Universidade do Minho
Escola de Economia e Gestão

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The importance of Cash Holdings for Acquiring companies in Mergers and Acquisitions.

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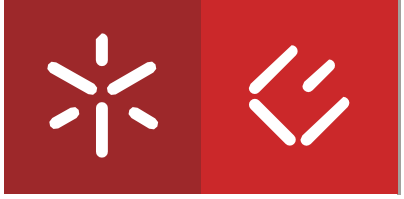

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Tese de Mestrado em Finanças

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Professor Doutor Gilberto Ramos Loureiro

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The Importance of Cash Holdings for Acquiring Companies in Mergers and Acquisitions

ABSTRACT

Cash holdings can be an important vehicle for firms to undertake value increasing investment opportunities, but also a source of agency costs. Using a sample of Mergers and Acquisitions of bidders from several countries: Germany, France, UK and US, between 1990 and 2015, I find a positive relation between excess cash and M&A activity. The results also suggest that smaller firms, with higher investment opportunities and riskier cash-flows tend to hold more cash. Additionally, I do not find any short-term significant stock market reaction to cash-rich bidder acquisitions, despite abnormal declines in post-merger operating performance. Finally, cash-rich firms use their cash rather than stock to finance these investment decisions.

Keywords: Cash Holdings, M&As, payment method, announcement returns, operating performance, agency costs.

A importância do nível de caixa para firmas adquirentes em Fusões e Aquisições.

RESUMO

O nível de caixa de uma empresa pode ser um veículo importante para conseguir financiar oportunidades de investimento de valor acrescentado, mas também pode representar uma fonte de custos de agência. Utilizando uma amostra de Fusões e Aquisições em vários países: Alemanha, França, Reino Unido e EUA, entre 1990 e 2015, encontro uma relação positiva entre o excesso de caixa e a atividade de investimento. Os resultados também sugerem que as empresas de menor dimensão, com maiores oportunidades de investimento e fluxos de caixa com maior nível de risco, tendem a reter mais dinheiro. Além disso, não encontro qualquer reação do mercado de ações, a curto prazo, a aquisições de licitantes ricos em caixa, apesar de encontrar posteriores declínios no desempenho operacional do adquirente. Finalmente, as empresas ricas em dinheiro utilizam o mesmo em vez de ações para financiar essas decisões de investimento.

Palavras-chave: Participações em dinheiro, Fusões e Aquisições, método de pagamento, retorno de anúncios, desempenho operacional, custos de agência.

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1. Introduction

Conservative financial policies are often criticized as serving the interests of managers rather than the interests of stockholders. The reasons for firms to hold excess cash trigger both academics and practitioners interest, as it is documented that it can influence the market value of the firm's equity around corporate events. Bates, Kahle and Sultz (2009) acknowledge that cash-to-assets ratios doubled from 1980 to 2006. In the post-crisis period, firms are being encouraged to use their cash stockpiles to stimulate the economy[1]. Mergers and Acquisitions (M&As)[2] constitute a useful setting to assess some financial consequences of excess cash holdings, providing large observable outcomes of the investment decision process.

Modigliani and Miller (1958) argue that in a frictionless environment, firms are able to fund all value-increasing investment opportunities, and do not depend on the availability of internal capital. However, once capital market imperfections are introduced, cash holdings can be valuable for firms when other sources of funds are insufficient to satisfy the demand for capital. In other words, external financial constraints can be a determining factor for firms to use available cash holdings to fund necessary expenditures and possible investment opportunities.

Holmstrom and Tirole (1998) argue that in a framework of good investment opportunities, agency problems are less relevant compared to the benefits of incremental cash flows from positive NPV projects, and thus leading to the conclusion that firms should hold cash for precautionary reasons, despite the negative effects caused by possible agency problems. Thus, cash reserves can provide benefits to equity holders, by reducing the underinvestment problem. Managers wishing to avoid the costs associated with external financing in an imperfect information environment find it optimal to maintain sufficient internal capital to allow them to reduce the underinvestment problem.

[1] "So, if I've got one message, my message is now is the time to invest in America… Today, American companies have nearly $2 trillion sitting on their balance sheets… so I just want to encourage you to get in the game." (President Obama, Feb. 7, 2011, Chamber of Commerce in Washington, D.C.)

2 For the purposes of this dissertation, the terms Mergers and Acquisitions are used as synonyms.

Jensen (1986) notes that cash-rich companies face serious agency costs as managers tend to make bad acquisitions (negative NPV projects) instead of paying out dividends to the shareholders. This problem is more severe in the presence of large free cash flows that are in excess to meet payments to stakeholders and fund positive NPV projects. Consequently, encouraging firms to use their cash stockpiles to create the illusion of growth may lead to wealth destruction through poor investments in acquisitions, as documented by Moeller, Schlingemann and Stulz (2005).

The purpose of this dissertation is to investigate whether excess cash holdings are related with M&A activity and value-increasing investment decisions in particular. In terms of performance evaluation, I analyse the stock market short-term reaction and operating performance for bidders following successful bids. Finally, I examine whether firms with large cash stockpiles are more likely to use their cash rather than stock to pay for acquisitions.

The first challenge in this matter is to define excess cash, which first requires predicting what the normal level of cash should be for each company. To do so, I use a sample of acquiring firms and apply the Harford (1999) standard empirical model that uses determinants of cash holdings to predict the normal level of cash holdings at the firm level. Excess cash holdings are therefore determined by the difference between the actual and normal level of cash holdings. This model is widely accepted by related literature as a robust methodology of predicting excess cash.

To implement this analysis, I use a sample of M&As where the bidders are from the following countries: United States, United Kingdom, Germany and France, for the time period between 1990 and 2015. A distinctive feature of this research is that it uses a sample from a variety of countries with different characteristics in terms of legal environment, shareholder protection, and development of the financial markets, whereas the bulk of the literature focus essentially on the US market.

Overall, my results provide evidence consistent with the agency cost theory of Jensen (1986), although I do not find a conclusive relation between excess cash and value-decreasing investment decisions.

I find evidence that excess cash[3] is positively correlated with M&A activity, controlling for several firm characteristics, including leverage, market-to-book ratio, size, operating cash flow level and sales growth, similarly as it was found by Harford (1999).

Furthermore, operating performance in successful cash-rich bids declines significantly for the subsequent periods following the bid[4]. This conclusion is also consistent with the agency cost theory, since operating performance represents an important indicator of the corporate benefit of the acquisition.

However, I do not find statistically significant results for the relation between the stock price reaction at the M&A announcement and cash stockpiling. This result contrasts with that of Harford (1999), who finds significant negative announcement abnormal returns and also evidence of market anticipation for acquisitions made by cash-rich firms. Despite this conclusion, the univariate tests of differences in means and medians indicate that the cumulative abnormal returns (CARs) for cash-rich firms are lower comparing with other firms.

Finally, nevertheless important, I show that cash stockpiles fuel cash acquisitions, as excess cash is positively correlated with cash bids rather than stock bids.

The remainder for this investigation is organized as follows: in section 2, I review the relevant literature related to the topic of the dissertation and formulate the hypotheses. Section 3 describes the empirical methodology. Section 4 explains the sample selection and reports descriptive statistics. Empirical results are discussed in section 5. Finally, section 6 provides conclusions and final remarks of this study.

2. Literature review and Hypotheses formulation

The use of excess cash holdings on M&As may occur in an unfavourable context for shareholders. Denis, Denis and Sarin (1997), Dlugosz, Fahlenbrach, Gompers and Metrick (2004), Palia (2001), Smith (1996) and Wahal (1996) show that large shareholders have enough capital at stake to have an incentive to monitor and influence management's actions. Managers' desires of reducing their personal undiversified risk

[3] Calculated for the year preceding the acquisition.

