for the acquisition I control only for the form of payment.

Hansen (1987) suggests that stock financing forces target shareholders to share the risk of possible overpayment, suggesting an association between stock financing and hubris.

Ghosh and Ruland (1998) study whether the managers' preferences for control rights influence the method of payment choice. The authors find a positive association between the target's managerial ownership and the use of stock as payment, and a negative association between the acquirer's managerial ownership and the payment by stock. Managerial ownership is used in my study to detect the existence of an agency problem in the acquirer and in the target (see sections 2.1.1.1 and 2.2.1).

To control for the method of payment I use a dummy variable based on *SDC*'s variable that flags those acquisition in which stock was swapped between the acquirer and target as part of the financing of the acquisition (STOCKSWAP).[38]

4.2.4.3 Accounting method

An additional matter that may be significant in explaining the post-acquisition long-term performance and the stock market's reaction to the acquisition announcement is the accounting method used in the acquisition. Different business combination accounting rules, especially those set forth in Accounting Principals Board Opinion (APBO) No. 16 from 1970 established that both purchase and pooling of interest methods were acceptable in accounting for business combinations. Conventional wisdom holds that managers prefer the pooling of interest method since it enables them to avoid the

[38] An additional measure for the use of stock (cash) in financing the acquisition is the percentage of stock (cash) paid from the total value of the acquisition PCTSTOCK (PCTCASH). Using these variables substantially reduces my sample size. Since there is a significant correlation between these variables and the variable STOCKSWAP (of 0.1814 and –0.1990 with PCTSTOCK and PCTCASH respectively with a P-Value < 0.0001) I do not include PCTSTOCK and PCTCASH in my analysis.

additional depreciation and amortization expense arising from the assets write-up under the purchase method (Aboody, Kasznik, and Williams, 2000).

Robinson and Shane (1990) investigate whether benefits derived from the accounting method are reflected in the bid premia paid for the target's stock. The authors calculate the target premia as the cumulative abnormal returns (CAR) accruing to the target from forty days prior to the announcement to the day of the announcement. Robinson and Shane (1990) find an association between the accounting method and the target's CAR. The targets' CAR are higher in the pooling of interest method than in the purchase method.

Aboody et al. (2000) investigate the choices of pooling versus purchase in stock for stock acquisitions. The authors examine non-capital-market explanations for managers preferring the pooling of interest method. Among the variables included in their model are: managers' compensation structure, managerial ownership, and debt. The authors find that in acquisitions with large differences between the acquisition price and the book value of the target's net assets, managers with earnings based compensation are more likely to chose the pooling method to avoid the negative effect of the purchase method on the earnings. Aboody et al. further find that the likelihood of using the purchase method increases with debt constraint costs. The authors find no association in the case of stock based compensation.

As in the case of the method of payment, it is possible that the accounting is associated with the underlying motive for the acquisition and therefore may not be significant in explaining the post-acquisition long-term performance and the stock market's reaction to the acquisition announcement. Since in this study, I use operating

cash flow returns to measure the change in performance, and according to Healy et al. (1992) this measure mitigates the impact of the accounting method I expect the accounting method to be insignificant in explaining the acquisition's effect on the post-acquisition long-term performance.[39]

The choice of accounting method is controlled for using a dummy variable based on the *SDC* database identifying the accounting method used in the business combination. The variable POOL equals one if the acquisition was characterized as a pooling of interest and zero if the purchased method was used.

4.2.4.4 Multiple acquisitions

The number of corporate acquisitions the firm was involved in may also be important in explaining the post-acquisition long-term performance and the stock market's reaction to the acquisition announcement. Schipper and Thompson (1983) make a distinction between a specific merger event and an acquisition program. The authors find that acquisition activity has ex-ante favorable impact on the value of the firm announcing its intention to acquire. If an acquisition is a part of an acquisition program, the stock market's reaction to the announcement of that acquisition would not be the same as if it was a separate acquisition. The reason for that difference is that after announcing an acquisition program the following acquisitions are partially expected, and therefore are partially priced by the stock market before the acquisition announcement itself. Schipper and Thompson (1983) find abnormal returns accruing to firms as far as a year prior to an acquisition announcement.

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[39] It should be noted that following FASB Statement No. 141, *Business Combination*, the pooling of interest is no longer an acceptable accounting method for business combinations. Since FASB Statement No. 141 was approved only in February 2001, the companies in my sample were not affected by it, and could have chosen both the purchase and the pooling of interest methods.

Carlisle (1995) argues, "Practice makes perfect". The author finds that the stock market's reaction to an acquisition announcement made by "experienced acquirers" is more positive than to an announcement of the first acquisition made by an acquirer. The results are interpreted as if companies acquiring multiple companies become better in the acquisition business and therefore achieve higher gains.

Following Shipper and Thompson (1983) and Carlisle (1995) the fact that an acquirer has recently acquired another company is relevant to this study in two ways. On one hand, I expect the stock market's reaction to the following acquisition to be lower because the acquisition was expected. On the other hand, an experienced acquirer may be better in choosing a target and implementing programs. I thus expect the stock market to react more positively to the announcement of the earlier acquisition. The multiple acquisitions case represents a case of confounding events where even when trying to calculate the acquisition's impact on long-term performance it is unclear whether the change in performance is a result of previous acquisitions or the current one. I hence have no prior expectations on how would the multiple acquisitions issue would impact the post-acquisition long-term performance and the stock market's reaction to the acquisition announcement.

To control for cases of multiple acquisitions I create a dummy variable that equals one if the acquirer has been involved in another acquisition in the three years prior the acquisition announcement (ACQINV3). Similar dummy variables are created for cases were the acquirer was involved in an acquisition in the 200 days prior the acquisition announcement (ACQINV1) and if the target was involved in an acquisition in the 200 days prior the acquisition announcement (TRINV1).

4.2.4.5 Relative size of target

The target's size, or relative size compared to the acquirer, may be important in explaining the firm's post-acquisition long-term performance and in explaining the stock market's reaction to the acquisition announcement. The probability of an acquisition decreases with the size of the target firm (Palepu, 1986). This conjecture is based on the assumption that there are size based transaction costs in an acquisition. Both Palepu (1986) and Ambrose and Megginson (1992) find that the probability of a firm receiving an acquisition bid is negatively related to the firm size. Furthermore, Martin (1996) argues that the as the target size increases the information asymmetry problem regarding the target would be larger.[40] In addition, it is likely that the larger the relative size of the target the bigger the impact (positive or negative) on the acquirer following the acquisition.

I have no hypothesis regarding the direction of the relative size's effect on the post-acquisition long-term performance and the stock market's reaction to the acquisition announcement.

To control for the relative size of the target compared to the acquirer I calculate the target's market value 30 days prior to the acquisition announcement and divide it by the acquirer's market value also calculated 30 days prior to the announcement (RELSIZE).

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[40] Martin (1996) than links the information asymmetry problem with the likelihood of using stock to finance the acquisition and finds no consistent association between the use of stock to finance the acquisition and the relative size of the target.

4.2.5 Descriptive statistics on accounting variables and control variables

Table 7 includes the summary statistics of the variables used to identify the motive of the acquisition. All variables are calculated for the year prior the acquisition announcement, unless otherwise indicated. In this section I present an overview of some of the more interesting data presented in Table 7.

4.2.5.1 Accounting variables

Panel A of Table 7 presents the descriptive statistics for the accounting variables and firm characteristics. Looking at the ROE and ROA calculated for targets in the year prior the acquisition (-0.1157, and –0.0518, respectively), we can see targets are losing that year. More that 26% of mergers started as tender offers. Examining the companies' SIC codes I find that almost 60% of acquisitions are done within the same industry (either defined as same two digits SIC code or four digits SIC code). This result is higher than Andrade et al.'s (2001) finding of over 40%, but closer to Ghosh's (2001) finding of over 50% This result suggests that a risk reduction motive by managers may be an important factor. The average potential tax synergies (ITC and NOL) account for about 1% of the value of the firms involved, consistent with findings in previous studies. Only over 6% of mergers had multiple bidders, this is consistent with Andrade et al. (2001).

4.2.5.2 Control Variables

The summary statistics for the control variables are presented in Panel B of Table 7 and summarized below.

Industry shocks - One way I examine possible industry shocks is by examining the change in median sales or cost of goods sold (COGS) in the firms' industry from the year before the acquisition announcement to the year of the announcement. The average

change for both sales and COGS, for both acquirer and target, was a positive 8%. As explained by Maksimovic and Philips (2001) a positive shock can also induce corporate acquisitions in an industry. Another method to examine a possible industry shock is to examine those cases where an acquisition took place in the firm's industry in the year before the acquisition (as in Palepu, 1986).

Method of payment - In 53.75% of the acquisitions in the sample some stock was swapped as part of the acquisition financing. This figure is similar to the 57.6% of firms in the sample used in Andrade et al. (2001), which included 4,256 acquisitions between 1973 and 1998. Ghosh and Ruland (1998) used a sample of 212 acquisitions from 1981 through 1988.

Accounting method - 24.26% of the firms in the sample used the pooling of interest accounting method. This is virtually the same as the 24% of firms using the pooling method in the sample used in Healy et al. (1992).

Multiple acquisitions - Multiple acquisitions have an effect both when estimating the market model, and both when calculating the stock market reaction to the acquisition announcement. 7.95% of the acquirers in the sample used in this study were involved in an acquisition in more than one acquisition in a period of one year. This number increases to 22.65% of the acquirers when examining those that were involved in more than one acquisition in a period of three years. Only 1.36% of the targets in the sample were involved in an acquisition in more than one acquisition in a period of one year.

Relative size of target - The median size of the target relative to the acquirer was 14.54%, consistent with Andrade et al. (2001) who found a median relative size of around 11%.[41]

4.2.6 The discriminant function

The discriminant function is estimated for one half of my sample using the classification criteria presented in Table 1. The observations are discriminated using the accounting variables and control variables described in the previous sections.[42] The coefficients of this score are presented in Panel A of Table 8. After estimating the discriminant function I calculate the A score for the other half of my sample. The A score represents the inferred motive for the acquisition based on both the stock market reaction to the acquisition announcement and the selected ex-ante accounting data. The descriptive statistics for the calculated A score are shown in Panel B of Table 8. It is interesting to note that though the original group participation included a similar number of synergy-motivated acquisitions and agency-motivated acquisitions, the calculated A score shows fewer synergy-motivated acquisitions (18%) and more agency-motivated acquisitions (82%).

4.2.6.1 Means tests between groups

To further examine the A score, I compare the mean values of the variables used in the discriminant function for the positive A score group (consistent with the synergy motive) vs. the negative A score group (consistent with the agency motive).

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[41] In some mergers the definition of target and acquirer is less clear. Since it is unlikely that a company would acquirer another company, which is larger in size, I make sure that the value of the variable RELSIZE is less than one. In those cases where it is not, I switch between the acquirer and target definitions.

[42] The expected sign of the variables' coefficients are presented in Table 6.

As shown in Panel A of Table 8, the synergy motivated acquisitions are associated with higher levels of cash and lower growth opportunities for the target (TRCASH_TRQ; the mean value for the agency group is 0.396, and mean value of 0.182 for the synergy group, the difference is statistically significant with p = 0.010), more tender offers (TENOFF; the mean value for the agency group is 0.162, and mean value of 0.285 for the synergy group, the difference is statistically significant with p = 0.004). Synergy motivated acquisitions tend to be more focused than agency-motivated acquisitions (SAMEIND4; the mean value for the agency group is 0.297, and mean value of 0.508 for the synergy group, the difference is statistically significant with p = 0.000), and are usually associated with less payment in stock (STOCKSWAP; the mean value for the agency group is 0.649, and mean value of 0.476 for the synergy group, the difference is statistically significant with p = 0.001) and less cases were the pooling of interest accounting method was used (POOL; the mean value for the agency group is 0.351, and mean value of 0.095 for the synergy group, the difference is statistically significant with p = 0.000). All these finding are consistent with the expectations formed in previous sections.

5. ANALYSIS OF POST-ACQUISITION LONG-TERM PERFORMANCE AND LINK WITH MOTIVES FOR ACQUISITIONS

5.1 Analysis of post-acquisition long-term performance

I calculate post-acquisition long-term performance in two ways: the first is using long-term abnormal stock returns, and the second is using an accounting measure for long-term operating performance.

5.1.1 Long-term abnormal returns

Long-term abnormal stock returns are calculated based on the market adjusted model using an equally weighted index for the whole sample.[43] The model is estimated over 24 months prior to the announcement of the acquisition. Cumulative abnormal returns (CAR) are calculated for the acquirer (LTCAR) as monthly returns for the three years following the acquisition. Table 9 presents both the mean and median LTCARs for the first year, the first two years, and the first three years. As shown in the Table 9, all values are negative and significantly different from zero. Moreover, LTCAR becomes more negative as time progresses. This indicates that on average, the acquisitions are not in the interest of long-term shareholders.

