

How adverse selection of cash holdings affect corporate and investor behavior in M&A cases: Evidence from fully stock financed European acquisitions

Finance
Master's thesis
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2012

HOW ADVERSE SELECTION OF CASH HOLDINGS AFFECTS CORPORATE AND INVESTOR BEHAVIOR IN M&A CASES: Evidence from Fully Stock Financed European Acquisitions

PURPOSE OF STUDY

This thesis examines how excess cash holdings affect firm and investor behavior in equity financed mergers and acquisitions. The theoretical framework for the study has been set based on research on firm capital structure and M&A outcomes. It therefore builds on a solid theoretical base, where optimality is seen as a basis for rational behavior. Equity financing has strong signaling effects, which have been reported to diminish shareholder value in the short-term especially if irrationally exercised. Reflecting on the selection of cash holdings, firms are subject to stronger signaling effects as essentially they provide a less expensive form of financing. In light of the prevailing theory, I intend to provide results that capture these effects in European context, while enabling comparison of domicile and cross-border M&A cases and the implications of different legislations.

DATA AND METHODOLOGY

I gather mainly two different samples in order to first measure excess cash reserves and secondly to inspect how they are translated into a sample consisting purely of equity financed acquisitions in the EU-15 countries. I use ThomsonReuters and SDC to retrieve the data for M&A cases occurring in 1999-2010. I primarily use OLS multivariate and Logit regressions to test the impact of excess cash reserves on M&A announcement effects, probability of using equity, and post-acquisition performance. Further, account for outliers and sampling bias by winsorising and the Heckman two-stage model respectively.

RESULTS

The results provide strong support for my hypothesis. Excess cash tends to have strong signaling effects on bidder cumulative abnormal returns, where the relation is significantly negative. I also provide evidence that lowering levels of information asymmetry off-sets this effect, as uncertainty about the bidder valuation levels is lowered. The probability of using equity in M&A cases is similarly negatively related to excess cash reserves. This effect is highlighted in market conditions that are more favorable, i.e. valuation levels are higher. Differentiating between country legislation builds on the finding, as higher investor protection increases the probability of using equity but simultaneously the adverse selection cost is emphasized. Post-acquisition operating performance is shown to be improved with higher excess cash ratios. Cash reserve levels are shown to decrease during the first years after the transaction, converging therefore towards normal levels.

KEYWORDS

M&A, merger, acquisition, adverse selection, asymmetry of information, capital structure, cash holding, precautionary motive, method of payment.

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TUTKIELMAN TAVOITTEET

Tutkielmassa tarkastellaan ylimääräisten kassavarantojen vaikutusta yritysten ja sijoittajien käyttäytymiseen, kun kyseessä on omalla pääomalla rahoitetut yrityskaupat. Teoreettinen viitekehys pohjautuu tutkimuksiin, jotka käsittelevät yrityksen pääomarakennetta ja yritysostojen tuloksia. Taustalla on laaja teoreettinen pohja, jossa nähdään optimaalisuuden olevan perustana rationaaliseen käyttäytymiseen. Pääomarahoituksen muodoista oman pääoman ehtoisella rahoituksella on voimakas signaalointivaikutus, jonka on raportoitu vähentävän omistajien arvoa lyhyellä aikavälillä, erityisesti mikäli sitä on käytetty epärationaalisesti. Kassavarantojen tasojen valinnan myötä yritykset omaksuvat vahvempia signaalointivaikutuksia, jotka tulee huomioida rahoituspäätöksissä. Vallitsevan teorian huomioonottaen esitän tuloksia, jotka käsittelevät näitä vaikutuksia Euroopassa. Vertailen myös maiden sisällä tapahtuvia ja maantieteelliset rajat ylittäviä yrityskauppoja ja siten tutkin eri lainsäädäntöjärjestelmien vaikutusta niihin.

LÄHDEAINEISTO JA MENETELMÄT

Käytän pääosin kahta eri otosta, jotta ensiksi pystyn arvioimaan määritelmän ylimääräisistä käteisvaroista ja toiseksi tarkastamaan, miten nämä heijastuvat puhtaasti omalla pääomalla rahoitettuihin yritysostoihin EU-15 maissa. Tiedot on kerätty ThomsonReuters ja SDC -hakemistoista kattaen yritysostot aikaväliltä 1999 - 2010. Olen ensisijaisesti käyttänyt OLS monimuuttuja ja Logit regressioita testatakseni ylimääräisten kassavarantojen vaikutuksia yrityskaupan ilmoitusvaikutukseen, todennäköisyyteen käyttää omaa pääomaa, sekä yrityskaupan jälkeiseen suorituskykyyn. Lisäksi huomioidakseni vieraiden havaintojen osuuden ja otosmenetelmän virheen käytän winsorising-menetelmää and Heckman kaksi-vaihe mallia.

TULOKSET

Tulokset tukevat vahvasti hypoteesejani. Ylimääräisillä kassavarannoilla on vahva signaalointivaikutus ostavan yrityksen kumulatiivisiin epänormaaleihin tuottoihin, joissa suhde on huomattavan negatiivinen. Osoitan myös, että alentamalla tiedon epäsymmetrisyyden määrää voidaan tätä negatiivista vaikutusta vähentää, sillä epävarmuus ostajan arvostustasosta laskee. Ylimääräisten kassavarantojen kasvaessa oman pääoman käytön todennäköisyys yrityskaupoissa laskee. Tämä vaikutus korostuu edullisessa markkinatilanteessa, jossa arvostustasot ovat korkeammat. Eri maiden lainsäädännön merkitys puolestaan heijastuu siten, että korkeampi sijoittajansuoja lisää todennäköisyyttä käyttää omaa pääomaa, mutta samalla korostuu haitallisen valikoitumisen kustannukset. Yrityskaupan jälkeisen toiminnan tehokkuus osoitetaan olevan parempi ylimääräisten kassavarantojen kasvaessa. Kassavarantojen taso osoitetaan olevan laskevia yrityskaupan jälkeen, jolloin ne lähestyvät normaalitasoa.

AVAINSANAT

Yrityskauppa, yritysosto, fuusio, haitallinen valikoituminen, tiedon epäsymmetria, pääomarakenne, kassavaranto, varovaisuuden periaate, maksutapa.

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I. Introduction

1.1 Background

Several mergers and acquisitions related research has focused on studying methods of payment and share price announcement effects, both for cross-border and domestic M&As. Findings vary significantly over time and across geographical focus, however a series of common fundamentals have been established: 1) equity financed transactions imply lower share price returns around the announcement date (Myers and Majluf, 1984); 2) full equity offers are more likely to be extended and accepted during equity market highs (Choe, Masulis, Nande, 1993); 3) method of payment does not affect the operating performance of the combined entity post-acquisition (Healy et al., 1999). Reflecting on theory and previous literature, the frames for this study are set relatively conscientiously: equity financed transactions are expected to have negative share price announcement effects, increase in probability at market highs, and create no operational value after the acquisition on average. The thesis builds on an understanding that firms having cash and marketable securities on their balance sheets, which exceed the required amount to finance daily operations, do not create value for shareholders. The return on cash is significantly lower than the required rate of return on equity. Therefore, it would be understandable to deploy these low return assets in ventures that provide higher returns. For some reason in situations where this cash could be deployed, firms haphazardly decide not to – instead they use more expensive sources of finance. The question is: Why do firms use equity financing if internal funds are also available?

In the presence of capital market imperfections deriving from asymmetric information between managers and capital providers, liquidity may be considered to be in a strategic role. Financial flexibility in the form of excess cash reserve may convey 1) growth opportunities; 2) stability through economic downturns; 3) guard against the underinvestment¹ problems caused by expensive external financing, which are seen valuable for shareholders. Firms that experience high growth prospects and need a high level of liquidity to ensure corporate flexibility, are

¹ The underinvestment occurs because there are realized project payoffs that cover the investment expenditure at the time of the investment but not the investment expenditure and the promised payment on leverage at later dates (Myers 1977).

expected to act against established corporate finance theories. Cash reserves do, however, induce an adverse selection cost by sending a stronger signal of overvaluation when equity financing is used. It is this signal that my thesis addresses.

This study is motivated by the study conducted by Gao (2011) and reflects results on his findings. In his study, Gao (2011) explores the effects of excess cash ratio of bidder announcement effects and the relation between excess cash reserves and equity financing. Based on a US sample, the author finds evidence that announcement effects and probability of using equity as a method of payment is negatively related to excess cash reserves. He also finds that post-acquisition performance improves along the cash richness of the bidder prior to the M&A case.

1.2. Contribution to existing literature

The aim of the paper is to study EU-15 firms' liquidity and its relation to M&A outcomes. Fundamentally I differentiate between firms with excess cash reserves and non-cash rich firms, in order to test theories such as adverse selection of cash reserve and asymmetries of information. Adding to the vast amount of literature on the topic, I provide results for the EU-15 countries and apply methods that capture market irrationality and two-sided asymmetries of information according to Rhodes-Kropf and Viswanathan (2004) and Shleifer and Vishny (2003). I find that the methodology Gao (2011) uses adds to the existing literature, with close reference to Harford (2005), by inspecting equity financed transactions. Gao (2011) uses a US based sample and inspects acquisitions during the period 1990-2005. Hence, I bring a more contemporary data set with a different geographical focus. In addition, I provide robustness tests that account for the growth opportunities that are prevalent in certain market conditions and industry cycles.