[4] The period considered following the bid is four years.

or increase their scope of influence through corporate diversification may lead to poor investment decisions. On the other hand, costs related with external financing and capital market imperfections can trigger an underinvestment problem that might support the need for firms to hold cash for precautionary reasons. Financial literature on this subject is very diverse in the sense that different hypotheses and periods lead to different conclusions.

Harford (1999) finds that there are reasons for shareholders to be concerned about managers' access to large pools of internal funds. In this study, the results suggest that cash-rich firms are more likely to make acquisitions, and these are acquisitions that are referred as "value-decreasing", and their targets are less likely to attract other bidders.

> "The results on acquisitions have implications for boards of directors and investors in evaluating payout policy and cash reserves. Large cash balances remove an important monitoring component from the investment process, often resulting in the destruction of shareholder value" (Harford, 1999, p. 1996).

Similarly, Décamps, Mariotti and Rochet (2011) establish a model that predicts that the marginal value of cash varies negatively with the stock price, and positively with the volatility of the stock price.

Along with Harford (1999), Pinkowitz, Stulz and Williamson (2006), Harford, Mansi and Maxwell (2008) and Kalcheva and Lins (2007)[6] find evidence consistent with the agency cost argument. These studies point out corporate governance and investor protection as important drivers for cash holdings and firm value relation.

Harford et al. (2008) show that poorly governed firms tend to dissipate their cash reserves more quickly than firms with stronger governance, and spend the cash primarily on acquisitions. These investments of cash by weakly governed managers reduce future profitability, an effect that is incorporated in firm stock prices. This implicates that better-governed firms are able to use both cash and stock in acquisitions.

[6] These authors find that when external country-level shareholder protection is weak, firm values are lower when controlling managers hold more cash. This insight is not directly associated with the purposes of this dissertation, but gives an important notion of the determinants of cash holdings and firm value.

Likewise, Dittmar and Mahrt-Smith (2007) find that effective corporate governance increases with the value that investors attach to a firm's level of cash holdings[7].

In relevant literature, there are also several findings that support cash as an important vehicle for firms undertake good investment opportunities through M&As, especially for financially constrained firms.

Pinkowitz et al. (2006) find that small firms, firms with strong growth opportunities, more investment in R&D, and riskier cash flows hold larger amounts of cash. Pinkowitz and Williamson (2001) find similar results for firms in the US, Japan, and Germany, and find that the investment opportunity set, rather than the financing opportunity set of the firm affects the value that shareholders place on a firm's cash holdings. Ozkhan and Ozkhan (2004) find that firms with higher market-to-book ratios have higher levels of cash[8].

Previous evidence can be related with the industry of the firm, periods of financial crisis or corporate governance. In a context of more efficient markets, firms should be always able to raise funds to invest.

Campello, Lin, Ma and Zou (2011)[9] find that for the period of the financial crisis of 2008/2009 the option to access liquidity through credit lines becomes less valuable when internal liquidity is abundant[10]. Looking at real-side decisions of US firms for this period, cash savings were the primary method of investing in presence of unavailability to access credit lines.

Bates et al. (2009) find that the significant increase of firm's cash ratios since the 1980s is related to the increasing risk of firm's cash flows and the fact that firms hold fewer inventories and receivables and are increasingly R&D intensive. In this investigation, precautionary reasons to hold cash have significant explanatory power for this increase. Kim, Mauer and Sherman (1998) and Harford (1999) also report that cash holdings are positively correlated with industry cash flow volatility, in the sense that

[7] In this study, good governance approximately doubles the value of cash relatively to poor governed firms.

[8] This investigation also reveals that firm's growth opportunities, cash flows, liquid assets, leverage and bank debt are important in determining cash holdings.

[9] These authors conducted three surveys in 2009 and 2010, each containing approximately four hundred private and public firms in the United States. These surveys contain information about firms' spending plans (investment, technology, and employment), difficulty in accessing or renewing credit lines, the pricing of lines, covenant violations, line renegotiations, and drawdown activity.

[10] Even considering the fact that more profitable, liquid firms should find it easier to establish credit lines.

firms with lower or no bond ratings or that operate in high cash flow volatility industries face higher costs of external finance, supporting the theory that constrained firms hold more cash than unconstrained firms.

Alongside with these results, studies from Faulkender and Wang (2006), Pinkowitz et al. (2006) and Denis and Sibilkov (2010) support that the value of cash is greater for constrained than for unconstrained firms. These results imply that higher cash holdings allow constrained firms to undertake value-increasing projects that might otherwise be bypassed. Almeida, Campello and Weisbach (2004) find that cash flow sensitivity of cash is positive for financially constrained firms, but statistically insignificant for unconstrained firms. Denis and Sibilkov (2010) also find that financially constrained firms exhibit low cash holdings because of persistently low cash flows. All these findings are strong indicators that firms hold cash for precautionary reasons.

Mikkelson and Partch (2003) find that persistent extreme cash holdings do not lead to poor performance and do not represent conflicts of interests between managers and shareholders, evidence consistent with cash reserves enhancing value, for both financially constrained and unconstrained firms. By examining operating performance and other characteristics of firms that for a five-year period held more than one-fourth of their assets in cash and cash equivalents, the results suggest that high cash holdings are accompanied by greater investment levels, particularly R&D expenditures, and by greater growth in assets. For firms that persistently hold large cash reserves, these authors conclude that such policies support investment without hindering corporate performance. Oppositely, Harford (1999) also examines operating performance of cash-rich bidder M&As, and shows that mergers with cash-rich bidders are followed by abnormal declines in operating performance.

In sum, financial literature refers several factors that influence firm's level of cash: time period, corporate, industry or market level conditions. After acknowledging all these possible explanations and determinants to justify firm's excess cash holdings and respective consequences, my dissertation focuses exclusively on M&A analysis from the bidder's perspective to find the financial consequences for bidders of holding excess cash prior to bid announcements. Relevant literature with this type of investigation is quite limited especially for recent years, as previous results are not transparent for more recent data, which lead me to the formulation of the following hypotheses:

- H1: *Cash-rich firms are more likely to engage in M&A activities;*
- H2: *Cash-rich bidders observe lower abnormal returns around the announcement of successful M&As;*

Proponents of this show that there should be a positive relation between excess cash and investment decisions, and a respective negative relation with stock market returns due to the negative reaction of the stock markets consistent with the agency cost theory[11]. Although relevant literature on the topic seem to account similar results, these results are consistent for samples containing attempted acquisitions and successful acquisitions. Luo (2005) finds that the market reaction to a merger and acquisition announcement influence whether the deal is consummated or not, as merging companies take into account information from the market reaction in closing the deal. Consequently, my dissertation focuses on successful deals, differing from what conventional literature consider.

The evidence on M&A post-operating performance is mixed: there is no consensus on whether cash-rich bidder firms have significant lower post-operating performance. However, several studies show that bids with lower announcement returns are typically followed by poor post-merger operating performance. Healy, Palepu and Ruback (1992) conduct a test of the post-merger performance and find a direct relationship between stock market reaction and post-merger performance, indicating that the market anticipated performance improvements to the initial acquisition announcement, which on average was positive in their sample. On the opposite, Harford (1999) with a similar approach find that the market recognizes that cash-rich bidders make poor acquisitions and these expectations are manifested at the announcement of the bid and realized by the operating performance of the merged firm over the post-acquisition period. Thus, in addition to this analysis regarding M&A activity, I also examine the post-merger operating performance of cash-rich bidders, similarly to Harford (1999):

[11] The two hypotheses are independent and analysed separately.

