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Economic Impact of Corporate Mergers and Acquisitions on Acquiring Firm Shareholder Wealth

George Coontz

I. INTRODUCTION

Mergers and acquisitions are a topic of great debate in today's business world. Some proponents argue that mergers increase efficiency whereas opponents argue that they decrease consumer welfare by monopoly power. This paper focuses on the efficiency aspect of mergers and acquisitions to determine if they affect shareholder wealth.

What are some motives for a merger? The first motive, some might say the most important of a public company, is to increase profitability and shareholder wealth by an increase in stock prices. An increase in share price means an increase in shareholder wealth. Investors want to invest in your company if you show increasing shareholder wealth over time. Another motive might be diversification of industry. This is one way to lessen risk of a one-product corporation. If the firm is a diversified corporation, they become less volatile. For example, two corporations can combine resources and become more efficient. This leads to economies of scale. Economies of scale can be defined as producing more at increased efficiency levels. This is basically being able to produce more at cheaper rates. The bigger a corporation is, the more efficient its inputs of capital and labor can be. Another motive for merger is geographic expansion. If you have a corporation in one area and want to expand to other areas, it is usually cheaper to merge with a firm in the same industry in a different location. It is also important to note that there are several anticompetitive effects that are also motives for mergers. Firms might choose to merge to lessen competition in the marketplace or to achieve monopoly profits (Steiner, 1975).

> "Some proponents argue that mergers increase efficiency whereas opponents argue that they decrease consumer welfare by monopoly power."

Why would a company want to increase shareholder wealth? This question has many answers. One such reason is that if shareholders are happy, it only makes sense that they will continue to invest in your company. Another reason for an increase in shareholder wealth is an internal reason. Since a lot of directors and officers of corporations are shareholders, they will try to achieve their maximum value. Another possibility resulting in an increase in shareholder wealth is making money. The more money a firm is earning, the higher the share price. It is logical that an investor would want a part of that.

The purpose of this research is to see if mergers and acquisitions affect shareholder wealth in the time before announcement dates and after consummation dates. The focus of this research is to better understand market reactions to mergers. This paper aims to find a reliable, consistent change in shareholder wealth before the announcement and after the consummation of the merger. A goal is for

an investor to be able to use ofthese findings to predict the affect of mergers and acquisitions and invest accordingly.

In Section II, I discuss previous literature on the subject. Section III presents relevant economic theories. In Section IV, I discuss hypotheses and establish a theoretical basis. I present the empirical model Section V and the data in Section VI. Section VII offers results and Section VIII focuses on conclusions and avenues for future research.

II. LITERATURE REVIEW

The corporation is a complex organism evolving over time. Part of the evolution is with corporate culture and traditional aging of a corporation, but the area of evolution this paper focuses on is mergers and acquisitions. Over time, mergers and acquisitions have been increasingly important to the evolution of the corporation. There have been four merger waves and a modern movement in corporate merger history. According to Gaughan (1996), the first wave took place from 1897 to 1904. The mergers in this wave were mostly in the manufacturing and mining industries. One of the most famous mergers happened during this period – it was "the first billion dollar mega merger deal when U.S. Steel, founded by J.P. Morgan, later joined with Carnegie Steel, founded by Andrew Carnegie, and combined with its other major rivals. The resulting steel giant merged 785 separate firms. At one time U.S. Steel accounted for as much as 75% of the United States' steel making capacity (Gaughan, 1996)." This is one example of a large firm created by merger still in existence today. But, U.S. Steel has seen its heyday and is now barely in existence due to overseas cost efficient production.

> "Over time, mergers and acquisitions have been increasingly important to the evolution of the corporation."

The second wave occurred between 1916 and 1929. It is surprising that so many mergers occurred during this period, because the antitrust laws (Sherman and Clayton Acts) were enacted during this time to deter monopoly action. This wave came to a crashing halt on October 24, 1929, Black Thursday (Gaughan, 1996). The third wave was between 1965 and 1969, also known as the conglomerate period (Gaughan, 1996). Many large firms were created during this period. The fourth merger period was from 1981-1989 (Gaughan, 1996). During this wave, mergers became larger and some even international. The current wave of mergers occurred during the mid to late 1990's. This was a time of great economic gains and usually with gains comes the possibility of a merger or an acquisition.