A majority of previous literature has focused on the US and UK. By inspecting a European-wide sample of M&A, the thesis contributes to the existing literature, as it allows the evaluation of the impact of a wide range of institutional settings and legal and regulatory rules on the pattern of M&A activity. Having a sample consisting of several different countries enables me also to consider cross-border acquisitions from a very specific perspective. In comparison to the US and UK, Continental European firms are characterized by weaker investor protection and less developed capital markets (La Porta et al., 1998) and by more concentrated ownership structure

(Faccio and Lang, 2002). EU directives on M&A have harmonized regulation across the EU-15 countries, but there still exists differences in implementation. The same provisions applied in the UK, where shareholder rights are paramount, and in the rest of Europe, where corporate governance is dominated by stakeholders, are largely debated in the EU. The lack of experience by national authorities in evaluating complex transactions, the independence of regulatory agencies, and the degree of explicit or implicit government involvement are clear barriers to a homogeneous implementation of rules across countries. The thesis provides a unique insight on the differences between the two legislative areas, where both firm and investor behavior is confined to the two distinct areas.

1.3 Research question and main findings

As stated, M&A is a well-studied area of finance, but certain aspects require more scrutiny, especially in the European context. Building on the existing theories and research results, I provide insights on three main concentration areas: 1) the announcement effect of fully stock financed acquisitions; 2) the probability of fully financing acquisitions with stock, 3) the post-transaction operating performance and uses of funds. Differentiating between different market conditions and different legislative areas, the thesis engages in answering the possible differences in results for different environments.

In my study, I provide results that highlight the impact of excess cash holdings on firm and investor behavior. The results are achieved through OLS and Logit regression, Wald tests, Ranksum tests, and Heckman two-stage tests. First, I find that excess cash reserves are negatively related to the announcement effect of equity financed bidders at 1 percent significance. The impact is more pronounced in hot equity markets than in non-hot equity markets, which portray the overvaluation component of the market that is signaled through equity bids. The effect is also shown to be emphasized in legislative areas with higher investor protection, i.e. in areas where equity financing is used more likely. When the probability of using equity is tested, the excess cash reserve variable is highly significant and negative. Therefore probability of using equity is lower when internal, cheaper funds are available. The finding conveys rationality in firm behavior. Third, the operating performance improves along bidder cash richness, which implies that the higher synergies are expected following the weaker announcement effect. Overall, the

results presented in this study have both complementary and contradictory aspects regarding the theoretical frameworks that I construct in Section 2.

1.4 Limitations of the study

There are three main limitations to this study that act as constraints when evaluating the applicability of the results presented in this study. First, the availability of M&A data and firm related metrics are constrained to the data sources. Securities Data Company (SDC) Mergers and Acquisitions database limits the geographical diversity of the sample used in this study. For an unknown reason, the amount of M&A activity is unproportionally high for the United Kingdom as observations for smaller countries are lacking. Further, the number of observations for smaller countries is not consistent with the distribution of M&A activity. Therefore, the sample is slightly biased towards countries where transactions are recorded with higher precision. Similarly, I use ThomsonReuters database to retrieve firm financials, where observations are sensitive to the accuracy and correctness of firm coding. Again, for some smaller countries there exists a relatively lower ‘hit ratio’ in finding sufficient information. This consequently makes country level comparisons difficult to perform. However, I find that the sample used is sufficiently large and a fair representation of firm behavior in the EU.

Second, even though I use a sample starting from the year 1999 (the year the Euro was introduced to the world financial markets as an accounting currency) there is heterogeneity between country legislation developments during the past 12 years. The impact of these changes in country legislation is impossible to fully account for. I perform tests that include country and year differences, which are seen to be sufficient measures to incorporate this effect. Further, I differentiate between Code and Common Law countries to test for differences across various legislations.

Third, an important variable in explaining decisions on method of payment in M&A cases is excluded from this study. Corporate control (elaborated on in Section 2.3.1) is excluded due to the hand picking nature of the variable. Including over 3,000 acquisitions in the specific test where management ownership would be used as an explanatory variable, makes hand picking a data collection method that is not seen feasible.

1.5 Structure of paper

The rest of the paper is organized as follows. Section II provides theoretical background and previous literature on the topic. Section III introduces the reader to the European legislative environment elaborating on differences between countries from an M&A perspective. Section IV introduces my hypotheses based on the existing theories and previous findings. The following section focuses on elaborating on the methods and data used to conduct the analysis. Section VI presents empirical observations of excess cash reserves, deal announcement effects, equity financing in M&A cases, and post-transaction operating performance. Section VII presents rationale for robustness analysis and implications on the reported findings. Section VIII concludes the research and suggests further research on the subject.

II. Theory and Previous Literature

2.1 Capital structure

The financing decisions made by companies are tightly related to the capital structures they decide to uphold. Finding the optimal levels of equity and debt has been an area of interest for researchers for decades. Myers (1984) and Myers & Majluf (1984) suggest that financing requirements are met in an order of choice, where the different financing possibilities are divided into three classes: 1) internal funds; 2) debt issuance; 3) equity issuance. According to the Pecking Order theory, financing behavior is driven by adverse selection costs. The costs are increasing with class, so that both debt and equity have premiums relative to retained earnings, equity having the most adverse selection cost due to its riskiness for the outside investor. Managers may be forced to forgo profitable projects if internal funds are not sufficient to finance the optimal investment program and information asymmetry is prohibitive. In this situation, financial slack is valuable, and the only opportunity to issue equity without the loss of market value occurs if information asymmetry is nonexistent or small. This idea captures the notion of time-varying adverse selection costs (discussed further in Section 2.2.1).

A rival theory to the Pecking Order theory, the Trade-Off theory, suggests that increasing leverage levels are beneficial for the company value until a certain point. Once the costs of financial distress exceed the tax benefits gained from increasing leverage, the company value starts to decrease. Several authors, including Schwartz and Aronson (1967), have documented strong industry effects in debt ratios, which can be interpreted as evidence of optimal ratios. Optimal capital structure research is broadly defined by the findings of Miller and Modigliani (1958), who detected the positive effects of interest tax shields in market valuations. This way of thinking has contributed to the Static Trade-off theory, which suggests target debt levels for firms. It introduces an incentive to adjust the capital structure to deviances from the optimal level. After a short-term shock in the capital structure, being weighted either to debt or equity, there exists pressure to return to the pre-shock capital structure. Taggart (1977), Marsh (1982), Auerbach (1984) and Jalilvand and Harris (1984) find mean reversion in debt ratios and show that firms appear to adjust toward a debt target.

Theoretically, the Static Trade-off theory may be considered more versatile than the Pecking Order hypothesis because the theory accommodates the propensity to use debt and equity, which the Pecking Order theory considers to be irrelevant. The theory implies that in addition to the cash flow deficit, other characteristics such as expected growth, size, leverage and assets with collateral value which can be used to secure debt may affect the use of debt by firms. Therefore, at the theoretical level, the main difference between the Pecking Order theory and the Trade-off theory is the suggestion that there are other factors than the flow of funds deficit that affect the decision of firms to use debt. The theory suggests that firms which have the same deficit may desire to use different amounts of debt because of differences in their size, leverage and asset structure. Leary and Roberts (2010) provide evidence that fewer than 20 percent of firms follow the Pecking Order's predictions concerning debt and equity issuance decisions. Only when they allow firms' debt capacity to vary with variables attributed to the Trade-off theory, does the predictive ability of the pecking order improve significantly. This finding is in-line with the comments.

2.2 Adverse selection of cash reserve

2.2.1 Theoretical background for the adverse selection effect of corporate cash reserve

Firms may hold significant amounts of liquidity for a variety of reasons. One of the most recognized motives is to minimize transaction costs. Vickson (1985) and Penttinen (1991) performed well-developed stochastic programming models to identify optimal cash reserve levels reflecting on the pecking order framework established by Myers (1984). This literature also contributes to research by showing that there are economies of scale on cash management and specifying how much cash a firm will hold on average. Another reason for holding liquid assets is to maintain funding for positive net present value projects also in situations when cash flows are too low. Information asymmetries and agency costs are emphasized in economic troughs as firm performance might be a reflection of the economic situation or internal reasons such as exhausted growth opportunities. Here external financing is expensive and a reserve of liquid assets is valuable if value creating investment opportunities are available and cash flows are low due to the bad economic state.

As stated, this paper aims to identify the informational aspect of cash reserve, namely its adverse selection effect. One may state that Myers and Majluf (1984), in their pioneering work on capital structure, were the first ones to allude to the adverse selection of cash reserve. In their work, the authors construct a model where information is one-sided based on the Pecking Order theory and that stock issuance has negative price implications. However, the fact that stock bidders are cash-rich contradicts this fundamental theory of corporate financing and the need for a model with two-sided information asymmetry framework.