- H3: *Cash-rich bidders tend to exhibit lower operating performance following successful M&As;*

Associated to the M&A process, previous research examining the role of the method of payment in explaining announcement returns to bidding firms in acquisitions find significant differences between cash and stock transactions. Wansley, Lane, and Yang (1983), Asquith, Bruner and Mullins (1983), Travlos (1987) and Brown and Ryngaert (1991) report that returns to bidders tend to be negative and significant in stock acquisitions and slightly positive though not significant in cash acquisitions.

Pinkowitz, Sturgess and Williamson(2013) add to literature the analysis regarding the payment method that cash-rich firms use in M&As, and find that U.S. cash-rich firms are less likely to use cash to finance acquisitions than similar non cash-rich firms, using alternative measures of excess cash. Consequently, between 1984 and 2006, cash-rich bidders are 23% less likely to make cash payment in acquisitions relative to other bidders. Additionally, cash-rich firms also include lower proportion of cash in mixed bids when comparing with other firms. The authors find that although cash holdings have influence in terms of acquisition decision, there is no clear explanation of why managers of cash-rich firms prefer to use stock in acquisitions. The results are robust for explanations related to agency, financial constraints, tax-related explanations, equity overvaluation, and capital structure. Consequently, the results in this paper mitigate the concern that cash stockpiles will lead to overinvestment in acquisitions.

Given these recent surprising findings and complementing the previous hypotheses, my dissertation also explores a possible link between excess cash and payment method decision. Therefore, I formulate the following hypothesis:

- H4: *Cash Stockpiles lead to cash-paid acquisitions;*

3. Methodology

3.1 Measuring excess cash holdings

There are various ways to test the financial effects of cash holdings on corporate performance and investment activity. The first step to conduct this kind of research and test my hypotheses is to establish a model of baseline cash holdings. This model is essential to all of the formulated hypotheses, since it will determine for every firm-year the normal level of cash and draw the line between normal/excess cash.

The main estimation cash models used in literature are documented by Opler, Pinkowitz, Stulz and Williamson (1999) and Harford (1999). These two models are very similar, as they use several determinants of cash holdings to predict the normal level of cash holdings for each firm. Excess cash holdings are determined by the difference between the actual and normal level of cash holdings predicted by the model, in which firms are classified as cash-rich based on the distribution of excess cash. These models are the main standard empirical models that have been used to study both the determinants and implications of cash holdings. Pinkowitz et al. (2013) perform robustness checks on several alternative methodologies to measure excess cash (as in Opler et al. (1999), Harford (1999) and Deangelo, Deangelo and Stulz (2010)), and find robust results using Harford's (1999) methodology. Thus, my model is based on Harford (1999) and is represented as follows:

$$Cash/Sales_{i,t} = a_i + \beta_1 NetCFO/Sales_{i,t} + \beta_2 \Delta\, NetCFO/Sales_{i,t+1} + \beta_3 \Delta NetCFO/Sales_{i,t+2} + \beta_4 M/B_{i,t-1} + \beta_5 CFOVar_i + \beta_6 Size_{i,t+1} + \in_{i,t} \quad (1)$$

Where *NetCFO* is operating cash flow net of investments; *M/B* is the firm's Market-to-book assets ratio; *CFOVar* is the coefficient of variation for the firm's Cash flows, and *Size* is log of the Market Value of Equity[13]. Further, I include industry, country and year fixed-effects.

3.2 Probit Model: excess cash and the likelihood of a bid

[13] The original model from Harford (1999) included also recession dummies and risk premium, which in the model used are substituted by the fixed effects.

After calculating the cash measure mentioned in the previous segment, in order to study my first hypotheses, I developed a probit model to find the relationship between excess cash and M&A activity. Within the sample of M&A acquirer's, with the probit model I am able to find if firms with higher levels of cash are more likely to engage in M&As in the following period.

Harford (1999) established a relation between excess cash and acquisition behavior by using a probit equation to predict which firms will attempt an acquisition. The regression I used for this purpose is based on this model, and states as follows:

$$Acquisition_{i,t} = \alpha_0 + \beta_1 Cashdev._{i,t-1} + \beta_2 SalesGrowth_{i,t-1} + \beta_3 NonCashWC_{i,t-1} + \beta_4 M/B_{i,t-1} + \beta_5 PER_{i,t-1} + \beta_6 Leverage_{i,t-1} + \beta_7 Size_{i,t-1} + \in_{i,t} \quad (2)$$

The dependent variable in the probit is equal to one if the firm announces a bid in year *t* and zero otherwise. The remaining variables are: cash deviation, which is the cash deviation of the firm's cash to sales level from the average value predicted given by the methodology previously referred; Several other firm characteristics are included for control: Annual sales growth, noncash working capital normalized by total assets, the ratio of the market value to the book value of equity, stock price at the end of the year divided by earnings per share for that year, leverage ratio and the natural logarithm of the market value of equity. For all these variables, the model uses the values of the year prior to the acquisition announcement, *t-1*, and *t* is the prediction year. In order to reduce possible yearly noise and represent a real scenario of the firm's characteristics I also included in this regression industry, country and year fixed-effects.

3.3 Announcement Returns for Bidders

In order to obtain an estimation of the valuation impact of successful M&As made by cash-rich acquirers, I test the stock price reaction to the M&A announcements. To examine the market's assessment of the M&As I compute the cumulative abnormal returns (CARs) around the deal announcements. Initially, I estimate the expected return surrounding the announcement period using the market model, as described by

Mackinlay (1997), which assumes a linear relation between the return of a market index and the security return. The market model removes the portion of the security return that is related to the variation in the market return, increasing the ability to detect the event effects (Mackinlay, 1997). After estimating what the normal stock return would be around the event, as if the event had not taken place, I compare it with the actual stock return. The estimation window is 231 days (-250 to -20) for different event windows, which go up to 21 days surrounding the event ((-10;10), (-5;5), (-2;2) and (-1;1)), being 0 the day of the acquisition announcement date. The abnormal return is then calculated by the difference of actual minus expected return for each day of the event window; then, for each acquirer, I compute cumulative abnormal return (CAR), i.e., the sum of the abnormal returns of each day of the event window.

As the literature suggests, there are two categories of factors that can explain acquirers' announcement returns: bidder characteristics and deal characteristics. The bidder characteristics that I use as controls are firm size, leverage and Market-to-Book value, which are measured at the end of the year prior to the acquisition announcement. Moeller et al. (2005) find robust evidence that bidder size is negatively correlated with the acquirer's announcement-period returns, leading to the expectation that managers of larger firms are more entrenched and more likely to make value-reducing acquisitions. Leverage is also an important control variable, since higher debt levels may help reduce future free cash flows and limit managerial discretion (Masulis, Wang and Xie, 2007). Asquith et al. (1983) and Moeller et al. (2005) find that bidder announcement returns increase in relative deal size. Thus, in terms of deal characteristics that influence bidder announcement returns, I use controls for all-cash paid acquisitions, cross-border and relative deal size.

Consequently, I estimate the following regression to test whether the patterns of cumulative abnormal returns are different for bidders with higher levels of cash, using the measure of excess cash holdings explained in section 4.1., with the following specification:

$$Avg.CAR_{i,t} = \alpha_0 + \beta_1 Cashdev._{i,t-1} + \beta_2 Leverage_{i,t-1} + \beta_3 M/B_{i,t-1} + \beta_4 Size_{i,t-1} + \beta_5 PaidinCash_{i,t} + \beta_6 Crossborder_{i,t} + \beta_7 RelativeSize_{i,t} + \in_{i,t} \quad (3)$$

Where $Avg.CAR$ is the average CAR value by firm-year, $PaidinCash$ is a dummy variable equal to one for deals paid in 100% cash, $Crossborder$ is a dummy variable equal to one for deals with bidder and target from different countries, and $RelativeSize$ is the deal value deflated by Total assets of the year prior to the announcement[15].

