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Do firms with excess cash pay higher premia?

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Abstract

Title: Do firms with excess cash pay higher premia?

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Key words: Mergers and acquisitions; Premia; Excess cash; Overconfidence; Hubris; Public acquisitions

Purpose: Self-interest and development of our knowledge. After research we found this interesting field of study. The thesis investigates if firms with higher excess cash pay higher premium prices. We analyze this from a behavioral point of view.

Methodology: This study implements a quantitative approach. For calculating excess cash we use Opler et al. (1999) approach. For bid premia model we use Alexandridis et al. (2013) approach. Testing our hypothesis we use regression analysis. We also include a survivorship bias approach.

Theoretical perspective: This study is built upon previous research in this field of study with an emphasis on bid premia and excess cash.

Empirical foundation: Public acquisitions by firms in the S&P 500 index; we also include dropped firms to bypass survivorship bias. Henceforth we show the importance of such an approach. Our sample consists of 519 non-financial firms, 565 public acquisitions and 2684 private acquisitions.

Conclusions: In this investigation we find support for our main hypothesis, which says that excess cash is statistically significant in the regression model. The interpretation is that the more excess cash a firm has, the more they overbid.

Acknowledgements: We like to thank associate professor Niclas Andrén for his guidance and specific knowledge in the field of corporate finance with emphasis on excess cash.

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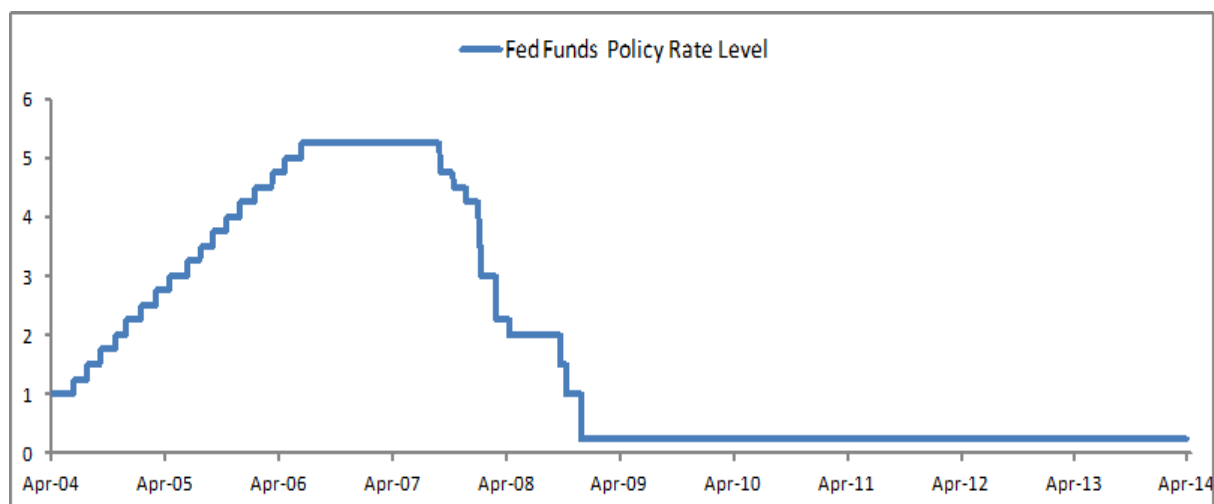
1. Introduction

This chapter presents the background and problem discussion providing the basis from which the purpose of the study is built and the research question defined.

1.1 Background

1.1.1 Low Cost of debt

The Global financial crisis (GFC) of 2008-2011 sent shockwaves around the world and today we are still left with the effects of the spectacle. One effect that is still in place today is that of the low interest landscape that spans most of the developed world. The GFC crisis forced major intervention from the central banks of the world, under heavy pressure from their residents. The actions came in the form of the central banks invoking fiscal and monetary measures (Cecchetti, 2009), in order to stimulate borrowing and investments to kick start their economies growth. For example the Federal Reserve, (the central bank of the United States), led by then chairman Ben Bernanke; by December of 2008, the Federal reserve Fund rate, the interest rate for the US from which other lending rates in the US are based off i.e. bank lending rate, mortgage rates, credit card rates, dropped to 0.25 from 5.25 in September 2007, and has remained at this level till today.



Source: Bloomberg

These sustained low rates have led to: (i) Reduced borrowing costs on household and corporate level. This encourages investments both on consumer and corporation level (Cecchetti, 2009). (ii) Institutional Investors seeking out high yielding investments when faced with a zero-yield environment. This occurrence is called “chasing the yield” (Lachman, 2004). As such there has been an increase in demand for fixed-income investment, which has

lowered borrowing costs for both investment grade and high yield issuers of debt (Economist, 2013). It is in this condition in which we find the current debt capital markets today.

1.1.2 Conservative Capital Structures

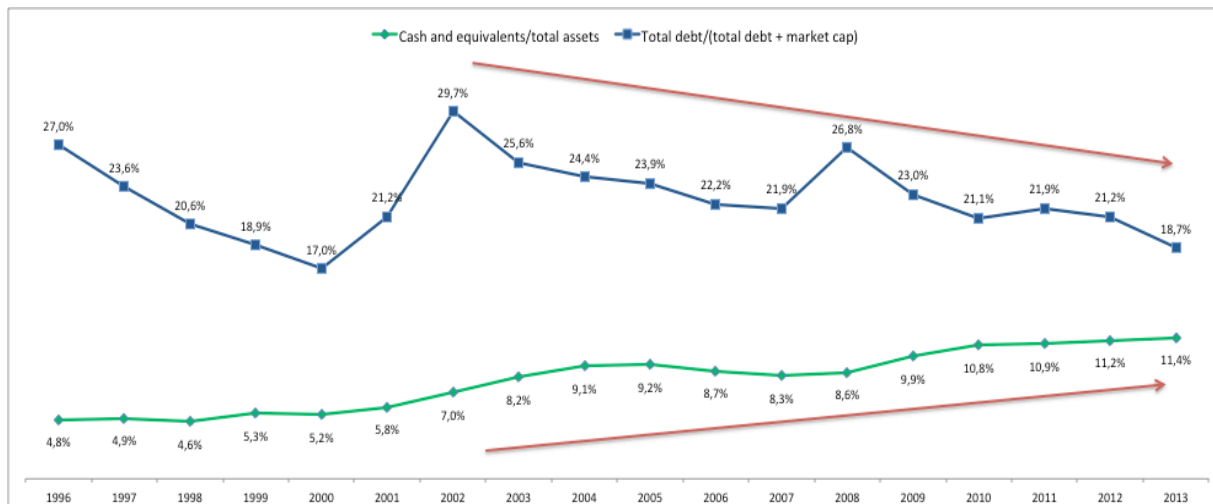
There is a plethora of research both theoretical and empirical around the subject of capital structures. We though have summarized the key characteristics that an optimal capital structure should entail into the following three statements;

- i) A low cost of capital
- ii) Sufficient financial flexibility to exploit strategic opportunities that arise
- iii) Adamant buffer to protect against downside scenarios

Yet in the wake of the GFC many firms have adopted conservative capital structures rather than try to achieve an optimal capital structure. This was due to the preference by firms to under go major de-leveraging in order to maintain low probabilities of distress as to keep or improve their credit rating. In a paper published by J.P. Morgan in December 2008, “Conservative capital structures”, they found that lower cost of capital for firms was attributed to higher credit ratings. With credit rating agencies adopting tougher standards, it was imperative for firms to adopt a more conservative capital structure in order to maintain a favorable credit rating as they sought to ride out the ensuing credit storm. These actions are in line with results from Khieu and Pyles (2012) study on the influence of a credit rating change on corporate cash holdings”. The report states downgraded firms increase excess cash holdings by approximately 3%. They also found that firms downgraded from investment to speculative grade hoard the most cash. The results suggest that a concern for financial constrains, in addition to the costs of declining ratings, are in play in firms decision making. But fast-forward to today; many of these firms still have these conservative structures in place despite the storm having passed by. Similarly, in the wake of GFC due to regulation and pressures from shareholders, most firms increased their liquidity buffer to protect against any potential downside scenarios.

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1.1.3 Cash vs. Debt



Source: J.P. Morgan & Bloomberg

We can see from the graph above that firms are holding unprecedented levels of cash and this has increased steadily from the onset of financial crisis up until today. It seems evident that firms have revised what is deemed a “sufficient” liquidity profile in order to exploit strategic opportunities. Yet many outsiders deem it over excessive and are pressurizing firms to start seeking out strategic opportunities on which to spend their excess liquidity on. For example, On April 23, 2013, Apple announced its intention to pay out a total of \$100 billion in cash by the end of calendar year 2015, the largest total payout ever authorized (Apple, 2013). This came due partly to a lawsuit filed by investor David Einkorn of Greenlight Capital. It is in this condition in which we find firms capital structure today in the USA.

1.2 Landscape Characteristics

1.2.1 Positive market reaction to firms utilizing debt to make strategic alternatives

As a function of the described state of US firms’ capital structures above, firms who have started to take up leverage again and move towards a more ideal capital structure, are reaping the rewards of positive market reaction to these actions (J.P. Morgan, 2014). In today’s landscape it seems taking on debt to pursue strategic goals that will benefit shareholder value is seen as a positive step and market participants are rewarding firms that do this. The debt taken on has been used to pursue strategic alternatives such as to pay down existing costly debt or returning money to shareholders through dividends or share buybacks schemes. Such companies who have undertaken these are Viacom, Costco, FedEx, Amgen, Apple, WeightWatchers and EMC².

1.2.2 Shareholder activism

Shareholder activism is a mechanism in which shareholders can influence a firm's decisions by exercising their rights as owners (Gillan and Starks, 2000). In 2013 shareholder activism was very pronounced (Weingarten and Rosewater, 2013). In fact activist hedge fund have been so successful that funds flowing into these funds has led to their asset under management to rise from \$36bn in 2009 to \$100bn in 2013 (Watts, 2014). The main issues that these hedge fund activists have been addressing are: *conservative capital structure and excessive liquidity*.

*“While it is important for the Board to focus on the return of capital on a sustained basis, it is also important for the Board to evaluate whether or not its share price is undervalued and to take advantage of it with share repurchases, especially when **the balance sheet exhibits dramatic excess liquidity**, as we believe Apple's does today. - Carl Icahn Apple Investor Letter*

*“This underperformance has been driven by the Company's 1) outsized cost structure, 2) **inefficient capital structure**, 3) poor M&A track record and 4) execution issues caused by unsuccessful extensions into security and enterprise switching” - Elliott Management's Juniper Board of Directors Presentation*

*“We expect management to optimize Helen of Troy's balance sheet to maximize shareholder value. Helen of Troy is **materially under-levered relative** to peers Jarden and Spectrum Brands. A more appropriate capital structure would create substantial value for shareholders in light of the unique strategic attributes of the business” -Scott Ferguson (Founder of Sachem Head Capital management) Board of Directors Letter*

1.2.3 Interesting M&A landscape

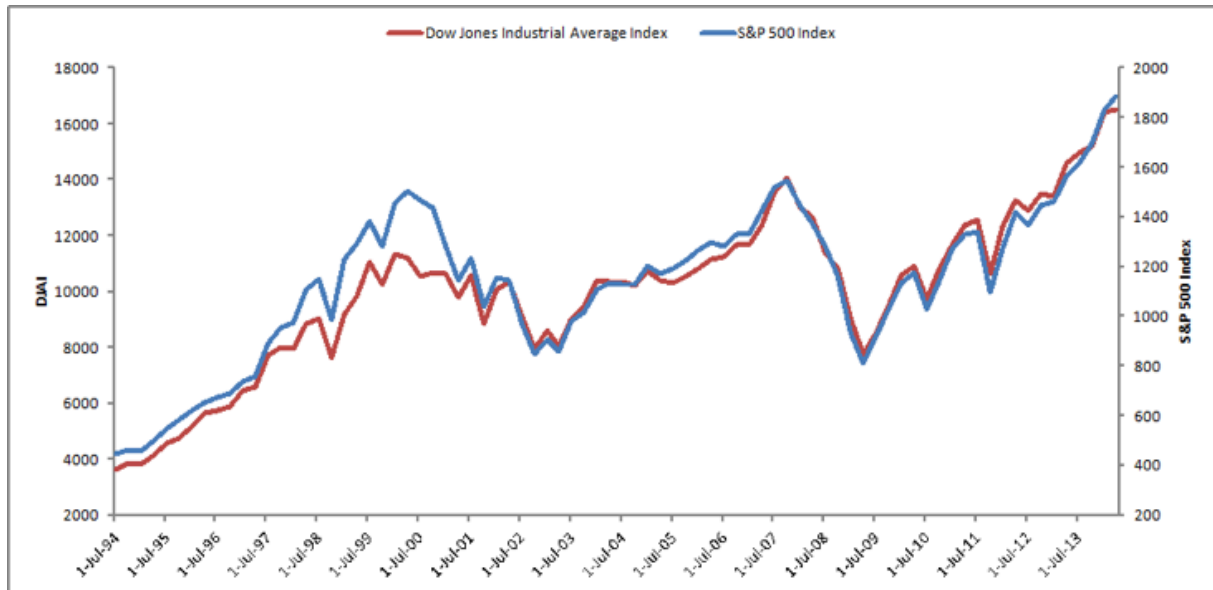
The highest premiums on targets tend to be on deals that are contested between multiple bidders. But in 2013, according to Dealogic, there were only 15 takeover deals that involved rival bids, the lowest since 2004 (Monga, 2013). This could be a major factor in why the bid premia on acquisition, based on the target's trading price one week before the deal was announced, were at 18 year low of just 19% (Monga, 2013). A reason for this could be down to the buoyant stock markets, which with prices increasing daily can complicate negotiations. With high stock prices acquiring firms might feel that target firms are already over valued and as such to pay top-up premium of this would be way too much. However, what is more puzzling is the lack of deals that have been occurring in today's landscape given the access to cheap liquidity and large cash holdings on the balance sheet as well as the fact that the market seems to reward companies that are taking on deals. Stock prices of acquirers have

increased an average of 2.4% between the day before and the day after a deal, the largest average increase since 2006 according to Dealogic database (Monga, 2013). This is the interesting M&A landscape in which we found ourselves at the end of 2013.

1.3 Problem discussion

At the end of 2013, the global cash pile of multi-national corporations (MNC's) was estimated to be around \$2.7tn, with 200 companies holding around \$2.2tn or 71% of the global cash pile (Masters, 2014). The top 5 MNC's companies held cash piles equivalent to the gross domestic product of the United Arab Emirates (Sakoui, 2014). Looking at the US specifically, corporations are holding record-high cash holdings (Sanchez and Yurdagul (2013) but the reasons behind this are greatly debated but mainly center around; less investment opportunities for firms leading to more cash holdings; repatriation of cash held abroad by multinationals having adverse tax consequences; record profits leading to an increase in cash flows (Pinkowitz et al. 2014). Interestingly, at the 2014 World Economic Forum in Davos, CEO's of some of the worlds largest MNC's commented that they would sit on their cash piles until they could invest in the right target companies and that large cash piles could become the new normal for companies. But many commentators are still predicting that 2014 will be the year of the megamergers driven by; favorable credit conditions in conjunction with a rise in cross-border mergers and acquisitions (M&A) as firms try to diversify their portfolios to mitigate risk in light of financial crisis whilst gaining exposure to faster growing markets (Domm, 2014). According to Harford (1999), high valued markets act as a precursor for the onset of a new merger wave, something that is evident if one took a look at equity markets at the end of 2013 (see diagram on next page); S&P 500 reaching 16-year highs and The Dow reaching 18-year highs, that.

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Source: Bloomberg

As a testament to the bullish views of some commentators, 2014 has got off to a blockbuster start with the shining star being the Technology, Media and Telecom industry. According to Mergermarket[®], six of the largest deals have been announced in this space. As organic growth has been hard to come by for many of these firms in recent years, they have thrust their hopes into inorganic growth, under the watchful eyes of activist investors. These activist investors have championed for firms to reduce their over capitalized balance sheet and create more value for their shareholders. Facebook's \$19bn acquisition of WhatsApp and \$2bn for Oculus VR, Google \$3.2bn acquisition of Nest labs are some of the deals that many have been questioned due to their astronomical prices. Why? The firms acquired were either making little or no profit or had just left the infantile stage, therefore did not warrant the prices paid. These actions seemed to be displays by overconfident CEOs showing that money is not a problem when it comes to acquiring firms they desired. Perhaps the youthfulness of these CEO's could be contributing to their overconfidence and their behavior; Ferris, Jayaraman and Sabherwal (2009) concluded that though CEO overconfidence is an international phenomenon, it is most extensively observed in younger individuals heading firms headquartered in Christian countries that encourage individualism. They also found that overconfidence is related to a number of aspects of merger.

But this topic had us intrigued and stimulated questions for us when researching into potential thesis topics.

1.4 Basis of research

Would these CEO's act in such a way, if not for their large internal cash resources; Do these cash balances have an impact on how much the firms CEO's bid; Had the acquisition landscape turn into a playground that only the cash-rich could play in. With all these questions ruminating in our heads, we undertook background research to try to come up with satisfactory conclusions to some of these questions. In our search we came upon this abstract from Malmendier and Tate 2005 paper, "Who makes acquisitions? CEO overconfidence and the market's reaction":

"Overconfident managers overestimate the returns to their investment projects and view external funds as unduly costly. Thus, they overinvest when they have abundant internal funds, but curtail investment when they require external financing"

Diving more into this, we came across Hayward and Hambrick (1997) study that examined the role of the CEO and if the individual portrays exaggerated self-confidence, called "CEO hubris". More specifically, they investigate if this hubris variable affects the size of the paid bid premium in large acquisitions, which they found strong support for. We also found when reading Moller et al. (2014) paper that they found that managers of large firms offer higher bid premiums.

On the face of it, the research we came across seemed to rationalize that there was a relationship between overconfidence, internal funding and CEO's overinvestment. We felt this offered an interesting topic to explore for our thesis and so our topic was established.

1.5 Research Question

It became apparent that certain aspects of our thesis topic had been covered extensively whilst others had not been studied depth. Areas such as acquisition premia in relation to M&A's have been examined in only a minority of M&A studies (Hitt et al. 2001). According to Hitt et al. (2001) most M&A's revolve around the following questions:

- i. The extent to which the acquisition increased the diversification of the acquiring firm/the relatedness of the acquiring firm (58% of the studies);
- ii. Firm size or the relative size of the acquired to the acquiring firm (52% of the studies);
- iii. The acquisition experience of the acquiring firm (28% of the studies).

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As acquisition premia, in relation to M&A's, had not been expanded on in depth and with our interest in the increasing cash holdings, we decided to combine both. Furthermore, we decided that as most studies center on non-empirical research we would try to undertake an empirical study to try to discover any relationship.

Therefore, we present our paper, that explores the relationship between bid premia and excess cash whilst answering the following question: *“If a firm has more excess cash on their balance sheet, will they pay a higher premia?”* Our purpose is to undertake initial research into this topic and by publishing our results would form an informative piece to the wider finance community that can be built upon.

1.6 Thesis outline

Chapter 2: will outline the Literature review. It will process the existing theory of excess cash holdings e.g. the value and the motives behind holding more cash. Furthermore the chapter will include the existing knowledge of mergers and acquisitions and premiums. Finally we will present the behavioral aspects of cash holdings and overconfidence.

Chapter 3: will outline the chosen methodology: It will explain our methodology, how we collected data, constructed our sample and the research approach. Furthermore it will process the models for excess cash and premium prices. Finally this chapter will assess the validity of the methods to ensure the quality of our study.

Chapter 4: will outline our empirical findings from our regressions.

Chapter 5: continues with the analysis and discussion of the results.

Chapter 6: In this chapter we will outline our conclusion of the study together with further research suggestions.

2. Literature review and hypotheses development

This section will process the existing theory of excess cash holdings and the existing knowledge of mergers and acquisitions. We will present the behavioral aspects in relation to both. Finally, we will first present our primary and secondary hypothesis.

2.1 Motives of holding cash

The motives behind holding cash are, firstly related to the transaction cost theory. Firms are more reliant on internal financing in order to minimize external costly financing when faced with investment opportunities (Faulkender and Wang, 2006; Pinkowitz and Williamson, 2004). Secondly there is a speculative motive, which Keynes (1937) argues for in that firms hold cash in order to meet unexpected changes in the market, be it increased interest rates or the impact of volatile markets. The holding of cash is done to increase liquidity preferences when capital markets are unfavorable i.e. the adverse selection costs make equity too expensive (Keynes, 1937; Opler et al. 1999).

The third motive is the precautionary, and this is mostly related to the constrained firms, as they are more sensitive to cash flow volatility. This creates an intertemporal trade-off between current and future investments (Han and Qiu, 2007). Han and Qiu (2007) go on to explain that financially constrained firms tend to increase cash holdings in response to an increase in cash flow volatility due to the fact that there exists a limited diversifiable option on future cash flows. For the unconstrained firms there exists no systematic relationship between cash holdings and volatility, suggesting that there is no precautionary motive for cash holdings.

The fourth explanation of cash holdings is the tax motive. Firms that are exposed to higher tax rates in their home country are not willing to repatriate cash to trigger larger tax expenses, thus creating more consolidated cash holdings (Opler et al. 1999; Foley et al. 2007). Foley et al. (2007) also shows that affiliates in low tax based countries hold more cash than other affiliates of the same firm; hence this increases cash holdings abroad.

The last motives of cash holdings are agency related, explaining the conflict of interest between managers and stakeholders. Managers' control are reduced when they pay dividends to shareholders, increasing the capital necessity, forcing the firm to obtain external capital and thus increases monitoring of the capital markets (Rozeff, 1982; Easterbrook, 2984). According to Jensen (1986) this is especially severe when the firm is generating substantial free cash flows and this can be explained by the fact that compensation to managers are

positively related to growth in sales (Murphy, 1985). They are more likely to spend money on investments than satisfy shareholders if the opportunity exists. Managers of firms with large free cash flows are more likely to undertake value destroying projects, though consideration are of importance e.g. firms paying with cash are more likely to generate some value enhancing returns since this temporarily reduces the cash holdings and therefore beneficial for shareholders (Jensen, 1986). Managers have stronger motives for cash holdings since this tend to reduce firm risk and increase their discretion (Opler et al. 1999).

