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Financing Method and Abnormal Returns in Corporate Mergers and Acquisitions

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Acquisitions

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Abstract

This study analyzes the impact of merger and acquisition financing method on buyer cumulative abnormal returns. The model builds on findings in previous literature by including deal structure variables, company variables, industry variables, time variables, and post-acquisition announcement return data from 2000 to 2018. The analysis does not find a statistically significant relationship between cash plus debt/stock financing and cumulative abnormal returns. However, significant coefficients for buyer and target industry suggest that deal structure varies and ultimately effects cumulative abnormal returns within specific industries. Additionally, significant results for buyer profitability and time variables provide insight on how the financial market interprets synergy realization and economic crises in relation to security valuation and the mergers and acquisitions market.

Acknowledgements

Table of Contents

1. Introduction

Firms engage in a wide variety of economic activity including shrinking, expanding, and restructuring all for the purposes of corporate development and adding value (Matos, 2001). Mergers and acquisitions play a vital role in this process and allow firms to strengthen operations, penetrate new markets, consolidate assets, and obtain human capital and intellectual property. In 2004 alone, over 30,000 mergers and acquisitions were completed globally, equating to roughly one transaction every 18 minutes (Cartwright and Schoenberg, 2006). The total value of these transactions was approximately $1,900 billion dollars, a figure which exceeds the GDP for several of the world's larger countries. The frequency of mergers and acquisitions has increased in the past decade with approximately 50,000 completed transactions globally in 2018, amounting to a total value in excess of $3,900 billion dollars (Institute of Mergers, Acquisitions, and Alliances). With the deployment of large amounts of capital and the potential for significant additive value, it is important to analyze the ways in which the merger and acquisition market is financed by the buyer.

Previous literature has revealed that companies utilizing stock as a primary component for their deal structure experience negative post acquisition returns. Deal structures that heavily rely on stock is an indication to the market that the buyer's stock is overvalued (Myers and Majluf, 1984). The inherent disparity of quality of information between the buyer and the target creates an environment where "information asymmetry" can impact acquisition deal structure and buyer returns (Wansley et al., 1987). Furthermore, buyers that primarily pay with cash are associated with positive abnormal returns.

This paper aims to analyze the impact of merger and acquisition financing methods on buyer cumulative abnormal returns. Controlling for buyer and target industry allows the model to perform a specific analysis on how financing methods differ across business sectors and how the financial market perceives the effectiveness of the deal structure. Additionally, this analysis incorporates an updated set of data to improve upon prior writings.

The hypothesis of this paper intends to test the results found in previous literature which theorize that stock financed acquisitions are significantly responsible for buyer's negative return. However, the analysis of this model presents insignificant results in relation to the significant conclusions reached in prior economic literature. Once the buyer and target industry are controlled for, transaction variables for percent of cash and percent of stock within the acquisition deal do not have a statistically significant impact on cumulative abnormal returns. Instead, the significant results for specific buyer and target industries suggest that acquisition deal structure differs across industry and that industry explains cumulative abnormal returns rather than the composition of the deal structure. Negative and significant results for the profitability of the buyer reveal that the financial market perceives integration risk as outweighing the potential marginal revenue or cost synergies of an acquisition. Additionally, significant results regarding the year of acquisition provide insight on how the market evaluates economic crisis and political climate in relation to the merger and acquisition market.

The following section will discuss the results of previous economic literature. Section 3 examines the data incorporated in the model. Section 4 discusses the empirical strategy used to analyze the relationship between financing method and cumulative

abnormal returns and presents the results of the model. Section 5 interprets the results and provides the conclusions.

2. Literature Review

Can systematic financing structures give firms a competitive advantage when undertaking an acquisition? In a model without taxes, Modigliani and Miller (1958) discover that a firm's market value is derived completely independent of the firm's capital structure and the firm's decision regarding how to finance its investment. While this empirical observation may hold in theory, arguably corporate tax laws within the economy should have a measurable impact on the financing structures used in acquisitions. Typically, cash acquisitions create an immediate liability in the form of a capital gains tax for the target's shareholders, while equity financing defers tax liabilities until the new shares are sold (Amihud et al., 1990). However, empirical evidence has been mixed and unable to detail a clear and statistically significant relationship between tax implications and debt/equity financing methods. For example, Carleton et al. (1983) show that for target companies with lower dividend payout ratios and lower book-to-market ratios, the probability of being acquired through cash financing is higher relative to an acquisition based on an exchange of securities. In theory, their conclusion contradicts the proposition that a beneficial tax savings effect is realized through higher depreciation costs associated with higher market-to-book ratios, further calling into question the empirical benefits of financing design (Carleton et al., 1983).

Instead of analyzing tax law implications, Amihud, Lev, and Travlos (1990) aim to address how corporate control pre- and post- acquisition affects a company's

investment structure. Their results reveal that stock financed acquisitions are associated with statistically significant negative two-day abnormal returns. They also conclude that firms possessing low managerial ownership are more likely to be associated with negative abnormal returns. Additionally, the significant results further support the hypothesis that as managerial ownership stakes of the acquiring firm increase, acquisitions are more likely to be executed through cash financing relative to stock exchanges (Martin, 1996). These results also align with the findings of Myers and Majluf (1984) who conclude that managers prefer financing through a stock exchange if they believe that their stock is overvalued. Similarly, Myers and Majluf (1984) show that acquiring investors often anticipate the stock financing preferences of target managers and subsequently drive down the value of firms that issue new equity in order to benefit from cash/debt financing. This phenomenon is well documented and referred to as "information asymmetry" wherein one party possesses superior private information relative to their acquisition counterpart (Myers and Majluf, 1984).