3.4 Operating Performance before and after the acquisition

Operating performance subsequent to successful M&As is also an interesting indicator for evaluating the outcome of investment decisions. Since previous literature finds unclear results for this indicator, I decided to include this analysis from the bidder's perspective, as to investigate a possible relation between cash stockpiling and operating performance.

The measure of operating performance used in these tests is cash flow return-on-assets. Cash flow here is defined as operating cash flow to exclude income from short-term investments. The market value of total assets is used in the denominator. Barber and Lyon (1996) show that when studying operating performance, it is important to control for abnormal firm characteristics prior to the event. To mitigate this type of issue, the model I use contains a control variable for the mean cash flow return-on-assets from four years prior to the event[16]. Consequently, the following regression is estimated:

$$Postmerger\ \frac{CF}{TA_i} = \alpha_0 + \beta_1 Cashdev._{i,t-1} + \beta_2 Premerger\ \frac{CF}{TA_i} + \in_{i,t} \quad (4)$$

Average cash flow return-on-assets is calculated for the bidder over the premerger period, considered as years -4 to -1 and also for the post-merger period,

[15] $Cashdev$, $Leverage$ and M/B are the same variables as in equation (2).

[16] In order to further mitigate this issue, Barber and Lyon (1986) and Harford (1999) use a control sample of firms experiencing normal performance.

which is the period between the years +1 to +4. Cash deviation is the deviation of the firm's observed cash ratio from the average value predicted given by the equation (1). The coefficient β_1 captures the relation between excess cash and post-merger operating performance. The β_2 coefficient captures the continuation of premerger performance. The α_0 coefficient captures any abnormal performance improvements between the premerger and postmerger periods. In the Healy et al. (1992) study, this coefficient is significantly positive, consistent with the average positive bidder abnormal returns for merger announcements in their sample. In contrast, Harford (1999) finds a negative and significant coefficient, which is also consistent with the average negative bidder abnormal returns found in his study.

3.5 Probit model for Method of Payment

Finally, to test my last hypothesis, I will measure payment methods within my sample and the probability of cash-rich bidders paying their acquisitions using more cash rather than stock. This section positions the main determinants of payment methods and focuses on the role of cash holdings on the method of payment decision and directly controls for deal and firm characteristics.

Pinkowitz et al. (2013) perform various multinomial logistic regressions and test multiple firm- and deal-level variables. Based on these models, I estimate the following probit regression:

$$Y_{i,t} = \alpha_0 + \beta_1 Cashdev._{i,t-1} + \beta_2 Leverage_{i,t-1} + \beta_3 M/B_{i,t-1} + \beta_4 Size_{i,t-1} + \beta_5 SalesGrowth_{i,t-1} + \beta_6 Crossborder_{i,t} + \beta_7 DealValue_{i,t} \in_{i,t} \quad (5)$$

Y , the dependent variable, is the method of payment for firm *i* in year *t,* and assumes the value one if the payment method is composed by at least 90% cash and zero otherwise; $Cashdev.$ is the cash deviation of the firm's cash ratio from the average value estimated using equation (1); The remaining firm and deal-level control variables include: Sales growth, Market-to-Book ratio, Leverage, the value of the deal and a dummy variable equal to one for deals with bidder and target from different countries.

4. Data Selection and Descriptive Statistics

My initial events sample contains 7,664 Mergers and Acquisitions announced between January 1990 and December 2015, and it was obtained from Securities Data Company (SDC) Platinum database. The sample of bids was subject to the following criteria: (1) The bidder owns less than 50% of the target prior to the bid and acquires at least 50% of shares; (2) Both bidder and target are classified by SDC as public corporations; (3) Utility and financial sectors, firms whose Standard Industry Classification (SIC) codes are between 4900-4949 and 6000-6999 were excluded; (4) Bidders are from the following countries: U.S., U.K., France and Germany; (5) Bidders with Market Value inferior to 10 Million Dollars were excluded[17]; (6) Both Bidder and Target are listed as Public firms; (7) Deals inferior to 1 Million Dollars were excluded; (8) The deal type is classified as a disclosed value merger, an LBO, or a tender offer; (9) The form of the deal is listed by SDC as a merger or acquisition of assets; (10) All repurchases, equity carve outs, and limited partnerships are excluded. Additionally, deal values were restricted to values superior to 1 Million Dollars. The filters used are based on related literature (as in Pinkowitz et al. (2013)). As a result, from these specifications I obtain 3,515 M&As from 2,240 different companies.

The accounting and financial data are obtained from Thomson's DataStream and WorldScope databases. All the date frequencies used are yearly except stock and market returns, which are daily. To measure the quality of the corporate governance at the country level, I use data from the World Bank database, and it corresponds to the same period and frequency of the accounting and financial data. The variables measured in prices are adjusted for inflation, using the consumer price index (2015=100) obtained from the World Bank database, an adjustment that enables to uncover real growth or decline, if any. In order to avoid estimation biases created by potential outliers, I winsorize all of the firm-level variables at 1% of its distribution.

Further, since some firms have missing values for some variables, there are variations in the actual sample size depending on the model being used.

Panel A of Table 1 shows how Mergers and Acquisitions are distributed by Acquirer's country. Clearly, the amount of M&As is much more frequent in the U.S.

[17] Considered at the announcement period;

(81.5%) than in the other countries. Germany is the least representative country, since it only embodies 129 observations, half of the United Kingdom (258 observations), which comes second in the list. Panel B shows the same distribution, but by Target's country. We can conclude that the vast majority of the Targets are also from the U.S. (70.75%), followed by U.K., Canada, France and Germany as main Target countries of the sample[18]. In fact, only 23.76% of the observations are Cross-border Mergers and Acquisitions, explaining this relation between panel A and B. From Panel C, we can see that the sample contains many types of businesses, but the ones that are truly significant are the manufacturing and services industries, that together account over 84% of the sample. Finally, Panel D reveals the distribution of M&As over the years. It can be seen that the number of observations increases across the 1990's. The most active period of the sample is between 1997-2000, representing approximately 30% of the M&As. It's also remarkable that the low level of observations of the early 1990's is consistent with the documented merger drought, that followed the merger wave of the 1980's. Also, we can see a continuous decline from 2007 to 2013, which might be related to the crisis of 2007 and some post-crisis uncertainty environment.

Table 1 - Description of the Mergers and Acquisitions Sample

The sample includes Mergers and Acquisitions made by acquirers from four different countries between 1990 and 2015. I exclude utilities and financial firms (SIC codes between 4900 and 4949 and between 6000 and 6999) Data are obtained from Securities Data Company (SDC) Platinum database. Panel A presents the number of the M&As by acquirer's country. In Panel B, M&As are shown by the major Target's countries. In panel C, according to the two-digit SIC code, and Panel D shows the M&As' distribution by year.

Panel A: Distribution of the Mergers and Acquisitions by Bidder's Country		
Country	**#M&As**	**%M&As**
United States	2863	81.5
France	265	7.54
United Kingdom	258	7.34
Germany	129	3.67
Total	3,515	100

[18] Remaining Countries have less than 50 observations.