Important facts to know about mergers are that they are regulated by antitrust laws and the Department of Justice. Antitrust laws include the Sherman Act of 1890 and the Clayton Act of 1914. The meaning of these laws has evolved over time, while at first, they were loosely enforced because the government did not have the resources to fully enforce the laws, but now, these laws play a huge role in the workings of corporations.

I want to briefly discuss the three major types of mergers: horizontal, vertical, and conglomerate. A horizontal merger is a merger that is between direct competitors in the same geographic and product markets (Waldman, 2001). A vertical merger involves corporations that are in different stages of manufacturing (Waldman, 2001). For example, a tire manufacturer would merge upstream with a rubber tree farm. The last major section of mergers is conglomerate mergers. These involve corporations that operate in different product or geographic markets (Waldman, 2001). This study looks at mergers across type and does not focus on only one category.

This paper looks at several studies to investigate motives and shareholder wealth effects. Langetieg (1978) says that "positive pre-merger excess returns indicate that the merger contributes to stockholder welfare." In his study, Langetieg examined pre and post-merger effects on stock-

holder gains with a three factor performance index. This index is an expansion on previous work that used a one and two factor model. Langetieg's model included a control group of non-merging firms. Starting at two points before the merger announcement date, 18 and 6 months before, he found a net benefit to stockholders of 6.11% and -1.61%, respectively. This study showed that shareholder gains were statistically insignificant.

In Amoako-Adu's and Yagil's (1986) study, stock price behavior was examined. They find that in two months (-2) before the announcement date is the first month where the change in the average residual is significant. They also found that from months (-2) to month (+2) from the announcement date are where the most gains occur. Before and after those dates, gains are statistically insignificant from zero.

Agrawal, Jaffee, and Mandelker (1992) find that after a merger, the acquirers have significant underperformance. They find that there is a significant wealth loss of 10% in 5 years after the merger. They suggest that this could be due to a lag in market adjustment from announcement date. Additionally, "the long run performance reflects that part of the net present value of the merger to the acquirer which is not captured by the announcement period return."

Leeth and Borg (1994) investigate a historical look at shareholder wealth and have some interesting findings. In the years of 1917 to 1924, stock prices "remained essentially constant. In marked contrast, prices fell dramatically for acquisitions completed during the merger wave of the late 1920's." An interesting finding is that "investors anticipated gains, bidding up stock price by 7 percent on average before acquisition, but apparently they reassessed potential profits after consolidation driving stock price down."

Previous studies state that there have been varying degrees to the impact of mergers on shareholder wealth. Some studies provide a positive correlation while others provide no relationship. I investigate this relationship further in my study.

III. ECONOMIC THEORY

The rational expectations hypothesis represents the principal theory used by investors for decision making. This hypothesis states that investors will have rational expectations about the future based on logical information from today. This assumes that investors base decisions on all available knowledge, or full information.

The main theory of my paper relates to shareholder wealth. Shareholder wealth is obtained by looking at stock prices, as traded. Since stock price is forward looking, investors attempt to estimate the present value of all future profits and/or earnings. This is important because if a merger takes place, this will increase or decrease the present value of profits. This is the difference of the normal increase in price over time and results in spikes where a merger occurs. A normal increase in price over time is due to the upward trend of the market, as a whole. Today there are more public companies and investors fueling this increase. A spike where a merger or acquisition occurs is due to an increase or decrease in shareholder value due to the merger or acquisition. This spike is due to an expected increase or decrease in future profits with the addition of the new firm and efficiency gain. Related to this is the bandwagon effect. The bandwagon effect occurs when investors choose to invest in a particular stock simply because others are. These types of investors are not making rational decisions based upon knowledge of expected future profits. This type of investment adds false value to the price of the stock. The equation for future profits in today's money follows:

$$P_{\text{shareholder wealth}} = \sum_{t=0}^{n} (R_t / (1+r)^t)$$

where P is the price of the stock, r is the interest rate, R_t equals profits, n equals the number of periods (8), and t is time with t = 0 representing the initial period. Time is infinite since stocks and their value exist in perpetuity. The only problem with this is being able to determine the interest rate and everything that influences the future profits, for instance economic factors.