Wansley et al. (1987) examine the relationship between financing structure, information asymmetry, and abnormal returns upon acquisition announcement. If the financial market and investors had access to all private information and possessed the ability to perfectly incorporate private information into security valuation, then capital markets would be more efficient (Healy and Palepu, 2001); thus, Wansley et al. presume the existence of abnormal returns to represent the effects of private information. The results conclude that stock financed acquisitions are associated with lower abnormal returns. Specifically, seller shareholders in cash acquisitions experience 33% abnormal returns compared to 17% abnormal returns in security financed acquisitions. The

observed relationship between abnormal returns and financing method is also consistent with the signaling hypothesis that proposes that financing an acquisition through a common stock exchange conveys negative information that the bidding firm is overvalued. Furthermore, Wansley, Lane, and Yang (1987) and Huang and Walking (1987) support these conclusions and show that higher abnormal returns for target firms are associated with cash financing.

The previous literature includes shortcomings with regards to the lack of specific industry control variables, and therefore the significant deal structure variables may only exist within a certain sector despite appearing to represent all acquisitions. A comparative analysis of acquisitions including variables for buyer and target industry allows this model to isolate and evaluate the more nuanced relationship between financing structure and abnormal returns. Including merger and acquisition data covering the last two decades also provides an updated analysis on the market's perception of deal structure.

3. Data

3.1 Transaction and Company Data

Merger and acquisition data is collected from Standard & Poor's Capital IQ for transactions with an announcement date between the 1/1/2000 to 12/31/2018 time period. Capital IQ is an ideal data source for the model's analysis as it provides detailed transaction information for mergers and acquisitions while also providing financial information regarding the specific targets and acquirers involved in the transactions. Capital IQ does not provide detailed information regarding the acquirer's post-acquisition announcement abnormal return; therefore, the data from Capital IQ is cross-referenced

with the corresponding cumulative abnormal return variable that is collected from the Wharton Research Data Service (WRDS). In order to obtain statistics regarding security cumulative abnormal return, the data sample is initially restricted to acquisitions involving public buyers.

In order to control for legal discrepancies present in cross border mergers and acquisitions, the sample is restricted to include transactions between target and acquiring companies with headquarters located within the United States. Furthermore, the sample strictly includes friendly mergers and acquisitions due to the fact that hostile takeovers are subject to additional governmental regulation and can negatively influence the acquirer's return (Servaes, 1991 and Rosengren, 1987). Mergers and acquisitions data is additionally restricted to include closed transactions to ensure that the model is analyzing completed deals. For the purpose of isolating and analyzing distinctive acquisition financing structures across business sectors, primary industry classifications of the target and acquirer include: energy, real estate, materials, industrials, consumer discretionary, consumer staples, health care, financials, information technology, communication services, and utilities. These restrictions yield a sample size of 2,753 successful domestic mergers and acquisitions. The sample of 2,753 is further reduced to include transactions in which both the target and acquirer report complete financial data for the model's explanatory variables. This creates an initial sample size of 478 transactions obtained from the Capital IQ source. While the sample window time frame is 18 years, the initial sample is relatively small due to the fact that observations had to be removed for those transactions that Capital IQ did not provide data for company control characteristics at the time of the announcement.

Individual company characteristics are included as explanatory and control variables in order to examine the impact of debt capacity, size, relative size, valuation, and profitability on transaction structure and abnormal returns. Accordingly, in order to gain an objective analysis of acquisition financing structure, it is necessary to control for the financial characteristics of both the target and acquirer. Previous literature has revealed that cash acquisitions are typically financed through the use of additional borrowing and impact the buyer's capital structure; ultimately, discrepancies between pre/post acquisition capital structure can influence the buyer's return and financing preference (Wansley et al., 1983). Definitions and summary statistics for all company characteristics are included in Exhibit 1 and Exhibit 2 in the appendix.

Exhibit 3 in the appendix provides details regarding the number of transactions relative to industry sector. The target industry with the most transactions is financials with 244 acquisitions, amounting to roughly 63% of the total transactions within the sample. The information technology group is responsible for the second largest number of transactions with 49 observations, amounting to roughly 13% of the total transactions within the sample. The sample also contains 26 acquisitions in which the target and acquirer do not operate within the same industry, approximately 7%, whereas acquisitions within the same industry total 362 observations, approximately 93%. Additionally, Exhibit 4 in the appendix provides a breakdown of total transaction value ranges and indicates an average transaction value of $1,552.91 million dollars, with roughly 39% of the sample falling under the $100 million-dollar threshold.