Panel B: Distribution of the Mergers and Acquisitions by Target's Country

Country	#M&As	%M&As
United States	2487	70.75
United Kingdom	250	7.11
Canada	216	6.14
France	170	4.84
Germany	65	1.85
Other Countries	327	9.30
Total	3,515	100

Panel C: Distribution of the Mergers and Acquisitions by Acquirer's Industry

Industry	SIC code	#M&As	%M&As
Mining	10-14	149	4.24
Construction	15-17	53	1.51
Manufacturing	20-39	1,837	52.26
Transportation & Public Utilities	40-49	28	0.80
Wholesale Trade	50-51	105	2.99
Retail Trade	52-59	210	5.97
Services	70-89	1,133	32.23
Total		**3,515**	**100**

Panel D: Distribution of the Mergers and Acquisitions by Year

Year	#M&As	%M&As
1990	11	0.31
1991	66	1.88
1992	50	1.42
1993	62	1.76
1994	126	3.58
1995	156	4.44
1996	166	4.72
1997	222	6.32
1998	265	7.54
1999	271	7.71
2000	273	7.77
2001	203	5.78
2002	149	4.24
2003	137	3.90
2004	140	3.98
2005	150	4.27
2006	154	4.38
2007	157	4.47
2008	114	3.24
2009	106	3.02
2010	111	3.16
2011	79	2.25
2012	90	2.56
2013	72	2.05
2014	85	2.42
2015	100	2.84
Total	**3,515**	**100**

In panel A of Table 2 it is possible to analyse the main accounting and financial variables considered in the determination of cash rich firms and the determinants of predicting bidders for the whole sample. The variables suggested in the acquisitions literature include sales growth, non-cash net working capital, market-to-book ratio, leverage, and firm size (see Ambrose and Megginson (1992), Comment and Schwert (1996), and Harford (1999), among others). The sample regarding this data is in firm-years, and contains 51,870 observations for periods between 1980-2015[19]. The results show that the average cash/sales ratio is about 30%, but the median is only 7%, which indicates some dispersion on this variable, which has a relatively high standard deviation. This ratio is crucial throughout this dissertation, since it will be used to determine excess cash holdings. The Cash/Total Assets ratio also undertakes a similar result. Another interesting figure in this panel is the positive level of sales growth (approximately 7%), which indicates that in my sample period the average evolution of sales level is increasing.

In panel B the main drivers of cash-richness are sorted by major industry groupings. The most frequent Industries in my sample are manufacturing (20-39 SIC range) and services (70-89 SIC range), which have the highest median values for the main determinants of Cash richness on this dissertation[20], especially for the Market-to-Book ratio and Operational Cash flow variation. Firms in an industry with a high average market-to-book ratio tend to derive most of their value from growth opportunities and intangibles, such as human capital and R&D. As previously referred, Cash Flow volatility and growth opportunities are documented by several authors as variables highly linked to cash stockpiling. By analysing panel B, we can see that the most frequent Industries in the sample contain strong levels of these variables when compared to the other industries.

[19] The decade of 1980's was included as so to obtain historical data previous to the first M&A observations.

[20] Although the Mining Industry has the second highest level of Cash/Sales, next to Services.

Table 2 – Summary Statistics: Acquirer's accounting and financial data

The accounting and financial data are obtained from Thomson's DataStream and WorldScope database. Each observation corresponds to a firm-year, from 1980 to 2015. I exclude utilities and financial firms (SIC codes between 4900 and 4949 and between 6000 and 6999). Variables are winsorized at 1% of the distribution. Panel A shows summary statistics regarding the main determinants of cash-richness for the total sample. Panel B shows the median values, by major industry groups, of the variables in panel A. All variables are defined in Appendix A.

Panel A: Summary Statistics of Cash Holdings

	# obs.	Mean	Median	Std. Dev.
Cash/Sales	22,048	0.3020	0.0778	0.9916
Cash/Total Assets	22,258	0.1151	0.0683	0.1372
CFO/Sales	31,842	-0.0149	0.0847	0.7046
M/B	39,783	2.8006	2.0100	4.0859
CFO Var./Sales	28,640	0.0302	0.0359	1.8956
Leverage ratio	33,256	0.7017	0.4072	1.8183
Sales Growth	31,419	0.0710	0.0772	0.0312
Size	40,838	6.3388	6.6273	2.566

Panel B: Summary Statistics of Cash Holdings by Acquirer's Industry

Industry	SIC code	*Cash/Sales*	*M/B*	*CFO/Sales*	*CFO Var./Sales*
Mining	10-14	0.098	1.595	0.240	0.087
Construction	15-17	0.051	1.340	0.200	0.021
Manufacturing	20-39	0.086	2.260	0.097	0.031
Transportation & Public Utilities	40-49	0.015	2.055	0.154	0.019
Wholesale Trade	50-51	0.009	1.850	0.018	0.011
Retail Trade	52-59	0.027	2.110	0.052	0.016
Services	70-89	0.139	2.440	0.108	0.039

Table 3 shows the distribution of the sample over time and the method of payment, by differentiating the structure of the bids. This table is included in order to see the evolution within the sample of the weight of cash bids throughout time. The percentage of cash bids ranges from a low of 18% in 1992 to a high of 61% in 2012. It's possible to perceive that all cash payment method has increased significantly across time and the high peaks correspond to a post-crisis period (2010-2012).

Table 3: Summary Statistics of the sample of Bids

The table presents summary statistics for the sample of bids. The classification Cash Bid takes the value one if the acquisition is paid 100%, and 0 otherwise. Similarly, Stock bids take the value one if the acquisition is paid 100% by equity components and zero otherwise. B Mixed bids assume the value one if both equity and cash are used. Information about the components of the bid (Cash and Stock) are obtained from Securities Data Company (SDC) Platinum database.

Year	Cash Bids	Stock Bids	Mixed Bids	Total Bids	% Cash
1990	3	2	6	11	27.27
1991	13	26	27	66	19.70
1992	9	20	21	50	18.00
1993	17	22	23	62	27.42
1994	36	48	42	126	28.57
1995	49	65	42	156	31.41
1996	40	57	69	166	24.10
1997	61	85	76	222	27.48
1998	68	103	94	265	25.66
1999	88	103	80	271	32.47
2000	84	112	77	273	30.77
2001	61	73	69	203	30.05
2002	68	35	46	149	45.64
2003	44	42	51	137	32.12
2004	64	29	47	140	45.71
2005	67	25	58	150	44.67
2006	87	25	42	154	56.49
2007	82	17	58	157	52.23
2008	60	19	35	114	52.63
2009	42	26	38	106	39.62
2010	66	24	21	111	59.46
2011	41	12	26	79	51.90
2012	55	12	23	90	61.11
2013	39	11	22	72	54.17
2014	41	20	24	85	48.24
2015	44	17	39	100	44.00
Total	**1,329**	**1,030**	**1,156**	**3,515**	**37.81**

5. Empirical results

5.1 . Does Excess cash predict future acquisitions?

The first stage of statistical analysis involves estimating the model to detect presence of excess cash, by establishing normal firm-year cash holdings. The standard empirical models of cash holdings (Harford (1999), Opler et al. (1999) and Deangelo et al. (2010)) identify main common determinants of cash holdings prediction. In turn, excess cash holdings are determined by the difference between the actual and normal levels of cash[21].

Table 4 presents the results of the model used for estimating cash holdings. Among the variables affecting cash holdings that are mentioned in literature, I find Market-to-Book ratio, firm's operational cash flow volatility, and Size to be statistically significant.

The results are consistent with Opler et al. (1999), Harford (1999) and Pinkowitz et al. (2013): these authors also find a positive and statistically significant effect of market-to-book and volatility of cash flows[22] on cash holdings, even after controlling for the level of operating cash flows. Additionally, Size has a negative significant coefficient, meaning that this variable is negatively related with cash reserves, which is also documented in previous studies regarding cash holdings.