2.2 The value of cash

For firms cash is a vital component that allows them to undertake value-increasing investment that otherwise might have been bypassed (Myers and Majluf, 1984; Faulkender and Wang, 2006). By having higher cash holdings, firms are more independent from external costly financing, consequently reducing their cost of capital. In recent studies of cash holdings, some researchers have disagreed with Modigliani and Miller's (1958) view that investments and growth are independent of the availability of internal funds. Such researchers are, Myers and Majluf (1984) who state that frictions in the capital market increase the cost of outside capital and hence make internally generated capital more favorable. By having internal funds, managers increase their flexibility when choosing to invest or not in projects. Rather than being faced with the prospect of turning down a valuable investment opportunity because external financing is too expensive or there is no option than to issue risky securities, this retention of cash offers an escape. Especially when researchers such as Myers and Majluf, (1984), state that valuable investment opportunities should be turned down if faced with the prospect of having to obtain external financing or issuing risky debt. This concept can be related to the pecking order theory in that it states that the most favorable financing option is: (i) internally generated cash, and (ii) if necessity of external financing, firms should issue debt rather than equity (Donaldson, 1961; Myers and Majluf, 1984).

Denis and Sibilkov (2009) developing on previous studies on the impact of financial constrains, proved that cash holdings are especially essential for constrained firms. This is due to a significantly stronger positive relationship between investment and cash in constrained firms than for unconstrained firms, as the latter has better access to capital markets. We can interpret this as cash holdings being a value-increasing answer to expensive external financing for financially constrained firms, in that higher cash holdings allow firms to undertake investment projects that otherwise might have been bypassed due to high costs. Denis and

Sibilkov (2009) also state that there is a negative relationship between financially constrained firms and their holdings of cash due to declining free cash flows and thus do not allow them to build adequate cash reserves. For constrained firms to increase adequate cash reserves, Almeida et al. (2004) suggest that when free cash flows are higher due to improved market conditions, they should increase their propensity to retain cash. To build financial slack, firms can restrict dividends or issue stock in periods when information is symmetric between management and stockholders, nor should they pay dividends if they have to undertake a fire sale to recoup cash (Myers and Majluf, 1984; Opler et al. 1999).

The value of cash depends on: (i) the solvency of a firm, (ii) distribution of cash and (iii) accessibility of capital markets (Faulkender and Wang, 2006). Pinkowitz and Williamson (2004) show that from a shareholders perspective the marginal value of cash is higher for firms with better growth options and more volatile investment opportunities, than those with fewer and more stable growth opportunities. Moreover, Faulkender and Wang (2006) show that the marginal value of cash decreases for firms with higher leverage or cash holdings. Since transactions costs are likely to be higher, firms that have more difficulty accessing capital markets place higher value on cash than for those with good access (Faulkender and Wang, 2006; Pinkowitz and Williamson, 2004). For firms that distribute cash, the marginal cash value is higher than when using stock repurchases instead of dividends (Faulkender and Wang, 2006).

2.3 Evolution of US Company cash holdings

A persistent and increasing pattern has been evident since the 1980s in US firms cash holdings collectively. The changes in cash holdings from the pre-GFC period to the post-GFC period are nothing in comparison to the cash holdings from the late 1990s to before the crisis (Pinkowitz et al. 2014). Annual growth rate from 1979 to 1997 was around 6.5%, while after mid-1990s until 2011 the growth rate was above 9% (Sanchez and Yurdagul, 2013). These changes are astronomical when compared to changes in the rest of the world: since the late 1990s there has been a 111% increase in the median cash/assets ratio in the U.S. compared to 36% increase in the rest of the world. Additionally, though cash/assets ratios have increased for public firms throughout the 2000s, they have not for private firms (Pinkowitz et al. 2014). This increase in US average cash-ratios is due to; riskier cash flows, holding of fewer inventories and accounts receivable, and the increasing of R&D intensity (Bates et al. 2009).

2.4 Mergers & acquisition

The research on M&A is quite extensive and has produced a substantial amount of theories and empirical evidence concerning various parts of the M&A transaction cycle. Despite this, the question of whether takeovers improve corporate performance is controversial. Reed et al. (2007) stated that M&A are one of the most complex transactions one can undertake. These transactions can have several motives for M&As that Cooke (1986) list as; acquisition of particular assets, reduction of capacity, managerial motives, growth prospects, synergies, and taxation considerations.

2.4.1 Valuation process

There are several valuation methods that can be used in any M&A process. Hunt (2003) and Reis and Cory (1994) state that these methods are based on intrinsic, liquidation and relative value. Many academics have stated what many valuation practitioners believe; due to the judgmental assumptions and the complexity of forecasting future performance, valuation is as much an art as it is a science (Hunt. 2003, Baker et al. 2009). Adding to this, Moeller and Brady (2004) stated that pricing and valuation is a dynamic process that adapts to market conditions and the availability of data.

Valuation multiples are extensively used when pricing M&A transactions and are often based on accounting measures. Consequently, if the accounting numbers have been manipulated and CEO's put a large emphasis on them, there is a risk that this will lead to a high premium being paid out (Koller et al. (2005).

2.4.2 Stock piles and acquisitions

Cash rich firms and acquisitions have a strong relationship. Harford (1999) states that cash rich firms are more likely to attempt acquisitions as manager favor stock piling, which is in line with the hypothesis of free cash flow. Excessive cash holdings reduces the under investment problem for firms, since they can avoid costly external financing and still make investments even though cash flows are insufficient. The surplus of cash creates a financial flexibility for the firm. Though in Harford's study (1999) the findings show that even though managers can reduce underinvestment problem, firms with stock pilings are more likely to make value-decreasing acquisitions. This is mostly explained by the fact that cash rich firms undertake diversifying acquisitions, and thus cannot derive value-creating synergies from such projects (Harford, 1999).

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Opler et al. (1999) show the opposite of Harford (1999), they state that the spending on new projects is only marginally higher for firms with excessive cash. The explanation is that firms typically use the internal funds to cover up losses instead of making acquisitions. Their suggestion is that further investigation is needed to find out whether shareholders benefit from managements hoarding of cash.

2.4.3 Acquisition premiums

An acquisition premium is the price paid for a target firm that exceeds its pre-acquisition market value. A premium is paid to entice the target firm shareholders to sell to the acquiring firm. This premium paid is one of the key determinants as to whether a company will acquire another company or not (Lorange et al. 1994; Walker 2000). Huang and Walking (1987) and Savor and Lu (2009) state in their papers that these premiums paid in cash-financed acquisitions are larger than those paid in share-for-share transactions, as target shareholders are to be compensated for the immediate tax implications of cash offers.

According to Barger et al. (2008) findings, private companies, on average, pay lower premiums than public companies. They determined that public companies tend to pay a higher premium because operating companies expect to benefit from synergies. Potential synergies that can be created in the merger of the two firms are central to most justifications for bid premia. In the diagram below, price 2 and 3 represent prices incorporating bid premia.

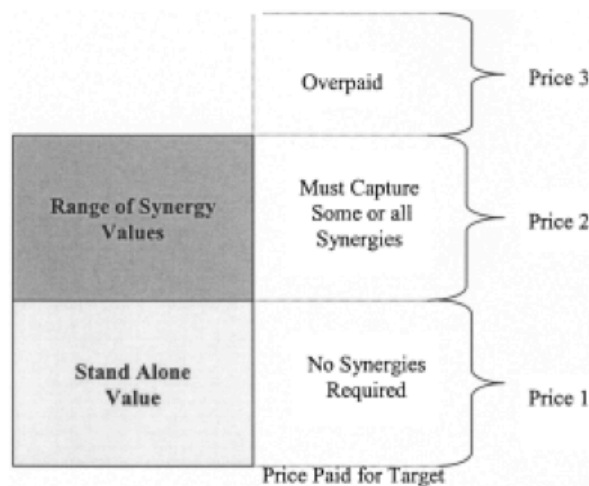


Fig. 1. Pricing, Synergy and Value Creation.

From: D. M. Schweiger (2002) *M&A Integration: A Framework for Executives and Managers*, New York: McGraw-Hill.

Figure 3.1 Pricing, synergy and value creation

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The premium paid must not be greater than the potential synergy if the acquisition is to produce positive returns for the acquiring firms shareholders. But due to the challenges of achieving integration it is often difficult to recognize all potential synergies (Sirower, 1997).

Another factor that may lead to higher bid premia would be the relationships between individuals, especially if those relationships are board interlocks (Haunschild, 1994). Another factor that will drive up premiums paid is the presence of multiple bidders for a particular target. In these case Coff (2002) states that the acquirer with the winning bid often overestimates a target firm's value in a phenomenon called "the winner's curse".

This curse continues after the target has been acquired, in that there is a burden for CEO's to recoup the costs and extract enough synergies from the merger. Sirower (1997) suggests that about 70% of acquiring firms fail to deliver the sufficient results to recoup the premium paid. The huge pressures that CEO's will face to make the merge successful can lead them to take actions that can be deemed to be due to an "aversion of loss" (Kahneman and Tversky, 1979). Usual course of actions include restructuring processes to consolidate assets and sell off others that are considered redundant (Cascio, Young, and Morris, 1997) and large-scale workforce reductions (Krishnan et al. 2007). Overall most of the research suggests that paying high premiums is likely to result in negative performance of the firm, due to an inability to earn adequate returns beyond the premiums paid (Datta, Narayanan, and Pinches, 1992).

2.4.4 Merger waves

Merger waves are a phenomenon that both market practitioners as well as economists face yet after much theoretical and empirical research, there is no consensus on their cause. Rhodes-Kropf and Viswanathan (2004) defined a merger wave as a sequence of time periods (two or more) in which the probability of a merger occurring is above the unconditional expected probability of a merger. Though merger waves can be proven (Brealey and Myers, 2003), according to Brealey and Myers (1996) in their textbook "*Principles of Corporate Finance*", there was an inability of financial theory to explain them.

In recent times though, there has been recent debates about the cause of mergers with two different schools of taught emerging, behavioral and neoclassical.

2.4.5 Merger waves – Behavioral school

Maksimovic and Phillips (2001) and Jovanovic and Rousseau (2001) followers of the behavioral school, where able to show in their studies that merger waves were highly

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correlated with periods of high valuations. Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) models also showed that merger waves resulted from managerial timing of market overvaluations of their firms. Rhodes-Kropf and Viswanathan (2004) find that valuation of the market fuel M&A waves i.e. when market is overvalued there tend to be more M&A activity vice versa. Their suggestion of why M&A waves occur is that there is a deregulation in the market and thus increases demand or there are innovation changes that require redeployments of assets.

2.4.6 Merger waves - Neoclassical school

Mitchell and Mulherin (1996) are members of the neoclassical school of thought and prior to Brealey and Myers (2003) were able to prove the existence of merger waves. But unlike Brealey and Meyers, they tied merger waves to industries and found that these waves clustered in certain industries, ultimately tying these to various economic, regulatory or technological shocks. Through a systematic analysis of industry shocks and merger activity, they believe it was possible to a truly understand how merger waves occurred. Their examining at an industry-level during the 1990s was further confirmed in the studies of Mulherin and Boone (2000) and Andrade, Mitchell, and Stafford (2001). The latter verified that merger and acquisition activities tend to cluster not only over time and by region, but also by industry. The activity of sectors varies between different waves and below are a list of top 5 industries based on average annual merger activity in the US listed in their study:

1970	1980	1990
Metals Mining	Oil & Gas	Metal Mining
Real Estate	Textile	Media & Telecom.
Oil & Gas	Misc. Manufacturing	Banking
Apparel	Non-Depository Credit	Real Estate
Machinery	Food	Hotels

Source: Andreade et al. (2001) created by authors

Figure 3.2 Top 5 industries based on average annual merger activity

Hartford (2005) also shared the neoclassical view that merger waves could be due to market timing or to clustering of industry shocks for which mergers were tools that facilitated change to the new environment. He expanded on the Brealey and Myers (2003) neoclassical view and found that economic, regulatory and technological shocks drive industry merger waves. Whether the industry shock led to a merger wave depended on whether there is sufficient overall capital liquidity. Harford’s research found that the macro-level liquidity component causes industry merger waves to cluster in time even if industry shocks do not.

2.5 Bid Premium Model

There has been little literature published on bid premium models and only one model appears in any study we come across. Alexandridis et al. (2013) produced a premium model for their paper, “*Deal size, acquisition premia and shareholder gains*”, which examined the contradictory predictions regarding the association between the premium paid in acquisitions and target deal size. The model documented a negative relation between offer premia and target size indicating that acquirers tend to pay less for large firms, not more. In their model different variations of premium were the dependent variable and the main explanatory variable was the natural logarithm of Market-Relative Target Size (lnMRTS), alongside other explanatory variables. Another implication of the study is that target firm still destroys values around the deal announcement, making M&As unfavorable from a shareholders perspective.

2.6 Behavioral Finance

In the past 20 years behavioral theorists have utilized psychological rational as a method to explain why merger activity occur, filling the gap that financial theory has so far been unable to do. Financial theory states that the value of any asset is equal to the present value of its cash flows (Bogan and Just, 2009). Therefore, assuming a strong efficient market (Fama, 1970), a firm’s share price should reflect this information and also encapsulate any potential value generation by the firm. Yet firms who engage in M&A’s usually pay above market price, signaling that they believe that either the target firm is worth more than what the market says or that from the creation of a new combine entity they can generate greater value. Research though has found that M&A’s have had a negative effect on the shareholder wealth of acquiring firms (Bradley, Desai, and Kim, 1988; Jarrell, Brickley, and Netter, 1988; Agrawal, Jaffe, and Mandelker, 1992; Berkovitch and Narayanan, 1993) and their overall long-term profitability (Fowler and Schmidt, 1988; Herman and Lowenstein, 1988; Ravenscraft and Scherer, 1987). In fact in their 2005 study, Malmendier and Tate report that U.S. firms spent more than \$3.4 trillion on over 12,000 mergers during the last two decades, yet acquiring shareholders lost over \$220 billion at that the announcement of merger bids alone between the periods of 1980 to 2001. So why do CEO’s continue to pay above market price despite the abundance of evidence stating there is no value in M&A’s?

Overconfidence, confirmation bias, illusion of control, hubris theory; these are a few behavioral theories that have been used to describe the irrational behavior of CEO’s when it

comes to merger and acquisition activity. As we are investigating bid premia, a function and error of M&A transaction (Malmendier and Tate, 2005), we believe that the behavioral explanations for why CEO's engage in M&A will apply also to why they offer a bid premia (pay more than market value). Below we detail behavioral theories addressed in studies relating to M&A activities.

2.6.1 Hubris effect

In his heavily cited paper, Richard Roll (1986) proposed a non-rational motivation for corporate merger activity titled "hubris hypothesis." Roll proposed that hubris, or pride, is a major driver of merge activity when faced with extensive evidence that states the possibility of achieving supernormal returns will be challenging (Bruner, 2004). Only an irrational belief born out of overconfidence bias, that "*this particular deal will be the 1 in a million deal*", could prompt a firm to undertake a deal and succeed where so many others have failed.

In relation to high premiums, hubris is CEO's overconfidence that they can achieve the synergy projected when the firm is acquired and integrated. According to Hayward and Hambrick (1997), firms that are acquired when hubris plays a major role are unlikely to achieve the needed synergy to deem the M&A successful. Consequently, firms may pay too high a premium and are unable to earn adequate returns to compensate for the premium and also produce a positive return.

Sirower (1997) offers 3 alternatives to hubris as a primary factor in paying too high a premium: (1) unfamiliarity with critical elements of the acquisition strategy, (2) lack of adequate knowledge of the target, and (3) unexpected problems that occur in the integration process.

2.6.2 Overconfidence

The line between confidence and overconfidence in ones ability is a very fine line. The former can help one take risks after weighing up the strengths and weakness of an opportunity; the latter can lead to a lack of proper investigation into the attributes of a project sometimes relying only on the availability of information (Hitt et al. 2001). This therefore can lead to decisions being based on a self-serving attribution of outcomes. Consequently, according to Malmendier and Tate (2005), an effect of "better than average" may occur. They found that this effect was most likely to apply to high-rank executives, based on Kruger (1999) and Camerer and Lovallo (1999) earlier research; showed that the "better than average" effect was prevalent in highly skilled individuals. Additionally, overconfidence can

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affect the attribution of causality in that individuals expect their behaviors to produce successful outcomes to their actions, but if a bad outcome occurs it is down to bad luck (Miller and Ross 1975). It is this overconfidence and mindset that can lead to CEOs overestimating their ability to generate returns and consequently as a result, paying high bid premia for target companies (Malmendier and Tate, 2005).

2.6.3 Illusion of control and Over-optimism

CEO's sit at the top of the executive structure, only governed by a board of directors, except in some jurisdictions where they also serve as Chairman of the board (Brickley et al. 1997). This position at the top of the pyramid brings a power, an illusion of control, due to them having the final say over the firm's strategic and investment decisions. According to Langer (1975) individuals are most optimistic about outcomes that they believe are under their control. A few years later Weinstein (1980) stated that individuals are more prone to overestimate outcomes to which they are highly committed. This could also lead to CEO's underestimating the likelihood of failure (March and Shapira, 1987). Being at the top of the pyramid and having their pay linked to their ability to deliver results, would encourage top executives to engage in opportunistic behavior that provides them with personal gains (Trautwein, 1990). As acquisitions increase the size of a firm, they often have a positive effect on a top executive's compensation and enhance his/her power and would lead to CEO's.

2.6.4 Confirmation Bias

Montier (2002) describes this as the term used for people's desire to find information that agrees with their existing pre-conceptions. Ross and Anderson (1982) describe how the presence of this bias can lead to the persistence of false beliefs and given an initial set of beliefs, according to Lord et al. (1979), individuals will tend to take new information confirming their beliefs as absolute fact. Hence they will subject contrary information to intense scrutiny. Due to repetition, such a process would lead to an affirmation that whatever initial belief they have is correct.

2.7 Hypothesis formulation

After presenting our introduction and literature review we present our hypothesis formulation that we will test in the study:

In relation to public deals that we have the relevant information to obtain premia measurement

Hypothesis 1: The larger a firms excess cash holdings the higher the premia it will pay over and above the average for a target.

In relation to private deal where we do not have the relevant information to obtain premia measurement:

Hypothesis 2: The larger a firms cash balance the more it will spend on acquisitions.

3. Method

This section will explain our methodology, how we collected data, constructed our sample and the research approach. Furthermore it will process the models for excess cash and premium prices. Finally this chapter will assess the validity of the methods to ensure the quality of our study.

3.1 Research Approach

The theory of excess cash and its explanation of how cash holdings affect both the organizational firm and, the rational behavior among top management is an intriguing subject. To investigate this matter we will utilize, a quantitative method, collecting secondary data from different sources and process this with validated measurements of excess cash and bid premia. We will use a deductive approach, establishing our hypothesis based on existing theory in this field. Finally we will measure and explain the hypothesis with different appropriate statistical methods (Bryan and Bell, 2011). With this approach Bryan and Bell (2011) suggest that an epistemological consideration is suitable, and more specifically a positivism position as our intention is to gather facts and supply an explanation to the existing field. Throughout the study we will conduct our study in an objective manner, with our results being based on facts.

3.2 Data Collection

For the data collection we used the following secondary sources: Factset[®] database, Kenneth French website and Mergermarket[®]. We collected information from between 2002-2012 to capture the end of the dot-com crash, the sixth wave (2003-2007), the global financial crisis (2008-2009) and the great recession (2010-2013).

The data used to calculate excess cash model was collected from Factset[®] database, Kenneth French homepage¹ and Standard and Poor's[®] website. From Factset[®] we have downloaded all the variables for our study except for indsigma, for which we calculated using Kenneth French industry index measurements. The obtained data detailing the relevant M&A information in relation to our dataset including deal value, bid premia, target size were downloaded from Mergermarket[®] database. For this study we will only examine completed transactions and do not include missing observations. In order to ensure the validity of the

¹ Data available at French homepage: <http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/>

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study, we have been consistent with our data collecting and also to minimize systematic errors and skewness in the sample.

When we initially collected the dataset they were classified into industries using Factset and Reuters ID's. In order to keep in line with most studies, we had to reclassify the firms into French industries system using Standard Industrial classification (SIC) code. However, in doing this we realized that there was not a classification for "internet companies". Rather firms such as Amazon, Facebook, Google, Netflix, firms that have become disruptive firms in their respective industries, are grouped with older firms and overall could distort results those industries in our model.

3.3 Limitations

As in line with other studies we decided that we should exclude all financial and utilities firms. We also decided to excludes any M&A transactions that where less than \$50m, which is common for a study in this field.