Previous literature suggests that post-acquisition security return is significantly impacted by merger and acquisition transaction characteristics. Thus, transaction

characteristics are the primary explanatory variables and are isolated to measure the significance of financial deal structure. "Total Cash Percent of Consideration" represents the portion of cash used by the acquirer in the transaction structure; "Total Cash" is the total value of cash used by the acquirer. "Total Debt Percent of Consideration" represents the portion of debt used by the acquirer in the transaction structure; "Total Debt" is the total value of debt used by the acquirer. "Total Stock Percent of Consideration" represents the portion of stock or equity used by the acquirer in the transaction structure; "Total Stock" is the total value of stock or equity used by the acquirer. "Total Preferred Percent of Consideration" represents the portion of preferred stock used by the acquirer in the transaction structure; "Total Preferred" is total value of preferred stock used by the acquirer. "Total Rights/Warrants/Options Percent of Consideration" represents the portion of rights/warrants/options used by acquirer in the transaction structure; "Total Rights/Warrants/Options" is the total value of rights/warrants/options used by the acquirer. "Total Hybrid Percent of Consideration" represents the portion of hybrid securities used by the acquirer in the transaction structure; "Total Hybrid" is the total value of hybrid securities used by the acquirer.

Exhibit 5 in the appendix details the relative usage of financial instruments within the acquisition transaction; interpreting the results, an average transaction in the sample is comprised of 36% cash and 63% stock. The average acquisition in the sample is primarily supported by cash and stock transactions. However, percentage of cash and percentage of stock have the same standard deviation of 39%, indicating that cash stock are employed in transactions on an equally consistent basis around the respective mean values. Lastly, with a mean of 0.6%, the percentage of debt is responsible for the third

largest financing allocation. The percentage of preferred stock and rights/warrants/options do not report a mean value above 0.5%, displaying the minimal extent to which they are utilized by acquiring companies. Hybrid securities do not report even a single use in financing structure for the transactions within the sample. Due to the low number of transactions supported by hybrid, preferred, and rights/warrants/options, percent of cash plus percent of debt and percent of stock are the only transaction variables included in the model's analysis.

Exhibit 6 in the appendix addresses the value of financial instruments within the acquisition transaction. Interpreting the results, the average transaction is comprised of approximately $252 million dollars of cash financing and $1,156 million dollars of stock financing. Relative to value of stock, the value of cash financing has a smaller standard deviation, $1,288 million dollars compared to $5,555 million dollars, indicating that the value of cash is employed in transactions more consistently around the mean of $1,288 million dollars while the value of stock fluctuates to a greater degree around the mean value of $5,555 million dollars. The third most significant transaction variable in terms of value is total preferred stock, which has a mean of $1.8 million dollars and a large standard deviation of $33 million dollars. However, preferred stock is only used in two transactions within the sample and highlights the infrequent usage as a financing tool for buyers. Similarly, the fourth most significant transaction variable in terms of value is total debt which has a mean of $1 million dollars and a standard deviation of $11 million dollars. The mean values for total hybrid and total rights/warrants/options are effectively $0, once again emphasizing that acquisition transaction value is primarily comprised of cash and stock financing.

3.2 Cumulative Abnormal Return Data

The model's response variable is measured by the acquiring company's cumulative abnormal returns. Cumulative abnormal return is defined as the sum of the differences between the expected return on a security and the actual return of the security as determined by the market (Nasdaq Financial Glossary). Controlling for transaction and company characteristics, cumulative abnormal return is the ideal dependent variable as it allows the model to measure the security's financial gain over a specific time period in relation to the acquisition financing structure and market valuation.

Once transaction data was collected from Capital IQ, the acquirer's stock ticker symbol and transaction date were entered into the WRSD database in order to obtain the according cumulative abnormal return. Prior to collecting data, parameters were instituted to accurately estimate cumulative abnormal return. The applied parameters include an estimation window, a minimum number of valid returns, an estimation gap, the start of event window, and the end of the event window. The estimation window is equal to 180 days and describes the length of the period, in trading days, used to measure the expected return and residual return variance. The minimum number of valid returns is equal to 90 observations and represents the minimum observations within the estimation window used to calculate expected return. The estimation gap is equal to 50 days and outlines the number of trading days between the estimation window and the beginning of the event window; the estimation gap is used to reduce the possibility that the risk model estimations are impacted by the event-induced return variance (Wharton Research Data Services). The event window begins 10 days prior to the acquisition announcement and

concludes 10 days after the acquisition announcement. Implementing the estimation parameters, WRDS calculates abnormal returns in excess of the Center for Research in Security Prices (CRSP) Value-Weighted Market Return using the Market-Adjusted Model and assuming a market beta of 1.

To begin, observations including two or more primary buyers had to be removed from the sample due to the fact that Capital IQ does not provide specific data regarding which party incurs the financing costs of acquisition. Therefore, the principal independent transaction variables cannot accurately correspond with a security's cumulative abnormal return. Next, transactions in which the primary buyer's stock is traded on foreign exchanges, such as The Toronto Stock Exchange, Over-The-Counter Market, and The Stock Exchange of Hong Kong Limited, were removed because of the lack of a cumulative abnormal return output from WRSD. Acquisitions in which the buyer had not engaged in an initial public offering prior to the transaction date had be excluded due to the inability to estimate cumulative abnormal returns. Lastly, transactions were excluded in which WRSD could not generate corresponding cumulative abnormal returns. Throughout this process, 90 observations were removed and this yields a final sample size of 388 transactions. The characteristics of the removed observations do not create a bias within the data sample as the removed observations are not concentrated within a specific industry or subgroup. However, a characteristic of the final data set that raises interest is the fact that a total of 6 separate transactions are announced by the same acquirer on the same day. The multiple acquisition announcements share an identical estimation window and could jointly be impacting the buyer's cumulative abnormal return, thus making it difficult to discern the true effects of a singular and

16

distinct financing structure. However, expressed as a percentage, the 6 transactions amount to roughly 1.5% of the final sample and, therefore, raise minimal concern in terms of adding bias to measuring the effects on cumulative abnormal returns.