The model used allows for active cash management on the part of the firm, through the inclusion of operating cash flow lead variables. For example, if the firm anticipates that cash flow in year *t+2* will fall short of that required for planned investment, cash reserves will likely increase over years' *t* and *t+1*. Accordingly, in recession periods, firms are likely to decrease their cash reserves to substitute for lower cash flows. In presented results, the coefficient for these lead variables aren't significant, which leads to the conclusion that cash management doesn't affect the normal levels of cash.

[21] As explained previously in section section 3.1.

[22] The computation of this variable is not the same in previous literature, but tend to capture similar financial effects.

Overall, the results remain similar to the main literature, suggesting that small firms, firms with higher levels of market-to-book and riskier cash flows hold larger amounts of cash (consistent with Harford (1999), Opler et al. (1999), Ozkhan and Ozkhan (2004), Deangelo et al. (2010) and Pinkowitz et al. (2013)). This means that the model does a reasonably good job for controlling these documented firm empirical relations that influence normal cash reserves.

Table 4: Measure of Cash holdings

The table presents the results from the estimation of the cash model presented in equation (1). The dependent variable is the firm-year Cash to Sales ratio. To control for Country and industry-related time-invariant characteristics, the model contains industry, country and year dummy variables. Presented in parentheses are heteroskedasticity robust *t*-statistics with standard errors clustered by year and country level. All variables are defined in Appendix A. ***Significant at the 1% level, **Significant at the 5% level, *Significant at the 10% level.

VARIABLES	***Cash/Sales***
$NetCFO/Sales$	-0.0015
	(-0.94)
$NetCFO/Sales_{t+1}$	-0.0015
	(-1.43)
$NetCFO/Sales_{t+2}$	-0.0016
	(-1.49)
M/B_{t-1}	0.0009***
	(2.69)
$CFOVar$	0.0001***
	(5.44)
$Size_{t+1}$	-0.0650***
	(-14.04)
Constant	0.4799***
	(6.96)
Observations	15,094
R-squared	0.148

In table 5, I divided my sample into two different groups (cash-rich and non cash-rich) of firms, according to the definition presented by Harford (1999): firm's with actual cash holdings deviating more than 1.5 standard deviations above the value predicted by the previous model, measured in *t-1*. The standard deviation used is the time series standard deviation of the firm's cash holdings. This definition is considered, even by the

author, rather "extreme", in the sense that it requires a large deviation from the predicted level of cash to classify a firm as cash-rich. Consequently, this definition produces a smaller number of cash-rich observations and makes it difficult for a given firm to continue to meet this definition. Hence, I apply this measure for robustness purposes throughout the several tests of the formulated hypotheses, as so to investigate if the tests performed are also robust for extreme cash-holders.

The table presents summary statistics for firms identified as cash-rich (7,935 firm years) and compares them to the rest of the sample (43,975 firm years). The results show that, by this definition, cash-rich firms have statistically significant different values from the rest of the population regarding not only cash to sales ratio but also market-to-book, sales growth and leverage. Cash to Sales ratio is about five times greater for cash-rich firms compared to the rest of the sample[24]. Market-to-book and sales growth are economically similar, but nonetheless statistically different and greater for cash-rich firms. As for leverage ratio, there is a substantial difference between the two populations of about 13% (51.69% to 37.95%). This result is opposite to Harford (1999) and consistent with Pinkowitz et al.(2013), and might be explained by the argument that cash-rich firms have more leverage so that when their cash position is considered net-of-debt, they are actually similar to other firms.

Table 5 – Summary Statistics for cash-rich Firms

The table presents the median cash to sales ratio, Market-to-Book, sales growth and leverage ratio of cash-rich firm-years and all other firm-years between 1980 to 2015. Firms are here considered as cash-rich firms if their cash reserves deviate by more than 1.5 standard deviations from the cash reserves predicted by the cash management model from equation (1), (Harford,1999). I present the p-values for the tests of medians (Wilcoxon rank-sum test). All variables are defined in Appendix A.

	Cash-rich Firms	**Other Firms**	**Differences (p-value)**
Cash/Sales ratio	0.3952	0.0666	(0.0000)
M/B	2.04	1.93	(0.0006)
Sales Growth	0.0837	0.0781	(0.0739)
Leverage	0.5169	0.3795	(0.0000)
Nº of observations	7,935	43,935	

[24] Demonstrating the "extremeness" mentioned by Harford (1999);

To analyze whether firms with excess cash are more likely to make an acquisition in the next period, I estimate the probit model presented in section 3.2, equation (2). The dependent variable is the dummy *Bidder* that assumes the value one when the firm announces an acquisition and zero otherwise. The model uses as excess cash measure the actual deviation of cash to sales ratio from the predicted in the normal cash model. The period of consideration is *t-1*, which is the period prior to the acquisition announcement.

Consistent with the first hypothesis, the results of the model reveal that there is a significant positive relation between higher level of cash holdings and the probability of becoming a bidder. The marginal effect associated to *CashDev*., implies that, on average, when the amount of cash deviation goes up by one unit it causes an increase in the probability of attempting an acquisition of, approximately, 2.84 percentage points, ceteris paribus. This finding is consistent with the free cash flow hypotheses, as documented by Opler et al. (1999) and Harford (1999), that stated that cash reserves and subsequent acquisition spending are positively correlated.

Oppositely, when analyzing the same model using Harford (1999) definition of cash-rich firm-year, the results do not illustrate any significant relation between cash-rich firm-years and the likelihood of becoming a bidder in the following period. As referred previously, the explanation to this loss of significance might be related to the highly-restricted definition of cash-rich firms. Another interesting conclusion is that for both specifications larger firms and with higher sales growth are more likely to become bidders, at 5% significance level.

Overall, the results provided indicate that the likelihood of making an acquisition in the next period is increasing with cash-richness, despite lack of evidence for extreme cash-holders. These results don't illustrate, however, if excess cash is related to investment decisions that benefit or harm shareholder's wealth. Consequently, whether these bids are value increasing or decreasing cannot be determined without tests that measure the valuation consequences of the bidding decision. For these purposes, the next section examines the market reaction to the bids to evaluate these acquisition decisions, and the post-merger operating performance.

Table 6 – Probit model for predicting Bidders

This table presents the results of a probit model (correspondent to equation (2)) of the M&A decision in a given year. The result of two probits are presented here. The dependent variable is the dummy *Bidder* that assumes the value one when the firm announces an acquisition and zero otherwise. The measure of excess cash used is represented by the variable *Cashdev,* as identified in equation (2); The model incorporates year, country and industry dummy variables. Presented in parentheses are heteroskedasticity robust z-statistics with standard errors clustered by year and country level. All variables are defined in Appendix A. ***Significant at the 1% level, **Significant at the 5% level, *Significant at the 10% level.

VARIABLES	***Bidder=1***
$Cashdev._{t-1}$	0.0284***
	(3.82)
$NonCashWC_{t-1}$	-0.0027
	(-0.14)
$SalesGrowth_{t-1}$	0.0353**
	(2.34)
M/B_{t-1}	-0.0004
	(-0.45)
PER_{t-1}	0.0015
	(0.42)
$Leverage_{t-1}$	-0.0002
	(-0.15)
$Size_{t-1}$	0.0198***
	(11.05)
Observations	11,129
R-squared	0.0649

5.2 Bidder's announcement returns and post-operating performance

5.2.1 Cumulative abnormal announcement returns

After finding the relation between cash stockpiling and acquisition behavior, the subsequent hypotheses analyze the valuation impact and the post-operating performance of the acquisitions.