Industry distribution of sample 516 firms

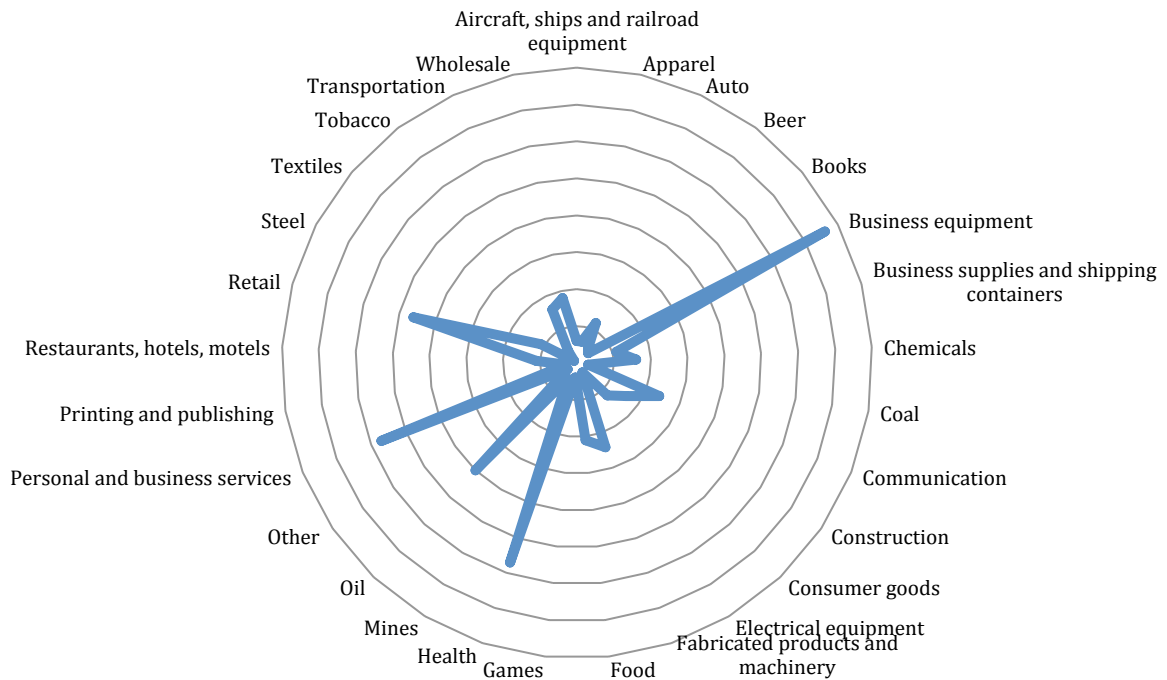


Figure 3.3 Industry distribution of sample 516 firms

3.4 Sample

For our study we initially thought about examining firms from across the globe and consequently thought of using the S&P 1200 Global Index. But as we looked into what collecting the data would entail and how to process and analyze it, we realized that this data set would be too large and a lot of complications would arise. Furthermore, we did not want to take into account exchange rates as would be required if readjusting prices to a base price, as fluctuations in this could distort data on foreign companies. Consequently we decided to focus on the US landscape, as it is not only the world's largest economy with most of the world's largest companies, but it also has the largest M&A volumes globally. We chose the S&P 500 because it is a benchmark utilized by professional and scholars alike and its constituents would offer up reliable data. Hence our dataset consists of the constituent firms in the S&P 500 index in 2014. Furthermore we created another sample including firms that had dropped out of the list between the time periods of 2002-2012. In including the dropped firms we

avoid survivorship bias for delisted firms that at some point in time had an impact on the overall index performance. Liang (2000) shows in his study of hedge funds that accounting for previous funds changes the outcome performance of the overall sample. This is especially important in our case since we base our study on an index that changes a lot. During our time period there is less than 150 firms that have survived in the S&P 500 throughout the last 15 years. In the end we are left with a dataset that consists of 383 active firms and 136 delisted firms. Total firm sample is shown in appendix 1.

3.5 Measurement

The main objective of this study is to investigate potential relationship between firms holding of excess cash and the payment of a higher bid premium. Our initial tests will first be completed only including firms included in today's S&P 500 index constituent list, and subsequently to account for dropped firms within our time period. The M&A data consist of 494 public transactions for active firms, including 71 for dropped firms. Furthermore the private deals consist of 2273 observations for active firms, and 411 for dropped firms. Appendix 2 provides information on our dataset.

Several multiple regressions will be run using E-views 8 software, in order to empirically examine our research question. Multiple regressions analyze the relationship between one variable (dependent variable) and a set of other variables (explanatory variables or independent variables). Gujarati and Porter (2011) state that the objective of the regression is to explain the behavior of the dependent variable in relation to the behavior of the independent variables. We use the most frequently used method in regression analysis (Gujarati and Porter, 2011), Ordinary Least Squares (OWLS) to estimate our regression models and investigate the relationship between the dependent and the explanatory variables. In order for our regression models to be considered reliable they have to meet some assumptions. These assumptions of the classical linear regression model must be fulfilled to show that the OLS estimation fulfills its desirable best linear unbiased estimator properties (BLUE) (Brooks, 2008). We will undertake test to control for these assumptions.

Assumption 1 – No correlation between the error term and independent variable

This assumption states that there is no correlation between the error term and independent variable needed to obtain unbiased estimate of regression coefficients. This assumption will be controlled for with correlation matrix.

Assumption 2 – No Perfect Collinearity

The assumption of no perfect collinearity states that *there is no exact linear relationship among the independent variables*. This assumption implies two aspects of the data on the independent variables. First, none of the independent variables, other than the variable associated with the intercept term can be a constant. Variation in the x's is necessary. In general, the more variation in the independent variables the better the OLS estimates will be in terms of identifying the impacts of the different independent variables on the dependent variable. We will control for this by using a correlation matrix. Any values obtained that are greater than 0.8 indicate that co-linearity is present and if this is the case, the regression model should be reconsidered (Gujarati and Porter, 2010).

Assumption 3 - Homoscedasticity

The assumption of homoscedasticity states that *the error terms all have the same variance and are not correlated with each other*. This assumption means the error terms associated with different observations are not related to each other. We will control for this using White heteroscedasticity, which will correct standard errors for all regressions.

Assumption 4 - No Autocorrelation

The assumption of no autocorrelation states that *the error term may not be correlated with each other*. This assumptions means the error terms at one date can not be correlated with the error terms in the previous periods or error terms may not be correlated with each other in terms of other factors such as socio or geographical distance. We will control for this using Durbin-Watson test.

3.5.1 Excess cash model

To calculate this variable we used Opler et al. (1999) approach, which is an established model used in previous studies by Bates et al. (2009) and Pinkowitz et al. (2013). We use this model because it is conclusive and includes more explanatory variables then other methods available. For example DeAngelos et al. (2010) method to calculate excess cash does not include a cash flow variable, which Bates et al. (2009) argues is an important measure because firms with higher cash flows accumulate more cash, all else being equal. Regarding the Harford (1999) model, it was hard to measure some coefficient; especially cash flow sensitivity because we would need data of cash flows ten year prior to the start of our sample and this was not available in our database. The Opler et al. (1999) model was sufficient because we had the information available to structure the regression.

The model is beneficial because it is estimated each year to let the coefficients vary over time, thus it accounts for normal cash holdings within the industry and only estimates the excess of cash holdings for each observation. Companies with excess cash hold more cash than predicted in that year (Opler et al. 1999). In the model we include all measures that are commonly used; cash, market-to-book ratio, size, cash flows, working capital, research and development expenses, leverage, capital expenditures, dividends and indsigma (Opler et al. 1999; Bates et al. 2009; Pinkowitz et al. 2013). To find an explanation for our hypotheses we will use appropriate statistical measures available in E-views. Below we present the variables for excess cash model. The outputs of the regression analysis are shown in appendices 3 and 4 for current and dropped sample. We will have no thoroughly discussion regarding these since the model is conclusive and we use it to calculate predicted cash flows. The model is only a complement to our study and not the main purpose.

3.5.1.1 Dependent variable

Cash (*lnCash*): is measured by the natural logarithm of cash holdings of the firm at time “t”, divided by net assets. This is the dependable variable in the regression. Cash sits at the core of this study and will later become the independent variable, since our intention is to investigate if there exists a relationship between excess cash and bid premia in M&A deals. Excess cash is an important component in any firm’s structure providing them with financial flexibility which enables them to invest in positive NPV projects they might have had to abandon due to lack of cash. Our dependent variable in this model will be regressed against the predicted cash holdings in time “t”. The predicted cash holding depicts the necessary cash to manage the operating firm. Hence, we define excess cash as the actual cash holdings in time “t” minus the predicted cash holdings yielded by the Opler et al. (1999) model.

The dependent variable gives us the instrument to distinguish between firms with an abnormal amount of cash and those without in order to test our hypothesis.

3.5.1.2 Independent variables

Market to book ratio (*MB*): measures the market value of the firm at time “t” divided by net assets at time “t”, hereafter net assets are defined as the book value of assets net of cash and marketable securities (Opler et al. 1999; Bates et al. 2009; Pinkowitz et al. 2013) This measure is an important part of cash, since market to book is a proxy for financial distress i.e. firms with high market to book are expected to hold more cash since the degree of information asymmetry between manager and investor (Opler et al. 1999; John, 1993). Stultz

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(1990) argues that firms with lower market to book ratio have poor investment opportunities, even though they usually hold higher ratios of liquid assets, since they find difficulty in financing their investment program through the capital markets. Higher market to book ratios is often related to higher cash flow levels, thus explaining the variations of cash (Shyam-Sunder and Myers, 1998). Our expectations are that this coefficient shall yield a positive value as in previous studies.

Size: is measured by the natural logarithm of the book value of the firm in “2012” dollars² using the consumer price index. Cash holdings yields economies of scale, Alexandridis et al. (2013) show that size has a positive relationship to bidding premium, the larger the firm the higher the premia. Opler et al. (1999) shows that the larger a firm is, the less liquidity the firm has, which is also shown later by Bates et al. (2009). Thus we expect this value in the regression to be negative.

Cash flow (CF): is measured by cash flows after interest and dividends divided by net assets. Firms generating higher cash flows are usually related to better investment opportunities (Opler et al. 1999; Bates et al. 2009). Cash flow is the determinant variable for cash piling; higher cash flow yields more cash and financial flexibility for firms (Bates et al. 2009). Opler et al. (1999) finds that firms with riskier cash flow and poor access to capital markets hold more cash as a precautionary motive, to protect them from adverse cash flow shocks. We expect this value to yield a positive coefficient as in previous studies.

Working capital (WC): is measured by current assets minus current liabilities divided by net asset. Current assets are also important factors in relation to cash, since these can be converted into cash relatively quickly, and are seen as a liquid substitute for cash (Bates et al. 2009). Mostly this coefficient is negative as it is net of cash holdings giving us an expectation negative impact on the model (Opler et al. 1999; Bates et al. 2009).

Research and development expenses (R&D): is measured by expenses in R&D divided by net assets. Missing values in our sample is set to zero, unless we would of only treated firms having R&D expense. Opler et al. (1999) finds that R&D expenses a proxy for cash holding firms. This since R&D is costly to finance with external capital, and thus the firm requires cash reserves to finance costs and also against the macroeconomic downturns to still finance their investments (Bates et al. 2009). This coefficient is negative, and we expect the variable to yield this on our sample too.

² Data available at: <http://bls.gov>

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Leverage: is measured by long term debt plus short-term debt divided by net assets. Are leverage significant firms are more likely to use cash holdings to pay down debt; this yields a negative relationship between cash holdings and leverage (Bates et al. 2009). Leverage is important since it relates to the precautionary motives of cash holdings. Firms having higher cash reserves will use them to pay down debt to increase solvency of the firm (Bates et al. 2009). This results in a negative relationship between cash holdings and leverage, though Acharya et al. (2007) find explanation for a positive relationship between cash holdings and leverage.

Capital expenditures (Capex): is measured by capital expenditures divided by net asset. Firms with higher capital expenditures are understood as firms having less liquid assets to convert into cash, this is therefore an important component of cash holdings (Opler et al. 2009). This coefficient is negative, and therefore we expect our outcome to be the same.

Dividends: is a dummy variable taking on value one if the firm has paid dividends. Missing values is set to zero assuming firms have not paid dividends, unless we would only treat firms paying dividends to shareholders. Bates et al. (2009) suggests that firms paying dividends is more solvent and have greater access to capital markets. Both Bates et al. (2009) and Brown and Kapadia (2007) finds that firms paying less dividends has higher cash holdings, this results in a negative relationship between cash and dividends, thus we expect this variable to yield negative coefficient for predicted cash levels.

Indsigma: is measured as the volatility in the industry, to measure this we use data available at Kenneth French homepage. Hence, in order to use this we need to reclassify all firms into French 30 industry classification system using 2-digit sic codes. We choose the 30-industry classification because in other methods available, industries like health are not separated from the industry others in more simplified classifications. The volatility has a substantial impact on cash flow, a positive relationship that increases the level of cash when risk increases (Bates et al. 2009). We expect this value to yield a positive coefficient as in previous studies.

The model is structured as below and using panel data set to explain the variation in cash holdings variation for firms each year:

$$\ln\text{Cash} = \alpha + \beta_1\text{MB} + \beta_2\text{Size} + \beta_3\text{CF} + \beta_4\text{WC} + \beta_5\text{R\&D} + \beta_6\text{Leverage} + \beta_7\text{Capex} + \beta_8\text{Dividends} + \beta_9\text{Indsigma} \quad (1)$$

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The opening balance of each year is calculated as the closing balance of the previous for each firm. Furthermore, we measured the M&A activity in any given year by the excess cash balance in the previous year as we felt this approach gives us the opportunity to investigate if determined excess cash holdings yielded by previous cash flows have an impact on premiums paid for M&A's in following years.

3.5.2 Bid Premia model

In our tests we will study M&A's made in both the public and private deal arena. The public deals will be tested using both regression analyses. The private deals will be tested using a simplified regression model. Upon calculation of excess cash, this variable will become our main explanatory variable in our bid premia and spending hypothesis. For bid premia equation we use the approach from Alexandridis et al. (2013) to explain premium as a function of excess cash, that contains a "private" variable which measures private acquirers in contrast to public acquirers, our model will not contain this variable as we will only measure publicly traded acquirers. Interestingly, Barger et al. (2008) show that private acquirers are more likely to pay higher premia than their public counterparts. We also exclude the variable "competition" as we could not obtain relevant information in relation to this from our database collection. A "high valuation" dummy variable replaces the activity variable as we are interested in the relationship between high valuation periods that display high activity and bid premia as explained in our literature section. Below we explain our variables:

3.5.2.1 Dependent variable

Bid premia one month before announcement: is the bid stock price one month before the acquisition announcement. It is measured as the size of the bid divided by the stock price at the announcement date minus one. This variable is our main dependable variable and this measure is robust to other measures used in Alexandridis et al. (2013). The dependent variable of our model is bid premium price 30 days before the announcement date. This is a commonly used measure by previous studies and shows robustness against other measurements of premium prices (Alexandridis et al. 2013). This measure will be investigated by cross sectional data trying to give further explanation to previous findings in this field of study. This measure is conclusive since it measures before the market reaction of the deal. Other measures available take into account the reactions after the deal has been set; this is not beneficial since it would not reflect the true premium value of the deal since it would be adjusted for after deal stock prices.

Bid premia one day before announcement: is the bid stock price one day before the acquisition announcement. It is measured as the size of the bid divided by the stock price at the announcement date minus one. This variable we choose because it was available in our database. Both measures are the actual premium paid for an acquisition by the acquirer.

3.5.2.2 Independent variables

Excess cash: is the main explanatory variable that is investigated to explain premium prices for acquisitions. It is measured as above using the Opler et al. (1999) approach. The main explanatory variable in this model is the excess cash variable, which has been calculated using the Opler et al. (1999). Our intention is to investigate if this variable explains the premium paid for M&A's. The expectations are that the coefficient should be positive, saying that more excess cash affects premium prices. Furthermore we will perform interactions to analyze if there is a specific time period explaining the relationship between excess cash and bid premium. The interaction method is essential since it has previously been shown by that M&A and premium bids are reflected by the market condition i.e. when market is overvalued, premiums tend to be lower vice versa. Furthermore there are previous findings of industry specific waves by Mitchell and Mulherin (1996), which explains the interactions between industries. Testing this variable we include control variables, which will be presented below.

Market relative acquirers size (lnMRAS): is the natural logarithm of the acquirer relative the median market valuation of all US firms at time t. This measure is significant for Alexandridis et al. (2013) showing that the larger the acquirer the higher the bid premia. Market relative target size is a recent finding by Alexandridis et al. (2013) explaining that the higher the target size, the less premium paid for an M&A, thus the overpayment potential is less for larger targets. This measure is highly significant in Alexandridis et al. (2013) study, and our expectations are that this should yield a negative coefficient in the regression model.

Market relative target size (lnMRTS): is the market valuation of the target at the announcement date. It is measured as the natural logarithm of the market value relative the median market valuation of all US firms at time t. This variable is Alexandridis et al. (2013) main independent variable trying to explain premium prices, it is significant and the interpretation is that the less the size of the target the higher the bid premia. Market relative acquirers size is according to Moeller et al. (2004) a measure of the size of the bidder relative the overpayment risk. The results have been various across studies, Asquith et al. (1983) and Alexandridis et al. (2013) find a positive relationship interpreting that larger firm is more

likely to overpay on acquisitions. Travlos (1987) on the other hand finds a negative relationship; an explanation to this could be that the M&A market changed and more recently firms seek more growth opportunities and strategic investments. We expect this coefficient to yield a positive relationship on bid premia and the size of the acquiring firm.

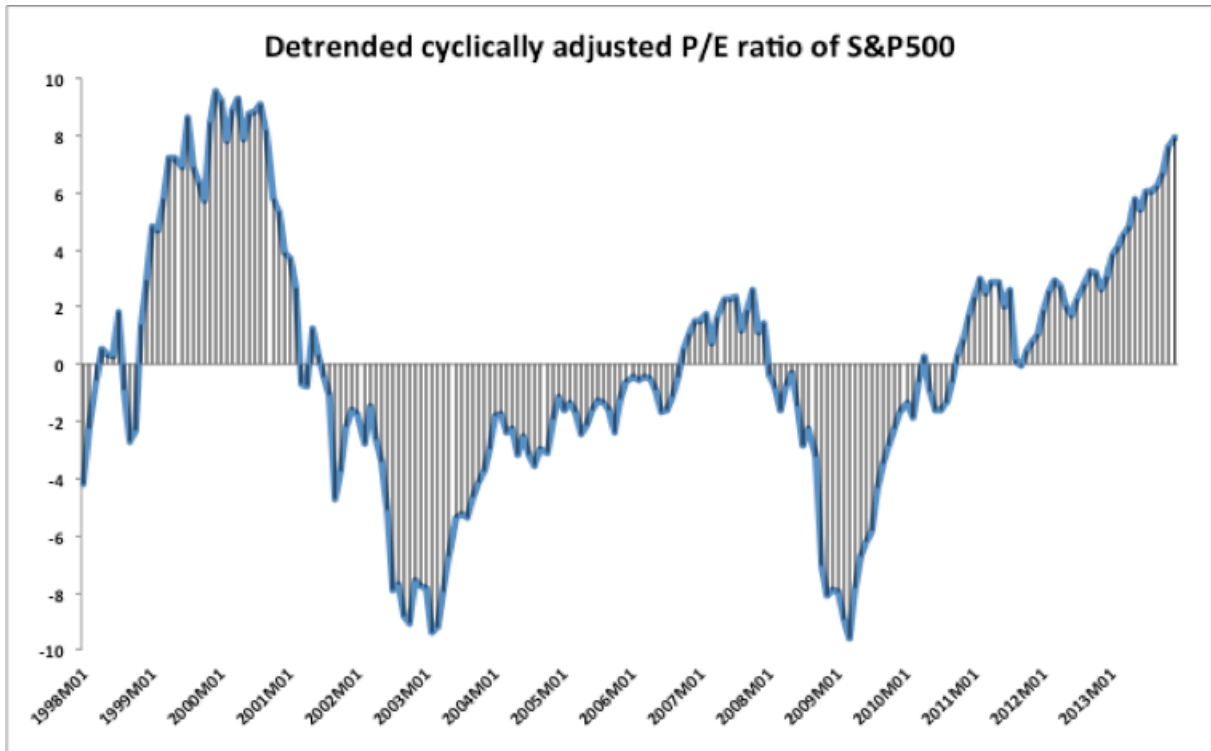
Diversified acquisition (Divers): is a dummy variable set to one if the acquisition is classified as a diversifying acquisition. We achieve this by comparing the acquirers industry to the targets industry using 3-digit sic codes. This is used because premiums are usually higher when the acquisition is strategic i.e. the acquirer and target is located in the same industry (Officer, 2003; Alexandridis et al. 2013).

High valuation (Highval): Is a dummy variable set to one if the acquisition is announced in a high valuation market; this measure is a control variable and substitute for the activity measure. It is measured using monthly-detrended cyclically adjusted P/E-ratio of the S&P 500³ (Bouwman et al. 2009; Alexandridis et al. 2013). The premiums in high valuation markets are lower than elsewhere. The diagram below suggests that high valuation periods occur in year 2007, 2011, 2012 and 2013 and will have a dummy variable set to one.

Altman Z score (lnAltman): It is a measure that investigates the performance of a corporation, and is thus favorable to use as a control variable since it captures the condition and works like a credit evaluation tool capturing adverse credit risk (Altman, 1968). Bhagat (2005) show that firms that are more distressed tend to increase investment after periods of negative cash flow explained by revival. This behavior can be explained using Altman Z since it is used for investment guidelines and detecting insolvency. Furthermore it is previously shown that firms more exposed to volatility hoard more cash as a precautionary motive, than firm having greater access to capital markets, thus assessing the present condition of the acquiring firm (Denis and Sibilkov, 2009). Altman Z gives an indication of competing usage of cash e.g. firms that are more distress needs to hold more cash in order to prevent insolvency when volatility is high. Furthermore firms could use cash to pay out dividends, pay down debt or distribute it. If a firm has more to do than targeting potential acquisitions then they are probably not as eager to overbid. Therefore we use Altman Z as a control variable in our premia model.

³ Data available at Schiller's homepage: <http://irrationalexuberance.com>

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The model defined below will be our main one and will be applied to a structured using cross sectional data set, letting variables vary over cross sectional units:

$$\text{Bidpremia} = \alpha + \beta_1 \text{Excess cash} + \beta_2 \ln \text{MRAS} + \beta_3 \ln \text{MRTS} + \beta_4 \text{Divers} + \beta_5 \text{Highval} + \beta_6 \ln \text{Altman} \quad (2)$$

3.5.3 Private deal model

The private deals we will study by summing up the total amount spent on private acquisitions for each company each year, we will then use a regression model to try to explain our second hypothesis by investigating if firms with excess cash spend more on private acquisitions. For private acquisitions there are no premium prices available since there is no stock price to measure from, and there exists a misvaluation problem as explained by Rhodes-Kropf and Viswanathan (2004). There exists a misvaluation problem in the synergies estimated for an acquisition, especially when the transaction is related with stock bids. There is no stock price to rely on for private targets and therefore if we would try to evaluate what the premia corresponds to, we could have a bias. Therefore we only estimate spending instead of premium prices for private targets. Control variables used in previous describe models will be included in this method too, and they are described above.