4. Empirical Strategy and Results

For the purposes of analyzing buyer cumulative abnormal returns, the model uses an ordinary least square (OLS) linear regression. Specifically, Equation 1 is estimated below:

$$(1) \qquad \gamma_{it} = \alpha + \beta_1 TRA_{it} + \beta_2 ACQ_{it} + \beta_3 TAR_{it} + \eta_{IND}^{ACQ} + \eta_{IND}^{TAR} + \varepsilon_{it}$$

where γ is the buyer's cumulative abnormal return, i and t represent the acquired firm and time respectively. Furthermore, TRA is a vector of transaction financing methods, ACQ is a vector of acquirer business characteristics, TAR is a vector of target business characteristics, η represents the acquirer and target industry respectively, and ε is an error term with the usual properties. Financing characteristics only include percent of cash plus debt and percent of stock financing due to relatively infrequent use of hybrid securities, preferred stock, rights/warrants/options. Empirically, the model assumes that successful acquisitions can be executed using any combination of financing methods in terms of both value and percent.

For the acquirer, company control variables include net debt/market capitalization, total assets, market capitalization/net income, and net income/revenue. Net debt divided by market capitalization is included as a variable because it controls for the relative debt capacity for the acquirer that can ultimately impact the acquirer's financing

decision. Total assets measures the relative size of the company, which in turn impacts the acquirer's ability to generate cash and secure debt loans. Market capitalization divided by net income controls for the acquirer's stock valuation. Net income divided by revenue controls for the acquirer's profitability and cash generation.

Company control variables for the target include total assets of the acquirer/total assets of the target, net debt/market capitalization, and net income/total revenue. Total assets of the acquirer divided by total assets of the target is included in order to measure the relative size of the target. Discrepancy in size between the target and acquirer may impact the acquirer's financing decision and must therefore be controlled. Net debt divided by market cap is included as a variable because it measures the target's level of financial distress. Depending on the financial distress of the target, the target may be less willing to negotiate a financial package from the acquirer and would therefore approve an acquisition method that is less than ideal. Similarly, net income divided by total revenue controls for the target's profitability and cash generation.

The regression includes the complete data set with 388 observations; thus, the data includes transactions across all of the target industry categories except consumer staples. The model includes dummy variables for buyer and target industry in order to control for fixed financing effects within the sub-groups. The model also includes dummy variables for year of acquisition in order to control for time fixed effects.

Exhibit 7 in the appendix provides the regression output. Interpreting the results in Column 1, percent of cash plus debt and percent of stock are not statistically significant. Therefore, the complexion of the financial package offered by the bidders does not significantly impact bidder return.

The first variable that is statistically significant is the acquirer's profitability as measured by net income divided by revenue. The coefficient is significant at the 1% level and implies that there is less than a 1% chance that the regression results are the result of a random distribution. A unit increase in the acquirer's profit margin leads to a 2.52% decrease in cumulative abnormal returns; furthermore, the results are unanticipated in that the coefficient for the acquirer's profitability is negative.

Transaction value is also negative and statistically significant at the 5% level. The negative coefficient implies that a unit increase in transaction value decreases the acquirer's cumulative abnormal return by 2.34%.

Target industry dummy variables for financials and materials are both statistically significant. The negative coefficient for financials is statistically significant at the 1% level and implies that acquirers targeting the financials industry experience a 67.8% lower cumulative abnormal return. The negative coefficient for materials is statistically significant at the 10% level and implies that acquirers targeting the materials industry experience a 20.7% lower cumulative abnormal return.

Acquirer industry dummy variables for financials, industrials, and information technology are also statistically significant. The positive coefficient for financials is statistically significant at the 1% level and implies that acquirers operating within the financials industry experience a 54% higher cumulative abnormal return. The negative coefficient for industrials is statistically significant at the 10% level and implies that acquirers operating within the industrials industry experience a 11.4% lower cumulative abnormal return. The negative coefficient for information technology is statistically

significant at the 1% level and implies that acquirers operating within the information technology industry experience a 20.7% lower cumulative abnormal return.

Dummy variables for the acquisition year in 2009, 2010, and 2013 are all statistically significant. The negative coefficient for year 2009 is statistically significant at the 1% level and implies that acquirers in 2009 experience a 16.7% lower cumulative abnormal return. The positive coefficient for year 2010 is statistically significant at the 5% level and implies that acquirers in 2010 experience a 37.8% higher cumulative abnormal return. The positive coefficient for year 2013 is statistically significant at the 10% level and implies that acquirers in 2013 experience an 8.23% higher cumulative abnormal return.

5. Conclusion

5.1 Transaction Variables

This paper provides an analysis of the impact of cash, stock, preferred, and debt acquisition financing methods on cumulative abnormal returns. However, the lack of significant coefficients for all transaction variables conflicts with previous literature theorizing that stock financed acquisitions, relative to cash financed acquisitions, are associated with lower cumulative abnormal returns. Myers and Majluf (1984) and Wansley et al. (1987) both detail a significant relationship between information asymmetry, financing method, and abnormal returns. Additionally, these results align with the signaling hypothesis which states that stock financed acquisitions convey negative information that the acquiring firm is overvalued, and thus the financial market tends to react negatively to stock financing. Moreover, Wansley, Lane, and Yang (1987)

and Huang and Walking (1987) find evidence to support the implications of information asymmetry and the signaling hypothesis and conclude that higher abnormal returns are associated with target firms which utilize cash financing. Once buyer/target industry is accounted for, the lack of significant results for percent of cash plus debt and percent of stock ultimately emphasize the significant results for buyer/target industry characteristics. The findings of previous literature are valid, but the model's industry control variables reveal that it is buyer/target industry that explains cumulative abnormal returns rather than deal structure.