Cumulative Abnormal Returns (CARs) are commonly used as a measure of the market's assessment of M&A deals, as they represent the investors' reaction to the deal announcement. Although the market assessment is relative, rather than absolute, one

should find a positive/ negative reaction to announcements of value-increasing/decreasing acquisitions, especially in deals that are less anticipated.

Table 7 reports the Cumulative Abnormal Return analysis results. Panel A presents the mean CARs surrounding the announcement day. The immediate announcement effect of M&As is negative and statistically different from zero, for all estimation windows. These statistically significant and abnormally negative market reactions reveal that investors view these corporate events as value destroying from the perspective of the bidders' shareholders[25]. The mean CAR for a 3-day event window is of -0.77%, for a 7-day[26] event window is -0.82%, for a 11-day event window is -1.05% and – 1.77% for a 21-day event window.

This short-term market reaction to acquisitions leave little room for divergence. However, it is also clear that this negative market reaction is undifferentiated between cash-rich bidders and the rest of the firms. Through the univariate tests of differences in means and medians , the results don't illustrate any association between excess cash and stock market reaction to the investment announcement. Panel B presents a multivariate analysis, being the dependent variable the mean bidder's CARs for the various event windows up to 21 days surrounding the event. The results show that even controlling for several firm and deal-level characteristics, there seems to be no robust relation between increasing excess cash and bidder short-term stock market returns. However, for a 10-day event window (model (3)) there is a negative coefficient for Cash deviation, significant at a 10% level, indicating that there is evidence that implies that when the deviation from the normal level of cash deviates by one unit, Cumulative Abnormal Returns decrease, on average, 1.59%, ceteris paribus. Despite this conclusion, I cannot infer about the actual link between stock markets reaction and cash-rich successful M&As, thus the second hypothesis is rejected.

[25] The effect for the bidders' shareholders is the subject of interest in this dissertation, although the combined effect might be positive.

[26] From 5 days prior to the announcement day to 1 day succeeding the event. The inclusion of this event-window is based on Harford (1999).

Table 7 – Market Reaction to Cash Stockpiling

The Table presents, in panel A, mean cumulative abnormal returns around the event date for the full sample and subsamples, considering four event windows. Firms are here considered as cash-rich firms if their cash reserves deviate by more than 1.5 standard deviations from the cash reserves predicted by the cash management model from equation (1), (Harford,1999). The estimation window is of 231 days (-250 to -20). To test if the mean CARs are statistically different between the two groups of firms I perform a t-test, for which I present the differences obtained, in absolute terms and the p-values. Panel B shows the result of the estimation of equation (3), where the dependent variables match the average bidders' Cumulative Abnormal Returns for four different event-windows. All regressions incorporate year, country and industry dummy variables. All variables are defined in Appendix A. ***Significant at the 1% level, **Significant at the 5% level, *Significant at the 10% level.

Panel A: Cumulative Abnormal Returns - univariate analysis

Event-window	Total Sample	Differences in means $\lvert \text{cashrich Firms} - \text{Other Firms} \rvert$	Differences in means (p-value)
[-1;1]	-0.0077***	0.0030	(0.3211)
[-5;1]	-0.0082*	0.0200	(0.1004)
[-5;5]	-0.0105*	-0.0106	(0.1946)
[-10;10]	-0.0177*	-0.0264*	(0.0088)

Panel B: Cumulative Abnormal Returns regression

	(1)	(2)	(3)	(4)
VARIABLES	**CAR [-1;1]**	**CAR [-5;1]**	**CAR [-5;5]**	**CAR [-10;10]**
$Cashdev._{t-1}$	-0.0018	-0.0022	-0.0159*	-0.0098
	(-0.33)	(-0.22)	(-1.73)	(-0.71)
$Leverage_{t-1}$	0.0002	0.0005	-0.0000	-0.0001
	(0.07)	(0.07)	(-1.13)	(0.93)
M/B_{t-1}	0.0027*	0.0024	0.0003	0.0004
	(1.78)	(1.45)	(0.19)	(0.22)
$Paid\ inCash$	-0.0487*	0.0155**	0.0143**	0.0185**
	(-1.88)	(2.55)	(2.14)	(2.17)
$Crossborder$	-0.0021	0.0005	0.0041	0.0173*
	(-0.46)	(0.07)	(0.44)	(1.65)
$Size_{t-1}$	-0.0026	-0.0053**	-0.0024	-0.0049*
	(-1.25)	(-2.41)	(-1.06)	(-1.93)
$RelativeSize$	-10.0487*	-9.7847*	-7.5086	-2.8129
	(-1.88)	(-1.82)	(-1.33)	(-0.41)
Constant	0.0169	0.0431	0.0522	0.0556
	(0.61)	(1.23)	(1.26)	(1.14)
Observations	1,016	1,016	1,017	1,017
R-squared	0.120	0.081	0.068	0.061

The lack of results in this section is not particularly surprising, given the complexity of the unknowns underlying investor's perception and the fact that I am only considering successful events, which means that the successful cash-rich bidder M&As do not observe the same negative market reaction reported by previous literature. Other explanations for this might be related to the fact that studies such as Opler et al. (1999), Harford (1999) and Décamps et al. (2011), that find significant negative relationship, are conducted for US bidders only, and don't consider a long-time period as the one used in this dissertation. Despite the control variables used for time, country and industry of acquirer's, this sample differentiation from previous studies might explain part of the lack of results.

5.2.2 Post-M&A Operating Performance

Additional to the announcement returns evaluation, I also perform an operating performance analysis, including periods of pre and post successful acquisitions.

By applying a similar method, I use as measure of operating performance the cash-flow return-on-assets. Barber and Lyon (1996) show that when studying operating performance, it is important in designing tests to control for abnormal firm characteristics prior to the event. They demonstrate that tests can lead to incorrect inferences if the sample of firms being studied had abnormal operating performance prior to the event. In order to capture this effect, the regressions contain pre-acquisition operating performance calculated for periods *t-4* to *t-1.*

Table 8 presents the results of the regression for the bidders' operating performance following successful Mergers and Acquisitions. The results show that increasing excess cash is negatively related to the abnormal operating performance following the event (at the 1% level). The marginal effect associated to *CashDev*., implies that, on average, when the amount of cash deviation goes up by one unit it causes a decrease of the post-merger operating performance by, approximately, 1.65 percentage points, ceteris paribus. Once again, I do not observe significant results using the extreme cash-rich firm-year definition suggested by Harford (1999).

These results suggest that from an operating performance point of view, cash-rich bidders tend to undertake poor investment decisions, although the same inference is not found in extreme cash-holders. Relating these results with the ones found in announcement returns, investor's do not incorporate this expectation in firms' stock prices, as the announcement returns are followed by unknowns. From this perspective, investors aren't able to recognize future operating declines for cash-rich bidder acquisitions.

Table 8 – Operating performance

This table shows the results of a regression test of the effects of a merger on operating performance for bidders. Premerger performance is the firm's cash flow return-on-assets, averaged from the year *t-4* to *t-1.* The dependent variable is Postmerger performance, calculated also as the bidders' cash flow return-on-assets, averaged from *t+1* to *t+4.* Both models incorporate year, country and industry dummy variables. Presented in parentheses are heteroskedasticity robust *t*-statistics with standard errors clustered by year and country level. All variables are defined in Appendix A. ***Significant at the 1% level, **Significant at the 5% level, *Significant at the 10% level.

VARIABLES	***Postmerger Performance***
$Cashdev._{t-1}$	-0.0165***
	(-2.84)
Premerger Performance	0.4638***
	(5.45)
Constant	0.0080
	(0.53)
Observations	11,129
R-squared	0.0649

5.3 Payment Method decision

In order to further investigate the importance of cash holdings prior to M&A announcements, it is also interesting to investigate whether this excess cash is used as payment method for these investments. As seen in previous results, excess cash is strongly related to subsequent investing. Consequently, one should find reasonable to speculate that this excess cash is used for financing these investment decisions.