5.1.2 Long-term operating performance

As in Healy, Palepu and Ruback (1992), I also use operating cash flow returns to examine long-term performance. Operating cash flow returns are defined as the ratio of operating cash flows to market value of assets.[44] Following Healy, Palepu and Ruback

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[43] Using the value-weighted market index produced similar results (not reported).

[44] I also calculate operating cash flow returns using sales. The book value of assets cannot be used to deflate the operating performance measures because acquisitions accounted for using the purchase method would have much higher book value of assets than those acquisitions accounted for using the pooling

(1992) operating cash flows are calculated as sales (item 12 in *Compustat*) minus the cost of goods sold (item 41) minus selling and administrative costs (item 189) plus depreciation and amortization (item 14).[45] The market value of assets is calculated as the sum of the market value of equity, the book value of debt and the value of preferred stock. The operating cash flow returns are industry adjusted by subtracting from the calculated ratios the two-digit SIC code industry median ratio. The industry adjusted operating cash flow returns are calculated for different years before and after the acquisition. The operating performance prior to the acquisition is calculated as a weighted average of the performance measures of the acquirer and target involved in the acquisition.[46]

I calculate operating performance from five year before the acquisition to five years after the acquisition. Table 10 presents the operating performance results. Operating performance is calculated using different measures. The first, OCF, is using cash flow from operating activities (data item 308 from *Compustat*). The second measure for operating performance is the one used by Healy et al. (1992), HPR. It consists of calculating operating cash flow as sales (data item 12 from *Compustat*) minus the cost of goods sold (data item 41) minus selling and administrative expenses (data item 189), plus

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method. This would result in the acquisitions using the purchase method having far lower cash flow returns than those acquisitions accounted for using the pooling of interest method.

[45] As robustness tests (not reported) I calculate operating cash flows in two alternative ways: the first is using net cash flow from operating activities (data item 308 in *Compustat*), and the second is following Linn and Switzer (2001) measure operating cash flow as income after tax before extraordinary items (data item 18), plus depreciation and amortization (data item 14), plus interest expense (data item 15), minus interest income (data item 62), plus total income taxes (data item 16). The different measures did not produce significant differences.

[46] The weights used are the market value of assets of the companies in the year I calculate the ratio. In the robustness tests I use as weights the book value of the firm or its sales according to the ratio calculated.

depreciation and amortization charges (data item 14). Both measures are than deflated either by the market value of assets, or by sales. Market value of assets is calculated as the sum of the market value of equity (data item 24 times data item 25), preferred stock (item 10), and the book value of debt (data item 9 plus data item 34). Sales are taken as data item 12 from *Compustat*. The book value of assets cannot be used to deflate the operating performance measures because acquisitions accounted for using the purchase method would have much higher book value of assets than those acquisitions accounted for using the pooling method. This would result in the acquisitions using the purchase method having far lower cash flow returns than those acquisitions accounted for using the pooling of interest method. Though the control I use for the different accounting methods may capture the differences in the results, the returns will be distorted.[47]

The performance before the merger is calculated as a weighted average of the performance of the acquirer and target. The industry median is also calculated before the merger as weighted average of the industry medians of both companies. The weights used to calculate to average are the market value of assets (in Panels A and B), and sales (in Panels C and D).[48] The performance in the years following the merger is taken from the merged entity.[49]

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[47] For comparison purposes I also measure operating performance with the measure used in Linn and Switzer (2001). Linn and Switzer measure operating cash flow as income after tax before extraordinary items (data item 18), plus depreciation and amortization (data item 14), plus interest expense (data item 15), minus interest income (data item 62), plus total income taxes (data item 16). The use of this measure produced similar results (not reported).

[48] The method is similar to the one used in Carline et al. (2002), among others.

[49] As can be in the different panels in Table 10 many observations are lost when calculating the operating performance. The sample I use in this study includes all completed mergers of public companies (excluding banks) between 1981 and 1999. Since data is available up to the year 2000, most acquisitions, occurring after 1995 are either not included, or just partially included in the table.

As can be seen from Table 10, the operating performance results when using the operating cash flow (OCF), and when using the Healy et al. (1992) measure (HPR) are qualitatively the same. When examining the unadjusted performance, both Panel A and Panel B show a decrease in performance approaching the year of the merger (from 6.97% to 4.62%, and from 16.06% to 11.83%, in Panels A and B respectively), and an increase in performance in the years following the merger (from 4.62% to 6.31%, and from 11.83% to 14.46%, in Panels A and B respectively). The industry median's performance seems to be relatively stable (around 3% to 4% in Panel A, and 11% to 12% in Panel B). Therefore, the adjusted performance shows a decrease in performance approaching the merger year (from 1.57% to 1.20%, and from 1.73% to 0.51%, in Panels A and B respectively) and an increase in performance following the merger (from 1.20% to 2.57%, and from 0.51% to 2.15%, in Panels A and B respectively).

There is a difference between deflating the measures by the market value of assets (Panel A and B), and deflating the measure by sales (Panel C and D). Both Panel A and Panel B show an overall increase in the average operating performance following the acquisition. This increase is consistent with the results reported by Healy et al. (1992), and Linn and Switzer (2001). The results presented in Panel C and D show an increase in performance approaching the merger (when examining the adjusted median performance, the results show an increase from 2.52% to 3.42%, and from 2.92% to 5.49%, in Panels C and D respectively), which subsequently declines, but not to the pre-merger levels (when examining the adjusted median performance, from 3.42% to 3.80%, and from 5.49% to

3.81%, in Panels C and D respectively).[50] Ghosh (2001) presents cash flow returns scaled by both assets and sales. Interestingly, the difference in the results between deflating by assets and deflating by sales presented here is evident in the results shown by Ghosh (2001).[51]

5.2 Linking post-acquisition long-term performance to the acquisitions motives

I study the post-acquisition long-term performance based on the acquisition type I first identify the acquisition type using the stock market reaction to the acquisition announcement.

To examine the acquisition's impact on post-acquisition long-term performance I examine the change in the industry adjusted cash flow returns from the period before the acquisition to the period after the acquisition. I calculate different measures to capture the acquisitions impact on performance. I use four different measures: the first is the difference between the performance in the year following the acquisition and the performance in the year before the acquisition (CHOCF1_1); the second is the difference between the performance in the third year following the acquisition and the performance in the year before the acquisition (CHOCF3_1); the third measure I use is the difference between the mean performance in the three years following the acquisition and the mean performance in the three years before the acquisition (CHAOCF1); the last measure I use is the difference between the mean performance in the three years following the acquisition and the performance in the year before the acquisition (CHAOCF2).

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[50] The highest adjusted performance is in the forth year following the acquisition in Panels A and B, in the third year following the acquisition in Panel C, and in the year of the acquisition in Panel D.

[51] Instead of calculating the operating cash flow returns relative to the industry as I do here, Ghosh (2001) calculates the performance relative to matching firms.

5.2.1 Means tests

One way to study the corporate acquisition effect on post-acquisition long-term performance is to examine the mean LTCAR and operating performance for each motive. I study the average performance for each motive, and compare the performance across motives.

5.2.1.1 Using the stock market reaction to the acquisition announcement

The results of analyzing the long-term performance based on the acquisition type are presented in Table 11. The average returns for the synergy group are -0.059, -0.225, and -0.340 for the year following the acquisition, the two years following the acquisition, and the three years following the acquisition, respectively. The negative returns for the synergy group are contrary to the expected positive returns. As expected, I find the average returns to be negative in the cases of hubris. The average returns for hubris cases are -0.158 for the first year following the acquisition (LTCAR(1,12)), -0.351 for the two years following the acquisition (LTCAR(1,24)), and -0.459 for the three years following the acquisition (LTCAR(1,36)). Similarly, I find the average returns for the agency group to be negative in all windows. The average returns for agency group are: LTCAR(1,12) = -0.142, LTCAR(1,24) = -0.311, LTCAR(1,36) = -0.453. I find the average returns for the undefined group to be: LTCAR(1,12) = -0.039, LTCAR(1,24) = -0.126, and LTCAR(1,36) = -0.152.

The results presented in Panel A show that all mean CAR, in all windows, are negative. This indicates that all types of acquisitions are, on average, not in the interest of long-term shareholders. These findings support the hypotheses that agency-motivated acquisitions and cases of hubris reduce the firms' post-acquisition long-term

performance. I do not find support for the hypothesis that synergy-motivated acquisitions increase post-acquisition long-term performance. In the first year following the acquisition, I find support for the hypothesis that synergy-motivated acquisitions outperform agency-motivated acquisitions and cases of hubris ($t = 2.396$ and $p = 0.0067$ for the t-test examining the difference between the synergy group and cases of hubris, and $t = 2.714$ and $p = 0.0171$ for the t-test examining the difference in performance between the synergy group and the agency group). The difference in performance between the different types becomes insignificant in the subsequent years ($t = 1.623$ and $p = 0.1055$ for the difference between the synergy group and cases of hubris in the two years following the acquisition; $t = 1.147$ and $p = 0.2521$ for the difference between the synergy group and cases of hubris in the three years following the acquisition; $t = 1.530$ and $p = 0.1262$ for the difference between the synergy group and the agency group in the two years following the acquisition; and $t = 1.431$ and $p = 0.1528$ for the difference between the synergy group and the agency group in the three years following the acquisition).

As shown in Panel B of Table 11, when examining changes in post-acquisition long-term operating performance, I find support for the hypothesis that synergy-motivated acquisitions increase post-acquisition long-term performance. The average difference between the performance in the year following the acquisition and the performance in the year before the acquisition (CHOCF1_1) for the synergy group is 0.004. The difference between the performance in the third year following the acquisition and the performance in the year before the acquisition (CHOCF3_1) for the synergy group is 0.003. The difference between the mean performance in the three years

following the acquisition and the mean performance in the three years before the acquisition (CHAOCF1) for the synergy group is 0.011. The difference between the mean performance in the three years following the acquisition and the performance in the year before the acquisition (CHAOCF2) for the synergy group is 0.008. I fail to find support for the hypotheses that cases of hubris reduce post-acquisition long-term performance (the mean operating performance for cases of hubris is: CHOCF1_1 = -0.009, CHOCF3_1 = 0.063, CHAOCF1 = 0.006, and CHAOCF2 = 0.003). Additionally, I fail to find support for the hypotheses that agency-motivated acquisitions reduce post-acquisition long-term performance (the mean performance for the agency group is: CHOCF1_1=0.007, CHOCF3_1 = 0.019, CHAOCF1 = 0.011, and CHAOCF2 = 0.013). I also fail to find a significant difference between the performances of the different types of acquisitions.

5.2.1.2 Using the A score

After calculating the score for each acquisition I examine the acquisitions' effect on post-acquisition long-term performance, as shown in Table 12.

Similar to the results presented in Panel A of Table 11, when measuring performance using long-term CAR, I find, as hypothesized, that agency-motivated acquisitions reduce post-acquisition long-term performance (average performance for the agency group is LTCAR(1,12) = -0.119, LTCAR(1,24) = -0.312, and LTCAR(1,36) = -0.548). I find support for the hypothesis that synergy-motivated acquisitions increase post-acquisition long-term performance only in the first year following the acquisition (LTCAR(1,12) = 0.025). Contrary to what I expected, average LTCAR becomes

negative, for the synergy-motivated acquisitions in the second and third year following the acquisition (LTCAR(1,24) = -0.222, and LTCAR(1,36) = -0.073).

When examining the differences in performance between the different types of acquisitions I find that synergy-motivated acquisitions outperform agency-motivated acquisitions in all LTCAR windows examined. I find a statistically significant difference between the two groups in the first year window (t = 1.665, p = 0.0982) and the first three years window (t = 2.110, p = 0.0397). Since in Table 11 Panel A I find a significant difference between the synergy group and the agency group only for the year following the acquisition, the results presented in Table 12 Panel A indicate that adding the ex-ante accounting information to the stock market reaction to the acquisition announcement in ex-ante identifying the type of acquisition improves the identification process.