Rhodes-Kropf and Viswanathan (2004) introduced a model that allowed uncertainties about both a bidder's stand-alone value and deal synergies, which enabled violation of the Pecking Order theory. Target managers may misinterpret part of the bidder overvaluation as synergies and are appealed to accept stock as consideration. Therefore, assuming that excess cash reserves prevent fully stock financed acquisitions to be completed due to target unwillingness to accept stock considerations based on the adverse selection framework is not correct. Target unwillingness ascends from the difficulty to distinct between positive synergies and overvaluation, as they are

unclear for limited information target decision- makers. The market-wide component of overvaluation implies market values of both the bidder and target above intrinsic values. The target correctly adjusts the bids for potential market overvaluation, but being Bayesian² updater, he puts some weight on high synergies as well. When the market-wide overvaluation is high, the estimation error associated with the synergy is high too, so the offer is more likely to be accepted (Gao, 2011). Cash consideration removes ‘lemon’ bidders trying to exploit stock overvaluation, which would provide target managers the security to accept a bid. The use of stock as consideration, given high cash levels manifests the adverse selection and investors would be inclined to depress the bidders share price. Thus, when the market is overvalued, then the target is more likely to overestimate the synergies even though he can see that his price is affected by the same overvaluation because he still underestimates the shared component of the misvaluation. In addition, Hansen (1987) proposes a model where the bidder’s uncertainty about the target’s value increases the probability of using stock as consideration due to the ‘contingency pricing effect’. Stock financing forces target shareholders to share the risk that the acquirer may have been overvalued.

In a survey conducted by Lins et al. (2010), 200 corporate CFO’s were asked to determine the importance of 22 factors affecting excess cash reserve decisions. Based on the study, the most important factor is the security buffer that cash reserves provide against cash flow short falls. 47 percent of the 188 respondents gave a 4 or a 5 on a scale of 0 to 5, where 5 is defined as highly important. The authors also find that future investment opportunities are also seen as an important factor, however it was ranked fifth in importance with a mean of 2.36. The respondents gave minimal importance to cash reserves to ensure efficiency in running operations, interest rates difference between cash and debt, and time taken to raise external funds a higher importance than future investment opportunities. Regulatory requirements and cash holdings of peers were seen with importance in the last quartile. I have included the full results of Lins et al. (2010) in Appendix D.

² Bayesian updating is the revision of prior probability estimate to produce a posterior probability estimate. In algebra it gets the form of conditional probability and can be written as: $\text{Prob}(A|B) \times \text{Prob}(B) = \text{Prob}(A \text{ and } B) = \text{Prob}(B|A) \times \text{Prob}(A)$.

2.2.2 Other informational implications of cash

Maintaining high cash reserves has two strategic roles that have also informational relevance 1) precautionary motive; 2) managerial discretion motive. According to the precautionary motive, the potential underinvestment problems are addressed by holding excess cash reserves. Underinvestment problems are induced by costs associated with external financing decisions, which are subject to the adverse selection of equity (Myers and Majluf, 1984) and agency costs of debt (Myers, 1977; Jensen and Meckling, 1976). Opler et al. (1999) provide a relation between underinvestment costs and growth opportunities – higher growth opportunities incur higher costs of external financing for shareholders (an empirical result later documented by Almeida et al., 2004; and Bates et al., 2009). In European context, Faccio and Masulis (2005) bidders of higher growth opportunities are more inclined to use stock as consideration in takeovers.

Jensen's (1986) free cash flow theory assumes that more internal funds allow managers to elude control of the capital market. Following, the need for shareholder approval is decreased and managers obtain freedom to decide on investments according to their own discretion. Managers are reluctant to pay out funds, and they have an incentive to invest even when there are no positive net present value projects available. With increasing managerial discretion to misuse funds for value-destroying projects when cash reserves are high, the market for corporate control (a corporate governance mechanism) is supposed to limit self-serving behavior. However, higher degree of information asymmetry increases the vagueness of value-creating and value-destroying projects for outside stakeholders. Specifically, this makes determining excess cash reserve levels difficult for shareholders. Managerial discretion motive arises from entrenched managers being reluctant to use cash, an insulator against external capital market monitoring, as payment medium. Cash reserves are held even though profitable growth opportunities are exhausted and fiduciary duty would require them to pay-out cash in the form of dividends (Jensen, 1986; Opler et al., 1999). According to this view stock financed bids are cash preserving strategic decisions, given managerial entrenchment. The implication would be a negative price reaction as cash levels are maintained in order to lower monitoring power over actions. Operational performance of stock financed bids for cash-rich firms are also observed in this paper (Section 5.3.1).

Cash offers and stock offers have different tax implications. Due to tax obligations generated by cash offers for the target's stockholders, the target firm might be inclined to prefer stock offers. The tax-free aspect of exchange offers enables the target to defer realized capital gains until the stock is sold. In certain countries, the depreciation basis of acquired assets remain the same in stock offers, whereas cash deals enables the acquiring firms to raise the depreciation basis of acquired assets to their market value. Nevertheless, due to the differential in tax treatment, higher acquisition prices are generally required in cash offers to offset the tax burden of the selling stockholders (Wansley, Lane and Yang, 1983). When comparing differences between countries, taxation issues are to be addressed as they most likely affect management decision making and therefore I elaborate on them in Section 3.2.

2.3 M&A financing decision

2.3.1 Determinants of payment method

A firm's method of payment decision could be driven by capital structure considerations if firms maintain a capital structure target. Tax benefits and benefits from reduced agency costs of debt financing against the expected costs of financial distress have been used to explain capital structure targets (Miller and Modigliani, 1963; Harris and Raviv, 1991; Myers, 1977; Jensen and Meckling, 1976). Alternatively, Stulz (1988) and Harris and Raviv (1988) propose that capital structure could be driven by management preference to pay with debt financed cash in order to maintain control. Linn and Switzer (2001) argue that bidders use cash to deter competing bids when they have favorable private information indicating a high value for the target, potentially due to synergies. The authors also argue that a large cash offer increases the probability of the target accepting the offer and eliminates any delay, which could be exploited by other competing bids from other firms. Importantly, bidder firm management with favorable private information on future returns increases the fraction of cash as a method of payment. Rationale for this would be to deter competition and capture a large share of the synergistic gains.

Following I have listed the most recognized determinants of methods of payment.

Collateral: Debt holders in firms with fewer tangible assets and more growth opportunities are subject to greater moral hazard risk, which increases the cost of debt, often making stock more attractive (Myers, 1977). Hovakimian et al. (2001) find that there exists a positive correlation between tangible assets and leverage levels, implying a significant role of tangible assets on a firm's debt capacity and the level at which it is utilized. Hence, collateral increases the use of cash as debt capacity is increased, which consequently lowers the probability of using equity.

Leverage: M&A cash considerations are usually obtained by debt financing and therefore highly leveraged firms prefer to use stock as a method of payment. The capital structure choice boils down to the risks associated with financial leverage as discussed in Section 2.1. DeAngelo and Masulis (1980) predict the costs of excess debt levels in their paper and find that the marginal cost of excess debt increases along leverage. Harford et al. (2009) find that the fraction of a deal that is paid for with cash versus equity is negatively associated with the acquirer's pre-acquisition leverage deviation. In other words, a firm behaves in a way that it balances its method of payment between cash and equity according to its leverage target. This conveys that the probability of using equity increases according to firm leverage. This is consistent with the well acknowledged fundamentals of corporate finance set out by Modigliani and Miller (1958).

Bidder size: Bidder size is likely to be an explanatory variable when considering financing decisions. Larger firms are more diversified, which lowers expected bankruptcy costs. They also have better access to debt markets and lower flotation costs. Based on these attributes it may be argued that larger firms more readily use cash as M&A financing. In addition, the relative deal size (deal size diffused by bidder total assets) is more probably smaller for larger firms, which makes the bidder more apt to use cash reserves or unused debt capacity to finance the transaction. Further, the use of cash allows the bidder to avoid the significant costs of obtaining shareholder approval of preemptive rights exemptions and stock authorizations and the higher regulatory costs of stock offer (Faccio and Masulis, 2005).

Market-to-book: Bidders with good growth opportunities convey a positive equity story for the target shareholders. Market-to-book, defined as the market value of equity over the book value of equity, is a commonly used proxy for growth opportunities.

Economic activity: Business cycle conditions are likely to have an influence on the choice of the decision between equity and cash consideration. Choe, Masulis and Nanda (1993) argue that the overall state of the M&A market is likely to increase the probability of using stock financing due to the fact that firms face lower adverse selection costs, more promising investment opportunities and less uncertainty about assets-in-place. This coincides with the findings of Rhodes-Kropf et al. (2005) where they show that equity financed acquisitions are observed with greater likelihood in merger waves.

Operating cash flow: According to the Pecking Order hypothesis (Myers, 1984) managers follow a financing hierarchy as follows: internal finance, debt financing and lastly external equity financing. In addition, Jensen (1986) argues that there exists a positive correlation between amounts of free cash flow and cash financed acquisitions. Thus, higher free cash flows are expected to lower the probability of using equity as consideration.

Sales growth: Historical sales growth may be used as a proxy for growth opportunities (Ismail and Krause, 2010). Even though the metric is backward looking, it removes the constraint of using analyst growth forecasts, which are not available for a large proportion of the sample firms.

Corporate control: Amihud et al. (1990), Stulz (1988), and Jung, Kim and Stulz (1996) propose in their papers that major shareholders should be reluctant to use stock financing when there is dilution of control. Assuming control is valuable for shareholders³, there should be a clear propensity to use cash as consideration when the control position may be altered. A bidder with highly concentrated or highly diffused ownership structure is less likely to be concerned with corporate control issues. Martin (1996) and Ghosh and Ruland (1998) contemplate that there exists a negative relationship between the likelihood of stock financing and managerial ownership only over the intermediate ownership range. Concentrated ownership of a target means that a stock financed acquisition can create a large blockholder, threatening the corporate governance of the acquirer. This implies that if the target has a highly concentrated ownership structure and its relative size to the bidder is high, a stock financed acquisition will create a new

³ Nenova (2003) and Dyck and Zingales (2004) document substantial benefits to corporate control in Europe.

bidder blockholder and the existing controlling shareholder will lose controlling power in the bidder.