3.6 Reliability and validity

3.6.1 Reliability

Reliability and validity ensures that the method used and results are applicable to the research (Bryman and Bell, 2011). Reliability main task is to guarantee that the results found are repeatable in forthcoming studies. To ensure this, the measures have to be stable over time, internally reliable and be inter-observer consistent i.e. that variables should measure the same concept overtime; they are coherent capturing the same concept and be consistent in subjective parts and selections (Bryman and Bell, 2011). In our investigation we have been thorough in our measuring of secondary data gathered and in these cases we needed to make selections undertaken in previous studies methods e.g. when measuring the high valuation market variable we used the same data as in Bouwman et al. (2009), instead of creating our own adjusted price to earnings ratio.

3.6.2 Validity

Validity on the other hand is concerned that the model used and research design is conclusive to capture the explanation in what is being studied (Bryman and Bell, 2011). In this study we use appropriate models to find explanation for our hypotheses. Opler et al. (1999) model is utilized to measure cash rich firm by accounting for operating cash holdings for firms, this method was selected since we could measure it fairly with data gathered from Factset[©] and French homepage. Regarding the Pinkowitz et al. (2013) model that we used to investigate excess cash and its affect on bid premia, we included as many control variables as available to us to be consistent with the measuring methodology. The internal validity is not important since we include independent explanatory variables that have been utilized in previous research papers, thus fulfilling requirements of face validity (Bryman and Bell, 2011). Since we are not investigating any relationships to do with private acquiring firms or competition, we have dropped the variables associated with these from the original model.

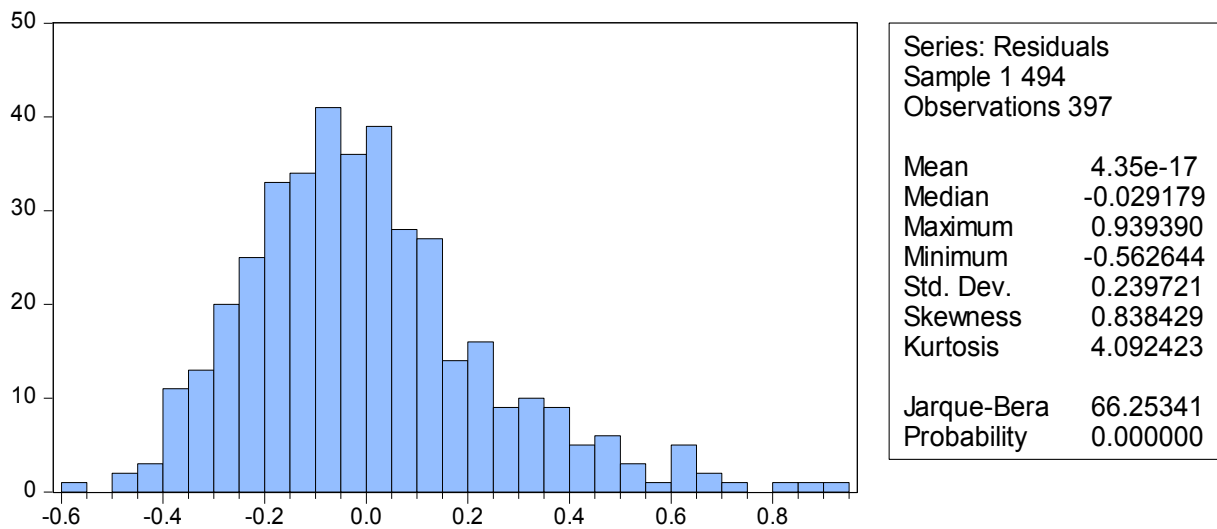
4. Empirical Findings

This section will present our empirical findings of our study into the relationship between excess cash and bid premia by comparing and contrasting the different outcomes for current and dropped firms sample. The statistical results are also illustrated

4.1 Descriptive statistics

4.1.2 Current sample

Table 4.1 Jarque-Bera test of current sample



From The Jarque-Bera test above we can see that the sample does not display normal distribution but rather excess kurtosis and right skewness. The histogram shows a probability density function for a fat-tailed distribution i.e. displaying leptokurtosis. The kurtosis is affected by the fact that we have a considerable amount of firms holding excess cash.

This non-normality is caused by a few extreme positive premia values and by the fact that we have a considerable amount of firms holding excess cash. As our sample size contains all the relevant data we require, it is not possible to increase our sample size in order to gain normal distribution as stated by central limit theorem (Rosenblatt, 1956). Furthermore, as our sample contains a lot of negative values, it is not able to log our values in order to observe normal distribution. The skewness is mostly due to a large variation in cash holdings. The excess cash is the actual cash holdings minus predicted cash holdings, and this can yield negative values, since predicted cash holdings can be larger than the actual cash holdings of the firm. In the sample there are a few observation having very negative excess cash and this

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is the reason for negative skewness. This could be solved using natural logarithm to compress the sample, though this would remove a considerable amount of values and bias our data sample. The kurtosis is affected by the fact that we have a considerable amount of firms holding excess cash.

Table 4.2 Descriptive statistics of current sample

Variable	Descriptive statistics of current sample (premia model)						
	lnMRTS	lnMRAS	lnMB	lnAltman	Highvalue	Excess cash	Divers
Mean	0.8802	4.1377	0.9412	2.1312	0.4106	0.0075	0.1511
Median	0.8127	4.1001	0.8741	1.8842	0.0000	0.0210	0.0000
Max	5.2141	7.0015	3.3824	9.0633	1.0000	1.0694	1.0000
Min	-3.2314	0.7966	-0.1188	-4.7464	0.0000	-9.6346	0.0000
Std. Dev.	1.4472	1.2687	0.5700	1.2775	0.4926	0.7387	0.3586
Skewness	0.2633	-0.0070	1.0770	0.9577	0.3635	-10.7171	1.9480
Kurtosis	2.8204	2.2833	5.0233	7.9039	1.1322	132.0975	4.7947

Analyzing the descriptive statistics of our independent variables in the table above we see from the kurtosis and skewness that the overall fit is consistent, except the excess cash variable, which represents the values from the Opler et al. (1999) model. *An lnMRTS figure is given in a ratio and average 0.88 and exhibits a median of 0.81 implying evenly and closely distributed data points. lnMRAS, also given as a ratio, is more closely distributed with fewer outliers data points mean value of 4.13 and median value of 4.10. lnMB also displays similar characteristics as lnMRAS, with its mean, 0.94, and median, 0.87. We observe that the mean and median values, 2.13 and 1.88 respectively, for lnAltman are above the critical value of 1.8. Anything below this critical value tells us a firm is in financial distress (Altman, 1968). Excess cash appears to be well distributed with respective mean-median ratios of 0.049 - 0.0207. Outliers in the sample will influence this result. Both the highvalue and diversifying variables are dummy variables in our regression but still supply us with useful information. Observing the high value variable we can see that in our sample 41% of acquisitions are undertaken in high valued markets and 15.1% of acquisitions of a diversifying nature.*

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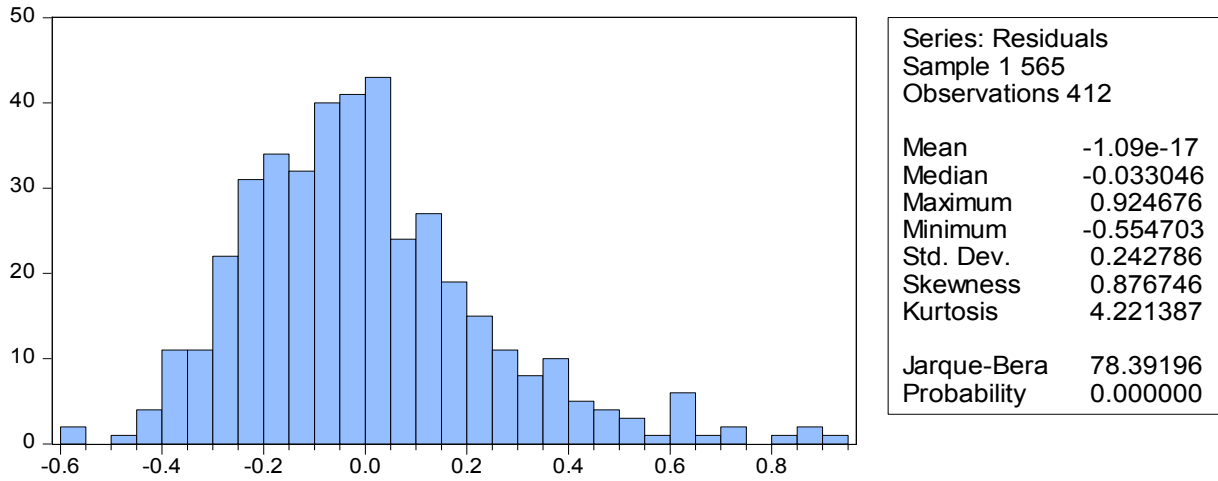
Table 4.3 Correlation matrix of current sample

Correlation matrix for premia model of current sample							
Variable	lnMRTS	lnMRAS	lnMB	lnAltman	Highvalue	Excess cash	Divers
lnMRTS	1						
lnMRAS	0,1889	1					
lnMB	-0,0200	0,1437	1				
lnAltman	-0,0419	-0,0155	0,4494	1			
Highvalue	0,0008	-0,0528	0,0818	-0,1251	1		
Excess cash	-0,0378	0,0162	-0,2609	-0,0394	-0,0017	1	
Divers	-0,1141	0,0364	-0,0736	-0,0317	0,0338	0,0330	1

By setting up a covariance matrix of the independent variables, we can see that the highest correlation is between lnAltman and lnMB. However as the correlation is below 0.8, we can state that there is no multicollinearity present between them or in this sample. Therefore there are no severe disturbances by running the regression if we include both variables (Brooks, 2008).

4.1.2 Dropped sample

Table 4.4 Jarque-Bera test of dropped sample



When run the Jarque-Bera test above we expect that much of the observations and explanations for the current sample will apply here. The sample does not display normal distribution but rather excess kurtosis and right skewness. The histogram shows a probability density function for a fat-tailed distribution i.e. displaying leptokurtosis. This non-normality is again caused by a few extreme positive premia values and as our sample size contains all the relevant data we require, it is not possible to increase our sample size in order to gain normal distribution as stated by central limit theorem (Rosenblatt, 1956). Furthermore, as our sample contains a lot of negative values, it is not able to log our values in order to observe normal distribution.

Table 4.5 Descriptive statistics of dropped sample

Descriptive statistics of dropped sample (premia model)							
Variable	lnMRTS	lnMRAS	lnMB	lnAltman	Highvalue	Excess cash	Divers
Mean	0,8723	4,0929	0,8958	2,1448	0,4005	0,0494	0,1529
Median	0,7837	4,0512	0,8663	1,8920	0,0000	0,0207	0,0000
Max	5,2141	7,0015	3,3824	9,0633	1,0000	1,2032	1,0000
Min	-3,2314	0,7966	-1,4818	-4,7464	0,0000	-4,6689	0,0000
Std. Dev.	1,4477	1,2722	0,6263	1,2682	0,4906	0,3505	0,3603
Skewness	0,2527	0,0381	0,4238	0,9582	0,4062	-8,0558	1,9288
Kurtosis	2,8078	2,2688	5,1986	7,8995	1,1650	106,6836	4,7202

lnMRTS averages 0.87 and exhibits a median of 0.78 implying evenly and closely distributed data points. lnMRAS is more closely distributed with fewer outliers data points mean value of 4.09 and median value of 4.05. lnMB also display similar characteristics as lnMRAS, with its mean, 0.89, and median, 0.86. We observe that the mean and median values, 2.14 and 1.89 respectively, for lnAltman are above the critical value of 1.8. Excess cash

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appears to be well distributed with respective mean-median ratios of 0.049 – 0.0207. Outliers in the sample will influence this result. Observing the high value variable we can see that in our sample 49% of acquisitions are undertaken in high valued markets and 15.3% of acquisitions of a diversifying nature.

Table 4.6 Correlation matrix of dropped sample

Correlation matrix for premia model of dropped sample							
Variable	lnMRTS	lnMRAS	lnMB	lnAltman	Highvalue	Excess cash	Divers
lnMRTS	1						
lnMRAS	0,1878	1					
lnMB	-0,0052	0,1948	1				
lnAltman	-0,0419	-0,0459	0,4226	1			
Highvalue	-0,0015	-0,0297	0,1095	-0,1178	1		
Excess cash	-0,0001	0,0456	-0,0265	0,0657	0,0129	1	
Divers	-0,1035	-0,0241	-0,0706	-0,0775	-0,0169	0,0016	1

We can see that the highest correlation is between *lnAltman* and *lnMB*. However as the correlation is below 0.8, we can state that there is no multicollinearity present between them or in this sample.

4.1.3 Comparison of models

When we compare our two samples, our current sample has higher mean values across the board except for the variables *lnAltman*, excess cash and diversified.

On average, firms in our dropped sample hold much higher levels of *excess cash*. *This is a function of us accounting for survivorship bias. The normal cash holdings in the current sample are high due to large cash holdings being very common in largest US corporations which S&P 500 displays (Federal Reserve, St. Louis, 2007).* This then distorts our predicted cash holdings data we the model yields higher predicted values. In the dropped samples we adjust for survivorship bias and so we obtain lower predicted cash holdings due to the fact that these dropped firms have less cash holdings giving us unbiased objective picture of the S&P 500 in our analyzed time period. Consequently the sample has less outlier, observed in our max and min values, which is positive, as we do not want large variations in our sample.

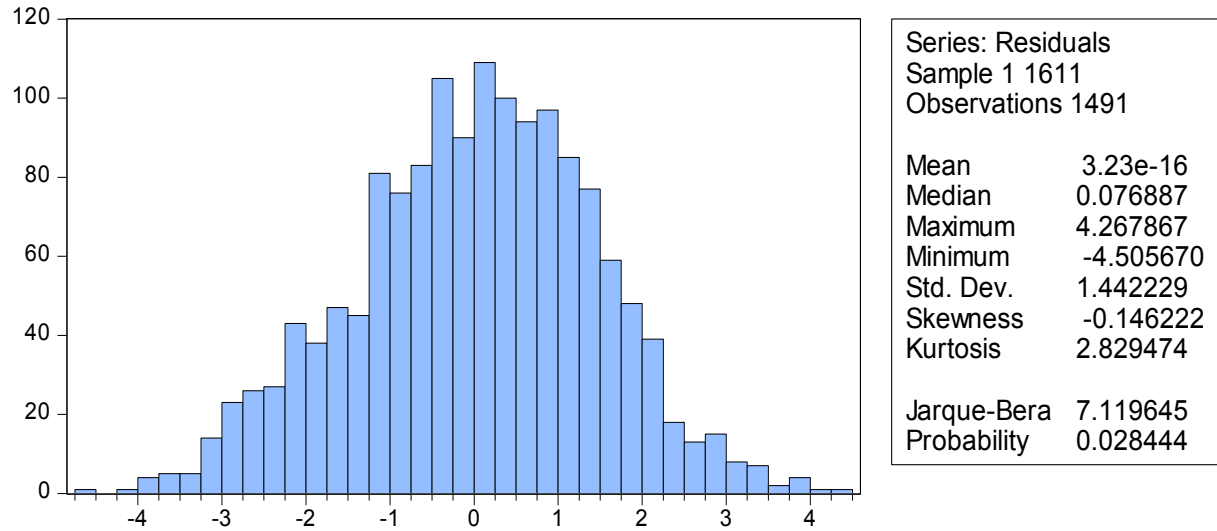
We also observe that in our dropped sample that the acquisitions are slightly more diversified and to be in better financial health i.e. slightly higher *lnAltman*. This will be a function of including more deals due to an increase in number of firms in dropped sample.

When we compare both correlation matrixes although most of the values change between the two samples, the differences are not substantial. However what is of interest is that in

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some relationships there is a change in signs, showing that the variables have shifted from a positive correlation to negative correlation: high value's correlation to excess cash and diversifying; excess cash relationship to *lnAltman*. But in both matrixes there is no multicollinearity.

4.1.4 Private acquisition model



From the Jarque-Bera test above we see a fairly normal distributed sample of the private spend model. However, there is excess skewness in the sample, also the histogram shows somewhat leptokurtic outcomes.

4.2 Regression Results

4.2.1 Current sample regression analysis

Table 4.7 Current sample regression analysis of public M&A

Current sample regression analysis of public M&A		
Variables	Bidpremia30	Bidpremia30 ⁴
Constant	0,4148	0,3193
Excess cash	0,0223 0,3648	0,0335 0,0518^d
lnMRTS		-0,0357 0,0000^a
lnMRAS		0,0235 0,0190^c
lnMB		0,0709 0,0061^a
Divers		-0,0637 0,0643^d
Highvalue		-0,0415 0,1024
lnAltman		-0,0162 0,1403
<i>N</i>	453	397
<i>R</i> ² <i>adj</i>	-0,0004	0,0702

$$\text{Bidpremia30} = 0,3193 + 0,0335\text{Excess cash} + -0,0357\text{lnMRTS} + 0,0235\text{lnMRAS} + 0,0709\text{lnMB} + -0,0637\text{Divers} + -0,0415\text{Highvalue} + -0,0162\text{lnAltman}$$

The regression for the current sample above shows the confirmation of Alexandridis et al. (2013) and Moeller et al. (2004) findings that the less the targets size the higher the bid premia. Furthermore the lnMRAS is a significant explanation in the bid premium for firms in acquisition, the interpretations is that the larger the firm relative the median market valuation the higher the premium price on a target, which is in line with Alexandridis et al. (2013) findings. The market to book control variables also confirm the findings of Alexandridis et al. (2013) study.

Regarding our main variable excess cash, we can see an economical impact on bid premia in this regression model suggesting that there exists an explanation of our hypothesis in the bid premium for target acquisitions. Interpretation is that the more excess cash firms hold the more likely they are in overbidding. Furthermore we find an economical explanation for if the

⁴ P-values are bold italics reported in bracket: a, b, c and d, which represented 0,1 %, 1 %, 5 % and 10 % significance level.

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acquisition is of diversifying character or not, interpretation is that if the acquisition is diversifying then the acquiring firm is less likely overbidding.

4.2.2 Dropped sample regression analysis

Table 4.8 Dropped sample regression analysis of public M&A

Dropped sample regression analysis of public M&A		
Variables	Bidpremia30	Bidpremia30 ⁵
Constant	0,4068	0,3671
Excess cash	0,0410 0,3894	0,0750 0,0313^c
lnMRTS		-0,0355 0,0000^d
lnMRAS		0,0206 0,0407^c
lnMB		0,0418 0,0629^d
Divers		-0,0790 0,0201^c
Highvalue		-0,0461 0,0689^d
lnAltman		-0,0177 0,1054
<i>N</i>	511	412
<i>R</i> ² <i>adj</i>	-0,0004	0,0702

$$\text{Bidpremia30} = 0,3671 + 0,0750\text{Excess cash} + -0,0355\text{lnMRTS} + 0,0206\text{lnMRAS} + 0,0418\text{lnMB} + -0,0790\text{Divers} + -0,0461\text{Highvalue} + -0,0177\text{lnAltman}$$

The regression of the dropped sample above shows different outcomes for the variables. The model still confirms the findings of Alexandridis et al. (2013) and Moeller et al. (2004) regarding the market relative target value. Furthermore the model still confirms the findings in Alexandridis et al. (2013) regarding the lnMB and lnMRAS variable.

The dropped sample regression shows statistical significance for diversified acquisitions, which suggest that firms targeting diversifying acquisitions pay lower premia for such targets. Furthermore, the model gives an economical explanation to high valuation market. The finding is in line with Alexandridis et al. (2013) that acquisitions in high valuation market tend to pay less premium prices. The explanation to this is that the target firm is already overvalued due to a bullish market sentiment, which makes the acquiring firm adopt a conservative approach towards the target. This is due to their reluctance to pay an additional

⁵ P-values are bold italics reported in bracket: a, b, c and d, which represented 0,1 %, 1 %, 5 % and 10 % significance level.

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premia on top of the over valuation. Finally, we see that our main hypothesis is confirmed when we account for dropped firms and bypass survivorship bias. The excess cash variable is statistically significant and suggests that firms holding more excess cash are likely to be overbidding for target acquisitions.

4.2.3 Dropped sample interaction regression analysis

Table 4.9 Dropped sample interaction analysis of M&A

Interaction analysis of year on dropped sample M&A		
Variable	Bidpremia30	P-value⁶
Constant	0,3828	0,0000
Excess cash	0,3943	0,0262^c
lnMRTS	-0,0385	0,0000^a
lnMRAS	0,0188	0,0672^d
Divers	-0,0825	0,0167^c
Highvalue	-0,0503	0,0617^d
lnMB	0,0386	0,1053
lnAltman	-0,0188	0,0912^d
Excess cash × 2003	-0,4156	0,1528
Excess cash × 2004	-0,1379	0,6559
Excess cash × 2005	-0,3255	0,0904^d
Excess cash × 2006	-0,4688	0,0446^c
Excess cash × 2007	-0,3155	0,2489
Excess cash × 2008	-0,3279	0,4654
Excess cash × 2009	-0,2289	0,5384
Excess cash × 2010	-	-
Excess cash × 2011	-0,1571	0,5351
Excess cash × 2012	-0,3289	0,0744^d
Excess cash × 2013	-0,4655	0,0531^d
<i>N</i>		412
<i>R² adj</i>		0,0574

Interaction analysis gives us the possibility to analyze if one explanatory variable influences the effect of another explanatory variable on the dependent variables. In order to gauge whether excess cash was a critical explanatory variable influencing acquisition premia in certain years, we took our main dropped sample regression and included interaction terms between excess cash and bid premia. The information provided would be helpful, as we would expect excess cash to play a smaller role in global financial crisis years (2008-2010) and 6th M&A wave year (2003-2007). This is because during the 6th wave years, the market was relatively high valued; hence the bid premia paid would have been relatively low. As for the GFC years, we would expect the premia to be quite low due to fire sales by firms and also the lack of targets leading to low M&A activities.

⁶ P-values are bold italics reported in bracket: a, b, c and d, which represented 0,1 %, 1 %, 5 % and 10 % significance level.