When measuring post-acquisition long-term performance as operation performance, as shown in Panel B of Table 12, I find, as expected, that all synergy-motivated acquisitions to be associated with an average increase in post-acquisition long-term operating performance (the mean performance for the synergy group is: CHOCF1_1=0.038, CHOCF3_1 = 0.082, CHAOCF1 = 0.051, and CHAOCF2 = 0.052). I find agency-motivated acquisitions to be associated with a decrease in post-acquisition long-term operating performance only in one measure representing the change in operating performance from the year prior the acquisition to the year following the acquisition (CHOCF1_1 = -0.006). I find synergy-motivated acquisitions to significantly outperform agency-motivated acquisitions in all four measures (t = 2.514, p = 0.0175 for CHOCF1_1; t = 2.687, p = 0.0083 for CHOCF3_1; t = 2.008, p = 0.0467 for CHAOCF1; t = 2.441, p = 0.0160 for CHAOCF2). This result is different than the one in Panel B of

Table 11, where I found no significant difference, and further shows the importance of accounting information in identifying the motives for the acquisitions.

5.2.2 Regression analysis

To further study the link between the motives for acquisitions and the post-acquisition long-term performance I examine the association between the motives and the change in post-acquisition long-term performance. The regression analysis is performed first by identifying the motives for the acquisitions using the stock market reaction to the acquisition announcement, then by identifying the motives using the accounting information, and finally by identifying the motives using the A score, combining both sets of information.

5.2.2.1 Using the stock market reaction to the acquisition announcement

The stock market reaction to the acquisition announcement is measured by the CAR accruing both to the acquirer and the target. A measure representing the stock market reaction was previously explained, and presented in Table 3. The results of regressing the stock market reaction to the acquisition announcement on the long-term CAR are presented in Table 13 Panel A. The regression results for the CAR in the year following the acquisition show that both the acquirer CAR (ACQCAR) and the total CAR (TTLCAR) are highly significant (the coefficient on ACQCAR equals 0.7068, $p < 0.0001$, and the coefficient for TTLCAR equals 0.7185, $p < 0.0001$). The acquirer CAR (ACQCAR) remains positive and highly significant in all regression (0.7636, $p = 0.0016$ for LTCAR(1,24); and 0.8597, $p = 0.0101$ for LTCAR(1,24)), while the total CAR (TTLCAR) are only significant at the 5% or 10% level (0.2749, $p = 0.0443$ for LTCAR(1,24); and 0.6304, $p = 0.0981$ for LTCAR(1,24)). In general, the significance of

the acquirer CAR and the total CAR, as well as the R^2 decrease as the long-term performance is measured over a wider window. This result is not surprising given the fact that as more time goes by after the acquisition, more events, other than the acquisition, are affecting the firms' performance.

I also regress the acquirer CAR and the total CAR on the four measures of operating performance introduced in section 5.1.2. The regression results are presented in Panel B of Table 13. I fail to find a relation between the stock market reaction and the measures of operating performance. As shown in the table all coefficients are not significant, except for when I regress TTLCAR on CHOCF1_1 where the coefficient is negative and significant at the 5% level (-0.0655, p = 0.0428).

5.2.2.2 Using accounting information

I regress the ex-ante accounting variables and firm characteristics with the acquisitions' against the different measures of post-acquisition long-term performance. This test may help evaluate the usefulness of the different accounting variables used. The model used for this association study is:

$$\Delta \text{ Post-acquisition long-term performance} = \Sigma\beta_i \text{ Accounting variables} + \Sigma\beta_j \text{ Control variables} + \varepsilon_i \quad (3)$$

Where the change in post-acquisition long-term performance is either post-acquisition long-term CAR, or change in post-acquisition long-term operating performance. A summary of the hypothesized effect of the different variables on the change in performance is presented in Table 6.

I first regress ex-ante accounting measures and firm characteristics on LTCARs. The results of the regression are presented in Table 14 Panel A.[52] As expected, acquisitions within an industry result, on average, in higher post-acquisition long-term performance (the coefficient for the same industry indicator (SAMEIND4) is positive and significant, 0.1687, p = 0.0094). As predicted, tender offers also result in an increase in post-acquisition long-term performance (the coefficient for TENOFF is 0.1281, p = 0.0674). The results regarding the potential synergies as a result of correcting an agency problem in the target are unclear. Contrary to what was expected a higher ROA in the target results, on average, in an increase in post-acquisition long-term performance (the coefficient for TRROA is 0.4691, p = 0.0144).

The regression results also show that the change in the acquirer's industry median sales and median cost of goods sold in the year prior to the acquisition announcement are significant in all regressions. An increase in median sales and a decrease in median cost of goods sold result in an increase in post-acquisition long-term performance (the coefficients for ACQCHMSL is 0.5696 (p = 0.0703), 0.9816 (p = 0.0802), and 1.3421 (p = 0.0982), when regressing on LTCAR(1,12), LTCAR(1,24), and LTCAR(1,36) respectively. the coefficients for ACQCHMCOGS is -0.7746 (p = 0.0058), -1.5250 (p = 0.0024), and -2.1402 (p = 0.0033), when regressing on LTCAR(1,12), LTCAR(1,24), and LTCAR(1,36) respectively). This shows the importance of the situation in the acquirer's industry in explaining the post-acquisition long-term performance.

Similarly, I regress the accounting variables on the measures of change in post-acquisition long-term operating performance. The regression results are presented in

Panel B of Table 14. As can be seen from the table, the results for the four regressions are very similar suggesting that the difference between the operating performance measures is not significant. When comparing these results to the ones presented in Panel A we can see that although some are analogous, most results are different. Specifically, the targets level of debt (TRDDEBT) is significant in both cases, as are the potential tax gains (NOLTOMKT) and the shock borne on the firms' industry (ACQSSALES, ACQSCOGS, TRSSALES, TRSCOGS). Alternatively, the difference between the acquirer and targets' level of debt (DLEV) is highly significant in this case ($p < 0.0001$), where it was not in Panel A ($p = 0.7998$). The same is true for the acquirers' level of debt (ACQDDEBT), the targets' level of property, plant, and equipment (TRNPPE), and the targets' size relative to the acquirer (RELSIZE). The targets' level of R&D (TRRD) expenses was significant in Panel A, but is no longer significant when using the operating performance measures.

This dissimilarity in the regression results between Panel A and Panel B may suggest that the post-acquisition long-term abnormal stock returns measures and the post-acquisition long-term operating performance measures gauge fundamentally different elements.

5.2.2.3 Using the A score

Finally, I regress the A score, containing both accounting, and stock market information on long-term CAR. The results of the regression are presented in Table 15 Panel A. As shown in the table, the coefficient on the A score is positive in all regressions, but significant only when regressing against LTCAR in the first year following the acquisition. As shown in Panel B of Table 15, when regressing the A scores

[52] An important caveat when interpreting the results of this regression is that some of the variables included

on the different measures of change in post-acquisition long-term performance, I find a positive and significant association in all cases (the coefficient is: 0.00003 (p = 0.0447) when regressing on CHOCF1_1, 0.00004 (p = 0.0717) when regressing on CHOCF3_1, 0.00004 (p = 0.0348) when regressing on CHAOCF1, and 0.00003 (p = 0.0613) when regressing on CHAOCF2). As expected, a positive score, identified as a synergy-motivated acquisition, is associated with an increase in post-acquisition long-term performance, regardless of the performance measured used.

5.2.3 Conclusions about the link between post-acquisition long-term performance and the motives for the acquisitions

In this section I validated the different methods suggested in section 4 to identify the motives for the acquisitions by examining the post-acquisition long-term performance of the different groups of mergers. The results show that in general, regardless of the post-acquisition long-term performance measure I use, synergy-motivated acquisitions outperform agency-motivated acquisitions. In addition, some measures show that synergy-motivated acquisitions increase their performance following the merger, while agency-motivated acquisitions decrease their performance following the merger.

The inclusion of accounting information in when identifying the motives for the acquisitions substantially improves the identification of the motives, and results in more distinct groups.

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in this analysis may be interpreted in more than one way. Therefore, it is more difficult to draw conclusions

6. ADDITIONAL TESTS

6.1. Identify the motives for acquisitions using only accounting information

In this section I perform supplementary tests regarding additional ways of identifying the motives for the acquisitions. These tests consist of calculating scores representing accounting information only. The A score calculated in the main body of this study represented both stock market and accounting information. Both sets of information were collected prior to the acquisition. In this section I attempt to estimate a score representing accounting information only. This score is later validated by examining the post-acquisition long-term performance.

This method is similar to the one presented in section 4.2 and consists of performing multiple discriminant analysis (MDA) using the following model:

$$\textit{Ex-post change in performance} = \Sigma\beta_i \textit{ Accounting variables} + \Sigma\beta_j \textit{ Control variables} + \varepsilon \quad (4)$$

Where the change in performance is a dummy variable (CHPER) that equals one if the was a positive change in post-acquisition long-term operating performance and zero otherwise. I calculate scores for the four different measures of change in post-acquisition long-term operating performance.

I randomly divide my sample into two halves. I use the MDA model to estimate a discriminant function on one half. Using the discriminant function I calculate a score for each observation in the other half of my sample. I then examine the differences in the mean performance for all acquisitions with positive scores and those with negative score.

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from specific coefficients on specific variables.

Descriptive statistics about the scores are presented in Panel A of Table 16. The correlations between the different scores are presented in Panel B of Table 16. For comparison purposes Table 16 includes statistics for the original A score. As can be seen in the Table the different scores based on accounting information are highly and significantly correlated ($p < 0.0001$). The score based on CHAAOCF1 is negatively correlated to the others. All accounting scores are not significantly correlated with the A score.

The means comparison between the groups classified using the score based on CHAOCF3_1 are presented in Table 17 Panels A and B. The results are in most cases insignificant, though all results show that acquisitions with positive scores outperform, on average, acquisitions with negative scores. When comparing the mean LTCARs between the groups classified using the score based on CHAAOCF2 (presented in Panels C of Table 17) we find similar results to Panel A. When using CHAOCF1_1, and CHAAOCF1 I find no significant differences in the mean performance between the acquisitions with positive scores and the acquisitions with negative scores (not reported) in all performance measures (both abnormal stock returns and operating performance).

I interpret these results to mean that accounting information can be used to classify acquisitions into two groups that ex-post have significant differences in long-term performance.

6.2 Using managerial ownership data

The firms' level of managerial ownership can be used to proxy for a potential agency problem in the firm. This is relevant either to detect a potential synergy by correcting an agency problem in the target (as in section 2.1.1.1), or by detecting an

agency problem in the acquirer suggesting an agency-motivated acquisition (as in section 2.2.1). I was able to collect limited data about the level of managerial ownership for both acquirers and targets. Data was obtained for firms from 1992 to 1999. In order not to substantially reduce my sample size, I examine the significance of the managerial ownership by calculating an A score using the acquirer's level of managerial ownership (ACQOWNER) and the target's level of managerial ownership (TROWNER), and comparing the original A score with the A score containing the ownership data.

The original A score was obtained for 534 observations. Because of limited ownership information the new A score was obtained for only 79 observations. I calculated the correlation between the two scores and found it to be positive and highly significant ($r = 0.5272$, $p < 0.0001$). I hence conclude that the inclusion of managerial ownership does not substantially change my results.

6.3 The effect of the accounting method

Controlling for the accounting method used in the acquisition as a dummy variable may not be sufficient to capture the effect of the accounting method. Acquisition that use the purchase method account for the target's assets at market value, whereas acquisitions that use the pooling of interest method account for the target's assets at the current book value. This typically results in acquisition using the purchase method having larger book value of assets than acquisition using the pooling of interest method. When examining the post-acquisition long-term operating performance I use a measure of operating cash flow deflated by assets (as in Healy et al., 1992). Thus, it is possible that acquisitions that use the purchase method will show systematically lower change in post-

acquisition long-term operating performance than acquisition using the pooling of interest method.

To control for this possible problem I construct a measure of change in post-acquisition long-term operating performance that is similar to the one used in the paper (CHOCF1_1, CHOCF3_1, CHAOCF1, and CHAOCF2) in which instead of deflating the operating cash flows by the book value of assets, I deflate by the firm's sales.[53] I examine the change in post-acquisition long-term performance using the new measures (CHOCFSL1_1, CHOCFSL3_1, CHAOCFSL1, and CHAOCFSL2) based on the calculated A score (Similar to Panel B in Table 12). The results are presented in Panel A of Table 18. The results shown are similar to the ones presented in Panel B of Table 12.

A possible relation between the accounting method used in the acquisition and the motive for the acquisition may be that in agency-motivated acquisitions the managers of the acquiring firm may prefer to use stock to pay for the acquisition and use the pooling of interest method to account for the acquisition. The relation between the accounting method and the identified motive for the acquisition is presented in Panel B of Table 18. As can be seen in the table, the proportion of acquisitions using the pooling of interest method is lower in the acquisitions classified as being motivated by synergy (16.13%) compared to the proportion in acquisitions classified as motivated by agency (26.62%). The difference in proportion is in the expected direction but it is not statistically significant ($Z = -1.22$, $P = 0.2208$).