Relative deal value: Moeller et al. (2004) show that the relative size of the two firms will be relevant as the larger amount of cash required for a large target firm might be difficult to obtain. This will increase the probability of using equity, especially when the bidder's debt capacity is limited.

2.3.2 Effects of financing decision on post-acquisition performance

Prior literature identifies three main types of synergies: 1) financial synergy; 2) operational synergy; 3) managerial synergy. In addition, other value creating sources have been suggested by researchers: market power (Ghosh, 2004), valuation differences between target and bidder (Jarrel et al., 1998), tax benefits, diversification and improvement of the marketability of securities (Mandelker, 1974). Shleifer and Vishny (1989) put forward that mergers are motivated by empire building, which is seen as an instrument to transfer wealth from the bidder to the target – not actual value creation. Similar effects are present in a hypothesis by Roll (1986) as he suggests that hubris⁴ motivates managers to acquire.

Assuming managerial rationality, acquisition offers are extended on a value creation basis. Capturing identified synergies is a matter of consolidation and implementation efficacy post-transaction and may deter value creation. Nevertheless, operating performance is assumed to improve as a result of the synergistic gains. However, previous studies document results to the opposite. Healy, Palepu, and Ruback (1992) conduct a test of the post-merger performance of the 50 highest value mergers of 1979 to 1984 in the US. They observe the operating performance of the two independent firms prior to the merger and compare it to the performance of the combined entity post the transaction. Healy et al. (1992) find no relation between changes in performance

⁴ The Hubris Hypothesis is advanced as an explanation of corporate takeovers. It suggests that there is a tendency for bidder firms to pay too much. Firm managers are over optimistic about their ability to add value to a new firm. Hubris on the part of individual decision makers in bidding firms can explain why bids are made even when a valuation above the current market price is essentially a valuation error. Bidding firms that are said to be infected by hubris simply tend to pay too much for their targets. It is often argued by various experts that there really are no gains associated with corporate takeovers and even if there are, they are highly overestimated and the sources of these small gains are basically 'elusive'.

and the method of payment. It is possible, however, that this result was influenced by the small sample size (50 mergers, of which 13 were cash offers). They find that, on average, the operating performance of the combined entity improves and that this operating improvement is embedded in the announcement effect of the merger as positive stock reactions are observed on average. The authors find, however, that performance in general improves. The finding is consistent with Cornett and Tehranian (1992), who also reported improving performance for a sample of 30 bank mergers. Clark and Ofek (1994) investigate the relation between post-merger industry-adjusted performance and whether cash was included in a takeover offer. They find no significant relation. They also do not find any general improvement in performance as a consequence of the merger studied.

Loughran and Vijh (1997) conclude that combinations resulting from cash offers earn excess cash that are significantly larger than those associated with stock offers. A reason why cash offers may be associated with greater post-merger excess returns is that the post-combination operating results for such offers may exhibit greater improvement than what is observed for combinations associated with stock offers (Linn, Switzer; 2001). Linn and Switzer (2001) report for a sample of 413 combinations that the change in performance of the merged firms is significantly smaller for cases in which the acquiring firm offered stock as compared to cash offers.

Based on the study conducted by Gao (2011), post-acquisition investments are, in general, unrelated to pre-acquisition excess cash reserves. This finding is contrary to the view that excess cash reserve reflects growth. He finds, though, that long-term debt reduction is positively related to a bidder's excess cash ratio, which is related to the overvaluation hypothesis discussed in the next subsection.

2.4 Announcement effects of acquisitions

When reviewing research on abnormal returns for bidders and targets, the literature is relatively scattered. There is a considerable contrast between the large share price returns of target firms and the frequently negligible returns of bidding firms. Empirical evidence suggests that target shareholders realize abnormal returns around the announcement day, which are significantly different from zero. For U.S. target firms, Servaes (1991), Kaplan and Weisbach (1992) and

Mulherin and Boone (2000) find abnormal returns over 20 percent around the offer announcement. Schwert (1996) finds that share price reactions are not confined to days around the announcement but actually commence already 42 days prior to the event, emphasizing the run-up effect. As with U.S. firms, European targets have been recognized to experience double-digit abnormal returns. The returns have been decreasing as Franks and Harris (1989) found returns of 24 percent for the period 1955-1958 whereas Georgen and Renneboog (2004) discover only 13 percent for 1990-2001. Bidder share performance is insignificantly different from zero. Andrade et al. (2001), Franks et al. (1991) and Healy et al. (1992) show negative announcement effects whereas Asquith et al. (1983), Dennis and McConnell (1986) and Georgen and Renneboog (2004) show zero or slightly positive returns. The run-up effect is not either as strong for bidder firms as for targets. The returns of the combined are expected to increase as a result of the target firm's established positive announcement effect and negligent bidder share price reaction. Researchers unanimously document significant positive announcement effects for the combined firm, although the size of the total effect varies across studies. Bradley et al. (1988), Lang et al. (1989) and Healy et al. (1992) compute average abnormal returns of around 10 percent for the combined entity. Announcement gains of 4 percent are reported by Kaplan and Weisbach (1992), and Mulherin and Boone (2000).

Research papers on how payment method affects the target and bidder share price performance around and after an M&A case varies also significantly. First, Moeller et al. (2004) and Andrade et al. (2001) argue that all-cash bids generate higher target and bidder returns compared to all-equity acquisitions. An opposing view is presented by Franks et al. (1991), Chang (1998), Chatterjee and Kuenzi (2001) and Fuller et al. (2002) who report superior performance for stock acquisitions compared to cash acquisitions. The inspected share price performance varies significantly across the researches mainly due to differences in methodology as abnormal returns are measured with market modeling and varying bench-marking methods that are sensitive to the assumptions made on the peer groups formed in the studies. Franks et al. (1991), Lang et al. (1991), and Schlingemann (2004) and Harford (1999) attribute the negative effect of cash acquisitions to the agency cost of free cash flow. The underlying argument in most cases is the tendency of a cash rich firm to spend its resources on value –destroying acquisitions. Uddin and Boateng (2009) find that selected transaction-specific, firm-specific, and geographic characteristics affect the abnormal returns of acquiring firms. Relating to the firm-specific impact

on shareholder returns, Moeller, Schlingemann, Stulz (2005) find that the losses in shareholder wealth are caused by acquisitions by large firms, whereas when considering only small firms the shareholders gain in the aggregate.

Announcement effects of stock financed acquisitions have been well researched in previous papers: e.g. Travlos (1987) and Wansley et al. (1987) all find negative announcement effects for stock offers. These results all coincide with the framework of Myers and Majluf (1984), where stock issuance indicates overvaluation as costs of adverse selection increase when moving from internal financing to equity financing. Market timing, similarly, is well researched, where major findings underline the negative announcement effects of stock issuance. Tapping capital markets at market highs is a strategic decision managers seriously consider, as documented by Graham and Harvey (2001). Stock financed acquisitions correlate with merger waves (Rhodes-Kropf et al., 2005; Dong et al., 2006), which emphasizes the market timing aspect of equity financing. Loughran and Vijh (1997) and Agrawal and Jaffe (2000) find that bidders underperform peers in the long-term, which implies a price adjustment post-transaction of stock bids. The assumption of one-sided asymmetry of information is relaxed by Rhodes-Kropf and Viswanathan (2004) when they introduce the possibility of information asymmetry in valuing synergies. Market irrationality is also considered by Shleifer and Vishny (2003) as they propose a model with irrational markets and self-serving target managers, in which it is common knowledge that the market is mispriced but self-correcting in the long-run. They propose a more behavioral model where announcement effects are not significantly different for stock and non-stock bidders, but in the long-term the fundamentals of the bidders expose possible overvaluations. Harford (2005) challenges the overvaluation hypothesis as the explanation for merger waves but concedes that equity valuation could impact acquisition decisions.

Other characteristics of an acquisition have also been documented to affect announcement returns:

Diversification strategies are seen to destroy value as documented by Berger and Ofek (1995). This effect is related to the efficiency differences of diversifying portfolios between firms and investors. Diversifying takeovers are expected to benefit from financial synergies, which include cash flow stability, lower bankruptcy probability, cheaper access to capital, an internal capital

market, the use of underutilized tax shields, as well as contracting efficiencies created by a reduction in managers' employment risk.

Cross-border acquisitions tend to increase abnormal returns for target firms. It follows that the share price of bidders acquiring foreign firms significantly underperforms that of the bidders participating in domestic takeovers (Conn et al., 2005). The market anticipates that regulatory and national cultural differences between the bidders' and targets' countries may lead to difficulties in managing the post-merger process (Baldwin and Caves, 1991). Domestically-oriented firms frequently resort to cross-border takeovers as a means to survive the tough international competition in global markets. Expansion abroad also enables firms to exploit differences in tax systems and to capture profits resulting from market inefficiencies such as national controls over labor markets (Servaes, 1994). In addition, imperfect capital markets allow firms to exploit favorable exchange rate movements by moving operations to other countries or by acquiring foreign firms. Moreover, Conn et al. (2005) suggest that the signaling effect of cash transactions may not have the same force in the case of cross-border mergers and acquisitions in that, other factors may have impact on the means of payment. It has been suggested that the use of equity by cross-border acquirers may be due to problems associated with acquiring information about the foreign firms. Further, the use of cash may be due to the reluctance of foreign target firms to accept overseas equity as suggested by Gaughan (2002) and this might neutralize the signaling impact of cash acquisitions.