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The table above shows the interaction of excess cash and the year analyzed in our study. As we can see there are four periods in the interaction analysis showing excess cash influencing the effect of the period on the bid premium in that year. The period 2005, 2012 and 2013 is economically significant, and 2006 is statistically significant. The interpretation of the coefficients is that excess cash had substantial impact on the considered time period in relation to bid premiums. All coefficients are negative, suggesting that there is a negative relationship between bid premiums in those periods and excess cash. These years fall within the sixth merger wave, where acquirers paid lower premium. Boston Consulting Groups report “*Riding the next wave in M&A*” from 2011 on pp. 10 offers some explanation for this relationship. It states based on its research that premiums in 2005 and 2006 were substantially less than the average long-term premiums at 36%. Furthermore, Alexandridis et al. (2012) shows that in this time period acquirers were less over-optimistic and offered significantly lower premiums that can explain the negative impact on premiums. As we stated in the introduction section, cash holdings were at an all time high in 2013, yet bid premia was at an 18 year low. This could offer an explanation for the significant results in 2013.

4.2.4 Dropped sample private acquisitions

Table 4.10 Dropped sample private acquisitions

Spend private model of dropped sample		
Variable	Coefficient	P-value ⁷
C	1,8535	
Excess cash	-0,0200	<i>0,0435^c</i>
Size	0,8442	<i>0,0000^a</i>
Cash flow	0,2460	<i>0,4236</i>
Leverage	-0,0797	<i>0,5235</i>
Dividends	0,0388	<i>0,6268</i>
<i>N</i>	1491	
<i>R² adj</i>	0,1026	

This model is a sub test to our main hypothesis. This is conducted in order to give further explanation to the outcomes, which has been presented previously. From the model we can conclude that size is of significant matter and the interpretation is that the larger the firm, the more it will spend on private acquisitions. Furthermore, the model shows confirmation on our

⁷ P-values are bold italics reported in bracket: a, b, c and d, which represented 0,1 %, 1 %, 5 % and 10 % significance level.

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main hypothesis, though the coefficient in the model is negative suggesting that the less excess cash a firm has the more it will spend on acquiring private targets. The negative coefficient can be explained by the fact that firms that hold less excess cash are more likely to spend on private strategic targets, since due to less cash holdings they do not have the funds to acquire larger public targets.

5. Data Interpretation and Discussion

This section will discuss our empirical findings on our main dataset by mainly focusing on the impact of excess cash on bid premia in our model. We will also discuss what this mean, how the results are valuable and why.

The present study was designed to evaluate the effects of excess cash holding on bid premia. The results showed that when adjusting for survivorship bias in our sample, bid premia increases as excess cash increases. In our sub-study of spending in the private space, our results painted a different picture. As excess cash increases, the amount spent on acquiring private targets decreases.

5.1 Dropped sample model - interpretation

Model 1 in table 4.8 displays the results when we regress our variable of interest, excess cash, on the bid premia 30-days before the announcement. Excess cash has a coefficient of 0.0410 and it is insignificant at 0.05 percent. In Model 2, we add in other control variables alongside our variable of interest. We can see that despite controlling for other variables, excess cash is statistically significant at 0.05 level, with a lower p-value of 0.0313. For every unit increase in excess cash we see a 0.0750 percent increase in bid premia. In this regression, this is the second largest coefficient.

Interestingly when we observe $\ln\text{MRTS}$, the natural logarithm of market relative target size that measures the size of the target, we see that it is significant at 0.00 percent level. Its relationship to bid premia though is negative as we observe a negative coefficient of -0.0355. Therefore, every unit increase in the size of the target leads to reduction in the bid premia by 0.0355 percent.

On the other hand when we observe $\ln\text{MRAS}$, the natural logarithm of market relative acquirer size that measures the size of the acquirer, we can see that it is statistically significant at 0.05 percent level. Similar to excess cash, the size of the acquirer has a positive relationship with the bid premia, in that for every unit increase in the acquirer's size there is a 0.0206 percent increase in the bid premia.

The diversifying variable is a dummy variable measuring if an acquisition is a diversifying in nature. We can observe from the results that diversifying acquisitions have a negative effect on bid premia, in that when a deal is of this nature, bid premia decreases by 0.0790. The

variable is statistically significant at 0.05 level. Moreover, it obtained the largest coefficient in our model.

lnMB, the natural logarithm of market to book that measures the financial valuation and also the potential investment opportunities of a firm, is economically significant on 0.1 percent level. It obtained a coefficient of 0.0418, meaning that it has a positive relationship with bid premia, our dependent variable. For every unit increase in lnMB, there will be a 0.0407 percent increase in our dependent variable, bid premia.

Highvalue is our second dummy variable in this model and it measures whether or not the acquisition occurred in a high valued market i.e. overvalued market. This variable has a negative relationship with bid premia, in that if an acquisition takes place in a high valued market its bid premia will decrease by -0.0461 percent. This variable is economically significant at a 0.1 level, with a p-value of 0.0689.

5.2 Dropped sample interaction model - Interpretation

Table 4.9 displays our independent variables alongside our interaction terms between excess cash and each year in our observed time period. We do this to investigate the effect that excess cash has on bid premia in each year. In this model all our independent variables from the model above maintain their negative or positive relationship with bid premia. Observing the model we can see that the interaction between excess cash and 2010 is missing, this is due to an E-views error.

Looking at the interactions we see that in years 2005, 2006, 2012, 2013, excess cash has a negative influence in relation to bid premia in these years. In 2005, for every unit change in excess cash we see a -0.3255 percent decrease in bid premia in that year. The variable is economically significant at 0.1 percent level. In 2006, for every unit change in excess cash we see a -0.4468 percent decrease in bid premia in that year. In 2012, for every unit change in excess cash we observe a -0.3289 decrease in bid premium in that year. This variable is economically significant at 0.1 percent level. Finally, in 2013, for every unit change in excess cash we observe a -0.4655 decrease in bid premium in that year. This variable is economically significant at 0.1 percent level. ‘

5.3 Dropped sample spend model – Interpretation

In table 4.10 we observe the results for our secondary hypothesis, with the amount of money spent on private acquisitions by dropped firms as our dependent variable.

In this Model, we add in other control variables alongside our variable of interest. We can see that despite controlling for other variables, excess cash is still statistically significant at 0.05 level, with a lower coefficient of 0.0435. For every unit increase in excess cash we see a 0.0200 percent decrease in the amount spent on private deals.

Interestingly Size, a measurement of the size of the acquiring firm similar to lnMRAS, is the only significant independent variable. It is significant on a 0.00 basis. Size has a positive relationship with the amount of money spent on private acquisitions, in that with every unit increase of size there is a 0.8442 percent rise in the amount of money spent on private acquisitions

5.4 Robustness of the regression

As in line with most empirical studies, a “robustness check” is needed in order to examine how our core regression coefficient estimates behave when we make modifications to our model. As we focused on our dropped sample, we used our current sample and the results obtained from the regression as a robustness test. The results for this can be seen in table 4.7. From this we can observe that the signs and magnitudes in this regression are similar to that of our dropped sample. This is evidence that the estimated regression coefficients in our dropped sample can be reliably interpreted as the true causal effects of the associated variable and our model is both plausible and robust.

5.5 Discussion

5.5.1 Dropped sample

The main regression presented in table 4.8 gives explanation to the main hypothesis of this study formulate in the literature section: *The larger a firms excess cash holdings the higher the premia it will pay over and above the average for a target.* The result suggests that the more excess cash a firm holds, the more it is that they overpay for the target firm. This is in line with Malmendier and Tate (2005) statement that CEO’s having access to more internal funds overinvests. We can conclude that in our dataset, US companies in the S&P 500 excess cash holdings have a positive influence on the bid premia they pay to acquire a target. The

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reason for this we resolved is down to behavioral factors centered on an overconfidence bias. When faced with an investment opportunity, CEO's buoyant on the power they wield at the top of corporate pyramid, and riding on the wave of overconfidence in their "above-average" abilities, see this as a way to flex their financial muscle. The larger the muscle behind the CEO, the more they are willing and expected to spend the excess cash available in order to acquire the right target. This raise a problem from a shareholders point of view since CEO main objectives is to maximize the value of the firm.

Hayward and Hambrick (1997) explains four different CEO indicators for overbidding; the recent performance of the firm, which comes back to the free cash flow theory, if fixed claims is limited on cash flows this, can yield a hubris effect, which explains the potential overpayment. Another important factor is the medias coverage of CEO; they are often related to heroics and an important factor in the social context explained as "*larger then life*". This relationship with media gives extraction to CEO's self importance and increases the likelihood of hubris and contests for M&A's

Roll (1986) backs up Hayward and Hambrick (1997) statement saying that bidding firms infected by hubris simply pay too much for their targets, and cannot extract synergy values matching payments. The pride in the CEO's status is an important factor considering potential overbidding, especially if boards are more passive and consists of many inside directors.

Our study similarly found that even though excess cash was a significant variable influencing the bid premia, the size of the target company was in fact the most significant variable in the model (p-value of 0.000). This finding is in agreement with Alexandridis et al. (2013) results. Furthermore, results show a negative relationship between the target firms size and bid premia, which falls in line with the findings of Moeller et al. (2004), Dong et al. (2006), Alexandridis et al. (2013). As the target size increases, the bid premia paid to the acquired will decrease. This rational is plausible, as with a bigger target, the harder and longer it will take to extract potential synergies needed to make the takeover successful. Furthermore, the spotlight that CEO's will be under will be greater when involving larger targets and therefore force them to take actions which could further harm any possible synergy extractions.

The size of the acquiring firm has the opposite affect to the size of the target firm, in that as the acquiring firm size increases the bid premia increases also. When a firm is bigger, the target company will most likely try to extract as much of a premia as possible due to the fact

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that they know the firm can afford to pay up. On the other hand, a bigger firm wanting to complete a deal quickly, will come in with an initial bid that composes of a high bid premia in order to entice a quick settlement. This variable also yielded statistical significance.

Observing our results we can see that the diversifying dummy variable, that if a firm was to undertake a diversifying acquisition it would pay a lower bid premium. Again this is not surprising given that entering into a new industry or sector will mean it will be harder to extract potential synergies due to lack of expertise. Therefore the acquiring firm will offer lower premia, as the synergies are smaller. This variable was statistically significant.

On an economically significant level, our models show that if the acquisition took place in a high valuation market, it would yield a lower bid premium paid. This is in line with the findings of Bouwman et al. (2009); why would a company knowing the target is over-valued pay a high premium on top of this. Potential synergies if extracted might not still make up for the over paid premium if the deal was executed.

Market to book variable is a proxy for investment opportunities and valuation of a firm. It is shown in our model that this has a positive correlation with bid premia on an economically significant level. If an acquiring firm is deemed to have a high valuation, the market believes that it has bright future and as such this could lead to the firm believing in its own hype. In doing this they believe that they will be able to extract enough potential synergies from acquisitions to deem it successful. Therefore when bidding for attractive target companies, they will overbid in order to win, experiencing the winner's curse phenomenon.

5.5.2 Dropped sample interaction model

The dropped sample interaction model method is less about the excess cash and gives more explanation to the valuation cycle, which has been covered by many researchers in this field of study. The interaction outputs show that the years important are: 2005, 2006, 2012 and 2013. 2005 and 2006 is explained by the sixth merger wave covered in Alexandridis et al. (2012). They show that acquirers in this period paid less premium than the long term mean value. This is due to the fact that in high value periods, such as the sixth merger wave, firms pay lower premia (Alexandridis et al, 2013).

5.5.3 Dropped sample spend model

The results from this model were at first surprising, as they disproved our hypothesis that the more excess cash a firm holds the more it will spend on private acquisitions. The basis of

hypothesis was built upon the notion that a firm has more excess cash it would make more acquisitions irrespective of private or public arena. Therefore we shall discuss the meaning and explanation of these findings.

As a firm's excess cash increases they are more open to undertaking a larger deal, which could bring more synergies, increase product mix and help penetrate new markets (Hayward and Hambrick, 1997). As a result they reduce their spending in the private arena, in order to develop a big enough war chest to spend in acquiring a public target.

Looking at the model, excess cash is much less important than the size of the firm when it comes to how much is spent on private acquisitions. We knew that the size of the acquirer would be a big influence on our dependent variable but did not expect the coefficient to be so big and also at a significance level of 0.00. When you take into account how big our sample is, over 2000 deals, it is further surprising that we obtained such a result. Interpreting this we can say that the bigger the firm the more it spends on deals. The private arena is one where bigger firms can go to acquire strategic bolts on to fortify their business, where overconfident CEO's can go to grow their empire (Malmendier and Tate 2005 paper) and acquire firms who are creating disruptive technologies. Though they may pay higher bid premia than for public targets (Alexandridis et al, 2013), acquiring a smaller private firm is a cheaper alternative to acquiring a public target as well more likely to offer higher returns. This is due to the fact that it is easier to extract synergies from smaller targets than larger targets (Alexandridis et al, 2013).

6. Conclusion

This overall aim of this paper has been to investigate the relationship between excess cash holdings and bid premia. In particular, when trying to acquire a potential target, is there a positive relationship between the bid premia an acquiring firm pays and the acquiring firm's excess cash holdings. The study also sought to investigate the effect of excess cash holdings on spending on private acquisitions. Both bid premiums and excess cash holdings are important fields of study in finance with a plethora of empirical papers on the subjects but the general theoretical literature surrounding this particular topic is very minimal. As such we were motivated to undertake an empirical study in order to add to the narrow spectrum of existing studies and try to answer the question, if a firm has more excess cash on their balance sheet, will they pay a higher premia?

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A major inspiration behind this study was the below quote from Malmendier and Tate 2005 paper, “Who makes acquisitions? CEO overconfidence and the market’s reaction” had any substance behind it:

*“Overconfident managers overestimate the returns to their investment projects and view external funds as unduly costly. **Thus, they overinvest when they have abundant internal funds, but curtail investment when they require external financing**”.*

By undertaking this study we hoped to empirically prove or disapprove this statement. Therefore, *excess cash is a proxy for “abundant internal funds” and bid premia a proxy for “overinvestment”*.

As we aimed to be submit as objective a paper as possible, we utilized a dropped sample as our main dataset in order to bypass any survivorship bias associated with our sample set, S&P 500 in the period 2003-2013. Though this study is not an extension of their papers, we have utilized models outlined in Opler’s (1999) Alexandridis, et al. (2013) research papers. In their respective papers the authors outlined an excess cash model and bid premia model. In Opler’s excess cash model, the natural logarithm of cash holdings is the dependent variable and it was controlled by a number of independent variables. All independent variables were significant in our model bar our working capital variable. This is due to the small significance this variable has in real world situations in predicting future cash flows. The dependent variable in the aforementioned model then became an independent variable in our version of Alexandridis et al. (2013) bid premia model. In this model, the bid premia from our dropped firm dataset was the dependent variable and it was also controlled for by a number of independent variables. As stated this model was a slight variation of the original model, as we did not take into account market activity or competition variables.

Our results from the bid premia model indicated that there is a positive relationship between excess cash holdings and bid premia paid in an acquisition of a target company. In doing this it proved our main hypothesis and offered a simple answer to our simple question. In addition, the results obtained in relation to our independent variables supported results obtained in several others studies that analyze the impact of these independent variables on bid premiums. Therefore our study acts as pseudo-robustness test for these studies and offer more evidence that their analysis is correct.

When we observed the spend model, in relation to our second hypothesis, we saw that excess cash was statistically significant. But unlike the bid premia model, our hypothesis was proven

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wrong. Excess cash has a negative relationship with the amount of money spent on private deals. We interpreted this as saying that if firm's excess cash holdings increase, they will spend less on private deals and be more likely to undertake a transaction in the public arena.

In general, our study offers the basis on which further studies into this topic can be based on and compared. Furthermore our study can be used in relation to a spectrum of topics from the behavioral affect of cash holdings on CEO's decision making to Jensen's free cash flow problem to even the reasons for holding cash. Although a simple concept lies at the heart of this study, many of the results verify findings from across several different fields of finance. This therefore points towards a study, which is reliable due to its dataset (S&P 500) that is adjusted for survivorship bias and valid due to how established research and models upon which form its foundations.

In answering the questions set out by our paper, we have come to the conclusion that excess cash holdings, a powerful and useful resource for any top executive in trying to create shareholder value, in the hands of an overconfident CEO can exacerbate irrational behavior. It is this irrational behavior based perhaps on hubris, which leads to bid premia being paid out. When a CEO has more excess cash holdings they are more likely to enter the public arena looking for that career-defining, front page transaction than perhaps build value slowly through dipping into the private market and acquiring strategic targets that will get lost in the abundance of financial news stories. With the amount of traction that the interest in the topic of firms sitting on a mountain of excess cash is getting, we feel that this is an area of research that will receive increased attention over the coming years. As such we feel that our study and the results surrounding the positive effect of excess cash holdings on bid premia, can add a certain dimension to this relative infantile research area.

6.2 Proposals for Further Research

Concerning the study's research focus, it is pointed out that it remains highly under researched and therefore offers plenty of space for future scrutiny.

Although we selected our variables after much examination of previous literature, there is still a possibility that different variables deemed to be more suitable for future research could be included. We include variables that would distinguish between pure acquisitions and mergers. By controlling for this we can see if excess cash has any affect on the different restructuring events. In relation to takeovers, we could also control for hostile vs. friendly

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takeovers and its impact on bid premia. In our sample we did not control for competition or bidding wars, which can have an impact on bid premia. In future studies we would include a variable to measure and control for this. In our sample we did not include a variable to account for behavioral factors or the impact of management. As such we would include a variable to measure CEO overconfidence or experience of management in place.

Another suggestion is a focus on a longer time perspective in terms of research period, which might reveal relationships that are only pronounced over a longer history of acquisitions. We could also incorporate a different price benchmark than the bid – premia 30 that we utilized. In doing this observation with negative announced premiums could now have a positive value.

Currently the sample is based on S&P 500, which encompasses the largest US firms, therefore concentrating our study on a specific geographical location. In future studies, we would replicate the studies across different geographical locations and on different indices. If not we would just perform the study on one global indices such as S&P 1200.

We reclassified our data into French industry classification given on French webpage. But with such a changing landscape and the introduction of new industries we feel that French classification is a bit outdated. Therefore, we would classify the firms using Reuters or Factset classifications that will offer broader and more up-to-date industry classifications. We would also run an interaction model with excess cash, to see if excess cash influences bid premia in certain industries.

During our data collection phase we collected information on over 2000 private deals. Due to a lack of information, we were not able to obtain useful findings. In a further study, we would try to collect as much information to private deals. We would also undertake more analysis and try to find more relevant control variables to include in this model. Perhaps this dataset could play a greater role in a new study with a wider scope.

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Do firms with excess cash pay higher premia?

Appendix 1: Total sample

Total sample for excess cash and premia regression model (excl. financial and utility firms)		
Firm	Ticker	French Industries
3M Co	MMM-US	Health
Abbott Laboratories	ABT-US	Health
AbbVie Inc.	ABBV-US	Health
Abercrombie & Fitch Co.	ANF-US	Retail
Accenture Plc.	ACN-US	Personal and business services
Actavis PLC	ACT-US	Health
ADC Telecommunications Inc.	ADCT-US	Business equipment
Adobe Systems Incorporated	ADBE-US	Personal and business services
ADT Corp	ADT-US	Personal and business services
Advanced Micro Devices, Inc.	AMD-US	Business equipment
Agilent Technologies Inc.	A-US	Business equipment
Air Products & Chemicals, Inc.	APD-US	Chemicals
Airgas, Inc.	ARG-US	Wholesale
AK Steel Holding Corporation	AKS-US	Steel
Akamai Technologies, Inc.	AKAM-US	Personal and business services
Alberto-Culver Company	ACV-US	Consumer goods
Alcoa Inc.	AA-US	Steel
Alexion Pharmaceuticals, Inc.	ALXN-US	Health
Allegheny Technologies Incorporated	ATI-US	Steel
Allegion PLC	ALLE-US	Personal and business services
Allergan, Inc.	AGN-US	Health
Alliance Data Systems Corporation	ADS-US	Personal and business services
Allied Waste Industries LLC	AW-US	Other
Alpha Natural Resources, Inc.	ANR-US	Coal
Altera Corporation	ALTR-US	Business equipment
Altria Group Inc.	MO-US	Tobacco
Amazon.com, Inc.	AMZN-US	Retail
American Greetings Corporation	AM-US	Books
AmerisourceBergen Corp.	ABC-US	Wholesale
AMETEK, Inc.	AME-US	Electrical equipment
Amgen, Inc.	AMGN-US	Health
Amphenol Corporation	APH-US	Business equipment
Anadarko Petroleum Corporation	APC-US	Oil
Analog Devices, Inc.	ADI-US	Business equipment
Anheuser Busch Inbev SA	BUD-US	Beer
Apache Corporation	APA-US	Oil
Apollo Education Group Inc.	APOL-US	Personal and business services
Apple Inc.	AAPL-US	Business equipment
Applied Biosystems Inc.	ABI.XX1-US	Health
Applied Materials, Inc.	AMAT-US	Business equipment
Applied Micro Circuits Corporation	AMCC-US	Business equipment
Archer Daniels Midland Company	ADM-US	Food
Armstrong Holdings, Inc.	ACKH-US	Construction
Ashland Inc.	ASH-US	Chemicals
AT&T Inc.	T-US	Communication
AT&T Wireless Services	AWE-US	Communication
Autodesk, Inc.	ADSK-US	Personal and business services
Automatic Data Processing	ADP-US	Personal and business services
AutoNation, Inc.	AN-US	Retail
AutoZone, Inc.	AZO-US	Retail
Avery Dennison Corp	AVY-US	Business supplies and shipping containers
Avon Products, Inc.	AVP-US	Consumer goods
Baker Hughes Incorporated	BHI-US	Fabricated products and machinery
Ball Corporation	BLL-US	Business supplies and shipping containers
Barr Pharmaceuticals Inc.	BRL.XX1-US	Health
Barrick Gold Corporation (USA)	ABX-US	Mines
Bausch & Lomb Inc.	BOL-US	Health
Baxter International Inc.	BAX-US	Health
BEAM Inc.	BEAM-US	Beer
Becton, Dickinson and Co.	BDX-US	Health
Bed Bath & Beyond Inc.	BBBY-US	Retail
BellSouth Corporation	BLS.XX1-US	Communication
Bemis Company, Inc.	BMS-US	Business supplies and shipping containers
Best Buy Co Inc.	BBY-US	Retail
Bethlehem Steel Corp.	BHMSQ-US	Steel
Big Lots, Inc.	BIG-US	Retail

Do firms with excess cash pay higher premia?