7. SUMMARY AND FUTURE RESEARCH

The purpose of this dissertation is to classify corporate acquisitions based on the motive for the acquisition and then examine the corporate acquisition effect on post-acquisition long-term performance based on the inferred motive. I examine three methods to classify the acquisitions: the first is using ex-ante stock market data only; the second is using accounting information only; and the third method uses a combination of both ex-ante stock market data and ex-ante accounting data. I validate the classifications by examining the corporate acquisition effect on post-acquisition long-term performance based on the classification. The post-acquisition long-term performance is measured using abnormal stock returns and operating cash flow returns. The results show that the classification based on both ex-ante stock market data and ex-ante accounting data is more accurate than the classifications using either source data alone.

The classification model developed in this dissertation improves our understanding of the corporate acquisitions effect on post-acquisition long-term performance by enabling the examination of sub-groups of acquisitions (based on the inferred motive) and by identifying, ex-ante, groups of acquisitions that are likely to cause an increase in post-acquisition long-term performance and those groups of acquisitions that are likely to cause a decrease in post-acquisition long-term performance.

This classification model may be useful in investigative different phenomena associated with corporate acquisitions. For example, acquisitions which are classified as motivated by agency and record goodwill resulting from the acquisition are likely not to

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[53] Descriptive statistics about operating cash flows deflated by sales are presented in Table 10 Panels C and D.

create value (these are not synergy-motivated acquisitions) and are therefore likely to experience a goodwill impairment following the acquisition. Hence, this model may be used to classify, ex-ante, acquisitions that are likely to experience goodwill impairments. The potential association between the inferred motive for the acquisition and goodwill impairments remains as future research.

An additional idea for future research would be to examine the association between abnormal earning and the inferred motive for the acquisition. Acquisitions classified as motivated by synergy are likely to have larger abnormal earnings than acquisitions classified as motivated by agency. It is also possible that the inferred motive for the acquisition will also be associated with the quality of earnings, suggesting that acquisitions classified as motivated by agency will have lower quality earnings than those classified as motivated by synergy.

Figure 1 – Number of mergers in the sample as a percentage of firms in CRSP

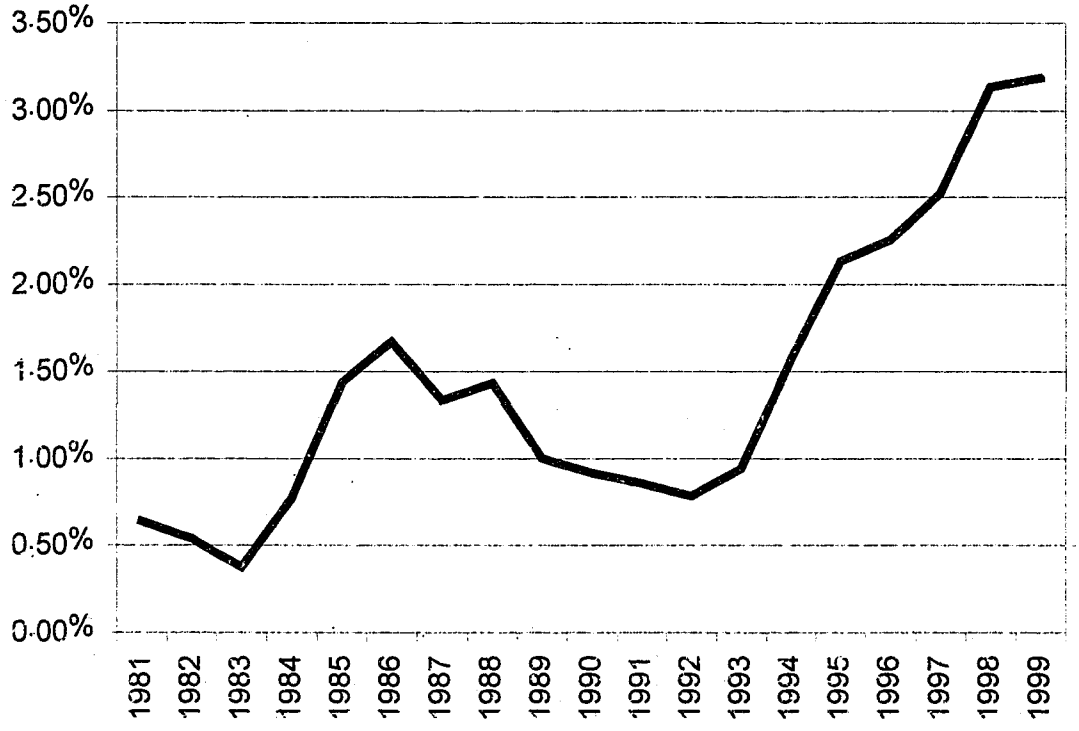

Table 1 – Sample selection

Mergers are identified using the Securities Data Company (*SDC*) database. Stock price data was obtained from the Center for Research in Security Prices (*CRSP*) database, and the financial statement data was taken from *COMPUSTAT*.

All mergers of US public companies between 1981 and 1999	4,268
Mergers involving companies from the financial sector (SIC code 6XXX)	(1,714)
Mergers involving firms not found in CRSP	(509)
Mergers without sufficient data to calculate stock market reaction	(58)
Final sample	**1,987**

Table 2 – Distribution of mergers in the sample

Panel A: Temporal distribution

Year	*Number of mergers in the sample*	*Percentage of total sample*
1981	32	1.56%
1982	29	1.42%
1983	20	0.98%
1984	46	2.25%
1985	88	4.30%
1986	103	5.04%
1987	87	4.25%
1988	100	4.89%
1989	68	3.33%
1990	61	2.98%
1991	56	2.74%
1992	52	2.54%
1993	64	3.13%
1994	119	5.82%
1995	170	8.31%
1996	185	9.05%
1997	221	10.81%
1998	276	13.50%
1999	268	13.11%

Table 2 – Distribution of mergers in the sample

Panel B: Industry distribution

The industry distribution is based on the acquirers' primary two digit SIC code. The five most frequent industries in each year are presented, as well as the percentage of mergers in that industry from the total mergers in that year. Industry 1 is the most frequent and industry 5 is the fifth most frequent.

Year	Industry 1	Industry 2	Industry 3	Industry 4	Industry 5
1981	28 (16%)	48 (9%)	36 (9%)	13 (9%)	20 (6%)
1982	28 (14%)	38 (14%)	48 (10%)	20 (7%)	87 (7%)
1983	38 (20%)	58 (20%)	28 (15%)	33 (10%)	48 (5%)
1984	35 (11%)	80 (11%)	38 (9%)	37 (7%)	36 (7%)
1985	28 (13%)	48 (7%)	49 (7%)	37 (6%)	35 (5%)
1986	35 (12%)	45 (9%)	28 (8%)	37 (7%)	36 (5%)
1987	28 (10%)	73 (10%)	35 (8%)	37 (6%)	36 (6%)
1988	35 (11%)	36 (9%)	38 (7%)	73 (6%)	48 (6%)
1989	35 (15%)	28 (12%)	73 (10%)	38 (9%)	48 (7%)
1981-1989	**28 (9%)**	**35 (9%)**	**38 (6%)**	**36 (6%)**	**73 (6%)**
1990	35 (11%)	73 (11%)	13 (11%)	48 (8%)	28 (7%)
1991	35 (13%)	73 (13%)	28 (9%)	13 (7%)	38 (7%)
1992	73 (10%)	80 (10%)	35 (8%)	38 (8%)	49 (8%)
1993	80 (13%)	48 (11%)	73 (9%)	28 (9%)	49 (8%)
1994	73 (12%)	28 (12%)	38 (10%)	48 (9%)	35 (9%)
1995	73 (12%)	28 (10%)	38 (10%)	35 (7%)	80 (6%)
1996	73 (11%)	38 (10%)	80 (9%)	48 (8%)	35 (7%)
1997	73 (14%)	35 (8%)	48 (8%)	36 (8%)	38 (7%)
1998	73 (18%)	48 (8%)	36 (7%)	28 (7%)	35 (6%)
1999	73 (19%)	36 (12%)	49 (10%)	28 (9%)	35 (8%)
1990-1999	**73 (14%)**	**35 (8%)**	**48 (8%)**	**28 (7%)**	**36 (7%)**
1981-1999	**73 (12%)**	**35 (8%)**	**28 (8%)**	**48 (7%)**	**36 (7%)**

The SIC codes belong to the following industries
13: Oil and Gas Extraction
20: Food and Kindred Products
28: Chemicals and Allied Products
35: Industrial and Commercial Machinery and Computer Equipment
36: Electronic and Other Electrical Equipment and Components, Except Computer Equipment
37: Transportation Equipment
38: Measuring, Analyzing, and Controlling Instruments; Photographic, Medical and Optical Goods; Watches and Clocks
45: Transportation by Air
48: Communications
49: Electric, Gas, And Sanitary Services
58: Eating and Drinking Places
73: Business Services
80: Health Services
87: Engineering, Accounting, Research, Management, and Related Services
(Source: Occupational Safety and Health Administration – U.S. Department of Labor)

Table 3 – Criteria used to identify type of acquisition based on the stock market reaction to the acquisition announcement

The Cumulative Abnormal Returns (CAR) accruing to the acquirer and the target at the acquisition announcement are used to identify motive or type of the acquisition. Total CAR are the combined CAR for both the acquirer and the target using their market value as weights. The criteria used to identify the type of acquisition based on the CAR are the following:

Acquirer CAR / ***Total CAR***	***Positive***	***Negative***
Positive	Synergy	Hubris
Negative	Undefined	Agency

Table 4 - Announcement period abnormal returns

Mean and median Cumulative Abnormal Returns (CAR) are presented for the acquirers, targets, and total, as well as the percentage of positive CAR out of each sample. CAR are calculated using *EVENTUS*, based on the market model. The estimation period is 200 business days ending at 30 days prior to the announcement for event windows (-30,30), (-20,5), and (-20,1), and ending 6 days prior to the merger announcement for windows (-5,5), (-3,3), and (-1,1). Total CAR are the combined CAR for both the acquirer and the target using their market value as weights. The market value of the firms is calculated 30 days prior to the announcement for event windows (-30,30), (-20,5), and (-20,1), and 6 days prior to the merger announcement for windows (-5,5), (-3,3), and (-1,1).

	Acquirer *n = 1,895*			*Target* *n = 1,801*			*Total* *n = 1,708*		
Window	***Mean***	***Median***	***Positive***	***Mean***	***Median***	***Positive***	***Mean***	***Median***	***Positive***
(-30,30)	-1.17%	-1.30%	47.02%	27.48%	24.42%	80.48%	1.85%	2.48%	56.54%
(-20,5)	-0.93%	-1.12%	46.23%	26.72%	23.33%	85.21%	2.41%	2.07%	58.42%
(-20,1)	-0.36%	-0.75%	46.62%	27.00%	23.69%	86.03%	2.93%	2.71%	60.75%
(-5,5)	-0.91%	-1.04%	45.30%	22.77%	19.07%	84.18%	2.13%	1.86%	59.02%
(-3,3)	-0.96%	-1.09%	44.40%	21.49%	18.42%	84.12%	2.05%	1.44%	59.07%
(-1,1)	-0.63%	-0.66%	44.03%	19.95%	15.65%	83.01%	2.11%	1.37%	61.12%

All mean and medians are statistically significant at the 1% level. Statistical significance for both the mean and median is tested using the Wilcoxon one-sample signed-ranks test.

Table 5 – Descriptive results of classification of acquisition motive based on the stock market reaction to the acquisition announcement

The Cumulative Abnormal Returns (CAR) accruing to the acquirer and the target at the acquisition announcement are used to identify motive or type of the acquisition. Total CAR are the combined CAR for both the acquirer and the target using their market value as weights. The initial reaction to the acquisition announcement is estimated by the calculating the cumulative abnormal returns (CAR) accrued to the acquirer and the target from five days prior to the acquisition announcement to five days following the announcement. The first group consists of acquisitions in which both the acquirer CAR and the total CAR (acquirer plus target) were positive. This group is consistent with synergy-motivated acquisitions. The second group contains acquisitions in which the acquirer CAR was negative and the total CAR was positive. This group is consistent with cases of hubris. The third group contains acquisitions in which both the acquirer CAR and the total CAR were negative. This group is consistent with agency-motivated acquisitions. The fourth group consists of acquisitions in which the acquirer CAR was positive and the total CAR was negative. This group is undefined.