III. European context

3.1 Distinct characteristics for the region

Much of the change towards intra-European deals can be attributed to the challenges brought about by the development of the single European market and the introduction of the Euro in 1999. Fragmented and mostly domestically-oriented European firms resorted to takeover deals as a means to survive the tougher regional competition created by the new market. The introduction of the Euro has put additional pressure on firms, as it eliminated all currency risks within the Eurozone and reduced the home bias of investors. Cross-border acquisitions are expected to yield cost advantages and are to enable firms to expand their business more rapidly abroad. Moreover,

takeover activity was fuelled by the creation of a liquid European capital market with new sources of financing (e.g. Euro-denominated bonds). As a result of such economic and structural changes on the Continent, the M&A market in Europe peaked at US\$1.2 trillion in 1999, a marked contrast with the peak of the fourth merger wave which amounted to merely US\$0.15 trillion (Martynova and Renneboog, 2006). Reflecting on the boom in the stock markets at the end of the 1990's, the attractiveness of equity as a means of payment was increased, which was mainly due to the overvaluation of equity providing bidders a cheap currency to pay for their acquisitions. The European market for corporate bonds experienced considerable growth and provided another accessible source of funds. In addition, a European junk-bond market emerged. Low interest rates and a bank attitude more receptive to risky loans also facilitated M&A activity.

Managers and policy makers in EU believe that the creation of an integrated economic space within Europe depends on changing and homogenizing EU legislation (European Commission, 2005, 2007). The process has, however, proven to be extremely slow, as from the first draft of the Takeover Directive⁵ proposed by the European Commission in 1985; it took 18 years to approve it. The directive, which included key provisions, to harmonize takeover mechanisms, regulatory frameworks and shareholder rights, remained subject to nationalistic biases.

Faccio and Masulis (2005) find that U.K. and Irish bidders exhibit different motives for method of payment from those of Continental Europeans. United Kingdom and Ireland are the only Common Law countries in the sample, which means that they find that there exists importance of the bidder's legal system when it is Common Law. I have included the major taxation differences in respect of M&A for the 5 largest countries in the EU-15 (76 percent of my M&A cases) in Table 1. La Porta et al. (1998) state that investor protection differs across countries because they belong to different legal families. Countries within continental Europe are civil law countries that enforce block-holder corporate governance systems in which investor protection is low⁶. They provide evidence that the nature and effectiveness of financial systems can be traced in part to the differences in investor protections against expropriation by majority shareholders, as reflected by

⁵ A directive is a legislative act of the European Union which requires member states to achieve a particular result without dictating the means of achieving that result. Directives normally leave member states with a certain amount of leeway as to the exact rule to be adopted (Moschieri, 2009).

⁶ German (Germany) and Scandinavian (Denmark, Finland, Norway, Sweden) civil-countries have better enforcement of takeover regulation than French civil-countries (France, Belgium, The Netherlands) (Vijgen, 2007)

legal rules and the quality of their enforcement. La Porta et al. (1997) concludes that countries with better investor protection have higher abnormal returns since regulation protects them better and consequently they have more trust in the security market and are more willingly to exchange their funds for stocks.

One of the well-known facts about corporate ownership is that the ownership of large listed firms is dispersed in the UK and concentrated in Continental Europe. In more than 50 percent of European firms a single voting block of shareholders commands a majority of shares (Franks, 2009). In contrast, in the UK, it is less than three percent. It has been argued that concentrated ownership is a response to inadequate investor protection – in the absence of protection, investors sought to protect their investments through large share blocks. The difference in ownership concentrations can be attributed to weak investor protection in Continental Europe and strong investor protection in the UK. Faccio and Lang (2002) report that Western European firms are most likely to be widely held (36.93 percent) or family controlled (44.29 percent). Ownership dispersion is especially important in the UK and Ireland, while family control is more important in Continental Europe. They also find that the State is an important shareholder in some Continental European countries.

3.2 Taxation differences

An obstacle to European consolidation through unsolicited takeover offers is the lack of regulatory harmonization. While for the past 15 years, the EU Commission has been trying to create a regulatory infrastructure that would be conducive to consolidation, it has achieved mixed results at best. Certain milestones have been reached: the single currency, the EU prospectus directive⁷, and one accounting standard for all listed firms – IFRS⁸. However, in other areas, largely as a result of member states' lack of political willingness to put national champions up for sales, the EU Commission has not achieved its objectives to establish a uniform takeover code or uniform set of corporate governance standards. Therefore golden shares and other forms of veiled or blatant national protectionism continue to exist.

⁷ The EU Prospectus Directive is intended to create common disclosure standards for public issues of securities throughout the EU and to facilitate mutual recognition of prospectuses and listing particulars.

⁸ International Financial Reporting Standards

Table 1: M&A tax differences in major EU-15 countries

Panel A: Tax position for target shareholders on cash offer				
UK	Germany	France	Italy	Spain
Gains are taxable. However, there exists a relief called for corporate shareholders with a holding of at least 10% of shares for at least 12 months. The exemption ensures that firms should be able to restructure without taxation of capital gains.	In general, corporate shareholders pay tax on 5% of the gain (effectively 95% of the gain is exempt).	Corporate shareholders can benefit from a participation exemption on 95% of the capital gains realized, provided the disposal is of "investment shares" held for at least two years. The remaining 5% of the gain is taxed at the standard rate.	Corporate shareholders can benefit from a participation exemption in respect of 95% of the gain, provided that 1) shares have been held for at least 12 months prior to the sale; 2) the shares were recorded as a long term investment at the end of the first accounting period after acquisition; and 3) a non-resident target must be resident in a jurisdiction which has an exchange of information agreement with Italy.	If a 5% or higher stake in a Spanish company is held by a corporate shareholder for a minimum 12 month period, relief in the form of 100% tax credit is available in respect of the portion of the income corresponding to non-distributed profits/ reserves generated throughout the holding period of the transferring shareholder and proportionally to the stake transferred.
Panel B: Tax position for target shareholders on a share for share offer				
UK	Germany	France	Italy	Spain
Subject to certain conditions shareholders are not treated as making a disposal of their shares in the target. If rollover treatment is allowed, paper issued by the buyer is treated as the same asset as the shares sold. Tax is therefore payable only on a future disposal of the buyer's paper consideration.	The tax position of the target shareholders who receive consideration in the form of shares does not differ from the treatment on a cash offer. However, rollover treatment applies for all shareholders otherwise subject to German tax if: the buyer is an EU based company which will hold the majority of voting rights in the Target.	The tax position of the target shareholders who receive consideration in the form of shares does not differ from the treatment on a cash offer. However, where rollover applies (e.g. cash component does not exceed 10% of consideration) any tax charge on disposal is deferred until the consideration shares are sold.	Tax treatment is similar to that of cash consideration. Where rollover applies, any tax charge on disposal is deferred until the consideration shares are sold. This situation may arise if fully equity financed acquisition and target's shares are held on the balance sheet and face value.	The tax position of Target shareholders does not differ from the treatment on a cash offer. Rollover may apply subject to certain conditions, including: 1) Buyer acquires at least 50% of voting rights; 2) Buyer is resident for tax purposes in Spain and; 3) Any cash compensation is capped at 10% of nominal value of the shares.
Panel C: Debt financing the takeover offer				
UK	Germany	France	Italy	Spain
Finance costs associated with UK corporate debt are generally deductible. This is subject to anti-avoidance rules, including transfer pricing rules which restrict deductibility for debt with equity-like features and where the debt has tax avoidance as a main purpose	Generally, the deduction of interest expenses exceeding interest income is limited to 30% of the taxable EBITDA for income and trade tax purposes. Nondeductible interest may be carried forward. This interest barrier applies irrespective of the legal form of the financed business and does not distinguish between debt financing by shareholders or third parties.	As a general rule, interest expenses are deductible for corporation tax purposes. This is subject to certain restrictions: 1) the interest must not exceed a statutory rate determined by averaging market rated loans 2) the leverage is subject to a 1:1.5 gearing ratio, interest cover ratio tests and similar rules.	Generally, the deduction of interest expenses exceeding interest income is limited to 30% of EBITDA. Any interest not so deductible can be carried forward and will be deductible in future years, subject to the same 30% test.	Finance costs duly recorded in the profit and loss account associated with the acquisition are generally deductible, subject to certain restrictions, including transfer pricing or thin capitalization rules in respect of loans received from related parties.

Source: Smith, H., and Lutz, G., 2001. *Tax in European M&A*.

Inspecting Table 1, the major differences in M&A taxation in Germany, UK, France, Italy, and Spain are outlined. First, a noticeable difference is the differences between the Common Law country UK and the others in tax position for target shareholders in cash offers. As the gains are taxable in the UK, but largely exempt in the other countries, target firms in the UK may be more reluctant to accept cash offers in the UK. Now acknowledging that the tax at which gains are taxed differs between the five countries, the effective difference might not be as severe. Second, the tax position for target shareholders on a share for share offer does not vary significantly between the countries if rollover is allowed. The differences are therefore more related to national taxation levels than M&A bound taxation directives. Third, the use of debt to finance acquisitions is made more appealing in the UK than in the other countries. UK does not limit the deductibility of interest costs, whereas at least in Germany and Italy net interest expense is capped at 30 percent of EBITDA. In cases where relative deal value is high, a cash offer financed with debt will consequently be more appealing in the UK. The three main clauses in M&A directives across the five countries hence provide two outcomes: 1) cash offers are less appealing in the UK for the target; 2) taxation of equity financed acquisitions does not provide major differences across the countries.