5.2 Industry Variables

The significance of both financial targets and financial acquirers provides further economic context for previous literature and the model's analysis. Berger et al. (1995) study the motivations behind banking mergers and introduce the "consolidation hypothesis"; under the consolidation hypothesis, mergers between banks are strongly motivated by the transfer or consolidation of financial assets. Moore (1997) supports this hypothesis and confirms that financial acquisitions serve to transfer assets under poor management to the acquirer for the purposes of redeploying the assets under better management. Similarly, in the financials industry, revenue streams are typically dependent on interests/fees and costs are dependent on human capital. Thus, mergers and acquisitions within the financials industry are not inspired by potential revenue and cost synergies. The financial market may conclude that financial acquirers are obtaining assets for the purposes of restructuring, exploiting undervalued assets or growing an asset pool, and then associate these acquisitions with positive cumulative abnormal returns.

However, it is also important to consider the negative cumulative abnormal returns associated with acquisitions in which the target operates within the financials industry. If the target is not properly managing an asset pool and aims for an acquisition, this would indicate that target is under financial distress. The financial market may, accordingly, associate the acquisition of a target within the financials industry with the acquisition of a company under financial distress and a potential loss of value for the acquirer. Nonetheless, this would not explain why an acquirer would voluntarily import unnecessary financial distress through the acquisition of a target within the financials industry.

Another possible explanation for the positive abnormal returns is the typically high valuation associated with financial firms relative to historical benchmarks. Using a sample of commercial banks, Flannery and James (1984) find a negative correlation between the change in interest rate and common stock returns. Additionally, Forbes and Mayne (1989) conclude that as the banks' prime rate increases, as measured by the difference between the interest rate and the banks' lending rate, then the stock performance of the banks increases. The past two decades have been an ideal environment for increasing the banks' prime rate due to the fact that interest rates have been relatively low compared to historical trends (Economic Research Federal Reserve Bank of St. Louis). Therefore, financial firms carry a relatively high valuation compared to alternative sectors due to the benefits of a low interest rate environment. With higher valuations, financial firms are likely to implement stock in their acquisition structure to a greater degree relative to other industries. Moreover, financial buyers rarely deviate from financial industry acquisitions and, in fact, 243 out of the 244 financial targets were

acquired by financial buyers in the sample. This, in turn, explains why financing method is not significant once industry is controlled for, while the industry for both financial buyers and financial targets is statistically significant.

Similarly, the significant results for buyers operating with the information technology industry are likely due to the high valuation associated with technology firms. Technology has the largest market capitalization across all industries and possess high growth potential with possibilities extending to the cloud storage, big data, and mobile computing (Fidelity Sector Investing). Technology has been rapidly integrated into all aspects of the economy and almost every business sector benefits from the implementation of technology. Diverse integration and high growth potential therefore cause technology firms to be highly valued relative to alternative industries. With a relatively high valuation, technology firms are more likely to implement stock in the acquisition structure, thus causing buyer industry for information technology to be statistically significant.

Negative cumulative abnormal returns associated with acquirers operating within the information technology industry may also be a result of the high risk associated with the integration process of high technology products. Chakrabari et al. (1994) state that the integration of the target's technology or knowledge base is extremely arduous and creates additional complexities for the buyer's innovation process. Additionally, Cloot et al. (2006) analyze the impact of acquisitions on the innovative performance for high technology firms and conclude that while the target's technological knowledge provides a positive effect in the first few years post acquisition, the effects eventually switch and negatively impact the innovative performance of the buyer.

Technology and financial acquisitions are responsible for approximately 76% of the acquisitions within the sample. Therefore, the regression results suggest that financing structure may have a statistically significant impact on abnormal returns for specific technology and financial acquisitions; however, once the buyer and target's industry is controlled for, financing structure is not significant, while industry is significant.

The acquisitions regarding buyers in the industrials industry and targets in the materials industry have not been extensively studied in previous literature and do not provide direct aid in interpreting the results of my model. However, on a macroeconomic level, industrials/materials firms are typically more sensitive to economic cycles and commodity pricing (Fidelity Sector Investing); in comparison to technology firms, industrials/materials firms are associated with lower growth rates and subsequently lower valuations. This would decrease the likeliness of acquisitions within both industries to be executed through stock financing. By nature of the sectors and a shared asset-heavy business model, industrials/materials firms also historically possess large asset bases. A larger asset base in the form of collateral would in theory increase the firm's ability to secure debt and access cash. Therefore industrials/materials firms are likely to acquire or be acquired by cash financing methods and this result is reflected in the significant industry coefficients once industry control variables are introduced.