There are several elements that go into the

motivation for mergers, which can influence share price. First of all, there is the efficiency theory. This theory directly relates to the cost of production. A company will merge or acquire another firm if the merger will increase economies of scale and scope. An economy of scale is when a company doubles its outputs for less than twice the cost (Pindyck, 2001). An economy of scope is when a single firm can produce at greater levels than two different firms, each producing separately (Pindyck, 2001).

Another theory is that of monopoly power. If a firm is able to obtain a monopoly or monopoly power without competitors or the Department of Justice finding out, they would be able to perform better in the long-run for their shareholders to by maximizing shareholder wealth. As a monopolist, they would be able to price off of the marginal revenue curve to capture the producer surplus, which would not ordinarily be obtained under perfect competition. Another element of merger motivation is empire building. This contributes to the wealth of the shareholders because as a firm gets larger, its ability to produce profits is greater.

IV. HYPOTHESES

My hypotheses follow:

1. I predict, *ceteris paribus*, that before the announcement date, there will be an increase in shareholder wealth of the acquiring firm.

Rational expectations state that investors make rational decisions about future earnings. A merger or acquisition should, in theory, be motivated by product extension or efficiency, therefore creating increases in shareholder wealth.

2. I predict, *ceteris paribus*, that right before (10 days) the announcement date of the merger or acquisition, shareholder wealth will increase once again.

The bandwagon effect is in effect here. If a lot of investors see an opportunity where other investors are taking a chance, this will cause increases in shareholder wealth due to the act. The bandwagon effect reinforces the effects discussed in the previous hypothesis.

3. I foresee, *ceteris paribus*, that after consummation date, shareholder wealth will increase.

The rational expectations hypothesis states that investors make decisions based upon the present value of future profits. If the merger is taking effect because of motives for profit and efficiency, shareholder wealth will increase due to this increased expected return. This is dependant on not every gain being rationalized and expected before the consummation date.

V. EMPIRICAL MODEL

To test the previous hypotheses, I use several tests. I test the change in values over time of the acquiring firm. I focus on announcement and consummation dates of mergers and acquisitions, which were announced and consummated in 2001 at over one billion dollars. I obtain data from 60 trading days before announcement (the reason behind using data prior to announcement is that generally there is a "buzz" or rumors about a prospective deal) and 60 days after consummation of the merger. I take these dates and their respective values and determine their change over time. From this, I obtain the value for the "shareholder change" component of my equation. I use this same method to determine the value for "S&P 500 change." The equation follows:

$$\%\Delta P_{\text{stock price}} - \%\Delta P_{\text{S\&P500}} = \text{change in shareholder wealth relative to S\&P 500}$$

This equation provides a value which I can compare across firms. I do this for each day (60 days before announcement and 60 days after consummation). I then find the average for the sample for each respective day. If this value is large, there is a significant difference between the S&P 500 index and the shareholder wealth of the acquiring firm. If this value is small, either positive or negative, there is little deviation from the index value. Once I have these values for each firm, I can compute an average value and a standard deviation.

VI. DATA

I test my hypotheses by combining data from

various sources. I obtain stock price (shareholder wealth) from Yahoo Finance (Yahoo, 2003). I am able to get the exact time period data from this site for each company. In order to obtain the exact announcement and consummation dates, I use Mergerstat Review 2002 (2002) and Merger & Acquisition Sourcebook 2002 (Dolbeck, 2002). These journals provide all the company information, merger information (type and size), and dates. To obtain data on the S&P 500 index, I use Yahoo Finance (Yahoo, 2003). I also use the Standard and Poor's company website (Standard, 2003). I use this data as a proxy for the whole market and as a control for seasonal market fluctuations and trends. I compile all of my data into tables and spreadsheets.