Table 9 reports results regarding estimated probit models, where the dependent variable is the dummy *CashvsStock*, and assumes the value one when the acquisition's payment method is composed by more than 90% of cash, and zero otherwise.

The outputs are clear: excess cash is positively and significantly related to cash rather than stock payment decision. These results are robust for model (2), meaning that the same relation is found in extreme cash-holders. In fact, throughout the several hypotheses tested using multivariate analysis, this is the only result that is consistent for both cash deviation and extreme cash-rich firm years, and even assumes a greater magnitude for this last specification. In this case, the marginal effect associated to *Cashdev.*, implies that, on average, when the amount of cash deviation goes up by one unit it causes an increase of the usage of cash payment above 90% by, approximately, 3.53 percentage points, ceteris paribus.

Remarkably there are other variables significantly correlated with cash acquisitions. It is possible to conclude that larger firms, with less leverage and higher in market-to-book ratios tend to prefer cash rather than stock as payment method. In terms of deal-level characteristics, one may conclude that cross-border acquisitions are positively related with the usage of cash, as the opposite occurs for the transaction value of the deal.

These founding's confirm conventional wisdom[28], in the sense that cash-rich bidders are more likely to use their cash to make acquisitions. Thus, through this analysis, one may conclude that there is evidence consistent with the agency cost theory: The existence and maintenance of excess cash can conduct managers to act in their personal interest and pool influence by financing acquisitions with that same excess cash, rather than paying dividends to shareholders.

[28] Contradicting the results of Pinkowitz et al. (2013).

Table 9 – Probit model for predicting Payment Method

This table presents the results of probit model (correspondent to equation (5)) of the payment method decision. The dependent variable is the dummy *Cash vs Stock,* and assumes the value one when the acquisition's payment method is composed by more than 90% of cash and zero otherwise. The first specification is estimated being the measure of excess cash *Cashdev,* as identified in equation (2); The second specification, (2), uses Harford (1999) identification of cash-rich firm-year. Both models incorporate year, country and industry dummy variables. Presented in parentheses are heteroskedasticity robust z-statistics with standard errors clustered by year and country level. All variables are defined in Appendix A. ***Significant at the 1% level, **Significant at the 5% level, *Significant at the 10% level.

VARIABLES	***(1)*** ***Cash vs. Stock***	***(2)*** ***Cash vs. Stock***
Cashrich	-	0.0494***
		(3.11)
$Cashdev._{t-1}$	0.0353**	-
	(2.17)	
$Leverage_{t-1}$	-0.0001**	-0.0002***
	(-2.26)	(-4.66)
M/B_{t-1}	0.0086***	0.0107***
	(2.67)	(4.51)
$Size_{t-1}$	0.0149***	0.0073**
	(3.54)	(2.12)
$SalesGrowth_{t-1}$	0.0079	-0.0071
	(0.28)	(-0.64)
$Crossborder$	0.0626***	0.0491***
	(3.21)	(3.16)
$DealValue$	-0.0001***	-0.0000***
	(-3.09)	(-3.04)
Observations	1,717	1,717
R-squared	0.0630	0.0466

6. Conclusions and final remarks

The previous literature provides diverse evidence on the possible benefits and drawbacks of cash stockpiling, and in particular prior to Mergers and Acquisitions. Using a sample of 3,515 Mergers and Acquisitions, the results support, globally, the agency cost theory, suggesting that excess cash leads managers to engage poor investment decisions. However, oppositely to prior findings, I do not find evidence for negative stock market reaction to cash-rich bidder acquisitions.

First, I investigate whether deviations from normal cash holdings are positively related to the likelihood of attempting an acquisition in the following period. I find evidence that there is, in fact, a positive relationship, and is increasing for smaller firms with higher investment opportunities, consistent with major prior literature. However, I do not find robustness for firms that hold extreme levels of cash.

In order to evaluate the performance of these events, I compute the Cumulative Abnormal Returns and the post-merger Operating performance for successful acquisitions, and find that the stock markets do not incorporate in stock prices the decreasing post-merger Operating performance that is found related to excess cash. Although prior literature report consisting relation between these two measures of performance, I do not find significant reaction for announcement returns of cash-rich bidder acquisitions. This might be related to the possibility of the merging firms which experienced poorest market reaction at the announcement period did not proceed and close the deal. However, it would be interesting to investigate whether this is the actual explanation for these findings. It is also important to refer that the results obtained for the declining operating performance aren't robust for extreme cash-holders, which mitigate the lack of consistency between these two performance measures. Regarding this topic, I recognize that using a control sample for controlling abnormal firm characteristics prior to the event would be an important procedure for this investigation, as suggested by the literature.

Finally, the results on the payment decision lead to the conclusion that in fact cash is the primary method used by cash-rich firms to finance the investment decisions. In this case, the results are robust for extreme cash-holders and leave little room for

doubts: cash holdings, when in excess, are used as primary resource for funding investment opportunities.

Overall, there is more consistency in favor of the agency cost theory rather than the idea of the enhancing value of cash for precautionary reasons. Nevertheless, this debate is far from being free of controversy, due to the diverse nature of multivariate procedures, sample selection and definition of excess cash. I admit the possibility that by using more sophisticated methods and undertaking the above-mentioned improvements the outcomes can differ from the ones presented. In addition to the hypotheses tested in this dissertation, as previous literature revealed, there are several other crucial determinants of cash holdings that assess the importance of cash from the shareholders' perspective: Investor protection, corporate governance, financial constraints, periods of crisis, among others.

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Appendix A –Definitions and respective DataStream and WorldScope Mnemonics

Variable	Definition and DataStream/Wordscope Mnemonic
$NetCFO$	Net cash Flow from operating activities (WC04860)
Cash	Cash (WC02003)
Total Assets	Total assets (WC02999)
Sales	Net sales or revenues (WC01001)
$NonCashWC$	Working Capital (WC03151) – Cash (WC02003)
M/B	The market value of equity (MV) divided by the book value of equity (WC03501).
CFO Var.	Average standard deviation of the firm's prior 10-year Net cash Flow from operating activities (WC04860)
Leverage	Long-term debt (WC03251) divided by the sum of preferred stock (WC03451) and common equity (WC03501).
Sales Growth	Percent change in net sales.
Size	Natural log of the firm's market value (MV).
Cashrich	Dummy variable that assumes the value one when the actual cash/sales ratio deviates more than 1.5 standard deviations of the normal cash/sales ratio estimated in equation (1).
$Cashdev$	Cash deviation of the firm's cash to sales level from the average value predicted in equation (1)
PER	Price to earnings ratio (PE).
Bidder=1	Dummy variable that assumes the value one for the firm-years in which the firm announces a bid and zero otherwise.
PaidinCash	Dummy variable that assumes the value one for events paid 100% in cash and zero otherwise.
$Crossborder$	Dummy variable that assumes the value one when the Acquirer's Country and Target Country are different and zero otherwise.
Postmerger Performance	Average 4-year cash flow return-on-assets after the acquisition, defined as Net cash Flow from operating activities (WC04860) divided by Total assets (WC02999).
Premerger Performance	Average 4-year cash flow return-on-assets before the acquisition, defined as Net cash Flow from operating activities (WC04860) divided by Total assets (WC02999).

Appendix A (Continued)

Cash vs. Stock	Dummy variable that assumes the value one when the acquisition's payment method is composed by more than 90% of cash and zero otherwise.
DealValue	Transaction value of the deal (DV).