5.3 Buyer Variables

The significant negative coefficient for profit margin also provides a compelling interpretation. Post-acquisition operating performance has been analyzed by many

economic researchers, yet a consensus has not been reached regarding the significance of operational improvements. Evaluating acquisitions in the early 1980's, Healy et al. (1992) find evidence that merged firms show significant improvements in asset productivity and subsequent cash flow generation. Furthermore, they conclude that there is strong and positive relationship between post-merger increases in operating cash flow and positive abnormal returns at the time of the acquisition announcement. Switzer (1996) confirms these results and finds that operating performance is significantly increased by corporate acquisitions. Additionally, evidence of positive abnormal returns at the announcement date associated with operating improvements suggests that the financial market anticipates operating synergies upon acquisitions.

However, Ghosh (2001) suggests that previous literature has historically measured performance improvements relative to industry-median firms. Typically, acquirers are larger than industry-median firms and plan acquisitions around periods of superior performance (Penman, 1991, Frank and Harris, 1989). Thus, previous results are likely to create bias as the regression intercept may be impacted by nonrandom errors caused by temporary/permanent differences in prior performance measurements between the acquirer and its industry counterparts (Powell and Stark, 2001). Ghosh (2001) addresses this suspected bias by using performance and size matched firm benchmarks and does not find any evidence that operating performance is significantly improved by acquisitions; however, Ghosh (2001) does conclude that cash flows are significantly increased in cash financed acquisition but decrease in stock financed acquisitions. These results call into question the extent to which the financial market believes revenue, cost, and financial synergies can be realized by the buyers and reflected into security valuation.

As Zollo and Meier (2008) point out, actualizing post-acquisition synergies is heavily influenced by the success of the integration process. Revenue synergies and cross selling can require substantial investments through training, marketing, sales support and can ultimately impact the acquirer's synergy realization rate (Zollo and Meier, 2008). Similarly, cost-synergies can impact the acquirer's synergy realization by lowering the quality of customer service and lowering the retention rate of top salesman (Bekier and Shelton, 2002). Cultural differences between the target and acquirer can also impact revenue realization, sociocultural integration, and shareholder value for the acquiring firm (Stahl and Voight, 2008). As previously referenced, acquirers generally time transactions around periods of superior operational performance (Penman 1991, Frank and Harris 1989). Therefore, the financial market may conclude that firms are not likely to increase their operational efficiency, and may even harm their operational efficiency, if their profit margins are already relatively high prior to the acquisition. Essentially, the complexity of the integration process may be perceived as a threat to the marginal increase in profitability for an already profitable company. Conversely, an acquirer with a lower profit margin may realize relatively more significant operational benefits, and subsequent positive abnormal returns, through an acquisition. The significance of profit margin implies that the financial market evaluates revenue and cost synergies as more likely to be realized for acquirers with lower levels of revenue and profitability; however, the acquirer's debt capacity, size, and valuation do not significantly impact cumulative abnormal returns. Similarly, the target's relative size, level of financial distress, and profitability are not significantly considered by the financial market in the security valuation process.

5.4 Transaction Value

Total transaction value is associated with negative coefficient of 2.34%. In order to prompt an acquisition, buyers must offer the target a premium over the intrinsic value of the firm as measured by the net present value of expected future cash flows independent of an acquisition (Eccles et al., 1999). Accordingly, the purchase price for almost every acquisition will be higher than the intrinsic value of the target firm itself. The financial market then evaluates the value gap between the intrinsic value of the target and purchase price of the buyer and subsequently adjusts security valuation. The financial market could thus interpret buyers in transactions with a high purchase price as less likely to experience the financial returns necessary to account for the purchase premium.

5.5 Time Variables

The significance of the time variables for 2009 and 2010 provide insight on the financial market's evaluation of mergers and acquisitions as a result of the 2007-2008 global financial crisis. The 2007-2008 financial crisis is the most severe since the 1930's Great Depression (Helleiner, 2011). The crisis created a delayed impact on the financial market's evaluation of mergers and acquisitions because the crisis initially developed in housing market and later resonated through various financial institutions, hedge funds, and insurance agencies. It began with the collapse of the housing market, which resulted from mortgage defaults of borrowers with low credit (Helleiner, 2011). The magnitude and scale of mortgage defaults quickly threatened the stability of financial institutions investing in mortgage-related products and possessing risk associated with the housing

market. Several hedge funds collapsed in early 2007, but the crisis worsened in 2008 when one of the largest U.S. investment banks, Bear Stearns, had to be bailed out by the Federal Reserve Bank (Helleiner, 2011). The total collapse of market confidence was further exacerbated in 2008 by the financial distress of government-sponsored mortgage agencies Fannie Mae and Freddie Mac, the bankruptcy of Lehman Brothers, and the bailout of the world's largest insurance agency, American International Group. Financial distress within the U.S. caused domestic and international banks to reevaluate loans and ultimately created widespread debt crises (Helleiner, 2011). Thus, in the wake of the financial crisis, the financial market viewed acquisitions with great skepticism and pessimism. To the extent that asset valuation and the transfer of assets lie at the heart of all acquisitions regardless of acquisition strategy, the financial market concluded that asset prices in 2009 had depreciated in value due to economic distress. Therefore, acquisitions in 2009 are associated with negative and highly significant cumulative abnormal returns.