The S&P 500 index is a "world-renowned index including 500 leading companies in leading industries of the United States" (Standard and Poor's, 2003). This index is a good proxy for market performance, overall. Just like the actual business world, the index is broken into sectors. These sectors include energy, materials, industrials, consumer discretionary, consumer staples, healthcare, financials, information technology, telecommunication services, and utilities (Standard and Poor's, 2003). The S&P 500 reports index values at the end of each day.

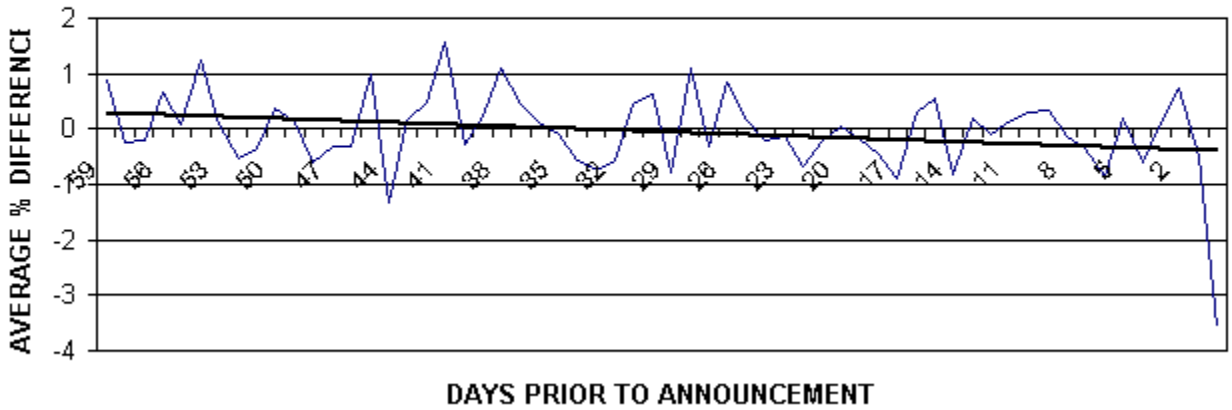
VII. RESULTS

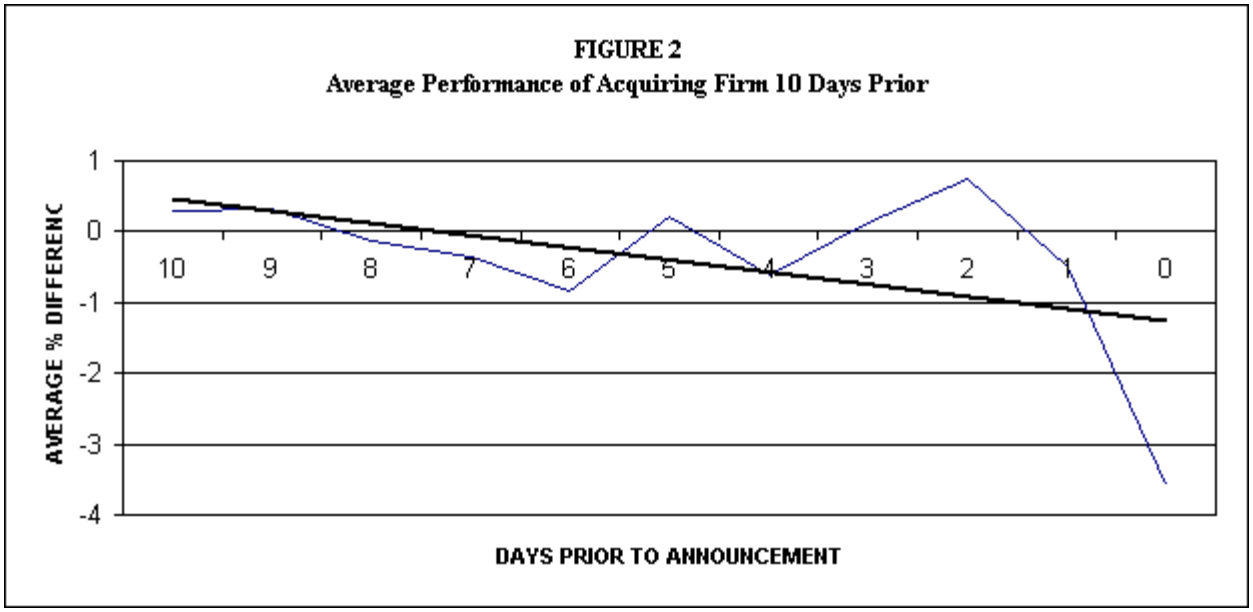
The results of this study were not expected, but still are very important. My hypotheses were not supported; actually, the opposite happened. I was able to sufficiently test 15 companies, which had a merger or acquisition value of over 1 billion dollars. In 2001, there were 54 mergers at over 1 billion dollars. I created a sample by taking each industry that had a merger value of over 1 billion dollars. If there was only one merger of that value, I used that merger. However, if there were more mergers of that value, I took the largest merger in dollar value as my sample merger.