Acquirer CAR ***Total CAR***	***Positive***	***Negative***
Positive	*Synergy* 745 (40%)	*Hubris* 263 (15%)
Negative	*Undefined* 21 (1%)	*Agency* 679 (44%)

Table 6 – Summary of variables included in the study

The definitions of the variables can be found in section 4.2.

Hypothesis	*Variable*		*Compustat items*	*Expected sign*
Correcting an agency problem in the target	Target's cash and growth opportunities	TRCASH* TRQ	(#1/#6) * (MVE + #10 + #4 - #5 + #9) / (#6)	-
	Target's level of debt	TRDDEBT	(#9+#44) / (#6) – industry median	-
Reducing target's management inefficiency	Target's return on equity (ROE)	TRROE1	#18 / #11	-
	Target's return on equity (ROE)	TRROE4	#18 / #11	-
	Target's return on assets (ROA)	TRROA	#18 / #6	-
	Low levels of Tobin's Q for the target and High levels of Tobin's Q for the acquirer	TRQ*ACQQ	(MVE + #10 + #4 - #5 + #9) / (#6) for acquirer and target	-
	Tender offers	TENOFF		+
Economies of scale / agency	Same 4 digit SIC code for the acquirer and target	SAMEIND4		+
	Same 2 digit SIC code, but not 4 digit SIC code, for the acquirer and target	SIND2N4		+
Financial synergy	Target's level of cash	TRCASH	#1	+
	Arithmetic difference between the acquirer and target's financial leverages	DLEV	(#9) / (MVE + #9 + #44 + #10)	+
	Absolute difference between the acquirer and target's financial leverages	ABSDLEV	(#9) / (MVE + #9 + #44 + #10)	+
Tax savings	Target's pre-acquisition net operating loss carry forwards (NOL)	NOLTOMKT	#52 / (MVE of combined firm)	+
	Target's pre-acquisition investment tax credits (ITC)	ITCTOMKT	#51 / (MVE of combined firm)	+
Agency	Acquirer's cash and growth opportunities	ACQCASH* ACQQ	(#1/#6) * (MVE + #10 + #4 - #5 + #9) / (#6)	+
	Acquirer's level of debt	ACQDDEBT	(#9+#44) / (#6) – industry median	+
Hubris	Target's level of R&D	TRRD	#46 / #6	-
	Target's level of tangible assets	TRPPE	#8 / #6	-
	Multiple bidders	COMBID		-

Table 6 – Summary of variables included in the study (continued)

Control variables	*Variable*		*Expected sign*
Industry shock	Shock on acquirer's demand (sales)	ACQSSLAES	?
	Shock on acquirer's supply (COGS)	ACQSCOGS	?
	Shock on target's demand (sales)	TRSSLAES	?
	Shock on target's supply (COGS)	TRSCOGS	?
	Change in acquirer's industry median sales	ACQCHMSL	?
	Change in acquirer's industry median COGS	ACQCHMCOGS	?
	Change in target's industry median sales	TRCHMSL	?
	Change in target's industry median COGS	TRCHMCOGS	?
	M&A in acquirer's industry (4 digit SIC code) in previous year	ACQMAIND4	?
	M&A in acquirer's industry (2 digit but not 4 digit SIC code) in previous year	ACQMAIND2N4	?
	M&A in target's industry (4 digit SIC code) in previous year	TRMAIND4	?
	M&A in target's industry (2 digit but not 4 digit SIC code) in previous year	TRMAIND2N4	?
Method of payment	Stock was swapped between the acquirer and target	STOCKSWAP	-
Accounting method	Pooling method	POOL	-
Multiple acquisitions	Acquirer involved in acquisition in previous 3 years	ACQINV3	?
	Acquirer involved in acquisition in previous 200 days	ACQINV1	?
	Target involved in acquisition in previous 200 days	TRINV1	?
Relative size of target	Relative size of target	RELSIZE	?

Table 7 – Descriptive statistics of variables used to identify the motive for the acquisition

Panel A: accounting variables and firm characteristics

All variables are calculated for the year prior the acquisition announcement, unless otherwise indicated. The definitions of the variables can be found in section 4.2.

Variable	*Mean*	*Median*	*Std Dev*	*Min.*	*Max.*	*N*
Target's cash and growth opportunities	0.4450	0.0588	1.4207	0.0000	26.1272	1637
Target's sub-optimal levels of debt	0.0147	-0.0194	0.1860	-0.4704	0.8860	1749
Target's return on equity (ROE)	-0.1157	0.0901	2.2918	-39.7718	19.1938	1768
Target's return on equity (ROE) (four year average before the acquisition)	0.5964	0.1885	1.7396	0.0046	30.7983	1869
Target's return on assets (ROA)	-0.0518	0.0310	0.3621	-6.7143	1.3321	1779
Levels of Tobin's Q for the target and the acquirer	0.0426	0.0048	0.0982	0.0000	0.7842	1372
Tender offers	0.2677	0	0.4428	0	1	1987
Same 4 digit SIC code for the acquirer and target	0.3442	0	0.4752	0	1	1987
Same 2 digit SIC code, but not 4 digit SIC code, for the acquirer and target	0.2350	0	0.4241	0	1	1987
Target's levels of cash	0.1655	0.0747	0.2061	0.0000	0.9746	1780
Arithmetic difference between the acquirer and target's financial leverages	-0.0504	-0.0242	0.2530	-0.9976	0.8716	602
Absolute difference between the acquirer and target's financial leverages	0.1855	0.1342	0.1792	0.0000	0.9976	602
Target's pre-acquisition net operating loss carry forwards (NOL)	0.0115	0	0.0639	0	0.9362	1987
Target's pre-acquisition investment tax credits (ITC)	0.0001	0	0.0008	0	0.0250	1987
Acquirer's cash and growth opportunities	0.6392	0.0904	2.3269	0.0000	33.4583	1514
Acquirer's sub-optimal levels of debt	0.0132	-0.0107	0.1751	-0.5795	0.8911	1560
Target's levels of R&D	0.0594	0.0000	0.1198	0.0000	0.9796	1718
Target's levels of tangible assets	0.3087	0.2442	0.2352	0.0000	0.9757	1778
Multiple bidders	0.0664	0	0.2491	0	1	1987

Table 7 – Descriptive statistics of variables used to identify the motive for the acquisition

Panel B: Control variables

All variables are calculated for the year prior the acquisition announcement, unless otherwise indicated. The definitions of the variables can be found in section 4.2.4.

Variable	*Mean*	*Median*	*Std Dev*	*Min.*	*Max.*	*N*
Shock on acquirer's demand (sales)	0.1943	0	0.3958	0	1	1981
Shock on acquirer's supply (COGS)	0.2014	0	0.4012	0	1	1981
Shock on acquirer's demand (sales)	0.2008	0	0.4007	0	1	1987
Shock on acquirer's supply (COGS)	0.2003	0	0.4003	0	1	1987
Change in acquirer's industry median sales	1.0797	1.0849	0.2112	0.1579	2.9359	1981
Change in acquirer's industry median COGS	1.0892	1.0879	0.2126	0.1414	2.6040	1981
Change in target's industry median sales	1.0818	1.0849	0.2060	0.2105	2.9359	1987
Change in target's industry median COGS	1.0922	1.0846	0.2132	0.1992	2.6319	1987
M&A in acquirer's industry (4 digit SIC code) in previous year	0.5224	1	0.4996	0	1	1987
M&A in acquirer's industry (2 digit but not 4 digit SIC code) in previous year	0.3347	0	0.4720	0	1	1987
M&A in target's industry (4 digit SIC code) in previous year	0.5013	1	0.5001	0	1	1987
M&A in target's industry (2 digit but not 4 digit SIC code) in previous year	0.3553	0	0.4787	0	1	1987
Stock was swapped between the acquirer and target	0.5375	1	0.4987	0	1	1987
Pooling method	0.2426	0	0.4287	0	1	1987
Acquirer involved in acquisition in previous 3 years	0.2265	0	0.4187	0	1	1987
Acquirer involved in acquisition in previous 200 days	0.0795	0	0.2706	0	1	1987
Target involved in acquisition in previous 200 days	0.0136	0	0.1158	0	1	1987
Relative size of target	0.4226	0.1454	2.1024	0.0001	78.4151	1716

Table 8 – Classification of acquisition motive based on ex-ante information
Panel A: discriminant function coefficient and means comparison

Table presents information about a score representing both ex-ante accounting and stock market information. The score was obtained using multivariate discriminant analysis. The score is calculated for two groups: the first is the group of acquisitions in which both the acquirer cumulative abnormal returns (CAR) and the total (target plus acquirer) CAR are positive, consistent with synergy-motivated acquisitions. The second group contains acquisitions in which both the acquirer cumulative abnormal returns (CAR) and the total (target plus acquirer) CAR are negative, consistent with agency-motivated acquisitions. The variables used to discriminate between the groups are accounting variables and firm characteristics as defined in section 4.2. The first column presents the coefficients of the discriminant function. The second (third) column shows the mean value of each of the variables used in the model for the agency-motivated (synergy-motivated) acquisitions. Mean differences are tested using the two-sample mean Z-test.

Variable	*Discriminant Function*	*Agency Mean value*	*Synergy Mean value*	*P-value for Z-test*
Intercept	2.112			
TRCASH_TRQ	-0.391	0.396	0.182	0.010
TRDDEBT	0.952	0.034	0.035	0.398
TRROE1	0.472	-0.164	0.008	0.018
TRROE4	-0.059	0.379	0.699	0.062
TRROA	2.616	-0.043	-0.007	0.075
TRQ_ACQQ	8.286	0.049	0.046	0.381
TENOFF	1.141	0.162	0.285	0.004
SAMEIND4	2.027	0.297	0.508	0.000
SIND2N4	1.558	0.203	0.302	0.026
TRCASH	-2.631	0.151	0.145	0.379
DLEV	0.971	-0.082	-0.103	0.278
ABSDLEV	-1.877	0.197	0.180	0.257
NOLTOMKT	4.938	0.030	0.042	0.204
ITCTOMKT	259.798	0.000	0.000	0.355
ACQCASH_ACQQ	-0.178	0.823	0.333	0.005
ACQDDEBT	-0.594	-0.007	-0.030	0.144
TRRD	0.575	0.052	0.037	0.116
TRNPPE	0.24	0.322	0.342	0.294
COMBID	-1.288	0.068	0.095	0.234
ACQSSALES	-1.22	0.162	0.079	0.012
ACQSCOGS	2.025	0.095	0.127	0.229
TRSSALES	1.165	0.162	0.190	0.299
TRSCOGS	-2.317	0.108	0.127	0.333
ACQCHMSL	3.867	1.086	1.080	0.381
ACQCHMCOGS	-3.684	1.098	1.050	0.002
TRCHMSL	-1.407	1.082	1.069	0.321
TRCHMCOGS	-1.868	1.098	1.048	0.003
ACQMAIND4	-0.026	0.486	0.460	0.345
ACQMAIND2N4	0.046	0.378	0.365	0.383
TRMAIND4	0.43	0.486	0.492	0.396
TRMAIND2N4	0.625	0.365	0.333	0.317
STOCKSWAP	0.224	0.649	0.476	0.001
POOL	-1.789	0.351	0.095	0.000
ACQINV3	-0.969	0.095	0.048	0.067
ACQINV1	-0.269	0.014	0.016	0.391
TRINV1	0	0.000	0.000	
RELSIZE	-0.18	0.315	0.328	0.380

Table 8 – Classification of acquisition motive based on ex-ante information

Panel B: Descriptive statistics about the score representing ex-ante information

Table presents information about a score representing both ex-ante accounting and stock market information. The score was obtained using multivariate discriminant analysis. The score is calculated for two groups: the first is the group of acquisitions in which both the acquirer cumulative abnormal returns (CAR) and the total (target plus acquirer) CAR are positive, consistent with synergy-motivated acquisitions. The second group contains acquisitions in which both the acquirer cumulative abnormal returns (CAR) and the total (target plus acquirer) CAR are negative, consistent with agency-motivated acquisitions. The variables used to discriminate between the groups are accounting variables and firm characteristics as described in section 4.2.

n = 170	31 *Positive* (18% of the sample)	139 *Negative* (82% of the sample)		
Mean	***Std***	***Minimum***	***Median***	***Maximum***
145.06	1092.45	-70.61	-19.88	13478.02

Table 9 – Post-acquisition long-term returns

Means and medians are presented for the acquirers' post-acquisition long-term Cumulative Abnormal Returns (LTCAR). LTCAR are calculated as monthly returns using *EVENTUS*, based on the market model for all acquirers in the sample. The estimation period is 24 months prior to the announcement. LTCAR are then calculated for the first year after the acquisition (LTCAR(1,12)), the first two years following the acquisition (LTCAR(1,24)), and the first three years following the acquisition (LTCAR(1,36)). n=1,221. All mean and medians are statistically significant at the 1% level. Statistical significance for both the mean and median is tested using the Wilcoxon one-sample signed-ranks test.