3.3 Cross-border acquisitions in Europe

Cross-border acquisitions are mostly undertaken in order to cope with the strong international competition in international markets. Furthermore, firms expand abroad to take advantage of imperfections in the international capital market. Firms can, for example, benefit from different tax systems (discussed above) or exploit favorable exchange rate movements by moving operations to other countries or by acquiring foreign firms. As a result, the market expects that cross-border deals have a higher chance of succeeding and consequently value those deals more than domestic ones. Cross-border deals within the EU have some advantages with respect to cross-border deals outside the region. Bidders within Europe rely on single currency, which diminishes the risks of foreign currency volatility. This reduces entry barriers, easing the exploitation of economies of scale and the transfer of intellectual capital and technology, and fosters the growth of cross-border deals (Campa and Hernando; 2008).

Moschieri (2009) shows that the UK experiences a higher proportion of cross-border deals than the European average. In addition to the higher investor protection, British firms have a more decentralized decision-making process, better accounting standards, stronger shareholder protection and operate in a more active and competitive market than the rest EU-15 countries. Overall, these characteristics of the UK explain why British firms are more active in M&As and why they are more attractive to foreign bidders. In a study strictly focused on UK firms, Uddin and Boateng (2009) find that UK firms engaged in cross-border M&As earn positive abnormal returns. Martynova and Renneboog (2009) find that domestic mergers and acquisitions trigger higher abnormal returns than cross-border operations. When a UK target is involved, the abnormal returns are higher than those of bids involving a Continental European target.

IV. Hypotheses

The study tests three separate aspects of excess cash reserves. I first examine the response of investors to announced stock-financed acquisitions. This will shed light on the propensity of investors to revalue bidders' position as a financial asset. Second, the probability of a cash-rich firm to use equity as consideration is tested. Third, the operating performance and post-acquisition uses of funds are investigated. Based on these three approaches I have formed underlying hypotheses for the empirical section.

***Hypothesis 1.1:** Excess cash reserves diminish post-acquisition bidder returns in fully stock financed acquisitions*

In the world of asymmetric information, the method of payment may signal valuable information to the market. If the bidding firm's managers possess information about the intrinsic value of their firm, independent of the acquisition, which is not fully reflected in the pre-acquisition stock price, they will finance the acquisition in the most profitable way for the existing shareholders. Mergers involving equity financing are inherently different from cash acquisition as there exists

valuation uncertainties. Target firms face the binary decision making problem to accept or reject, which is subject to uncertainty of the appropriate value of the offered shares⁹.

A number of explanations have been offered to explain the negative stock price reaction of acquisition announcements. Roll (1986) argues that managers of bidding firms suffer from hubris. Both Myers and Majluf (1984) and Hansen (1987) predict bidder choice of payment is skewed towards securities when the valuation levels are high and preference for cash when undervaluation occurs. As uncertainty about the bidder asset value rises, this adverse selection effect is exacerbated. Korajczyk, Lucas and McDonald (1991) argue that new stock investors bear greater adverse selection risk after stock issues. Travlos (1987) finds that stock-financed M&A deals exhibit much larger negative announcement effects than cash-financed deals. The announcement is hypothesized to be related to the finding that firms with poor stock returns generally pay with equity. He concludes that this is consistent with the empirical validity of an adverse selection effect. A related hypothesis, formalized by McCardle and Viswanathan (1994) and Jovanovic and Braguinsky (2002), is that firms make acquisitions when they have exhausted their internal growth opportunities. Accordingly, the market participants interpret a cash offer as good news and a common stock exchange offer as bad news about the firm's true value. If such information effects are important, the bidding firm's stock price change at the announcement date will reflect both the gain from the takeover (weighted by the probability that the takeover bid will go through) and the information effects.

Further, reflecting on the fact that two firms lack perfect positive correlation between cash flows, the default risk of the combined entity may be decreased through a merger. This co-insurance effect leads to an increase in the combined entity (Lewellen, 1971). Also latent debt capacity in the target will increase debt capacity in the combined entity (Travlos, 1987). In both cases, higher debt capacity increases the value for debt holders at the expense of shareholders (Higgins and Schall, 1975; and Galai and Masulis, 1976). Thus, stock financed acquisitions transfer, under the mentioned circumstances, value from shareholders to debt holders, which is reflected on the share price of the bidding firm.

⁹ Kaplan (1993) discusses the Paramount-Viacom merger where valuation issues were important as the supreme court of Delaware claimed that Paramount's Board of Directors breached its fiduciary duties to shareholders by accepting the Viacom without ever looking into another competing offer.

***Hypothesis 1.2:** The negative effect of excess cash reserves on bidder CARs is lessened with lower levels of information asymmetry*

Researching the relation between cash holdings and asymmetries of information and firm values I find two interpretations that could be applied. Based on Myers and Majluf (1984) cash holdings in combination with a higher level of information asymmetry have a positive influence on firm value because the adverse selection costs that arise from external finance can be avoided. A contrary view, Jensen (1986) proposes his free cash flow theory, which coupled with a higher level of information asymmetry leads to extreme moral hazard. From the two opposing views the interpretations in the context of excess cash holdings are: 1) higher levels of asymmetric information increase the negative relation of bidder CARs and excess cash reserve; 2) higher levels of asymmetric information decrease the negative relation of bidder CARs and excess cash reserve. Given the findings of Gao (2011) and Drobetz et al. (2010), they provide evidence that firm values are less affected by excess cash in situations where there is a higher level of transparency of the bidder. I therefore base my hypothesis according to the empirical finding.

***Hypothesis 1.3:** The negative effect of excess cash reserves on bidder CARs is emphasized in Common Law countries*

According to the findings of Uddin and Boateng (2009) UK firms experience positive short-term abnormal returns from cross-border acquisitions. When this finding is translated into reasoning for why cross-border acquisitions have provided positive abnormal returns, while the bidder returns have been reported to be ambiguous, I believe that the differences in bidder and target legislation have influence. In other words I find that Common Law portrays equity financed acquisitions in better light than Code Law countries and therefore the short-term share price reaction is better. Complementing this finding, Martynova and Renneboog (2009) find that target firms of French, German and EU-accession legal origins earn the lowest abnormal return upon the bid announcement, whereas UK and Scandinavian targets earn most. While the abnormal returns have been shown to be higher in Common Law countries, I anticipate that the adverse selection of cash reserves is highlighted in these countries, which will translate into a more

negative effect on bidder CARs. The hypothesis resides mainly in the fact that market efficiency is higher in Common Law countries (La Porta et al, 1999).

***Hypothesis 2.1:** Excess cash reserves decrease the probability of using stock as a method of payment in acquisitions*

Excess cash is expected to be deployed in events, where the expected return of the investment is higher than the return on the asset deployed. As the interest received on cash is close to negligible I expect M&A cases to provide an opportunity where the cash reserves can be utilized. According to the Pecking Order theory, firms will choose to minimize the costs associated with financing and therefore cash is assumed to be preferred against debt or equity. If the minimum level of cash needed for daily operations is exceeded there should be an increased propensity to use the excess cash in M&A financing. Therefore in the presence of excess cash reserves I expect the method of payment to be skewed towards cash resulting in a negative relation between excess cash reserves and probability of using equity.

Surprisingly, it has been shown that high cash firms do not use their cash stockpiles to finance acquisitions. Pinkowitz, Sturgess, Williamson (2011) show that while cash-rich firms are not more likely to be overvalued, they are more likely to use equity as the method of payment when they are overvalued. The result that cash rich firms take advantage of market timing is consistent with the findings of Baker and Wurgler (2002) and Graham and Harvey (2001). Cash richness is therefore considered as proxy for capitalizing on overvaluation, which consequently is consistent with seeking funding from the cheapest source available. In addition, the hypothesis that growth opportunities drive firms to maintain higher cash reserves, the greater potential will also be embedded in the valuation levels of such firms. It is therefore important to identify the ‘multiple enhancement factor that will most likely have effect on management decisions. As an example, the recent IPO of LinkedIn, an on-line social media platform, was valued highly based on growth expectations which lead to unprecedented valuation multiples (sales multiple: 14.0x). Inflated valuation multiples increase the probability of using stock as consideration, where the market value of equity is driven more by growth prospects than overvaluation.

Hypothesis 2.2: Cash rich firms are less likely to finance cross-border acquisitions with equity than non-cash rich firms

I expect cash-rich firms to be inclined to use cash as part of the consideration for a deal. In cross-border acquisitions this inclination is expected to be even stronger because of the differences in investor pools between the bidder-home country and target home-country. In cross-border deals, selling stock to foreign investors can entail several problems. I am concerned with the possibility that investors have a home country bias in their portfolio decisions as documented in Coval and Moskowitz (1999), French and Poterba (1991), and Grinblatt and Keloharju (2001), among others. This can reflect a foreign stock's greater trading costs, lower liquidity, exposure to exchange risk, and less timely, more limited access to firm information. Based on this finding, the shareholders of the target firm are assumed to be reluctant to accept shares of a firm domiciled in another country.