The results of this study did not provide support for hypothesis 1. I found that in the 60 days before an announcement of a merger, there is a trend of the acquiring firm to under-perform the S&P 500 index, as Figure 1 shows. There is an overall trend downward, but fluctuation everyday of positive and negative company performance, as compared to the S&P 500 index. The biggest finding of this is that there is a sharp down turn at 2 days prior to the announcement. This downturn indicates that there is a negative expected performance from the merger with increased efficiencies not expected

The results partially support hypothesis 2. I

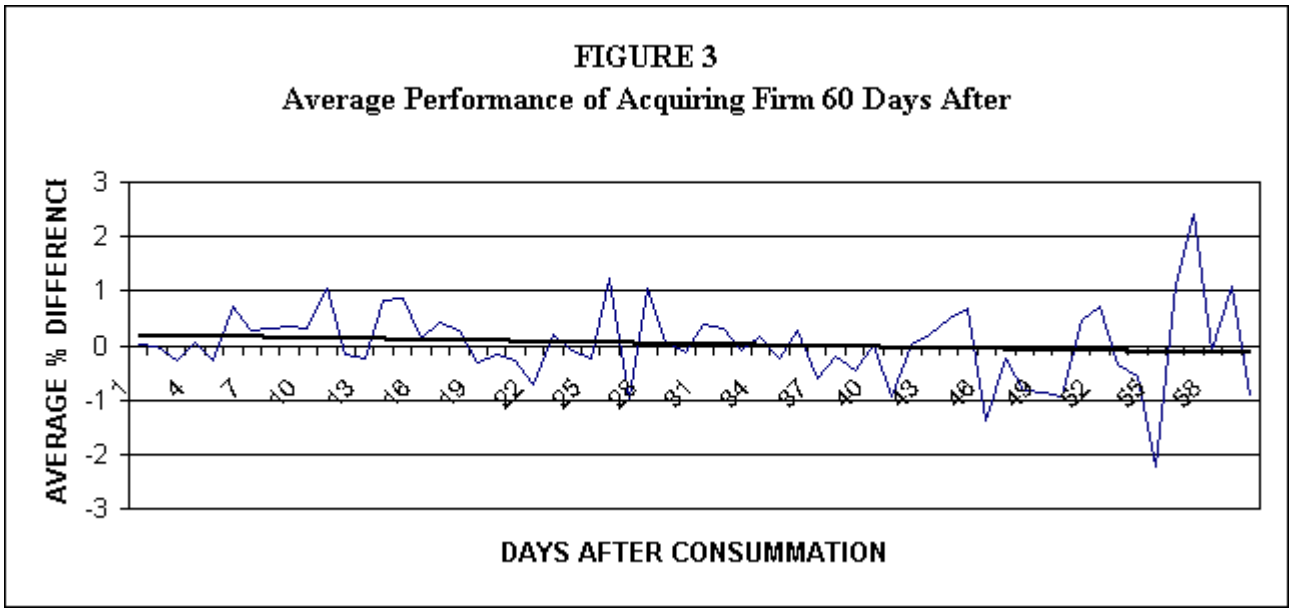
FIGURE 1
Average Performance of the Acquiring Firm 60 Days Prior