Biogen Idec Inc.	BIIB-US	Health
Biogen, Inc.	BGEN-US	Health
Biomet Inc.	BMET-US	Health
BJ Services Company LLC	BJS-US	Oil
BMC Software, Inc.	BMC-US	Personal and business services
BorgWarner Inc.	BWA-US	Auto
Boston Scientific Corporation	BSX-US	Health
Briggs & Stratton Corporation	BGG-US	Fabricated products and machinery
Bristol-Myers Squibb Co	BMJ-US	Health
Broadcom Corporation	BRCM-US	Business equipment
BroadVision, Inc.	BVSN-US	Personal and business services
Brown-Forman Corporation	BF.B-US	Beer
Brunswick Corporation	BC-US	Fabricated products and machinery
C.H. Robinson Worldwide, Inc.	CHRW-US	Transportation
C.R. Bard, Inc.	BCR-US	Health
CA, Inc.	CA-US	Personal and business services
Cablevision Systems Corporation	CVC-US	Communication
Cabot Oil & Gas Corporation	COG-US	Oil
Cameron International Corporation	CAM-US	Fabricated products and machinery
Campbell Soup Company	CPB-US	Food
Cardinal Health Inc.	CAH-US	Wholesale
CareFusion Corporation	CFN-US	Health
Caremark Rx, Inc.	CMX-US	Health
CarMax, Inc.	KMX-US	Retail
Carnival Corporation	CCL-US	Transportation
Caterpillar Inc.	CAT-US	Fabricated products and machinery
CBS Corporation	CBS-US	Communication
Celgene Corporation	CELG-US	Health
Centex LLC	CTX.XX1-US	Construction
CenturyLink, Inc.	CTL-US	Communication
Cephalon, Inc.	CEPH-US	Health
Cerner Corporation	CERN-US	Business equipment
CF Industries Holdings, Inc.	CF-US	Chemicals
Chesapeake Energy Corporation	CHK-US	Oil
Chevron Corporation	CVX-US	Oil
Chipotle Mexican Grill, Inc.	CMG-US	Restaurants, hotels, motels
Chiron Corporation	CHIR-US	Health
Cintas Corporation	CTAS-US	Restaurants, hotels, motels
Circuit City Stores Inc.	CCTYQ-US	Retail
Cisco Systems, Inc.	CSCO-US	Business equipment
Citrix Systems, Inc.	CTXS-US	Personal and business services
Cliffs Natural Resources Inc.	CLF-US	Steel
Coach, Inc.	COH-US	Retail
Coca-Cola Enterprises Inc.	CCE-US	Food
Cognizant Technology Solutions Corp	CTSH-US	Personal and business services
Colgate-Palmolive Company	CL-US	Consumer goods
Comcast Corporation	CMCSA-US	Communication
Computer Sciences Corporation	CSC-US	Business equipment
Compuware Corporation	CPWR-US	Personal and business services
Comverse Technology, Inc.	CMVT-US	Business equipment
ConAgra Foods Inc.	CAG-US	Food
ConocoPhillips	COP-US	Oil
CONSOL Energy Inc.	CNX-US	Coal
Constellation Brands, Inc.	STZ-US	Beer
Cooper Industries	CBE-US	Electrical equipment
Cooper Tire & Rubber Co	CTB-US	Auto
Corning Incorporated	GLW-US	Steel
Costco Wholesale Corporation	COST-US	Retail
Covidien plc.	COV-US	Health
Crane Co.	CR-US	Construction
Crown Castle International Corp.	CCI-US	Communication
CSX Corporation	CSX-US	Transportation
Cummins Inc.	CMI-US	Fabricated products and machinery
CVS Caremark Corporation	CVS-US	Retail
D.R. Horton, Inc.	DHI-US	Construction
Danaher Corporation	DHR-US	Business equipment
Darden Restaurants, Inc.	DRI-US	Restaurants, hotels, motels
DaVita HealthCare Partners Inc.	DVA-US	Health
Dean Foods Co	DF-US	Food
Deere & Company	DE-US	Fabricated products and machinery
Dell Inc.	DELL-US	Business equipment

Do firms with excess cash pay higher premia?

Delphi Automotive PLC	DLPH-US	Auto
Delta Air Lines, Inc.	DAL-US	Transportation
Denbury Resources Inc.	DNR-US	Oil
DENTSPLY International Inc.	XRAY-US	Health
Devon Energy Corp	DVN-US	Oil
DeVry Education Group Inc.	DV-US	Personal and business services
Diamond Offshore Drilling Inc.	DO-US	Oil
Dillard's, Inc.	DDS-US	Retail
DIRECTV	DTV-US	Communication
Discovery Communications Inc.	DISCA-US	Communication
Dollar General Corp.	DG-US	Retail
Dollar Tree, Inc.	DLTR-US	Retail
Dow Jones & Company, Inc.	DJ-US	Books
Dover Corp	DOV-US	Construction
Dr Pepper Snapple Group Inc.	DPS-US	Food
Dun & Bradstreet Corp	DNB-US	Personal and business services
E I Du Pont De Nemours And Co	DD-US	Chemicals
Eastman Chemical Company	EMN-US	Chemicals
Eaton Corporation PLC	ETN-US	Electrical equipment
eBay Inc.	EBAY-US	Personal and business services
Ecolab Inc.	ECL-US	Consumer goods
Edwards Lifesciences Corp	EW-US	Health
Electronic Arts Inc.	EA-US	Personal and business services
Eli Lilly and Co	LLY-US	Health
Embarq Corporation	EQ-US	Communication
EMC Corporation	EMC-US	Business equipment
Emerson Electric Co.	EMR-US	Business equipment
ENSCO PLC	ESV-US	Oil
EOG Resources Inc.	EOG-US	Oil
Equifax Inc.	EFX-US	Personal and business services
Estee Lauder Companies Inc.	EL-US	Consumer goods
Expedia Inc.	EXPE-US	Transportation
Expeditors International of Washington	EXPD-US	Transportation
Express Scripts Holding Co	ESRX-US	Retail
Exxon Mobil Corporation	XOM-US	Oil
F5 Networks, Inc.	FFIV-US	Business equipment
Facebook Inc.	FB-US	Personal and business services
Family Dollar Stores, Inc.	FDO-US	Retail
Fastenal Company	FAST-US	Wholesale
FedEx Corporation	FDX-US	Transportation
Fidelity National Information Services	FIS-US	Personal and business services
First Solar, Inc.	FSLR-US	Business equipment
Fiserv Inc.	FISV-US	Personal and business services
Fisher Scientific International LLC	FSH-US	Wholesale
Fleetwood Enterprises, Inc.	FLTWO-US	Auto
FLIR Systems, Inc.	FLIR-US	Business equipment
Flowserve Corp	FLS-US	Fabricated products and machinery
Fluor Corporation (NEW)	FLR-US	Personal and business services
FMC Corp	FMC-US	Chemicals
FMC Technologies, Inc.	FTI-US	Fabricated products and machinery
Ford Motor Company	F-US	Auto
Forest Laboratories, Inc.	FRX-US	Health
Fossil Group Inc.	FOSL-US	Consumer goods
Foster Wheeler AG	FWLT-US	Construction
Freeport-McMoRan Copper & Gold Inc.	FCX-US	Mines
Freescale Semiconductor Ltd	FSL-US	Business equipment
Frontier Communications Corp	FTR-US	Communication
GameStop Corp.	GME-US	Retail
Gannett Co., Inc.	GCI-US	Printing and publishing
Garmin Ltd.	GRMN-US	Business equipment
Gateway, Inc.	GTW-US	Business equipment
General Dynamics Corporation	GD-US	Business equipment
General Electric Company	GE-US	Fabricated products and machinery
General Mills, Inc.	GIS-US	Food
General Motors Company	GM-US	Auto
Genuine Parts Company	GPC-US	Wholesale
Genzyme Corporation	GENZ-US	Health
Georgia-Pacific Corporation	GP.XX1-US	Business supplies and shipping containers
Gilead Sciences, Inc.	GILD-US	Health
Global Crossing Ltd	GLBC-US	Communication
Goodrich Corporation	GR-US	Business equipment

Do firms with excess cash pay higher premia?

Google Inc.	GOOG-US	Personal and business services
Graham Holdings Co	GHC-US	Personal and business services
Great Lakes Bancorp Inc.	GLK-US	Chemicals
Guidant LLC	GDT-US	Health
H & R Block Inc.	HRB-US	Personal and business services
H.J. Heinz Company	HNZ-US	Food
Halliburton Company	HAL-US	Oil
Harley-Davidson Inc.	HOG-US	Consumer goods
Harman International Industries Inc./DE/	HAR-US	Games
Harris Corporation	HRS-US	Business equipment
Hasbro, Inc.	HAS-US	Games
HCA Holdings Inc.	HCA-US	Health
Health Management Associates Inc.	HMA-US	Health
HealthSouth Corp	HLS-US	Health
Helmerich & Payne, Inc.	HP-US	Oil
Hercules Incorporated	HPC-US	Chemicals
Hershey Co	HSY-US	Food
Hess Corp.	HES-US	Oil
Hewlett-Packard Company	HPQ-US	Business equipment
Hilton Worldwide Holdings Inc.	HLT-US	Restaurants, hotels, motels
Honeywell International Inc.	HON-US	Auto
Hormel Foods Corp	HRL-US	Food
Hospira, Inc.	HSP-US	Health
Illinois Tool Works Inc.	ITW-US	Fabricated products and machinery
Ingersoll-Rand PLC	IR-US	Business equipment
Intel Corporation	INTC-US	Business equipment
International Business Machines Corp.	IBM-US	Business equipment
International Flavors & Fragrances Inc.	IFF-US	Chemicals
International Game Technology	IGT-US	Personal and business services
International Paper Company	IP-US	Business supplies and shipping containers
Interpublic Group of Companies Inc.	IPG-US	Personal and business services
Intuit Inc.	INTU-US	Personal and business services
Intuitive Surgical, Inc.	ISRG-US	Health
Iron Mountain Incorporated	IRM-US	Personal and business services
Jabil Circuit, Inc.	JBL-US	Business equipment
Jacobs Engineering Group Inc.	JEC-US	Construction
JDS Uniphase Corp	JDSU-US	Business equipment
Johnson & Johnson	JNJ-US	Health
Johnson Controls Inc.	JCI-US	Business supplies and shipping containers
Joy Global Inc.	JOY-US	Fabricated products and machinery
Juniper Networks, Inc.	JNPR-US	Business equipment
Kansas City Southern	KSU-US	Transportation
Kate Spade & Co	KATE-US	Apparel
Kellogg Company	K-US	Food
Kimberly Clark Corp	KMB-US	Business supplies and shipping containers
KLA-Tencor Corporation	KLAC-US	Business equipment
Knight-Ridder, Inc.	KRI-US	Books
Kohl's Corporation	KSS-US	Retail
Kraft Foods Group Inc.	KRFT-US	Food
L Brands Inc.	LB-US	Retail
L-3 Communications Holdings, Inc.	LLL-US	Business equipment
Laboratory Corp. of America Holdings	LH-US	Health
Lam Research Corporation	LRCX-US	Fabricated products and machinery
Leggett & Platt, Inc.	LEG-US	Consumer goods
Lennar Corporation	LEN-US	Construction
Leucadia National Corp.	LUK-US	Food
Lexmark International Inc.	LXK-US	Business equipment
Linear Technology Corporation	LLTC-US	Business equipment
Lockheed Martin Corporation	LMT-US	Aircraft, ships and railroad equipment
Longs Drug Stores Corp.	LDG-US	Retail
Lorillard Inc.	LO-US	Tobacco
Louisiana-Pacific Corporation	LPX-US	Construction
Lowe's Companies, Inc.	LOW-US	Retail
LSI Corp	LSI-US	Business equipment
Lucent Technologies Inc.	LU-US	Business equipment
LyondellBasell Industries NV	LYB-US	Chemicals
Macy's, Inc.	M-US	Retail
Manitowoc Company, Inc.	MTW-US	Fabricated products and machinery
Manor Care, Inc.	HCR-US	Health
Marathon Oil Corporation	MRO-US	Oil
Marathon Petroleum Corp	MPC-US	Oil

Do firms with excess cash pay higher premia?

Marriott International Inc.	MAR-US	Restaurants, hotels, motels
Masco Corporation	MAS-US	Construction
Mastercard Inc.	MA-US	Personal and business services
Mattel, Inc.	MAT-US	Games
Maxim Integrated Products Inc.	MXIM-US	Business equipment
McAfee, Inc.	MFE-US	Personal and business services
McCormick & Company, Incorporated	MKC-US	Food
McDermott International	MDR-US	Construction
McDonald's Corporation	MCD-US	Restaurants, hotels, motels
McGraw Hill Financial Inc.	MHFI-US	Printing and publishing
McKesson Corporation	MCK-US	Wholesale
Mead Johnson Nutrition CO	MJN-US	Food
MeadWestvaco Corp.	MWV-US	Business supplies and shipping containers
Medco Health Solutions Inc.	MHS-US	Retail
Medimmune LLC	MEDI-US	Health
Medtronic, Inc.	MDT-US	Health
Merck & Co., Inc.	MRK-US	Health
MI 2009 Inc.	MZIAQ-US	Fabricated products and machinery
Michael Kors Holdings Ltd	KORS-US	Apparel
Microchip Technology Inc.	MCHP-US	Business equipment
Micron Technology, Inc.	MU-US	Business equipment
Microsoft Corporation	MSFT-US	Personal and business services
Mohawk Industries, Inc.	MHK-US	Textiles
Molex Incorporated	MOLX-US	Business equipment
Molson Coors Brewing Company	TAP-US	Beer
Mondelez International Inc.	MDLZ-US	Food
Monsanto Company	MON-US	Chemicals
Monster Beverage Corp	MNST-US	Food
Monster Worldwide, Inc.	MWW-US	Personal and business services
Moody's Corporation	MCO-US	Personal and business services
Mosaic Co	MOS-US	Chemicals
Motorola Solutions Inc.	MSI-US	Business equipment
Murphy Oil Corporation	MUR-US	Oil
Mylan Inc.	MYL-US	Health
Nabors Industries Ltd.	NBR-US	Oil
NACCO Industries, Inc.	NC-US	Auto
National-Oilwell Varco, Inc.	NOV-US	Fabricated products and machinery
Navistar International Corp	NAV-US	Auto
NCR Corporation	NCR-US	Business equipment
NetApp Inc.	NTAP-US	Business equipment
Netflix, Inc.	NFLX-US	Communication
Newell Rubbermaid Inc.	NWL-US	Consumer goods
Newfield Exploration Co.	NFX-US	Oil
Newmont Mining Corp	NEM-US	Mines
News Corp	NWSA-US	Printing and publishing
Nextel Communications	NXTL-US	Communication
Nielsen Hldg NV	NLSN-US	Personal and business services
Nike Inc.	NKE-US	Apparel
Noble Corporation PLC	NE-US	Oil
Noble Energy, Inc.	NBL-US	Oil
Nordstrom, Inc.	JWN-US	Retail
Norfolk Southern Corp.	NSC-US	Transportation
Nortel Networks Corporation (USA)	NRTLQ-US	Business equipment
Northrop Grumman Corporation	NOC-US	Business equipment
Novell, Inc.	NOVL-US	Personal and business services
Novellus Systems, Inc.	NVLS-US	Fabricated products and machinery
Nucor Corporation	NUE-US	Steel
NVIDIA Corporation	NVDA-US	Business equipment
Occidental Petroleum Corporation	OXY-US	Oil
Office Depot Inc.	ODP-US	Wholesale
OfficeMax Inc.	OMX-US	Wholesale
Omnicom Group Inc.	OMC-US	Personal and business services
Oracle Corporation	ORCL-US	Personal and business services
Oracle Corporation	ORCL-US	Personal and business services
O'Reilly Automotive Inc.	ORLY-US	Retail
Owens-Illinois Inc.	OI-US	Business supplies and shipping containers
PACCAR Inc.	PCAR-US	Auto
Pall Corporation	PLL-US	Fabricated products and machinery
Palm Inc.	PALM-US	Business equipment
Parker-Hannifin Corporation	PH-US	Construction
Patterson Companies, Inc.	PDCO-US	Wholesale

Do firms with excess cash pay higher premia?

Paychex, Inc.	PAYX-US	Personal and business services
Peabody Energy Corporation	BTU-US	Coal
Pentair Ltd	PNR-US	Fabricated products and machinery
PepsiCo, Inc.	PEP-US	Food
PerkinElmer, Inc.	PKI-US	Business equipment
Perrigo Company PLC	PRGO-US	Health
Perrigo Company PLC	PRGO-US	Health
PetSmart, Inc.	PETM-US	Retail
Pfizer Inc.	PFE-US	Health
Philip Morris International Inc.	PM-US	Tobacco
Phillips 66	PSX-US	Oil
Pioneer Natural Resources	PXD-US	Oil
Pitney Bowes Inc.	PBI-US	Business equipment
Placer Dome Inc. (USA)	PDG-US	Mines
PMC-Sierra Inc.	PMCS-US	Business equipment
Power One Inc.	PWER-US	Business equipment
PPG Industries, Inc.	PPG-US	Chemicals
Praxair, Inc.	PX-US	Chemicals
Precision Castparts Corp.	PCP-US	Steel
Priceline Group Inc.	PCLN-US	Personal and business services
PulteGroup, Inc.	PHM-US	Construction
PVH Corp	PVH-US	Apparel
QEP Resources Inc.	QEP-US	Oil
QUALCOMM, Inc.	QCOM-US	Business equipment
Quanta Services Inc.	PWR-US	Construction
Quest Diagnostics Inc.	DGX-US	Health
Questar Corporation	STR-US	Oil
Quintiles Transnational Holdings Inc.	Q-US	Personal and business services
RadioShack Corporation	RSH-US	Retail
Ralph Lauren Corp	RL-US	Wholesale
Range Resources Corp.	RRC-US	Oil
Raytheon Company	RTN-US	Aircraft, ships and railroad equipment
Red Hat Inc.	RHT-US	Personal and business services
Reebok International Ltd.	RBK-US	Apparel
Regeneron Pharmaceuticals Inc.	REGN-US	Health
Republic Services, Inc.	RSG-US	Transportation
Reynolds American, Inc.	RAI-US	Tobacco
Rite Aid Corporation	RAD-US	Retail
Robert Half International Inc.	RHI-US	Personal and business services
Rockwell Automation	ROK-US	Business equipment
Rockwell Collins, Inc.	COL-US	Aircraft, ships and railroad equipment
Rohm and Haas Company	ROH-US	Chemicals
Roper Industries, Inc.	ROP-US	Business equipment
Ross Stores, Inc.	ROST-US	Retail
Rowan Companies PLC	RDC-US	Oil
Ryder System, Inc.	R-US	Personal and business services
Sabre Holdings Corporation	TSG-US	Transportation
Safeway Inc.	SWY-US	Retail
salesforce.com, Inc.	CRM-US	Personal and business services
SanDisk Corporation	SNDK-US	Business equipment
Sanmina Corp	SANM-US	Business equipment
Sapient Corporation	SAPE-US	Business equipment
Schering-Plough Corp	SGP-US	Health
Schlumberger Limited.	SLB-US	Oil
Scripps Networks Interactive, Inc.	SNI-US	Communication
Seagate Technology PLC	STX-US	Business equipment
Sealed Air Corp	SEE-US	Business supplies and shipping containers
Sears Holdings Corp	SHLD-US	Retail
Service Corporation International	SCI-US	Personal and business services
Sherwin-Williams Company	SHW-US	Retail
Siebel Systems, Inc.	SEBL-US	Personal and business services
Sigma-Aldrich Corporation	SIAL-US	Wholesale
Smith International, Inc.	SII-US	Fabricated products and machinery
Snap-on Incorporated	SNA-US	Construction
Solectron Corporation	SLR-US	Business equipment
Southwest Airlines Co	LUV-US	Transportation
Southwestern Energy Company	SWN-US	Oil
Sprint Corp	S-US	Communication
St. Jude Medical, Inc.	STJ-US	Health
Stanley Black & Decker, Inc.	SWK-US	Fabricated products and machinery
Staples, Inc.	SPLS-US	Retail

Do firms with excess cash pay higher premia?