Following the 2007-2008 financial crisis, the U.S. introduced The American Recovery and Reinvestment Act of 2009 (ARRA) and injected $840 billion dollars into the economy in order to reinstate financial stability and stimulate economic growth (Carley and Hyman 2014). Blinder and Zandi (2010) model the economic conditions with and without the stimulus package and estimate that the ARRA is responsible for increasing the 2010 real GDP by approximately 3.4%, decreasing the unemployment rate by 1.5 percentage points, and bringing approximately 2.7 million jobs to the U.S. market. Thus, governmental support and the injection of money into the economy sparked a change in the market's outlook on asset valuations. Once again, to the extent that mergers

and acquisitions are simply the transfer of assets, the market favorably viewed acquisitions in 2010 as buyers obtaining assets at a depressed cost that were expected to appreciate in value. The positive and significant cumulative abnormal returns in 2010 are most likely due to a shift in the market's perception of future asset valuation and less about an increased ability to realize revenue, cost, or financial synergies within a specific year.

Significant positive abnormal returns in 2013 could be the result of President Obama's 2012 reelection for U.S presidency. The Obama campaign targeted several fiscal priorities that included increased spending for health, energy, education, infrastructure, and financial support for low income families (Feldstein 2009). The increase in government spending would theoretically stimulate the economy for the following years; thus, the financial market could have interpreted the Obama reelection and implied future fiscal policy as having an overall positive impact on the economy and creating a conducive environment for mergers and acquisitions.

5.6 Concluding Remarks

My analysis and empirical model could have been enhanced and improved through the incorporation of additional data and additional independent/control variables. The primary reason for not including the proposed variables is due to a lack of data. Additional variables would have created a more descriptive data set, but a majority of the transactions would have reported multiple missing data points and the data set would not have been complete.

To begin, because the data sample strictly includes successful acquisitions, it is possible that the market's reactions and buyer abnormal returns differ for acquisition announcements in general regardless of the deal outcome. Additionally, the model does not include a variable to control for target ownership. Previous literature has revealed a connection between managerial ownership, information asymmetry, and the financing decisions of acquiring firms (Martin, 1996, Myers and Majluf, 1984). Therefore, including corporate governance variables for the target corresponding to chief executive officer ownership and/or chairman ownership would have provided a more accurate measurement of the relationship between financing method and abnormal returns. Ownership variables are reported for a small portion of the sample, but even then, the ownership information is not necessarily reported at the time of the announcement which remains important for the model in terms of standardizing the variable's measurement.

The model also fails to account for alternative acquisition financing methods such as earnouts. Earnouts act as a contractual agreement between the investor and target, specifying payments that are to be withheld until the target achieves pre-determined post-acquisition performance metrics (Kohers and Ang, 2000). To mitigate the risk associated with information asymmetry and adverse selection, investors commonly use financing tools such as earnouts (Datar et al., 2001). Kohers and Ang (2000) report that earnouts are used more frequently by investors targeting acquisitions of private companies and companies operating within the technology industry and industries where information asymmetry is typically high. Datar et al. (2001) confirm these results and conclude that acquirers are more likely to utilize earnout structures when targeting private firms and firms with high growth potential, such as the technology and service sectors. Alternative

financing method variables were considered as inputs for the model due to the ability to mitigate risk associated with information asymmetry; however, the sample lacks a significant number of transactions that report statistics for the amount of earnouts used within the deal design.

While the original hypothesis regarding the significance of cash or stock financing was not confirmed, controlling for buyer and target industry characteristics ultimately provides insight on how deal structure is perceived by the financial market across industry. Future research may consider including additional data with a more diverse complexion of industry acquisitions in order to provide further analysis on the significance of industry specific financing methods. Significant results for buyer profitability and transaction value give insight on how the financial market evaluates risk associated with revenue/cost synergies and transaction premiums. Additionally, significant results for time variables present the financial market's changing perception of financial crises and political movements and how macroeconomic trends ultimately impact mergers and acquisitions.

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7. Appendix

Exhibit 1. Variable Definitions for Company Characteristics

Exhibit 1 provides variable definitions for acquirer/target characteristics that are controlled for in the regression.

Variable	Definition
Total Revenue	The total income from sales at the acquisition measured on announcement day
Net Income	The total revenue less cost of goods sold at the acquisition measured on the acquisition announcement day
Market Capitalization	The total market value of public shares outstanding measured one day before the acquisition announcement
Size/Total Assets	The total book value of assets at the acquisition measured on the announcement day
Total Cash and Short-Term Investments	The value of liquid assets in the form of cash and investments which are expected to be converted to cash within a year long time horizon measured on the acquisition announcement day
Total Debt	The total value of long-term debt and short-term debt measured on the acquisition announcement day
Net Debt	Total debt – total cash and short-term investments at the acquisition announcement day
Debt Capacity	Acquirers net debt/market capitalization

Price/Earnings	Market capitalization/net income is a valuation metric which details the value per dollar the company generates as income at the time of the acquisition announcement
Profitability	Net income/total revenue or profit margin is a measure of profitability and the revenue realization rate
Relative Size	Acquirer total assets/Target total assets
Financial Distress	Target's net debt/market capitalization

Exhibit 2: Summary Statistics for Company Characteristics

Exhibit 2 displays summary statistics for acquirer/target characteristics.

Variable	Mean	Std. Dev.	Min.	Max.
Acquirer- Debt Capacity	0.5	0.7	-2	7
Acquirer- Price/Earnings	7	228	-3,305	910
Acquirer- Profitability	-0.03	2	-21	0.6
Acquirer- Size/Total Assets (mm)	27,594	110,520	12	1,246,330
Target- Relative Size	58	262	0.2	3,673
Target- Financial Distress	10	162	-2.4	3,192
Target- Profitability	-0.3	4	-70	0.55

Exhibit 3. Transaction Industry Breakdown

Exhibit 3 describes the number and percentage of transactions which occur in the industry of the target company.