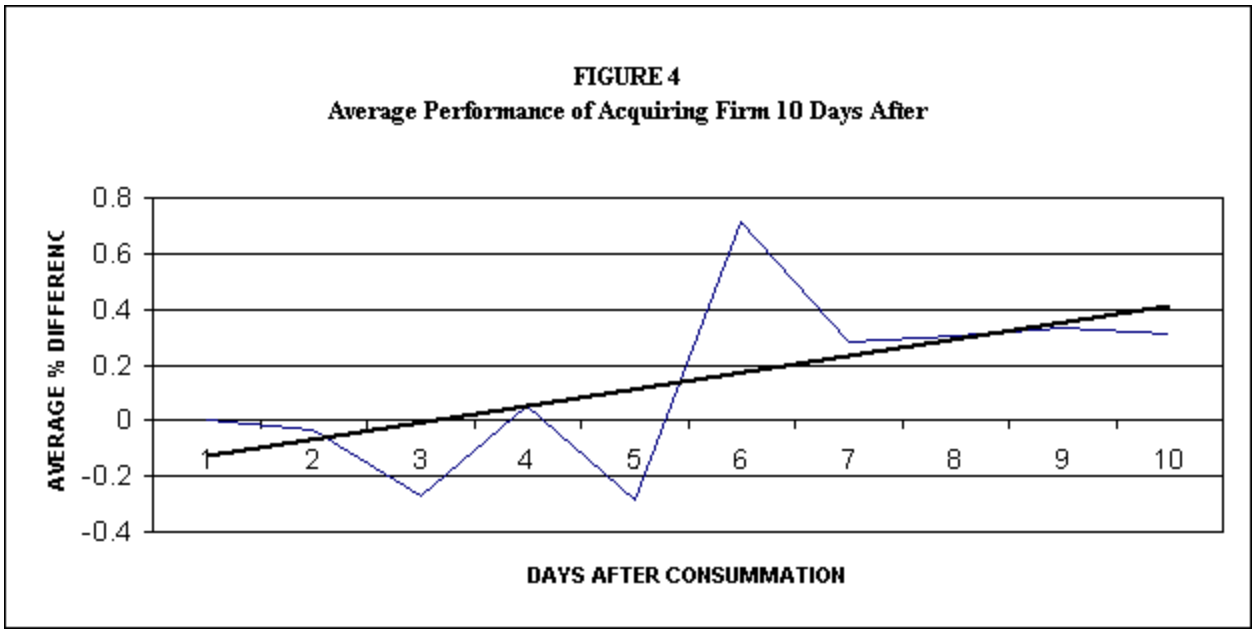




had expected a positive trend for the same reasons as in the first hypothesis. As Figure 2 shows, ten days before the announcement once again shows a decrease in shareholder wealth in comparison to the S&P 500 index. The majority of the trend line decrease is located in the two days prior to the announcement indicating that an announcement is expected and it will have a negative effect on shareholder wealth. This seems to present the idea that, at least for the 15 firms in this study, on average, mergers and acquisitions do not benefit shareholder wealth in the acquiring firm before the announcement date.

The results of this study do not support hypothesis 3. The trend over 60 days after consummation date of the merger or acquisition is downward sloping, but only minimal, as shown in Figure 3.





This could be due to the idea that all of the expected increase in shareholder wealth was realized between the announcement and consummation dates of the merger. The stock price could just be getting back to its rational price during this time because the bandwagon effect drove prices up above rational levels or, in other words, the stock was overvalued and now is going towards its real value.

An interesting finding, however, is that in the first 10 days after consummating the merger, the trend was to increase relative to the S&P 500 index, as shown by Figure 4. This could be just an anomaly where one or two merger companies performed well, while others remained constant. The trend is upward, but at a very small rate thus leading me to believe that this is not a consistent result.