Window (months)	*Mean*	*Median*
1,12	-10.59%	-7.70%
1,24	-27.23%	-19.74%
1,36	-39.20%	-30.16%

Table 10 – Operating performance

This table reports operating performance from five years before the acquisition to five years after the acquisition for all acquisitions in the sample. The measures in this table are deflated by the market value of assets (Panels A and B), or by sales (Panels C and D). The table presents the unadjusted median operating cash flow returns, the industry medians, and the industry-adjusted medians. Industry is defined using 2 digits SIC codes. All adjustments are maid by subtracting the industry median based on a two digit SIC code.

Panel A – Operating cash flow returns [a]

Year relative to acquisition	Unadjusted Median	N	Industry Median	N	Adjusted Median	N
-5	6.97%	434	4.37%	455	1.57%	43
-4	6.32%	540	4.14%	568	1.94%	53
-3	5.90%	686	3.60%	717	1.42%	68
-2	5.49%	867	3.44%	912	1.51%	86
-1	4.90%	994	3.16%	1052	1.48%	99
0	4.62%	1218	3.09%	1721	1.20%	121
1	4.84%	1004	3.13%	1824	1.36%	121
2	5.61%	1004	3.44%	1645	2.11%	100
3	6.42%	782	3.64%	1418	2.63%	78
4	6.24%	634	3.76%	1218	2.63%	63
5	6.31%	525	3.80%	1062	2.57%	52

[a] Operating cash flow returns are calculating using data item 308 from *Compustat*, deflated by the market value of assets. Market value of assets is calculated as the sum of the market value of equity (data item 24 times data item 25), preferred stock (item 10), and the book value of debt (data item 9 plus data item 34).

Table 10 – Operating performance

Panel B – Operating cash flow returns (as in Healy et al., 1992)[b]

Year relative to acquisition	Unadjusted Median	N	Industry Median	N	Adjusted Median	N
-5	16.06%	537	12.84%	67	1.73%	537
-4	15.08%	640	12.35%	79	1.45%	639
-3	14.48%	764	11.72%	95	1.46%	763
-2	13.43%	932	11.01%	115	1.24%	931
-1	12.64%	1007	10.85%	125	1.03%	1006
0	11.83%	1278	10.85%	203	0.51%	1277
1	13.18%	1223	11.03%	203	1.55%	1222
2	13.82%	967	11.27%	177	2.24%	967
3	13.98%	736	11.58%	149	2.22%	736
4	14.24%	579	11.37%	127	2.25%	579
5	14.46%	481	11.58%	109	2.15%	481

[b] Healy et al. (1992) calculate operating cash flow as sales (data item 12 from *Compustat*) minus the cost of goods sold (data item 41) minus selling and administrative expenses (data item 189), plus depreciation and amortization charges (data item 14). Operating cash flows are deflated by the market value of assets calculated as in a.

Table 10 –Operating performance

Panel C – Operating cash flow returns [c]

Year relative to acquisition	Unadjusted Median	N	Industry Median	N	Adjusted Median	N
-5	8.41%	540	4.44%	56	2.52%	540
-4	8.38%	688	4.19%	72	2.82%	687
-3	7.86%	880	4.15%	91	2.52%	880
-2	8.21%	1036	3.91%	108	2.56%	1036
-1	8.65%	1056	3.62%	112	3.35%	1056
0	8.68%	1237	4.02%	172	3.42%	1237
1	7.87%	1233	3.62%	182	3.25%	1233
2	8.36%	1020	3.91%	164	3.68%	1020
3	9.16%	803	4.02%	141	4.71%	803
4	9.02%	649	4.15%	121	3.79%	649
5	8.90%	540	4.22%	106	3.80%	540

Panel D – Operating cash flow returns (as in Healy et al., 1992)[d]

Year relative to acquisition	Unadjusted Median	N	Industry Median	N	Adjusted Median	N
-5	15.87%	660	12.38%	83	2.92%	660
-4	16.59%	782	12.54%	98	3.33%	782
-3	16.53%	961	12.55%	119	3.25%	961
-2	16.63%	1093	12.59%	134	3.62%	1093
-1	17.18%	1063	12.59%	133	4.33%	1063
0	18.65%	1298	12.68%	203	5.49%	1298
1	18.69%	1238	12.69%	204	5.44%	1238
2	18.02%	985	12.48%	177	4.77%	985
3	17.80%	755	12.50%	150	4.35%	755
4	17.83%	593	12.51%	127	4.10%	593
5	17.64%	497	12.71%	109	3.81%	497

[c] Operating cash flow returns are calculating using data item 308 from *Compustat*, deflated by sales (data item 12 from *Compustat*).

[d] Healy et al. (1992) calculate operating cash flow as sales (data item 12 from *Compustat*) minus the cost of goods sold (data item 41) minus selling and administrative expenses (data item 189), plus depreciation and amortization charges (data item 14). Operating cash flows are deflated by sales (data item 12 from *Compustat*).

Table 11 – Post-acquisition long-term performance grouped by initial stock market reaction to acquisition announcement

Table presents post-acquisition long-term performance grouped by initial stock market reaction to the acquisition announcement. The initial reaction to the acquisition announcement is estimated by the calculating the cumulative abnormal returns (CAR) accrued to the acquirer and the target from five days prior to the acquisition announcement to five days following the announcement. The first group consists of acquisitions in which both the acquirer CAR and the total CAR (acquirer plus target) were positive. This group is consistent with synergy-motivated acquisitions. The second group contains acquisitions in which the acquirer CAR was negative and the total CAR was positive. This group is consistent with cases of hubris. The third group contains acquisitions in which both the acquirer CAR and the total CAR were negative. This group is consistent with agency-motivated acquisitions. The fourth group consists of acquisitions in which the acquirer CAR was positive and the total CAR was negative. This group is undefined. Mean differences are tested using the two-sample mean t-test (P-Values are in parentheses).

Panel A – Long-term post-acquisition cumulative abnormal returns

Long-term cumulative abnormal returns (LTCAR) are calculated as monthly returns.

		LTCAR Months 1-12	*LTCAR Months 1-24*	*LTCAR Months 1-36*
Group	***N***	***Mean***	***Mean***	***Mean***
Synergy	475	-0.059	-0.225	-0.340
Hubris	172	-0.158	-0.351	-0.459
Agency	502	-0.142	-0.311	-0.453
Undefined	72	-0.039	-0.126	-0.152
Difference between		2.396	1.623	1.147
Synergy and Hubris		(0.0171)	(0.1055)	(0.2521)
Difference between		2.714	1.530	1.431
Synergy and Agency		(0.0067)	(0.1262)	(0.1528)

Table 11 – Post-acquisition long-term performance grouped by initial stock market reaction to acquisition announcement

Panel B – Long-term post-acquisition operating performance

Long-term operating performance is calculated as industry adjusted operating cash flows divided by the market value of assets. All measures are calculated as the difference between post-acquisition performance and pre-acquisition performance. CHOCF1_1 is the difference between the performance in the year following the acquisition and the performance in the year before the acquisition. CHOCF3_1 is the difference between the performance in the third year following the acquisition and the performance in the year before the acquisition. CHAOCF1 is the difference between the mean performance in the three years following the acquisition and the mean performance in the three years before the acquisition. CHAOCF2 is the difference between the mean performance in the three years following the acquisition and the performance in the year before the acquisition. Means are not statistically different.

	CHOCF1_1		*CHOCF3_1*		*CHAOCF1*		*CHAOCF2*	
Group	*N*	*Mean*	*N*	*Mean*	*N*	*Mean*	*N*	*Mean*
Synergy	389	0.004	240	0.003	413	0.011	391	0.008
Hubris	140	-0.009	81	0.063	146	0.006	140	0.003
Agency	364	0.007	218	0.019	397	0.011	366	0.013
Undefined	26	-0.010	15	-0.002	39	0.009	26	-0.014

Table 12 – Post-acquisition long-term performance grouped by a score representing ex-ante information

Using multivariate discriminant analysis a discriminant function is estimated for a randomly selected half of the sample. Using that discriminant function a score is calculated to represent the ex-ante information for the holdout sample. The score is calculated for two groups of acquisitions: the first group is one in which both the acquirer cumulative abnormal returns (CAR) and the total (target plus acquirer) CAR are positive, consistent with synergy-motivated acquisitions. The second group contains acquisitions in which both the acquirer cumulative abnormal returns (CAR) and the total (target plus acquirer) CAR are negative, consistent with agency-motivated acquisitions. The variables used to discriminate between the groups are accounting variables and firm characteristics as described in section 4.2. The score represents the accounting information priced by the stock market at the time of the acquisition announcement. Mean differences are tested using the two-sample mean t-test (P-Values are in parentheses).

Panel A – Long-term post-acquisition cumulative abnormal returns

Long-term cumulative abnormal returns are calculated as monthly returns.

		LTCAR Months 1-12	*LTCAR Months 1-24*	*LTCAR Months 1-36*
Group	*N*	*Mean*	*Mean*	*Mean*
Synergy	31	0.025	-0.222	-0.073
Agency	139	-0.119	-0.312	-0.548
Difference between Synergy and Agency		1.665 (0.0982)	0.626 (0.5322)	2.110 (0.0397)

Table 12 – Post-acquisition long-term performance grouped by a score representing ex-ante information

Panel B – Long-term post-acquisition operating performance

Long-term operating performance is calculated as industry adjusted operating cash flows divided by the market value of assets. All measures are calculated as the difference between post-acquisition performance and pre-acquisition performance. CHOCF1_1 is the difference between the performance in the year following the acquisition and the performance in the year before the acquisition. CHOCF3_1 is the difference between the performance in the third year following the acquisition and the performance in the year before the acquisition. CHAOCF1 is the difference between the mean performance in the three years following the acquisition and the mean performance in the three years before the acquisition. CHAOCF2 is the difference between the mean performance in the three years following the acquisition and the performance in the year before the acquisition.

	CHOCF1_1		*CHOCF3_1*		*CHAOCF1*		*CHAOCF2*	
Group	*N*	*Mean*	*N*	*Mean*	*N*	*Mean*	*N*	*Mean*
Synergy	20	0.038	18	0.082	21	0.051	21	0.052
Agency	111	-0.006	96	0.012	112	0.012	111	0.005
Difference between Synergy and Agency		2.514 (0.0175)		2.687 (0.0083)		2.008 (0.0467)		2.441 (0.0160)

Table 13 – Post-acquisition long-term performance – Regression analyses using the stock market reaction to the acquisition announcement

Panel A – Regressing the stock market reaction to the acquisition announcement on LTCAR

A regression model is used to study the changes in post-acquisition long-term performance. The model used in the regression is Δ *long-term performance* = *stock market reaction* + ε, where Δ *long-term performance* is the long-term cumulative abnormal returns (LTCAR) accruing in either the first year, the first two years, or the three years following the acquisition. The stock market reaction to the acquisition announcement is defined as either the CAR accruing to the acquirer or the total CAR accruing to both the acquirer and the target in the eleven days surrounding the acquisition announcement. I correct for outliers using the method suggested by Belsley et al. (1980).

Dependent Variable	***LTCAR Months 1-12***		***LTCAR Months 1-12***		***LTCAR Months 1-24***		***LTCAR Months 1-24***	
Independent variable	***Coefficient***	***P-Value***	***Coefficient***	***P-Value***	***Coefficient***	***P-Value***	***Coefficient***	***P-Value***
Intercept	-0.1319	<0.0001	-0.1566	<0.0001	-0.3168	<0.0001	-0.3531	<0.0001
ACQCAR	0.7068	<0.0001			0.7636	0.0016		
TTLCAR			0.7185	<0.0001			0.2749	0.0443
R^2	0.0239		0.0208		0.0084		0.0038	
Adj R^2	0.0231		0.0199		0.0076		0.0029	
n	1,179		1,065		1,184		1,062	

Panel A – Regressing the stock market reaction to the acquisition announcement on LTCAR (continued)

Dependent Variable	***LTCAR Months 1-36***		***LTCAR Months 1-36***	
Independent variable	***Coefficient***	***P-Value***	***Coefficient***	***P-Value***
Intercept	-0.4681	<0.0001	-0.5211	<0.0001
ACQCAR	0.8597	0.0101		
TTLCAR			0.6304	0.0981
R^2	0.0056		0.0026	
Adj R^2	0.0048		0.0016	
n	1,178		1,058	

Table 13 – Post-acquisition long-term performance – Regression analyses using the stock market reaction to the acquisition announcement

Panel B – Regressing the stock market reaction to the acquisition announcement on operating performance measures

A regression model is used to study the changes in post-acquisition long-term operating performance. The model used in the regression is Δ *long-term performance* = *stock market reaction* + ε, where Δ *long-term performance* is calculated as industry adjusted operating cash flows divided by the market value of assets. All measures are calculated as the difference between post-acquisition performance and pre-acquisition performance. CHOCF1_1 is the difference between the performance in the year following the acquisition and the performance in the year before the acquisition. CHOCF3_1 is the difference between the performance in the third year following the acquisition and the performance in the year before the acquisition. CHAOCF1 is the difference between the mean performance in the three years following the acquisition and the mean performance in the three years before the acquisition. CHAOCF2 is the difference between the mean performance in the three years following the acquisition and the performance in the year before the acquisition. The stock market reaction to the acquisition announcement is defined as either the CAR accruing to the acquirer or the total CAR accruing to both the acquirer and the target in the eleven days surrounding the acquisition announcement. I correct for outliers using the method suggested by Belsley et al. (1980).