Starbucks Corporation	SBUX-US	Restaurants, hotels, motels
Starwood Hotels & Resorts Worldwide Inc.	HOT-US	Restaurants, hotels, motels
Stericycle Inc.	SRCL-US	Other
Stryker Corporation	SYK-US	Health
Sunoco, Inc.	SUN-US	Oil
SUPERVALU INC.	SVU-US	Retail
Symantec Corporation	SYMC-US	Personal and business services
SYSCO Corporation	SYU-US	Wholesale
Target Corporation	TGT-US	Retail
TE Connectivity Ltd	TEL-US	Wholesale
Tektronix, Inc.	TEK-US	Business equipment
Tellabs, Inc.	TLAB-US	Business equipment
Temple-Inland, Inc.	TIN-US	Business supplies and shipping containers
Tenet Healthcare Corp	THC-US	Health
Teradata Corporation	TDC-US	Business equipment
Teradyne, Inc.	TER-US	Business equipment
Terex Corporation	TEX-US	Auto
Tesoro Corporation	TSO-US	Oil
Texas Instruments Incorporated	TXN-US	Business equipment
Textron Inc.	TXT-US	Aircraft, ships and railroad equipment
The Boeing Company	BA-US	Aircraft, ships and railroad equipment
The Clorox Co	CLX-US	Consumer goods
The Coca-Cola Company	KO-US	Food
The Dow Chemical Company	DOW-US	Chemicals
The Gap Inc.	GPS-US	Retail
The Goodyear Tire & Rubber Company	GT-US	Auto
The Home Depot, Inc.	HD-US	Retail
The J.M. Smucker Company	SJM-US	Food
The Kroger Co.	KR-US	Retail
The New York Times Company	NYT-US	Books
The Pep Boys - Manny, Moe & Jack	PBY-US	Retail
The Procter & Gamble Company	PG-US	Consumer goods
The TJX Companies, Inc.	TJX-US	Retail
The Walt Disney Company	DIS-US	Communication
The Western Union Company	WU-US	Personal and business services
Thermo Fisher Scientific Inc.	TMO-US	Business equipment
Thomas & Betts Corporation	TNB-US	Business equipment
Tiffany & Co.	TIF-US	Retail
Time Warner Cable Inc.	TWC-US	Communication
Time Warner Inc.	TWX-US	Games
Timken Co	TKR-US	Fabricated products and machinery
Titanium Metals Corp	TIE-US	Steel
Total System Services, Inc.	TSS-US	Personal and business services
Toys R US, Inc.	TOY-US	Retail
Tractor Supply Company	TSCO-US	Wholesale
Trane Inc.	TT-US	Fabricated products and machinery
Transocean LTD	RIG-US	Oil
Tripadvisor Inc.	TRIP-US	Transportation
Twenty-First Century Fox Inc.	FOXA-US	Communication
Tyco International Ltd.	TYC-US	Personal and business services
Tyson Foods, Inc.	TSN-US	Food
Union Pacific Corporation	UNP-US	Transportation
Unisys Corporation	UIS-US	Business equipment
United Parcel Service, Inc.	UPS-US	Transportation
United States Steel Corporation	X-US	Steel
United Technologies Corporation	UTX-US	Aircraft, ships and railroad equipment
Univision Communications Inc.	UVN-US	Communication
Unocal Corporation	UCL-US	Oil
Urban Outfitters, Inc.	URBN-US	Retail
US Airways Group Inc.	LCC-US	Transportation
W.W. Grainger, Inc.	GWW-US	Wholesale
Valero Energy Corporation	VLO-US	Oil
Walgreen Company	WAG-US	Wholesale
Wal-Mart Stores, Inc.	WMT-US	Wholesale
Varian Medical Systems, Inc.	VAR-US	Health
Waste Management, Inc.	WM-US	Other
Waters Corporation	WAT-US	Business equipment
Weatherford International Ltd	WFT-US	Oil
Verisign, Inc.	VRSN-US	Personal and business services
Verizon Communications Inc.	VZ-US	Communication
Vertex Pharmaceuticals Incorporated	VRTX-US	Health

Do firms with excess cash pay higher premia?

Western Digital Corp	WDC-US	Business equipment
Weyerhaeuser Company	WY-US	Construction
VF Corp	VFC-US	Apparel
Whirlpool Corporation	WHR-US	Consumer goods
Whole Foods Market, Inc.	WFM-US	Retail
Viacom, Inc.	VIAB-US	Communication
Windstream Holdings Inc.	WIN-US	Communication
Winn-Dixie Stores, Inc.	WINN-US	Retail
Visa Inc.	V-US	Personal and business services
Vitesse Semiconductor	VTSS-US	Business equipment
Worthington Industries, Inc.	WOR-US	Steel
WPX Energy Inc.	WPX-US	Oil
Vulcan Materials Company	VMC-US	Mines
Wyndham Worldwide Corporation	WYN-US	Restaurants, hotels, motels
Wynn Resorts, Limited	WYNN-US	Restaurants, hotels, motels
Xerox Corp	XRX-US	Personal and business services
Xilinx, Inc.	XLNX-US	Business equipment
XTO Energy Inc.	XTO-US	Oil
Xylem Inc.	XYL-US	Fabricated products and machinery
Yahoo! Inc.	YHOO-US	Business equipment
Yum! Brands, Inc.	YUM-US	Restaurants, hotels, motels
Zimmer Holdings, Inc.	ZMH-US	Health
Zoetis Inc.	ZTS-US	Health

Appendix 2: Total public M&A sample

Total sample of M&A deals in regression analysis (excl. financial and utility firms)				
Acquirer	French industry	Year	DV \$mn	Premium
Abbott Laboratories	Health	2003	381	18,08%
Applied Micro Circuits Corporation	Business equipment	2003	100	7,69%
Archer Daniels Midland Company	Food	2003	56	25,71%
Automatic Data Processing	Personal and business services	2003	550	87,02%
Caremark Rx, Inc.	Health	2003	6249	45,12%
Cephalon, Inc.	Health	2003	397	19,76%
Cephalon, Inc.	Health	2003	161	-46,95%
Chiron Corporation	Health	2003	861	17,65%
Cisco Systems, Inc.	Business equipment	2003	57	37,63%
Danaher Corporation	Business equipment	2003	797	19,01%
Devon Energy Corp	Oil	2003	5300	6,96%
Eli Lilly and Co	Health	2003	340	47,78%
EMC Corporation	Business equipment	2003	1688	51,47%
EMC Corporation	Business equipment	2003	1251	33,97%
Fisher Scientific International LLC	Wholesale	2003	753	37,46%
General Dynamics Corporation	Business equipment	2003	1500	46,02%
General Electric Company	Fabricated products and machinery	2003	9840	48,94%
General Electric Company	Fabricated products and machinery	2003	56	7,52%
General Electric Company	Fabricated products and machinery	2003	3352	4,73%
Genzyme Corporation	Health	2003	544	59,01%
Honeywell International Inc.	Auto	2003	56	64,72%
International Game Technology	Personal and business services	2003	106	31,43%
Johnson & Johnson	Health	2003	2400	25,38%
Leucadia National Corp.	Food	2003	425	14,22%
Motorola Solutions Inc.	Business equipment	2003	52	45,68%
Oracle Corporation	Personal and business services	2003	9833	60,61%
Parker-Hannifin Corporation	Construction	2003	186	6,67%
Pfizer Inc.	Health	2003	1244	60,77%
Philip Morris International Inc.	Tobacco	2003	598	0,78%
Precision Castparts Corp.	Steel	2003	729	46,13%
Symantec Corporation	Personal and business services	2003	87	57,48%
The Procter & Gamble Company	Consumer goods	2003	7116	59,44%
United Technologies Corporation	Aircraft, ships and railroad equipment	2003	1965	9,09%
VF Corp	Apparel	2003	502	60,38%
Yahoo! Inc.	Business equipment	2003	1520	52,46%
Zimmer Holdings, Inc.	Health	2003	3431	16,18%
Abbott Laboratories	Health	2004	1200	47,78%
Amgen, Inc.	Health	2004	1146	35,87%
Anheuser Busch Inbev SA	Beer	2004	2009	78,98%
Applied Materials, Inc.	Business equipment	2004	96	87,11%
AT&T Inc.	Communication	2004	47023	50,15%
Biomet Inc.	Health	2004	267	20,73%
BMC Software, Inc.	Personal and business services	2004	186	37,50%
BorgWarner Inc.	Auto	2004	320	16,70%
CA, Inc.	Personal and business services	2004	340	70,64%
CareFusion Corporation	Health	2004	2004	20,75%
CBS Corporation	Communication	2004	410	12,44%
Circuit City Stores Inc.	Retail	2004	257	14,57%
Cisco Systems, Inc.	Business equipment	2004	89	43,42%
Coca-Cola Enterprises Inc.	Food	2004	538	12,32%
ConocoPhillips	Oil	2004	1988	4,41%
Constellation Brands, Inc.	Beer	2004	1360	39,54%
Danaher Corporation	Business equipment	2004	193	35,54%
Ecolab Inc.	Consumer goods	2004	54	31,25%
Fisher Scientific International LLC	Wholesale	2004	3599	1,74%
General Electric Company	Fabricated products and machinery	2004	1270	60,58%
General Electric Company	Fabricated products and machinery	2004	756	31,30%
General Electric Company	Fabricated products and machinery	2004	247	19,65%
General Electric Company	Fabricated products and machinery	2004	827	2,75%
Genzyme Corporation	Health	2004	832	9,47%
Hewlett-Packard Company	Business equipment	2004	95	54,82%
Hewlett-Packard Company	Business equipment	2004	277	34,23%
Hewlett-Packard Company	Business equipment	2004	308	22,35%
Honeywell International Inc.	Auto	2004	2063	18,97%
Juniper Networks, Inc.	Business equipment	2004	3765	52,24%
National-Oilwell Varco, Inc.	Fabricated products and machinery	2004	2892	10,16%

Do firms with excess cash pay higher premia?

Noble Energy, Inc.	Oil	2004	3400	31,02%
Perrigo Company PLC	Health	2004	852	35,34%
Philip Morris International Inc.	Tobacco	2004	309	49,24%
Pioneer Natural Resources	Oil	2004	1934	15,90%
Pitney Bowes Inc.	Business equipment	2004	321	58,08%
Reebok International Ltd.	Apparel	2004	285	52,87%
Sanmina Corp	Business equipment	2004	77	17,65%
St. Jude Medical, Inc.	Health	2004	265	51,81%
Symantec Corporation	Personal and business services	2004	11354	39,47%
Tektronix, Inc.	Business equipment	2004	325	39,98%
Tellabs, Inc.	Business equipment	2004	893	1,82%
The J.M. Smucker Company	Food	2004	840	29,20%
United Technologies Corporation	Aircraft, ships and railroad equipment	2004	3140	3,09%
VF Corp	Apparel	2004	333	38,76%
3M Co	Health	2005	1306	33,33%
Adobe Systems Incorporated	Personal and business services	2005	2778	19,29%
Allergan, Inc.	Health	2005	3050	0,83%
Amgen, Inc.	Health	2005	2650	65,81%
Barrick Gold Corporation (USA)	Mines	2005	10033	31,20%
CA, Inc.	Personal and business services	2005	283	70,04%
CA, Inc.	Personal and business services	2005	357	63,93%
Chevron Corporation	Oil	2005	18569	3,72%
Cisco Systems, Inc.	Business equipment	2005	5300	25,40%
Coca-Cola Enterprises Inc.	Food	2005	305	24,65%
ConocoPhillips	Oil	2005	35600	37,68%
eBay Inc.	Personal and business services	2005	480	59,70%
Electronic Arts Inc.	Personal and business services	2005	683	52,54%
EMC Corporation	Business equipment	2005	275	10,20%
Express Scripts Holding Co	Retail	2005	1249	12,27%
GameStop Corp.	Retail	2005	1165	33,26%
General Dynamics Corporation	Business equipment	2005	2200	23,61%
General Electric Company	Fabricated products and machinery	2005	1326	43,65%
General Electric Company	Fabricated products and machinery	2005	4528	7,40%
General Electric Company	Fabricated products and machinery	2005	4836	-1,70%
Genzyme Corporation	Health	2005	600	26,49%
Harris Corporation	Business equipment	2005	425	39,25%
Hewlett-Packard Company	Business equipment	2005	383	33,74%
Honeywell International Inc.	Auto	2005	668	73,03%
International Business Machines Corp.	Business equipment	2005	174	42,42%
International Business Machines Corp.	Business equipment	2005	722	33,69%
International Business Machines Corp.	Business equipment	2005	934	16,79%
Johnson & Johnson	Health	2005	370	33,14%
Johnson Controls Inc.	Business supplies and shipping containers	2005	3200	33,19%
L-3 Communications Holdings, Inc.	Business equipment	2005	2596	24,66%
McKesson Corporation	Wholesale	2005	469	77,70%
McKesson Corporation	Wholesale	2005	105	41,94%
Medco Health Solutions Inc.	Retail	2005	2432	46,78%
Nortel Networks Corporation (USA)	Business equipment	2005	448	27,89%
NVIDIA Corporation	Business equipment	2005	52	-11,28%
Occidental Petroleum Corporation	Oil	2005	3898	26,01%
Oracle Corporation	Personal and business services	2005	568	42,63%
Oracle Corporation	Personal and business services	2005	3610	27,97%
Parker-Hannifin Corporation	Construction	2005	487	87,92%
Pfizer Inc.	Health	2005	1775	67,24%
Philip Morris International Inc.	Tobacco	2005	5122	43,09%
Quest Diagnostics Inc.	Health	2005	934	10,47%
Seagate Technology PLC	Business equipment	2005	1862	95,95%
Sprint Corp	Communication	2005	10459	22,31%
Sprint Corp	Communication	2005	4300	12,52%
St. Jude Medical, Inc.	Health	2005	1294	21,77%
SUPERVALU INC.	Retail	2005	231	3,64%
Symantec Corporation	Personal and business services	2005	178	15,61%
The Procter & Gamble Company	Consumer goods	2005	55692	19,87%
Twenty-First Century Fox Inc.	Communication	2005	571	54,84%
Twenty-First Century Fox Inc.	Communication	2005	6293	16,54%
Tyco International Ltd.	Personal and business services	2005	147	25,52%
United Parcel Service, Inc.	Transportation	2005	1296	44,22%
Valero Energy Corporation	Oil	2005	7900	22,12%
Verizon Communications Inc.	Communication	2005	10632	38,22%
Whirlpool Corporation	Consumer goods	2005	2585	33,16%
3M Co	Health	2006	106	36,84%

Do firms with excess cash pay higher premia?

Abbott Laboratories	Health	2006	3248	60,16%
Advanced Micro Devices, Inc.	Business equipment	2006	5107	35,20%
Anadarko Petroleum Corporation	Oil	2006	18000	34,93%
Anadarko Petroleum Corporation	Oil	2006	5112	27,86%
Applied Materials, Inc.	Business equipment	2006	286	47,67%
AT&T Inc.	Communication	2006	89437	25,77%
Barr Pharmaceuticals Inc.	Health	2006	2678	16,75%
Barrick Gold Corporation (USA)	Mines	2006	51	35,81%
Becton, Dickinson and Co.	Health	2006	332	63,72%
Boston Scientific Corporation	Health	2006	24975	20,25%
Constellation Brands, Inc.	Beer	2006	1294	59,79%
Crown Castle International Corp.	Communication	2006	5631	12,99%
CVS Caremark Corporation	Retail	2006	19840	-11,81%
Danaher Corporation	Business equipment	2006	369	69,68%
Danaher Corporation	Business equipment	2006	2103	25,64%
Eaton Corporation PLC	Electrical equipment	2006	58	15,50%
Eli Lilly and Co	Health	2006	2392	40,55%
EMC Corporation	Business equipment	2006	1905	88,17%
Emerson Electric Co.	Business equipment	2006	474	6,80%
Freeport-McMoRan Copper & Gold Inc.	Mines	2006	22635	29,07%
Frontier Communications Corp	Communication	2006	1105	22,02%
General Electric Company	Fabricated products and machinery	2006	625	48,39%
General Electric Company	Fabricated products and machinery	2006	215	47,06%
General Electric Company	Fabricated products and machinery	2006	442	46,54%
General Electric Company	Fabricated products and machinery	2006	3000	36,29%
General Electric Company	Fabricated products and machinery	2006	588	-6,57%
Genzyme Corporation	Health	2006	529	110,61%
Gilead Sciences, Inc.	Health	2006	2054	50,00%
Global Crossing Ltd	Communication	2006	123	74,51%
Hewlett-Packard Company	Business equipment	2006	4500	46,69%
Hospira, Inc.	Health	2006	1913	36,67%
Illinois Tool Works Inc.	Fabricated products and machinery	2006	271	60,78%
International Business Machines Corp.	Business equipment	2006	1050	28,15%
International Business Machines Corp.	Business equipment	2006	1183	28,06%
International Business Machines Corp.	Business equipment	2006	550	24,64%
Intuit Inc.	Personal and business services	2006	1176	26,38%
Jabil Circuit, Inc.	Business equipment	2006	901	22,06%
Johnson & Johnson	Health	2006	1298	35,68%
KLA-Tencor Corporation	Business equipment	2006	392	6,77%
L-3 Communications Holdings, Inc.	Business equipment	2006	151	3,00%
LSI Corp	Business equipment	2006	3539	31,49%
Mattel, Inc.	Games	2006	186	8,96%
McKesson Corporation	Wholesale	2006	1640	19,81%
Merck & Co., Inc.	Health	2006	855	135,51%
Micron Technology, Inc.	Business equipment	2006	763	48,22%
Molex Incorporated	Business equipment	2006	248	10,06%
Monsanto Company	Chemicals	2006	1632	33,04%
Motorola Solutions Inc.	Business equipment	2006	3622	34,89%
Motorola Solutions Inc.	Business equipment	2006	180	13,45%
Mylan Inc.	Health	2006	723	18,97%
National-Oilwell Varco, Inc.	Fabricated products and machinery	2006	307	11,90%
Northrop Grumman Corporation	Business equipment	2006	580	35,21%
NVIDIA Corporation	Business equipment	2006	162	22,06%
Oracle Corporation	Personal and business services	2006	867	50,96%
Oracle Corporation	Personal and business services	2006	210	39,60%
Oracle Corporation	Personal and business services	2006	149	36,67%
Oracle Corporation	Personal and business services	2006	378	27,00%
Peabody Energy Corporation	Coal	2006	1710	8,57%
SanDisk Corporation	Business equipment	2006	1371	21,50%
Service Corporation International	Personal and business services	2006	1175	18,41%
Sprint Corp	Communication	2006	1278	3,40%
The Boeing Company	Aircraft, ships and railroad equipment	2006	1992	26,05%
The Home Depot, Inc.	Retail	2006	3470	13,36%
The Walt Disney Company	Communication	2006	6400	11,32%
Thermo Fisher Scientific Inc.	Business equipment	2006	11880	18,66%
Zoetis Inc.	Health	2006	162	42,86%
3M Co	Health	2007	76	34,58%
Agilent Technologies Inc.	Business equipment	2007	207	28,71%
AT&T Inc.	Communication	2007	5306	25,85%
Avery Dennison Corp	Business supplies and shipping containers	2007	1271	34,36%
Barrick Gold Corporation (USA)	Mines	2007	791	36,95%

Do firms with excess cash pay higher premia?

CareFusion Corporation	Health	2007	1447	27,42%
Celgene Corporation	Health	2007	2547	48,70%
Cisco Systems, Inc.	Business equipment	2007	2506	21,80%
Computer Sciences Corporation	Business equipment	2007	115	41,11%
Computer Sciences Corporation	Business equipment	2007	290	26,21%
Computer Sciences Corporation	Business equipment	2007	1114	25,51%
Danaher Corporation	Business equipment	2007	2717	19,31%
Darden Restaurants, Inc.	Restaurants, hotels, motels	2007	1262	37,03%
Deere & Company	Fabricated products and machinery	2007	159	39,56%
Eaton Corporation PLC	Electrical equipment	2007	642	65,98%
Ecolab Inc.	Consumer goods	2007	261	39,38%
EMC Corporation	Business equipment	2007	57	73,12%
Emerson Electric Co.	Business equipment	2007	85	6,67%
Equifax Inc.	Personal and business services	2007	1223	27,33%
Fidelity National Information Services	Personal and business services	2007	1694	9,68%
Fiserv Inc.	Personal and business services	2007	4439	17,33%
FLIR Systems, Inc.	Business equipment	2007	84	33,71%
General Electric Company	Fabricated products and machinery	2007	299	-83,90%
Genzyme Corporation	Health	2007	335	51,35%
Hewlett-Packard Company	Business equipment	2007	1430	47,67%
Hewlett-Packard Company	Business equipment	2007	249	24,43%
Ingersoll-Rand PLC	Business equipment	2007	11155	33,66%
International Business Machines Corp.	Business equipment	2007	726	24,90%
International Business Machines Corp.	Business equipment	2007	143	18,00%
International Business Machines Corp.	Business equipment	2007	4393	11,75%
Intuit Inc.	Personal and business services	2007	109	32,40%
KLA-Tencor Corporation	Business equipment	2007	62	34,15%
Lam Research Corporation	Fabricated products and machinery	2007	470	59,12%
LyondellBasell Industries NV	Chemicals	2007	18569	22,61%
Marathon Oil Corporation	Oil	2007	6175	0,42%
Medco Health Solutions Inc.	Retail	2007	1257	30,99%
Medtronic, Inc.	Health	2007	3615	45,40%
Medtronic, Inc.	Health	2007	221	-35,23%
Microsoft Corporation	Personal and business services	2007	5032	111,78%
National-Oilwell Varco, Inc.	Fabricated products and machinery	2007	7333	22,99%
Newmont Mining Corp	Mines	2007	1294	31,35%
Nike Inc.	Apparel	2007	641	76,07%
Nucor Corporation	Steel	2007	1182	29,31%
Oracle Corporation	Personal and business services	2007	2867	21,81%
Oracle Corporation	Personal and business services	2007	495	17,73%
Parker-Hannifin Corporation	Construction	2007	270	41,23%
PerkinElmer, Inc.	Business equipment	2007	260	68,61%
Pfizer Inc.	Health	2007	156	151,57%
Philip Morris International Inc.	Tobacco	2007	404	87,40%
Pitney Bowes Inc.	Business equipment	2007	396	44,64%
Quanta Services Inc.	Construction	2007	1236	38,47%
Schlumberger Limited.	Oil	2007	748	93,04%
Symantec Corporation	Personal and business services	2007	794	30,02%
Teradyne, Inc.	Business equipment	2007	300	42,05%
Textron Inc.	Aircraft, ships and railroad equipment	2007	950	18,32%
Thomas & Betts Corporation	Business equipment	2007	452	-1,82%
Transocean LTD	Oil	2007	17102	1,45%
Twenty-First Century Fox Inc.	Communication	2007	5516	4,44%
Walgreen Company	Wholesale	2007	742	28,97%
Wal-Mart Stores, Inc.	Wholesale	2007	557	72,84%
Verizon Communications Inc.	Communication	2007	2613	2,72%
Western Digital Corp	Business equipment	2007	972	35,56%
Whole Foods Market, Inc.	Retail	2007	660	26,28%
Windstream Holdings Inc.	Communication	2007	577	24,85%
Vulcan Materials Company	Mines	2007	4428	45,43%
Xerox Corp	Personal and business services	2007	1655	45,00%
Amazon.com, Inc.	Retail	2008	300	28,92%
Anheuser Busch Inbev SA	Beer	2008	58563	14,53%
Ashland Inc.	Chemicals	2008	3313	27,27%
AT&T Inc.	Communication	2008	2795	84,38%
Autodesk, Inc.	Personal and business services	2008	195	24,29%
Barrick Gold Corporation	Mines	2008	322	28,38%
Best Buy Co Inc.	Retail	2008	92	68,79%
BMC Software, Inc.	Personal and business services	2008	695	60,92%
CBS Corporation	Communication	2008	1706	47,63%
CenturyLink, Inc.	Communication	2008	11501	-5,99%

Do firms with excess cash pay higher premia?