Hypothesis 2.3: Probability of using equity in M&A cases is increased for both cash rich and non-cash rich firms in Common Law countries

Code Law countries have generally a more concentrated shareholder base, which has been identified to be result of weaker investor protection (La Porta, 1997). Weaker investor protection is seen to decrease shareholder willingness to transfer funds for equity and therefore Code Law countries are assumed to experience weaker abnormal returns for bidders in fully equity financed transactions. In addition, the fact that the State has a stake in large firms in some Continental European countries increases the threshold for these firms to use equity as a method of payment.

Hypothesis 3.1: Post-acquisition bidder operating performance is better for cash rich firms

Assuming Hypothesis 1.1 holds, the participation of a bidder with excess cash reserves in a fully stock financed transaction is likely to be motivated by both synergies and market timing. This derives from the fact that cash rich bidders experience negative price corrections that off-set the positive effect of market timing. Here, I assume that the bidder acknowledges the price correction and is hence motivated to perform the transaction based on higher synergies. Through higher

synergies the bidder will be able to enhance operating performance, which should be demonstrated as higher operating cash flows. Similarly, as discussed earlier, targets accepting stock offers have perceived higher synergy potential. Thus, I hypothesize that the operating performance of the cash rich bidder exceeds the operating performance of the non-cash rich bidder in the following three years of the transaction.

Slightly contradicting my hypothesis, Ghosh et al. (2001) find that unlike for cash acquisitions, cash flows do not increase for merging firms that use stock as consideration. Moreover, it appears that cash flow margins, sales growth, and operating costs decrease following stock acquisitions. The empirical results for the study were weak, as stated in the original paper, and therefore I maintain my initial hypothesis of enhanced operating performance for stock financed acquisitions.

Hypothesis 3.2: Cash reserve is decreasing for cash-rich firms post transaction

As discussed earlier, one motive for firms to maintain excess cash is further growth opportunities. The convergence to 'normal' cash levels is only lagged over the inspected transaction as cash is invested later. I relate this hypothesis with the Static Trade-off theory where adverse events pushing leverage off its long-term level is only momentary. Cash reserves are diminished by increases in uses of funds in R&D, capital expenditure and other acquisitions. Therefore I assume that excess cash reserves diminish, or at least partially diminish, in the following three years of the transaction.

Based on the assumption that firms seek to deploy their assets in a way that maximizes shareholder value, firms with excess cash are expected to use this reserve in financing growth, therefore making cash or mixed offers. Therefore higher levels of synergies are expected for cash rich firms, which translate into higher operating cash flows post-transaction. High cash holding could prevent managers from quickly scaling down unprofitable business lines as cash itself and the interest income earned on it serves as a buffer to operating losses. Opler et al. (1999) show that excess cash is used to cover operating losses. Mikkelson and Partch (2003) analyze this aspect by investigating the operating performance of firms with extraordinary high cash holdings. They find that there are no adverse effects of high liquid assets on corporate performance. Their

evidence even suggests that firms with high cash holdings perform better than a sample of matched firms. Also the impact of corporate cash holdings upon shareholder wealth depends on the costs that shareholders have to bear when trying to disgorge cash from the corporate level against the will of the management.

V. Data and Methodology

This section introduces the data and methods used to derive the results in Section VI. Any specifications made to tables or figures are mentioned separately.

5.1 Data description

This paper reports results based on three interconnected data sets, which are introduced in this section. The core sample of this study is the list of companies domiciled in one of the EU-15 countries that have engaged in fully financed M&A activity in the period 1999-2010. However, in order to achieve more reliable results on defining excess capital, the key dependent variable in my study, I have gathered a set of all active and inactive firms domiciled in the EU-15 in the period 1996-2010¹⁰.

The primary data is from the SDC M&A database, covering the years 1999-2010. I require acquisitions to be stock-financed in order to minimize agency complications of free cash flow¹¹. The sample is geographically restricted to contain only listed companies in EU-15 countries¹², where both the bidder and target are required to be domiciled in one of the countries. The reason for the geographical limits is the secondary aim of the study is to analyze any characteristics differentiating countries from other countries. The reason for containing only listed companies is the unification of equity financing opportunities, which are considered similar for all listed companies.

¹⁰ The extended period in measuring excess cash reserve is due to independent variables in the regression analysis that require a certain time series prior to the transaction. These variables are introduced in the 'Methods' subsection.

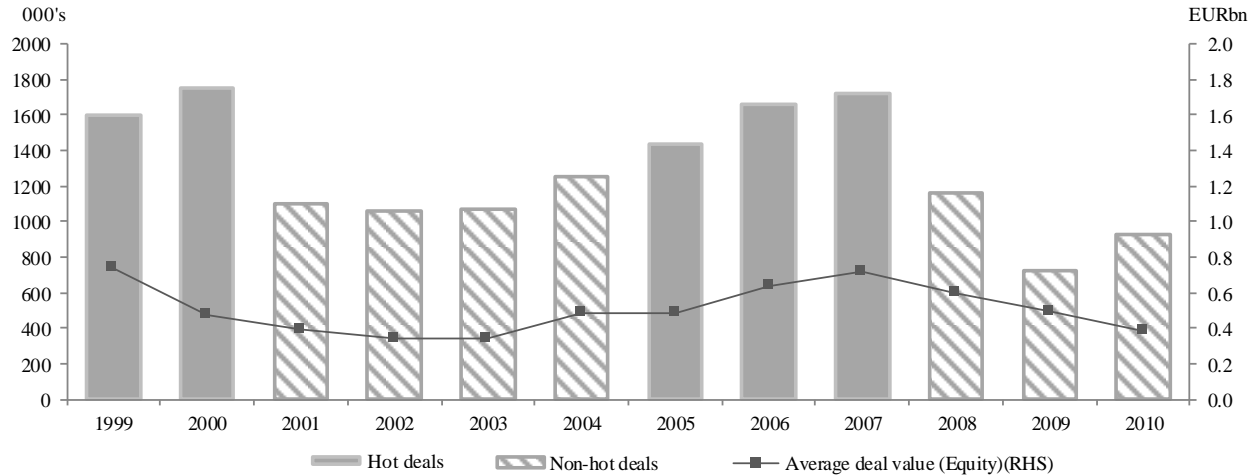
¹¹ Jensen (1986) noted that free cash flows allowed firms' managers to finance projects earning low returns which therefore might not be funded by the equity or bond markets.

¹² Countries include Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Ireland, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the UK.

Figure 1: Deal count and average deal value

Deal count and average deal value. Panel A depicts the number of deals announcement in each year during the period 1999-2010 in the EU15 countries. The observations included in the graph are based on the working sample of 988 deals to which sampling restrictions have been imposed. The graph also shows the average deal value on annual basis. Average deal value is based on the sum of deal values diluted by the number of deals each year ($\sum [x_{ij}] / n_{ij}$, where x is the average of deal value in a given year i). Panel B shows the relation of equity financed offers and other offers. The number of deals, % of total, and the average deal values are showed separately.

Panel A: Deal count and average deal value



Panel B: Equity vs. cash and mixed offer statistics

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Equity offers												
Count (000's)	101	150	68	33	64	76	108	106	112	61	46	63
(%)	6.3 %	8.6 %	6.1 %	3.1 %	6.0 %	6.1 %	7.5 %	6.4 %	6.5 %	5.2 %	6.3 %	6.7 %
Avg. deal value (EURbn)	3.34	1.55	0.81	0.56	0.42	1.80	0.42	1.31	0.48	0.38	0.15	0.58
Other offers												
Count (000's)	1496	1600	1041	1028	1008	1176	1328	1551	1608	1106	680	873
(%)	93.7 %	91.4 %	93.9 %	96.9 %	94.0 %	93.9 %	92.5 %	93.6 %	93.5 %	94.8 %	93.7 %	93.3 %
Avg. deal value (EURbn)	0.56	0.37	0.36	0.34	0.34	0.40	0.49	0.60	0.73	0.61	0.52	0.37

I also include several other restrictions to my data and carefully omit observations that do not meet the standards for selection. From the sample of 2,204 transactions I omit ones that do not report the deal value and where the stake purchased did not exceed 10 percent. This decreases the sample size to 1,423 observations. Then I require annual statement figures to be retrievable for the firms in the M&A sample. This diminishes the sample size further to 1,109. Finally I impose a requirement for the firms to have 2 years of consecutive daily share price data prior to the event in order to estimate abnormal returns¹³. This diminishes the working sample to a size of 988 deals. In this paper I will refer to this core working sample as Sample (1).

¹³ I also require there to be share price data 10 days post transaction, but this has no effect on the sample size.

Figure 1 presents the number of fully stock financed M&A transactions and the average deal value over the period 1999-2010. It includes a separation of hot and non-hot equity markets based on the absolute value of the deals announced in each year. The period 1999-2000, referred to as the 'IT-bubble' years, experienced large volumes of M&A transactions. The large percentage of deals in the TMT (telecom, media, and technology) sector underlines the vast interest in IT firms, where valuations were based essentially on growth prospects. The years following the change of the millennium, 2001-2003, were significantly slower in terms of absolute deal value. The change from 2000 to 2001 and 2002 were -76.4 percent and -92.0 percent respectively. The increase from 2003 onwards until 2007 was significant where annual deal values increased by approximately 100 percent from 2003. Credit crises escalating to a global financial crisis marked the downfall of M&A activity throughout the rest of the decade. External sources of finance dried-up and the entire global economy experienced a downfall. Consequently M&A deals dried-up, where equity financed transactions were even more affected as valuation levels were low and demand for equity securities was negligent. A clear indicator of the M&A market was the number of deals decreasing by 45.5 percent and the yearly deal values by 57.4 percent. Even though the markets have rebounded from the lowest point, I still do not classify the year 2010 as a hot equity market for similar reasons as for 2004.