Dep. Variable	***CHOCF1_1***		***CHOCF1_1***		***CHOCF3_1***		***CHOCF3_1***	
Ind. variable	***Coeff.***	***P-Value***	***Coeff.***	***P-Value***	***Coeff.***	***P-Value***	***Coeff.***	***P-Value***
Intercept	0.0026	0.4126	0.0046	0.1567	0.0169	0.0683	0.0213	0.0361
ACQCAR	-0.0148	0.6417			-0.1095	0.2915		
TTLCAR			-0.0655	0.0428			-0.1151	0.2995
R^2	0.0002		0.0048		0.0020		0.0021	
Adj R^2	-0.0009		0.0037		0.0002		0.0002	
n	896		846		545		517	

Panel B – Regressing the stock market reaction to the acquisition announcement on operating performance measures (continued)

Dep. Variable	***CHAOCF1***		***CHAOCF1***		***CHAOCF2***		***CHAOCF2***	
Ind. Variable	***Coeff.***	***P-Value***	***Coeff.***	***P-Value***	***Coeff.***	***P-Value***	***Coeff.***	***P-Value***
Intercept	0.0100	0.0058	0.0102	0.0090	0.0086	0.0271	0.0110	0.0069
ACQCAR	0.0223	0.5397			-0.0160	0.6825		
TTLCAR			-0.0084	0.8307			-0.0635	0.1207
R^2	0.0004		0.0001		0.0002		0.0028	
Adj R^2	-0.0006		-0.0011		-0.0009		0.0017	
n	968		902		900		850	

Table 14 – Post-acquisition long-term performance – Regression analyses using ex-ante accounting information

Panel A – Regressing ex-ante accounting information on LTCAR

A regression model is used to study the changes in post-acquisition long-term performance. The model used in the regression is Δ *long-term performance* = $\Sigma\beta_i$ *Variables tested* + $\Sigma\beta_j$ *Control variables* + ε, where Δ *long-term performance* is the cumulative abnormal returns (LTCAR) accruing in either the first year, the first two years, or the three years following the acquisition. I correct for outliers using the method suggested by Belsley et al. (1980). Variable definitions and expected signs can be found in Table 6.

Dependent Variable	*LTCAR Months 1-12*		*LTCAR Months 1-24*		*LTCAR Months 1-36*	
Independent variable	*Coefficient*	*P-Value*	*Coefficient*	*P-Value*	*Coefficient*	*P-Value*
Intercept	-0.1142	0.5895	-0.6571	0.0802	-0.6380	0.2487
TRCASH_TRQ	-0.0913	0.1358	-0.2057	0.0641	-0.0823	0.6100
TRDDEBT	0.1407	0.5415	0.7838	0.0577	1.4437	0.0169
TRROE1	-0.0348	0.0814	-0.0553	0.1202	-0.0575	0.2677
TRROE4	-0.0256	0.2502	-0.0082	0.8362	-0.0020	0.9718
TRROA	0.4691	0.0144	0.7520	0.0270	0.9829	0.0458
TRQ_ACQQ	0.9255	0.1261	0.9633	0.3913	2.2501	0.1699
TENOFF	0.1281	0.0674	0.2207	0.0762	0.3826	0.0371
SAMEIND4	0.1687	0.0094	0.2235	0.0548	0.3235	0.0577
SIND2N4	0.0468	0.5087	0.0934	0.4592	0.2136	0.2507
TRCASH	-0.0330	0.9099	0.4413	0.4031	-0.5730	0.4573
DLEV	-0.0503	0.7998	0.1314	0.7101	0.4853	0.3477
ABSDLEV	0.1207	0.5198	-0.2443	0.4630	-0.6605	0.1764
NOLTOMKT	0.0739	0.8194	0.1145	0.8468	-0.3418	0.7215
ITCTOMKT	-17.5139	0.6959	-75.6737	0.3429	36.7965	0.4427
ACQCASH_ACQQ	-0.0646	0.0072	-0.0972	0.0242	-0.1357	0.0311
ACQDDEBT	0.1004	0.6470	0.0133	0.9728	-0.2790	0.6257
TRRD	0.9730	0.0351	1.8667	0.0233	2.5925	0.0257
TRNPPE	0.0762	0.5395	0.3622	0.1014	0.2418	0.4504
COMBID	-0.0501	0.6172	-0.0894	0.6169	-0.0197	0.9401
ACQSSALES	0.1383	0.1736	0.1960	0.2790	0.1930	0.4641
ACQSCOGS	-0.0020	0.9857	0.0349	0.8610	0.1463	0.6149
TRSSALES	-0.0854	0.3684	-0.1069	0.5283	-0.1596	0.5104
TRSCOGS	-0.0452	0.6706	0.1155	0.5425	0.1570	0.5714
ACQCHMSL	0.5696	0.0703	0.9816	0.0802	1.3421	0.0982
ACQCHMCOGS	-0.7746	0.0058	-1.5250	0.0024	-2.1402	0.0033
TRCHMSL	0.0338	0.9181	-0.2340	0.6900	-0.3397	0.6881
TRCHMCOGS	0.0254	0.9267	0.5957	0.2261	0.8988	0.2069
ACQMAIND4	-0.0027	0.9752	0.0705	0.6565	0.1199	0.6046
ACQMAIND2N4	0.0955	0.2378	0.1459	0.3143	0.1268	0.5491
TRMAIND4	-0.1192	0.1917	-0.0296	0.8565	-0.1751	0.4604
TRMAIND2N4	-0.0562	0.5187	0.0671	0.6691	0.0071	0.9751
POOL	-0.1017	0.1612	-0.1653	0.2009	-0.0939	0.6163
ACQINV3	0.1119	0.2835	0.3360	0.0654	0.2715	0.3267
ACQINV1	-0.0338	0.8532	-0.3506	0.2772	-0.3998	0.4029
TRINV1	-0.0696	0.8410	-0.1138	0.8539	0.0649	0.9427
RELSIZE	0.0102	0.8605	0.0529	0.6087	-0.0479	0.7514
R^2	0.1909		0.1790		0.1601	
Adj R^2	0.0904		0.0764		0.0548	
n	335		333		332	

Table 14 – Post-acquisition long-term performance – Regression analyses using ex-ante accounting information

Panel B – Regressing ex-ante accounting information on operating performance measures

A regression model is used to study the changes in post-acquisition long-term operating performance. The model used in the regression is Δ *long-term performance* = $\Sigma\beta_i$ *Variables tested* + $\Sigma\beta_j$ *Control variables* + ε, where Δ *long-term performance* is calculated as industry adjusted operating cash flows divided by the market value of assets. All measures are calculated as the difference between post-acquisition performance and pre-acquisition performance. CHOCF1_1 is the difference between the performance in the year following the acquisition and the performance in the year before the acquisition. CHOCF3_1 is the difference between the performance in the third year following the acquisition and the performance in the year before the acquisition. CHAOCF1 is the difference between the mean performance in the three years following the acquisition and the mean performance in the three years before the acquisition. CHAOCF2 is the difference between the mean performance in the three years following the acquisition and the performance in the year before the acquisition. I correct for outliers using the method suggested by Belsley et al. (1980). Variable definitions and expected signs can be found in Table 6.

Dependent var.	*CHOCF1_1*		*CHOCF3_1*		*CHAOCF1*		*CHAOCF2*	
Independent var.	*Coeff.*	*P*	*Coeff.*	*P*	*Coeff.*	*P*	*Coeff.*	*P*
Intercept	0.0883	0.0450	0.0883	0.0450	0.0081	0.8674	0.0396	0.4346
TRCASH_TRQ	-0.0008	0.9666	-0.0008	0.9666	0.0063	0.7521	0.0042	0.8418
TRDDEBT	0.1595	0.0006	0.1595	0.0006	0.1428	0.0045	0.1801	0.0007
TRROE1	-0.0023	0.7306	-0.0023	0.7306	0.0019	0.7982	0.0034	0.6535
TRROE4	-0.0024	0.6586	-0.0024	0.6586	-0.0022	0.7099	-0.0038	0.5257
TRROA	0.0153	0.6614	0.0153	0.6614	-0.0094	0.7994	-0.0241	0.5399
TRQ_ACQQ	0.0698	0.5556	0.0698	0.5556	-0.0468	0.7178	-0.0149	0.9126
TENOFF	-0.0114	0.4328	-0.0061	0.7321	0.0005	0.9715	-0.0120	0.4680
SAMEIND4	0.0177	0.2037	0.0177	0.2037	0.0173	0.2526	0.0102	0.5194
SIND2N4	0.0151	0.3155	0.0151	0.3155	0.0182	0.2657	0.0121	0.4749
TRCASH	-0.0204	0.7450	-0.0204	0.7450	0.0072	0.9169	-0.0229	0.7522
DLEV	0.1844	0.0000	0.1844	0.0000	0.1302	0.0042	0.1930	0.0000
ABSDLEV	-0.0369	0.3474	-0.0369	0.3474	-0.0932	0.0297	-0.0797	0.0749
NOLTOMKT	0.1871	0.0090	0.1871	0.0090	0.2312	0.0031	0.2031	0.0126
ITCTOMKT	4.9547	0.4778	4.9547	0.4778	3.0486	0.6892	2.1972	0.7815
ACQCASH_ACQQ	-0.0014	0.7781	-0.0014	0.7781	0.0076	0.1742	0.0070	0.2259
ACQDDEBT	-0.0761	0.0633	-0.0761	0.0633	-0.0275	0.5373	-0.0832	0.0735
TRRD	-0.0205	0.8209	-0.0205	0.8209	-0.0263	0.7870	-0.0319	0.7535
TRNPPE	-0.0615	0.0239	-0.0615	0.0239	-0.0460	0.1230	-0.0492	0.1137
COMBID	-0.0271	0.2243	-0.0271	0.2243	0.0051	0.8337	-0.0112	0.6582
ACQSSALES	0.0440	0.0450	0.0440	0.0450	-0.0128	0.5928	0.0032	0.8981
ACQSCOGS	-0.0052	0.8311	-0.0052	0.8311	0.0477	0.0715	0.0458	0.0970
TRSSALES	-0.0386	0.0618	-0.0386	0.0618	-0.0324	0.1476	-0.0355	0.1336
TRSCOGS	0.0148	0.5237	0.0148	0.5237	-0.0310	0.2194	-0.0370	0.1595
ACQCHMSL	-0.0716	0.3080	-0.0716	0.3080	0.0296	0.6994	0.0301	0.7057
ACQCHMCOGS	0.0526	0.3941	0.0526	0.3941	-0.0376	0.5776	-0.0602	0.3895
TRCHMSL	0.0252	0.7300	0.0252	0.7300	0.0015	0.9852	0.0059	0.9430
TRCHMCOGS	-0.0453	0.4640	-0.0453	0.4640	0.0485	0.4726	0.0486	0.4877
ACQMAIND4	0.0306	0.1293	0.0306	0.1293	0.0088	0.6891	0.0244	0.2877
ACQMAIND2N4	0.0264	0.1522	0.0264	0.1522	0.0044	0.8273	0.0158	0.4515
TRMAIND4	-0.0300	0.1362	-0.0300	0.1362	-0.0190	0.3840	-0.0282	0.2176
TRMAIND2N4	-0.0424	0.0268	-0.0424	0.0268	-0.0242	0.2448	-0.0369	0.0886
POOL	-0.0094	0.5627	-0.0094	0.5627	0.0064	0.7147	-0.0009	0.9603
ACQINV3	0.0154	0.4771	0.0154	0.4771	-0.0110	0.6268	0.0003	0.9902
ACQINV1	0.0170	0.6409	0.0170	0.6409	0.0222	0.5836	0.0139	0.7434
TRINV1	0.0519	0.5237	0.0519	0.5237	0.0613	0.4896	0.0685	0.4580
RELSIZE	-0.0471	0.0003	-0.0471	0.0003	-0.0328	0.0197	-0.0393	0.0074
R^2	0.1883		0.2240		0.1480		0.1636	
Adj R^2	0.1003		0.0819		0.0566		0.0728	
n	378		239		382		378	

Table 15 – Post-acquisition long-term performance – Regression analyses using the A scores

Panel A – Regressing a score representing ex-ante information on LTCAR

A regression model is used to study the changes in post-acquisition long-term operating performance. The model used in the regression is Δ *long-term performance* = *A score* + ε, where Δ *long-term performance* is the long-term cumulative abnormal returns (LTCAR) accruing in either the first year, the first two years, or the three years following the acquisition. The A score was obtained using multivariate discriminant analysis. The score is calculated for two groups: the first is the group of acquisitions in which both the acquirer cumulative abnormal returns (CAR) and the total (target plus acquirer) CAR are positive, consistent with synergy-motivated acquisitions. The second group contains acquisitions in which both the acquirer cumulative abnormal returns (CAR) and the total (target plus acquirer) CAR are negative, consistent with agency-motivated acquisitions. The variables used to discriminate between the groups are accounting variables and firm characteristics as described in section 4.2. 1 correct for outliers using the method suggested by Belsley et al. (1980).