Target Sector	Number of Transactions	Percent of Total
Communication Services	8	2%
Consumer Discretionary	8	2%
Consumer Staples	4	1%
Energy	21	5%
Financials	244	63%
Health Care	25	6%
Industrials	20	5%
Information Technology	49	13%
Materials	7	2%
Real Estate	1	0.3%
Utilities	1	0.3%

Exhibit 4. Transaction Value Summary Statistics

Exhibit 4 provides summary statistics for transaction value as well as a breakdown of transaction value for specific ranges.

Transaction Value (mm)	Mean	Std. Dev.	Min.	Max.
Transaction Value	$1,553	$6,255	$0.95	$57,808

Transaction Ranges (mm)	Number of Transactions	Percent of Total
Greater than $1 Billion	66	17%
$500-$999.9	28	7%
$100 -$499.9	144	37%
Less than $100	150	39%

Exhibit 5. Transaction Variables Percent of Consideration Summary Statistics

Exhibit 5 provides summary statistics for the percent of the financial instrument utilized in the transaction structure.

Transaction Variable	Mean	Std. Dev.	Min.	Max.
Cash % of Consideration	36%	39%	0%	100%
Debt % of Consideration	0.6%	1%	0%	100%
Preferred % of Consideration	0.4%	1%	0%	100%
Stock % of Consideration	63%	39%	0%	100%
Hybrid % of Consideration	0.0%	0%	0%	0%
Rights/Warrants/Options % of Consideration	0.00001%	0.0002%	0%	0.004%

Exhibit 6. Transaction Variables Total Value Summary Statistics

Exhibit 6 provides summary statistics for the total value of the financial instrument utilized in the transaction structure.

Transaction Variable	Mean	Std. Dev.	Min.	Max.
Total Cash	$252	$1,288	$0	$17,816
Total Debt	$1	$11	$0	$169
Total Preferred	$2	$33	$0	$659
Total Stock	$1,156	$5,555	$0	$57,808
Total Hybrid	$0	$0	$0	$0
Total Rights/Warrants/Options	$0.00001	$0	$0	$0.002

Exhibit 7. Regression Output

Exhibit 7 provides regression output with the cumulative abnormal returns serving as the dependent variable and independent variables controlling for deal structure, acquirer/target characteristics, transaction value, acquirer/target industry, and year. Column 1 presents the variables' coefficient followed by the standard error in parentheses. Indicators for statistical significance are presented at the bottom of the exhibit. Total assets and transaction value are included in logarithmic form as a means to express the large discrepancy in raw values on a more convenient scale.

Variables	(1) Cumulative Abnormal Returns
% Cash + Debt	-0.0118
	(0.113)
% Stock	-0.00290
	(0.112)
Acquirer- Debt Capacity	-0.00603
	(0.00852)
Acquirer- Price to Earnings	1.04e-05
	(2.92e-05)
Acquirer- Profitability	-0.0254***
	(0.00413)
Acquirer- Log. Total Assets	0.0101
	(0.00978)
Target- Relative Size	5.42e-07
	(2.36e-05)
Target- Financial Distress	-1.66e-05
	(3.33e-05)
Target- Profitability	0.000482
	(0.00153)
Log. Transaction Value	-0.0237**
	(0.0112)
Target- Consumer Discretionary	-0.0186
	(0.0738)
Target- Consumer Staples	-
Target- Energy	-0.0895
	(0.129)
Target- Financials	-0.680***
	(0.145)
Target- Health Care	-0.00531
	(0.0872)
Target- Industrials	0.00416
	(0.0626)

Target- Information Technology	0.0483
	(0.0634)
Target- Materials	-0.211*
	(0.121)
Target- Real Estate	-0.0517
	(0.134)
Target- Utilities	-0.216
	(0.197)
Buyer- Consumer Discretionary	-0.0555
	(0.0733)
Buyer- Consumer Staples	-0.0694
	(0.0718)
Buyer- Energy	0.00621
	(0.124)
Buyer- Financials	0.543***
	(0.153)
Buyer- Health Care	-0.0632
	(0.0845)
Buyer- Industrials	-0.110*
	(0.0598)
Buyer- Information Technology	-0.210***
	(0.0614)
Buyer- Materials	0.205
	(0.129)
Buyer- Real Estate	-
Buyer- Utilities	0.0370
	(0.165)
Year 2017	-0.0236
	(0.0379)
Year 2016	0.00224
	(0.0382)
Year 2015	0.0450
	(0.0528)
Year 2014	0.0287
	(0.0428)
Year 2013	0.0823*
	(0.0490)
Year 2012	-0.0215
	(0.0498)
Year 2011	0.00750
	(0.0689)
Year 2010	0.377**
	(0.151)
Year 2009	-0.168***

	(0.0513)
Year 2008	0.00575
	(0.0533)
Year 2007	-0.0240
	(0.0374)
Year 2006	0.0121
	(0.0356)
Year 2005	0.00170
	(0.0344)
Year 2004	0.00879
	(0.0299)
Year 2003	-0.0126
	(0.0315)
Year 2002	0.000251
	(0.0311)
Year 2001	0.0143
	(0.0296)
Year 2000	0.0422
	(0.0283)
Constant	0.152
	(0.123)
Observations	388
R-squared	0.315

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1