Cliffs Natural Resources Inc.	Steel	2008	452	18,46%
Covidien plc.	Health	2008	70	88,18%
CVS Caremark Corporation	Retail	2008	2774	73,76%
Delta Air Lines, Inc.	Transportation	2008	6509	37,75%
DIRECTV	Communication	2008	105	56,52%
Eli Lilly and Co	Health	2008	5781	9,67%
Eli Lilly and Co	Health	2008	150	-50,48%
EMC Corporation	Business equipment	2008	159	44,74%
EMC Corporation	Business equipment	2008	73	24,87%
General Electric Company	Fabricated products and machinery	2008	732	37,93%
General Electric Company	Fabricated products and machinery	2008	877	31,56%
Hewlett-Packard Company	Business equipment	2008	13044	47,15%
International Business Machines Corp.	Business equipment	2008	266	53,57%
Johnson & Johnson	Health	2008	1101	83,43%
Johnson & Johnson	Health	2008	348	69,49%
KLA-Tencor Corporation	Business equipment	2008	477	46,41%
Manitowoc Company, Inc.	Fabricated products and machinery	2008	2632	115,79%
McAfee, Inc.	Personal and business services	2008	412	31,88%
Medtronic, Inc.	Health	2008	381	96,63%
Microsoft Corporation	Personal and business services	2008	1069	81,98%
Microsoft Corporation	Personal and business services	2008	396	21,02%
Oracle Corporation	Personal and business services	2008	6630	24,36%
O'Reilly Automotive Inc.	Retail	2008	985	32,30%
Pfizer Inc.	Health	2008	347	245,59%
Philip Morris International Inc.	Tobacco	2008	1953	10,37%
Republic Services, Inc.	Transportation	2008	12319	12,20%
Smith International, Inc.	Fabricated products and machinery	2008	3074	24,48%
St. Jude Medical, Inc.	Health	2008	89	93,55%
Staples, Inc.	Retail	2008	4288	30,28%
Teradyne, Inc.	Business equipment	2008	275	26,82%
Terex Corporation	Auto	2008	439	51,13%
The Dow Chemical Company	Chemicals	2008	18166	51,13%
Toys R US, Inc.	Retail	2008	519	2,68%
Walgreen Company	Wholesale	2008	241	38,82%
Wal-Mart Stores, Inc.	Wholesale	2008	3667	33,99%
Abbott Laboratories	Health	2009	2711	274,15%
Adobe Systems Incorporated	Personal and business services	2009	1554	47,46%
Agilent Technologies Inc.	Business equipment	2009	1351	29,87%
Alpha Natural Resources, Inc.	Coal	2009	1928	90,06%
Altria Group Inc.	Tobacco	2009	11487	12,44%
Applied Materials, Inc.	Business equipment	2009	327	32,69%
Baker Hughes Incorporated	Fabricated products and machinery	2009	5530	26,52%
Bristol-Myers Squibb Co	Health	2009	2100	93,24%
Cameron International Corporation	Fabricated products and machinery	2009	728	45,73%
Cephalon, Inc.	Health	2009	102	66,67%
Cisco Systems, Inc.	Business equipment	2009	2097	43,15%
Cisco Systems, Inc.	Business equipment	2009	3068	41,42%
Cliffs Natural Resources Inc.	Steel	2009	184	104,96%
Covidien plc.	Health	2009	64	246,67%
Covidien plc.	Health	2009	190	84,62%
Covidien plc.	Health	2009	396	40,64%
Danaher Corporation	Business equipment	2009	78	37,10%
Dell Inc.	Business equipment	2009	3807	76,47%
Denbury Resources Inc.	Oil	2009	4014	36,31%
EMC Corporation	Business equipment	2009	1806	2,79%
Emerson Electric Co.	Business equipment	2009	1124	40,06%
Emerson Electric Co.	Business equipment	2009	242	39,47%
Exxon Mobil Corporation	Oil	2009	40634	20,08%
Fidelity National Information Services	Personal and business services	2009	4175	46,16%
General Dynamics Corporation	Business equipment	2009	613	18,63%
Gilead Sciences, Inc.	Health	2009	1314	27,15%
Google Inc.	Personal and business services	2009	132	53,81%
Hess Corp.	Oil	2009	395	6,83%
Hewlett-Packard Company	Business equipment	2009	2632	39,82%
Intel Corporation	Business equipment	2009	793	52,12%
International Business Machines Corp.	Business equipment	2009	744	51,79%
Johnson & Johnson	Health	2009	818	23,35%
Merck & Co., Inc.	Health	2009	43198	17,52%
Mondelez International Inc.	Food	2009	23011	7,02%
Oracle Corporation	Personal and business services	2009	5629	17,28%
PepsiCo, Inc.	Food	2009	10640	7,99%

Do firms with excess cash pay higher premia?

PepsiCo, Inc.	Food	2009	4193	5,83%
Pfizer Inc.	Health	2009	59	63,74%
Pfizer Inc.	Health	2009	65016	38,88%
Sprint Corp	Communication	2009	802	32,16%
Sprint Corp	Communication	2009	731	25,57%
Stanley Black & Decker, Inc.	Fabricated products and machinery	2009	4364	40,52%
The Walt Disney Company	Communication	2009	3843	26,39%
Time Warner Cable Inc.	Communication	2009	242	95,76%
Time Warner Inc.	Games	2009	1782	95,76%
Toys R US, Inc.	Retail	2009	627	40,43%
Twenty-First Century Fox Inc.	Communication	2009	157	-14,45%
United Technologies Corporation	Aircraft, ships and railroad equipment	2009	185	30,00%
United Technologies Corporation	Aircraft, ships and railroad equipment	2009	206	-9,91%
Windstream Holdings Inc.	Communication	2009	330	97,82%
Windstream Holdings Inc.	Communication	2009	1124	32,54%
Xerox Corp	Personal and business services	2009	7352	38,73%
3M Co	Health	2010	625	16,80%
Abbott Laboratories	Health	2010	402	71,21%
Adobe Systems Incorporated	Personal and business services	2010	181	56,95%
Allegheny Technologies Incorporated	Steel	2010	792	51,70%
Apache Corporation	Oil	2010	3917	69,25%
Barrick Gold Corporation (USA)	Mines	2010	69	110,53%
Bristol-Myers Squibb Co	Health	2010	732	138,97%
C.R. Bard, Inc.	Health	2010	176	42,30%
Caterpillar Inc.	Fabricated products and machinery	2010	8609	23,84%
Celgene Corporation	Health	2010	2733	61,85%
CenturyLink, Inc.	Communication	2010	22153	19,99%
Cephalon, Inc.	Health	2010	1069	61,11%
Chevron Corporation	Oil	2010	4513	42,80%
CONSOL Energy Inc.	Coal	2010	965	0,66%
Covidien plc.	Health	2010	264	30,41%
Covidien plc.	Health	2010	2453	17,62%
Danaher Corporation	Business equipment	2010	299	124,77%
Dell Inc.	Business equipment	2010	824	12,90%
EMC Corporation	Business equipment	2010	2134	22,11%
Emerson Electric Co.	Business equipment	2010	1548	34,65%
FLIR Systems, Inc.	Business equipment	2010	226	3,99%
General Electric Company	Fabricated products and machinery	2010	541	45,77%
General Electric Company	Fabricated products and machinery	2010	1377	4,11%
General Motors Company	Auto	2010	3306	23,80%
Google Inc.	Personal and business services	2010	69	13,02%
Halliburton Company	Oil	2010	275	45,63%
Hewlett-Packard Company	Business equipment	2010	1969	239,51%
Hewlett-Packard Company	Business equipment	2010	1375	70,39%
Hewlett-Packard Company	Business equipment	2010	1141	46,53%
Honeywell International Inc.	Auto	2010	1380	67,26%
Honeywell International Inc.	Auto	2010	129	22,53%
Hospira, Inc.	Health	2010	112	54,93%
Intel Corporation	Business equipment	2010	6511	57,95%
International Business Machines Corp.	Business equipment	2010	409	113,20%
International Business Machines Corp.	Business equipment	2010	1572	75,44%
Johnson & Johnson	Health	2010	1994	60,25%
Johnson & Johnson	Health	2010	358	23,03%
Medtronic, Inc.	Health	2010	120	117,39%
Microchip Technology Inc.	Business equipment	2010	241	19,14%
Nabors Industries Ltd.	Oil	2010	821	26,33%
Oracle Corporation	Personal and business services	2010	797	45,99%
Oracle Corporation	Personal and business services	2010	614	35,57%
PepsiCo, Inc.	Food	2010	6127	112,55%
Pfizer Inc.	Health	2010	3214	52,08%
Pitney Bowes Inc.	Business equipment	2010	55	27,84%
Raytheon Company	Aircraft, ships and railroad equipment	2010	480	14,84%
Schlumberger Limited.	Oil	2010	12198	47,88%
Southwest Airlines Co	Transportation	2010	1560	69,06%
St. Jude Medical, Inc.	Health	2010	1241	41,50%
Staples, Inc.	Retail	2010	494	30,54%
Stryker Corporation	Health	2010	316	80,75%
TE Connectivity Ltd	Wholesale	2010	1258	64,94%
The Boeing Company	Aircraft, ships and railroad equipment	2010	734	43,45%
Thermo Fisher Scientific Inc.	Business equipment	2010	2091	30,55%
Time Warner Cable Inc.	Communication	2010	172	36,91%

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Time Warner Inc.	Games	2010	172	36,91%
Tyco International Ltd.	Personal and business services	2010	1836	33,44%
Wal-Mart Stores, Inc.	Wholesale	2010	2083	2,72%
Viacom, Inc.	Communication	2010	96	192,56%
3M Co	Health	2011	670	47,37%
3M Co	Health	2011	428	12,55%
Alpha Natural Resources, Inc.	Coal	2011	8156	31,36%
Applied Materials, Inc.	Business equipment	2011	4331	33,19%
Archer Daniels Midland Company	Food	2011	161	25,82%
Barrick Gold Corporation (USA)	Mines	2011	7535	53,74%
Baxter International Inc.	Health	2011	258	53,09%
Broadcom Corporation	Business equipment	2011	3449	58,38%
C.R. Bard, Inc.	Health	2011	67	108,59%
Caterpillar Inc.	Fabricated products and machinery	2011	684	76,00%
CenturyLink, Inc.	Communication	2011	2706	11,61%
Cephalon, Inc.	Health	2011	207	64,71%
Chesapeake Energy Corporation	Oil	2011	278	14,23%
Cliffs Natural Resources Inc.	Steel	2011	4330	43,84%
Computer Sciences Corporation	Business equipment	2011	404	203,57%
Danaher Corporation	Business equipment	2011	6724	12,22%
Delta Air Lines, Inc.	Transportation	2011	100	46,55%
E I Du Pont De Nemours And Co	Chemicals	2011	6312	5,39%
eBay Inc.	Personal and business services	2011	1941	40,69%
Ecolab Inc.	Consumer goods	2011	8138	44,67%
ENSCO PLC	Oil	2011	8735	29,51%
Express Scripts Holding Co	Retail	2011	33430	26,84%
General Dynamics Corporation	Business equipment	2011	237	44,13%
Gilead Sciences, Inc.	Health	2011	10367	88,86%
Google Inc.	Personal and business services	2011	8950	89,39%
Hewlett-Packard Company	Business equipment	2011	10255	47,40%
Honeywell International Inc.	Auto	2011	478	35,97%
International Business Machines Corp.	Business equipment	2011	375	57,90%
International Game Technology	Personal and business services	2011	89	57,71%
International Paper Company	Business supplies and shipping containers	2011	4167	32,40%
International Paper Company	Business supplies and shipping containers	2011	327	31,55%
Johnson & Johnson	Health	2011	21191	31,07%
Joy Global Inc.	Fabricated products and machinery	2011	1397	20,57%
Laboratory Corp. of America Holdings	Health	2011	76	40,00%
Lam Research Corporation	Fabricated products and machinery	2011	3298	25,69%
McKesson Corporation	Wholesale	2011	114	37,93%
Merck & Co., Inc.	Health	2011	374	25,00%
National-Oilwell Varco, Inc.	Fabricated products and machinery	2011	634	38,21%
NCR Corporation	Business equipment	2011	1050	47,21%
Newmont Mining Corp	Mines	2011	2088	23,46%
Oracle Corporation	Personal and business services	2011	1496	38,04%
PerkinElmer, Inc.	Business equipment	2011	547	45,83%
QUALCOMM, Inc.	Business equipment	2011	2741	33,10%
Quest Diagnostics Inc.	Health	2011	602	23,27%
Stanley Black & Decker, Inc.	Fabricated products and machinery	2011	1131	3,63%
Terex Corporation	Auto	2011	1466	-4,21%
Texas Instruments Incorporated	Business equipment	2011	6281	61,19%
The Coca-Cola Company	Food	2011	268	64,25%
The Walt Disney Company	Communication	2011	501	51,33%
Time Warner Cable Inc.	Communication	2011	263	48,25%
Transocean LTD	Oil	2011	2262	55,45%
Tyco International Ltd.	Personal and business services	2011	85	47,64%
United Technologies Corporation	Aircraft, ships and railroad equipment	2011	17861	56,44%
Walgreen Company	Wholesale	2011	397	-65,39%
Verizon Communications Inc.	Communication	2011	1742	45,71%
VF Corp	Apparel	2011	1961	26,81%
Windstream Holdings Inc.	Communication	2011	2158	18,49%
Yahoo! Inc.	Business equipment	2011	211	62,16%
Yum! Brands, Inc.	Restaurants, hotels, motels	2011	552	26,21%
Amgen, Inc.	Health	2012	885	52,14%
Anheuser Busch Inbev SA	Beer	2012	27856	29,06%
Apple Inc.	Business equipment	2012	339	86,05%
Bausch & Lomb Inc.	Health	2012	376	9,64%
Bed Bath & Beyond Inc.	Retail	2012	600	23,87%
Bristol-Myers Squibb Co	Health	2012	2020	81,82%
Bristol-Myers Squibb Co	Health	2012	6349	9,89%
ConAgra Foods Inc.	Food	2012	6740	24,17%

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Covidien plc.	Health	2012	295	72,16%
Danaher Corporation	Business equipment	2012	338	58,15%
Danaher Corporation	Business equipment	2012	621	22,25%
Dell Inc.	Business equipment	2012	2231	17,94%
Eastman Chemical Company	Chemicals	2012	4600	58,54%
Eaton Corporation PLC	Electrical equipment	2012	11940	15,92%
Exxon Mobil Corporation	Oil	2012	2983	27,42%
FLIR Systems, Inc.	Business equipment	2012	55	31,71%
FMC Corp	Chemicals	2012	298	60,79%
Forest Laboratories, Inc.	Health	2012	900	85,64%
Freeport-McMoRan Copper & Gold Inc.	Mines	2012	10750	37,86%
Freeport-McMoRan Copper & Gold Inc.	Mines	2012	3400	18,00%
General Electric Company	Fabricated products and machinery	2012	679	27,00%
General Motors Company	Auto	2012	405	50,83%
General Motors Company	Auto	2012	5500	10,31%
Gilead Sciences, Inc.	Health	2012	339	73,53%
Honeywell International Inc.	Auto	2012	598	36,61%
Intel Corporation	Business equipment	2012	3094	4,10%
International Business Machines Corp.	Business equipment	2012	1206	86,69%
Laboratory Corp. of America Holdings	Health	2012	241	36,02%
Leucadia National Corp.	Food	2012	3587	19,89%
McKesson Corporation	Wholesale	2012	1808	25,76%
Medtronic, Inc.	Health	2012	656	33,81%
Microchip Technology Inc.	Business equipment	2012	682	42,14%
Motorola Solutions Inc.	Business equipment	2012	158	60,00%
National-Oilwell Varco, Inc.	Fabricated products and machinery	2012	221	34,27%
National-Oilwell Varco, Inc.	Fabricated products and machinery	2012	2609	28,81%
NCR Corporation	Business equipment	2012	606	50,15%
Nielsen Hldg NV	Personal and business services	2012	1219	32,52%
Oracle Corporation	Personal and business services	2012	724	34,13%
Oracle Corporation	Personal and business services	2012	1810	24,73%
Parker-Hannifin Corporation	Construction	2012	75	104,92%
Precision Castparts Corp.	Steel	2012	2969	32,74%
Priceline Group Inc.	Personal and business services	2012	1475	19,65%
PVH Corp	Apparel	2012	2787	33,39%
Seagate Technology PLC	Business equipment	2012	58	28,17%
Sprint Corp	Communication	2012	11480	126,24%
Starbucks Corporation	Restaurants, hotels, motels	2012	607	23,11%
Stryker Corporation	Health	2012	1471	104,50%
The Home Depot, Inc.	Retail	2012	93	22,67%
Twenty-First Century Fox Inc.	Communication	2012	2154	0,58%
Verizon Communications Inc.	Communication	2012	671	200,00%
Accenture Plc.	Personal and business services	2013	280	-7,14%
Actavis PLC	Health	2013	8428	44,67%
Allergan, Inc.	Health	2013	768	62,02%
Amgen, Inc.	Health	2013	9036	-4,39%
AT&T Inc.	Communication	2013	3911	158,18%
Autodesk, Inc.	Personal and business services	2013	253	33,01%
C.R. Bard, Inc.	Health	2013	228	33,07%
Cisco Systems, Inc.	Business equipment	2013	2266	43,67%
Covidien plc.	Health	2013	934	37,74%
Gannett Co., Inc.	Printing and publishing	2013	2142	21,90%
General Electric Company	Fabricated products and machinery	2013	3240	37,66%
Georgia-Pacific Corporation	Business supplies and shipping containers	2013	1465	27,59%
Maxim Integrated Products Inc.	Business equipment	2013	423	44,29%
McAfee, Inc.	Personal and business services	2013	367	110,28%
McGraw Hill Financial Inc.	Printing and publishing	2013	224	34,32%
Nielsen Hldg NV	Personal and business services	2013	100	6,25%
Office Depot Inc.	Wholesale	2013	1423	21,95%
Oracle Corporation	Personal and business services	2013	1280	66,26%
Oracle Corporation	Personal and business services	2013	1962	22,18%
Perrigo Company PLC	Health	2013	6526	16,69%
Perrigo Company PLC	Health	2013	160	-50,00%
Pioneer Natural Resources	Oil	2013	868	13,42%
Salesforce.com, Inc.	Personal and business services	2013	2296	58,15%
Seagate Technology PLC	Business equipment	2013	279	30,54%
Service Corporation International	Personal and business services	2013	1393	49,72%
Stryker Corporation	Health	2013	691	85,64%
Tenet Healthcare Corp	Health	2013	4101	71,57%
The Kroger Co.	Retail	2013	2543	5,20%
Thermo Fisher Scientific Inc.	Business equipment	2013	15008	20,25%

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Total System Services, Inc.	Personal and business services	2013	1160	34,57%
Western Digital Corp	Business equipment	2013	188	92,96%

Appendix 3: Current sample excess cash regression

Current sample excess cash regression		
Variable	Coefficients	P-value
C	-4,8952	0,0000
MB	0,1431	0,0000
Size	-0,0884	0,0142
Cash flow	1,5171	0,0000
WC	0,0017	0,0509
RD	0,0571	0,0000
Indsigma	4,7798	0,0000
Leverage	0,2656	0,0000
Capex	0,7103	0,0000
Dividends	-0,0826	0,0377
Autos	1,2562	0,0017
Beer	-0,1997	0,6237
Books	0,3356	0,4442
Buseq	1,3412	0,0004
Varry	1,1371	0,0042
Chems	0,9601	0,0144
Clths	1,3283	0,0013
Cnstr	1,3613	0,0006
Coal	-1,2325	0,0064
Elceq	0,4931	0,2659
Fabpr	1,2610	0,0011
Food	0,6584	0,0873
Games	1,7302	0,0000
Hlth	1,4518	0,0001
Hshld	1,3966	0,0005
Meals	0,9229	0,0189
Mines	0,7000	0,0919
Oil	0,5799	0,1368
Other	-0,5877	0,1916
Paper	0,7581	0,0590
Rtail	0,8792	0,0197
Servs	1,1690	0,0018
Smoke	1,0489	0,0115
Steel	0,8696	0,0262
Telcm	0,2951	0,4371
Trans	0,9576	0,0139
Whlsl	1,0749	0,0056
N	3652	
R ² adj	0,4824	

Appendix 4: Dropped sample excess cash regression

Dropped sample excess cash regression		
Variable	Coefficients	P-value
C	-4,0509	0,0000
MB	0,1013	0,0000
Size	-0,2895	0,0000
Cash flow	1,4207	0,0000
WC	0,0012	0,1959
RD	0,0560	0,0000
Indsigma	5,1696	0,0000
Leverage	0,4295	0,0000
Capex	0,6598	0,0000
Dividends	-0,2086	0,0000
Autos	1,1574	0,0000
Beer	-0,1020	0,7510
Books	0,3431	0,2861
Buseq	1,5083	0,0000
Varry	1,1562	0,0002
Chems	0,9841	0,0011
Clths	0,9393	0,0005
Cnstr	1,4701	0,0000
Coal	-1,1897	0,0009
Elceq	0,6745	0,0495
Fabpr	1,1751	0,0001
Food	0,5954	0,0429
Games	1,6717	0,0000
Hlth	1,4201	0,0000
Hshld	1,4463	0,0000
Meals	0,8842	0,0039
Mines	1,0445	0,0011
Oil	0,4691	0,1165
Other	-0,6720	0,0624
Paper	0,5807	0,0636
Rtail	0,8401	0,0030
Servs	1,2640	0,0000
Smoke	1,0601	0,0016
Steel	0,4857	0,0995
Telcm	0,2971	0,3011
Trans	1,1251	0,0002
Whisl	1,0605	0,0003
N	4700	
R ² adj	0,4506	