Dependent Variable	***LTCAR Months 1-12***		***LTCAR Months 1-24***		***LTCAR Months 1-36***	
Independent variable	***Coefficient***	***P-Value***	***Coefficient***	***P-Value***	***Coefficient***	***P-Value***
Intercept	-0.10314	0.0058	-0.30204	<0.0001	-0.46750	<0.0001
A Score	0.00007	0.0441	0.00003	0.4950	0.00004	0.6364
R^2	0.0239		0.0028		0.0013	
Adj R^2	0.0181		-0.0032		-0.0046	
n	169		169		169	

Table 15 – Post-acquisition long-term performance – Regression analyses using the A scores

Panel B – Regressing a score representing ex-ante information on operating performance measures

A regression model is used to study the changes in post-acquisition long-term operating performance. The model used in the regression is Δ *long-term performance* = *A score* + ε, where Δ *long-term performance* is calculated as industry adjusted operating cash flows divided by the market value of assets. All measures are calculated as the difference between post-acquisition performance and pre-acquisition performance. CHOCF1_1 is the difference between the performance in the year following the acquisition and the performance in the year before the acquisition. CHOCF3_1 is the difference between the performance in the third year following the acquisition and the performance in the year before the acquisition. CHAOCF1 is the difference between the mean performance in the three years following the acquisition and the mean performance in the three years before the acquisition. CHAOCF2 is the difference between the mean performance in the three years following the acquisition and the performance in the year before the acquisition. The A score was obtained using multivariate discriminant analysis. The score is calculated for two groups: the first is the group of acquisitions in which both the acquirer cumulative abnormal returns (CAR) and the total (target plus acquirer) CAR are positive, consistent with synergy-motivated acquisitions. The second group contains acquisitions in which both the acquirer cumulative abnormal returns (CAR) and the total (target plus acquirer) CAR are negative, consistent with agency-motivated acquisitions. The variables used to discriminate between the groups are accounting variables and firm characteristics as described in section 4.2. I correct for outliers using the method suggested by Belsley et al. (1980).

Dependent Variable	***CHOCF1_1***		***CHOCF3_1***		***CHAOCF1***		***CHAOCF2***	
Independent variable	***Coefficient***	***P-Value***	***Coefficient***	***P-Value***	***Coefficient***	***P-Value***	***Coefficient***	***P-Value***
Intercept	-0.01037	0.1530	0.01955	0.0522	0.01282	0.1047	-0.00247	0.7454
A Score	0.00003	0.0447	0.00004	0.0717	0.00004	0.0348	0.00003	0.0613
R^2	0.0309		0.0287		0.0392		0.0269	
Adj R^2	0.0234		0.0200		0.0306		0.0193	
N	130		113		113		130	

Table 16 – Additional ways to identify the motives for the acquisitions

This table presents descriptive statistics and correlations for alternative scores that are calculated to identify the motives for the acquisitions. Using multivariate discriminant analysis a discriminant function is estimated for a randomly selected half of the sample. Using that discriminant function a score is calculated to represent the accounting information for the holdout sample. The score is calculated for two groups of acquisitions: the first is for acquisitions that experienced an increase in post-acquisition long-term operating performance, and the second group contains acquisitions that experienced a decrease in post-acquisition long-term operating performance. Operating performance is calculated in four ways: CHOCF1_1 is the difference between the performance in the year following the acquisition and the performance in the year before the acquisition. CHOCF3_1 is the difference between the performance in the third year following the acquisition and the performance in the year before the acquisition. CHAOCF1 is the difference between the mean performance in the three years following the acquisition and the mean performance in the three years before the acquisition. CHAOCF2 is the difference between the mean performance in the three years following the acquisition and the performance in the year before the acquisition. The variables used to discriminate between the groups are accounting variables and firm characteristics as described in section 4.2. The score represents ex-ante and ex-post accounting information. For comparison purposes I include the original A score calculated for the sample.

Panel A – Descriptive statistics

Dependent Variable based on	*N*	*Mean*	*Std Dev*	*Minimum*	*Median*	*Maximum*
A Score	195	0.18	0.80	-3.37	0.13	2.49
CHAOCF1_1	195	29.01	183.51	-43.79	-10.08	2008.28
CHAOCF3_1	195	6.99	64.34	-39.53	-4.92	698.89
CHAAOCF1	195	-19.02	31.39	-308.09	-12.68	59.55
CHAAOCF2	195	47.12	242.73	-82.44	-4.36	2664.93

Table 16 – Additional ways to identify the motives for the acquisitions

Panel B – Correlations

Pearson Correlation coefficient is calculated. N = 195. P-Values are presented below the coefficient in *Italic*.

Dependent Variable based on	*A Score*	*CHAOCF1_1*	*CHAOCF3_1*	*CHAAOCF1*	*CHAAOCF2*
A Score	1	0.0211 *0.7692*	0.0356 *0.6216*	-0.0580 *0.4209*	0.0264 *0.7146*
CHAOCF1_1	0.0211 *0.7692*	1	0.9942 *<.0001*	-0.8094 *<.0001*	0.9996 *<.0001*
CHAOCF3_1	0.0356 *0.6216*	0.9942 *<.0001*	1	-0.7972 *<.0001*	0.9956 *<.0001*
CHAAOCF1	-0.0580 *0.4209*	-0.8094 *<.0001*	-0.7972 *<.0001*	1	-0.8054 *<.0001*
CHAAOCF2	0.0264 *0.7146*	0.9996 *<.0001*	0.9956 *<.0001*	-0.8054 *<.0001*	1

Table 17 – Post-acquisition long-term performance grouped by a score using accounting information

Using multivariate discriminant analysis a discriminant function is estimated for a randomly selected half of the sample. Using that discriminant function a score is calculated to represent the ex-ante information for the holdout sample. The score is calculated for two groups of acquisitions: the first is for acquisitions that experienced an increase in post-acquisition long-term operating performance, and the second group contains acquisitions that experienced a decrease in post-acquisition long-term operating performance. In Panels A and B operating performance is calculated as the difference between the performance in the third year following the acquisition and the performance in the year before the acquisition (CHOCF3_1). In Panels C operating performance is calculated as the difference between the mean performance in the three years following the acquisition and the performance in the year before the acquisition (CHAOCF2). The variables used to discriminate between the groups are accounting variables and firm characteristics as described in section 4.2. The score represents the accounting information priced by the stock market at the time of the acquisition announcement. Mean differences are tested using the two-sample mean t-test (P-Values are in parentheses).

Panel A – Long-term post-acquisition cumulative abnormal returns

Long-term cumulative abnormal returns are calculated as monthly returns.

		LTCAR Months 1-12	*LTCAR Months 1-24*	*LTCAR Months 1-36*
Group	***N***	***Mean***	***Mean***	***Mean***
Positive score	35	0.006	-0.207	-0.370
Negative score	100	-0.217	-0.472	-0.689
Difference between Positive and Negative scores		2.600 (0.0111)	1.694 (0.0949)	1.307 (0.1963)

Table 17 – Post-acquisition long-term performance grouped by a score using accounting information

Panel B – Long-term post-acquisition operating performance

Long-term operating performance is calculated as industry adjusted operating cash flows divided by the market value of assets. All measures are calculated as the difference between post-acquisition performance and pre-acquisition performance. CHOCF1_1 is the difference between the performance in the year following the acquisition and the performance in the year before the acquisition. CHOCF3_1 is the difference between the performance in the third year following the acquisition and the performance in the year before the acquisition. CHAOCF1 is the difference between the mean performance in the three years following the acquisition and the mean performance in the three years before the acquisition. CHAOCF2 is the difference between the mean performance in the three years following the acquisition and the performance in the year before the acquisition.

	CHOCF1_1		*CHOCF3_1*		*CHAOCF1*		*CHAOCF2*	
Group	*N*	*Mean*	*N*	*Mean*	*N*	*Mean*	*N*	*Mean*
Positive score	45	0.000	35	0.029	45	0.003	21	0.002
Negative score	145	-0.009	86	-0.022	150	0.017	111	0.016
Difference between Positive and Negative scores		0.576 (0.5664)		2.074 (0.0402)		0.737 (0.4626)		1.048 (0.2967)

Table 17 – Post-acquisition long-term performance grouped by a score using accounting information

Panel C – Long-term post-acquisition cumulative abnormal returns

Long-term cumulative abnormal returns are calculated as monthly returns.

Group	N	*LTCAR Months 1-12* Mean	*LTCAR Months 1-24* Mean	*LTCAR Months 1-36* Mean
Positive score	46	-0.120	-0.244	-0.338
Negative score	89	-0.179	-0.486	-0.744
Difference between Positive and Negative scores		0.636 (0.5256)	1.557 (0.1218)	1.795 (0.0750)

Table 18 – Examining the effect of the accounting method used in the acquisition

Using multivariate discriminant analysis a discriminant function is estimated for a randomly selected half of the sample. Using that discriminant function a score is calculated to represent the ex-ante information for the holdout sample. The score is calculated for two groups of acquisitions: the first group is one in which both the acquirer cumulative abnormal returns (CAR) and the total (target plus acquirer) CAR are positive, consistent with synergy-motivated acquisitions. The second group contains acquisitions in which both the acquirer cumulative abnormal returns (CAR) and the total (target plus acquirer) CAR are negative, consistent with agency-motivated acquisitions. The variables used to discriminate between the groups are accounting variables and firm characteristics as described in section 4.2. The score represents the accounting information priced by the stock market at the time of the acquisition announcement. Mean differences are tested using the two-sample mean t-test (P-Values are in parentheses).

Panel A – Post-acquisition long-term operating performance grouped by a score representing ex-ante information

Long-term operating performance is calculated as industry adjusted operating cash flows divided by sales. All measures are calculated as the difference between post-acquisition performance and pre-acquisition performance. CHOCFSL1_1 is the difference between the performance in the year following the acquisition and the performance in the year before the acquisition. CHOCFSL3_1 is the difference between the performance in the third year following the acquisition and the performance in the year before the acquisition. CHAOCFSL1 is the difference between the mean performance in the three years following the acquisition and the mean performance in the three years before the acquisition. CHAOCFSL2 is the difference between the mean performance in the three years following the acquisition and the performance in the year before the acquisition.

	CHOCFSL1_1		*CHOCFSL3_1*		*CHAOCFSL1*		*CHAOCFSL2*	
Group	*N*	*Mean*	*N*	*Mean*	*N*	*Mean*	*N*	*Mean*
Synergy	20	0.023	19	0.021	22	0.043	22	0.019
Agency	111	-0.014	96	-0.008	112	0.003	111	0.005
Difference between Synergy and Agency		2.526 (0.0127)		1.553 (0.1249)		2.442 (0.0159)		1.423 (0.1570)

Table 18 – Examining the effect of the accounting method used in the acquisition

Panel B – Relation between accounting method and identified motive

Motive for acquisition / *Accounting method*	*Synergy*	*Agency*
Purchase	26 (15%)	102 (60%)
Pooling of interest	5 (3%)	37 (22%)
Proportion of Pooling in motive	16.13%	26.62%

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