I was also able to obtain some descriptive data, which provides some insight into my sample. Table 1 presents this information. The standard deviations for before and after the merger or acquisition are relatively similar. This means that, on average, the data for each day does not vary that much before and after the merger. The average for all days before the merger or acquisition is negative. This means that more time was spent under-performing the S&P 500 than days over-performing it. On the contrary, the average for all days after the consummation of the merger or acquisition was positive. This indicates that after the consummation, more days outperformed the S&P 500 or the fre-

TABLE 1
Descriptive Statistics

Variables	Standard Deviation	Mean	Maximum	Minimum
60 Days Prior to Announcement	.7495	-.0393	1.5756	-3.5757
60 Days After Consummation	.7169	.0262	2.3981	-2.2301

quency of the days in over-performance was greater. In comparing the minimum and maximum numbers, prior to the announcement had a lower minimum than after and after consummation had a higher max than prior to announcement. This shows that, on average, mergers and acquisitions increase the extreme values.

VIII. CONCLUSION

This paper touches on an important topic in corporate finance and economics, mergers and acquisitions. I find that, on average, merger or acquisitions, in the 15 firm sample, do not, on average, improve shareholder wealth of the acquiring firm; rather, it actually decreases it. This is important because the function of a company is to make money and transfer the profits to the stakeholders and risk takers of the corporations, the shareholders. If the goal is to maximize shareholder wealth, why would a corporation want to merge or acquire another firm if data suggests that it actually worsens shareholder wealth? The answer to this question is hard to pinpoint. First of all, the corporation might not be maximizing shareholder wealth. This should alarm shareholders because they are paying for more than what they are getting in return. In other words, a company is actually worth less than is paid for it. If this is the case, the Board of Directors and Officers are not fulfilling their fiduciary duty to shareholders. Where is this transfer of wealth going if it is not going to the shareholders? It may be the case that there was a differing in valuation of the merger from acquiring firm to the firm that was acquired. This would occur if "the buyer has made an offer too good to refuse" (Ravenscraft, 1987). They could also come to this variance by not making an informed rational decision, if one party withheld information, or if one firm would benefit more.

> "If the goal is to maximize shareholder wealth, why would a corporation want to merge or acquire another firm if data suggests that it actually worsens shareholder wealth?"

Another answer to this could be the small sample size of only large mergers and acquisitions. To increase the significance of this study, more firms could be added to increase the validity of this study. With a sample of only 15 firms out of 54, there is room for improvement. There is also room for improvement in mergers valued at under 1 billion dollars. This study aimed to focus on the large firms with the rationale that they would have the most shareholders and would show the best results. After further investigation, smaller mergers or acquisitions could possibly show more fluctuations in value.

One must also look at long-run effects verses short-run effects. This study only looks at a short time frame after the merger; it might be that the motivation was in the long-term, longer than 60 days. It would be interesting to look at these firms in the long-run – a year or longer – to see if the results might be different. It might be that the efficiency gains have not had time to manifest in the short-run thus causing temporary diseconomies of scale. This could be what drove shareholder wealth down in this sample.

Another explanation could be that "the acquiring company has offered to pay too high a price for the target" (Kaen, 2003). If this is the case, then the benefit of the merger would go to the shareholder of the acquired firm and the shareholders of the acquiring firm would lose value and wealth.

The overall trend in the firms that this study investigated was downward. This leads me to believe that these firms are mature, and they could have undertaken these mergers to gain a new product or region to continue to perform at growing company levels. If this is the case, they would be fulfilling their fiduciary duty to shareholders by sustaining the firm. Kaen states that one way for managers in declining industries to maintain their jobs is to seek and acquire a growing company. These usually do not perform well and "it is even more doubtful that there are

unique synergies between the declining firm and the growth industry. Investors generally are skeptical of such acquisitions and drive down the price of the 'old-line' acquiring firm" (Kaen, 2003). It can be concluded from this that if a declining firm wanted to sustain itself, it should not undertake a merger with a growing company utilizing its current managers and management style. It would not increase shareholder wealth.

The goal of this study was to determine if mergers and acquisitions affect shareholder wealth in order to invest accordingly. In the sample of mergers studied, there is evidence that an investor should not invest in companies that are planning to acquire another because the trend is to under-perform the market.

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