Table 2 shows descriptive statistics of M&A transactions in the EU-15 countries during the period 1999-2010. The statistics are based on the 988 deals that are included in the working sample. As expected the UK provides a large percentage of observations, 50.9 percent. Due to the sampling methods, Finland occupies a relatively large percentage of the total sample (5.3 percent), which is only 0.3 percent less than Germany with a significantly larger economy. Average deal values are highly affected by large deals on country level, especially for countries where M&A activity is low for a given year. For example, in Belgium, the acquisition of Almanij NV in 2004 (non-hot market) for a consideration of €20.8bn shifts the average significantly higher. When considering valuation levels, it is clear that hot equity markets provide higher multiples for earnings and book value of equity. Market-to-book averages for all countries for Hot and Non-hot markets are 1.7x and 0.9x respectively. Similarly, for price-to-earnings multiples are 18.8x and 13.8x respectively.

Table 2: Descriptive statistics of equity financed offer bidders

Descriptive statistics. The table provides number of deals, average deal value, relative deal value, bidder market-to-book, and bidder price-to-earnings for each of the EU15 countries included in the M&A sample. The statistics are provided for the 12 year period 1999-2010 as well as differentiating between Hot (1999-2000 and 2005-2007) and Non-hot (2001-2004 and 2008-2010) equity markets. Number of deals is the count of M&A transaction purely financed by equity that have been included in the sample. Average deal value is calculated as an equally weighted sum of deal value diluted by the number of deals ($\sum [x_{ij}] / n_{ij}$, where x is the average of deal value in a given year i and j is a dummy variable for Hot and Non-hot equity markets). Relative deal value is calculated as deal value diluted by the bidder enterprise value (market value of equity plus net book value of debt). Market-to-book value is the market value of equity divided by the book value of equity. Price-to-earnings is the market value of equity divided by the annual net income.

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland-Rep	Italy	Luxembourg	Netherlands	Portugal	Spain	Sweden	UK
Overall															
Number of M&A cases	8	24	22	52	75	55	15	14	64	7	23	12	56	58	503
(% of total)	0.81 %	2.43 %	2.23 %	5.26 %	7.59 %	5.57 %	1.52 %	1.42 %	6.48 %	0.71 %	2.33 %	1.21 %	5.67 %	5.87 %	50.91 %
Average deal value	308	1 808	249	660	3 422	1 712	614	25	2 078	571	739	968	1 099	335	836
Relative deal value	0.1x	0.1x	0.1x	0.2x	0.1x	0.2x	0.3x	3.2x	0.2x	0.3x	0.3x	0.0x	0.3x	0.1x	2.8x
Bidder market-to-book	0.9x	0.6x	0.8x	1.3x	0.7x	0.8x	0.4x	1.3x	0.4x	2.2x	1.0x	0.3x	0.6x	1.7x	4.4x
Bidder price-to-earnings	13.0x	15.9x	10.9x	24.2x	23.7x	19.8x	22.4x	n.m.	28.2x	11.3x	12.2x	15.2x	37.9x	20.3x	8.1x
Hot equity market (1999-2000 and 2005-2007)															
Number of M&A cases	2	16	12	35	41	35	7	8	31	6	12	7	35	35	295
(% of total)	0.20 %	1.62 %	1.21 %	3.54 %	4.15 %	3.54 %	0.71 %	0.81 %	3.14 %	0.61 %	1.21 %	0.71 %	3.54 %	3.54 %	29.86 %
Average deal value	78	1 663	387	634	4 770	1 763	978	11	2 785	665	668	1 281	1 574	321	1 128
Relative deal value	0.1x	0.1x	0.0x	0.2x	0.1x	0.3x	0.5x	0.0x	0.2x	0.4x	0.5x	0.0x	0.4x	0.1x	1.5x
Bidder market-to-book	1.0x	1.1x	1.3x	1.4x	0.9x	1.2x	0.5x	1.7x	0.6x	2.9x	1.3x	0.3x	0.8x	3.3x	7.0x
Bidder price-to-earnings	13.2x	41.5x	32.5x	30.9x	23.7x	24.7x	40.3x	n.m.	14.9x	5.5x	13.5x	17.0x	98.7x	15.7x	n.m.
Non-hot equity market (2001-2004 and 2008-2010)															
Number of M&A cases	6	8	10	17	34	20	8	6	33	1	11	5	21	23	208
(% of total)	0.61 %	0.81 %	1.01 %	1.72 %	3.44 %	2.02 %	0.81 %	0.61 %	3.34 %	0.10 %	1.11 %	0.51 %	2.13 %	2.33 %	21.05 %
Average deal value	385	2 240	7	741	728	1 605	199	61	1 170	2	833	28	308	358	231
Relative deal value	0.1x	0.2x	0.1x	0.1x	0.1x	0.1x	0.1x	4.0x	0.2x	0.0x	0.1x	0.0x	0.0x	0.1x	4.8x
Bidder market-to-book	0.6x	0.5x	0.6x	1.0x	0.5x	0.7x	0.4x	1.0x	0.4x	1.6x	0.9x	0.3x	0.6x	1.3x	3.0x
Bidder price-to-earnings	13.0x	14.6x	6.0x	20.4x	18.0x	19.6x	20.0x	n.m.	34.6x	11.3x	12.1x	9.7x	36.4x	26.1x	8.1x

For determining firms excess cash reserve ratio, I require a sample of all active and inactive firms operating in the EU-15 countries. I also extend the time period to include the years 1995-2010 due to independent variable requiring a time series of 4 years prior to the transaction. This sample totals 6,209 firms and 74,508 firm years. I include the same restrictions as for the Sample (1), which diminishes the sample size to 3,788 and 45,336 firm years. In this study I will refer to this sample as Sample (2).

Finally, to test the two latter sections of this study I impose further restrictions for Sample (1). In order to inspect the probability of a stock consideration, I require five year consecutive time series for annual sales prior to the transaction, which diminishes the sample size from 988 to 567. This sample of purely equity financed M&A cases is inflated by cash and mixed offers for which the same criteria are imposed on. The sample consisting of all types of offers includes 4033 firms. For testing operating performance and uses of funds post-transaction I need 3 years of annual statement figures after the transaction. Therefore I amend the initial sample of M&A deals 1999-2010 to exclude the final three years, which decreases the number of observations from 988 to 691. These samples will be referred to as Sample (3) and Sample (4) respectively.

5.2 Methods

In this subsection I present a synopsis of the different methods employed in my paper. In general I use multivariate regression in a large proportion of the reported results. Due to the straightforward nature of the Ordinary Least Square (OLS) regression model, I do not introduce the reader to this methodology. All other methods used in this paper are on the other hand mentioned and described to the extent that I find relevant. I elaborate more extensively on methods that I find to be more in-depth in nature or otherwise more complex.

5.2.1 Logit regression

Logistic regression is an approach to prediction, like the OLS regression. However, with logistic regression, the researcher is predicting a dichotomous outcome. That is, the dependent variable is set as a binary outcome of one or zero. This situation poses problems for the assumptions of OLS that the error variances (residuals) are normally distributed. Instead, they are more likely to

follow a logistic distribution. When using the logistic distribution, an algebraic conversion is made to arrive at the usual linear regression equation (which is typically written as $Y = B_0 + B_1X + e$). I use the logistic regression to measure the relation between certain bidder firm characteristics and the probability of using equity as a payment method in M&A cases. I construct the regression models largely following Gao (2011) where the dependent variable is set as one if equity is used and zero otherwise. The main explanatory variable is the excess cash reserve ratio derived through OLS regression. I use a set of control variables to capture the effect of previously observed firm characteristics that affect equity financing decision. In these models I also use industry and year dummies to account for the time and industry differences.

5.2.2 Heckman two-stage test

In his work, Gao (2011) uses a variant of the truncated regression specification formalized by Eckbo et al. (1990). The method does not significantly vary from the Heckman process and therefore I use Heckman treatment effect model to take into account the self-selection bias. The method consists of two stages. First I estimate the sample-selection correlation term, denoted as Mills ratio, using linear two-step Heckman selection model and secondly add the Mills ratio to the main regression and estimate it using OLS. This method assumes the decision to have certain characteristics and engage in M&A activity is made simultaneously (i.e. the error terms of the two equations are correlated). The selection equation is estimated by maximum likelihood as an independent Probit model to determine the decision to join using information from the whole sample of members and nonmembers. A vector of inverse Mills ratios (estimated expected error) can be generated from the parameter estimates (Greene, 1993). The level of advance use, y , is observed only when the selection equation equals 1 (i.e. firms engaging in acquisition activity) and is then regressed on the predictor variables, x , and the vector of inverse Mills ratios from the selection equation by ordinary least squares. Therefore, the second stage reruns the regression with the estimated expected error included as an extra predictor variable, removing the part of the error term correlated with the predictor variable and avoiding the bias. Sample selection bias has been corrected by the selection equation, which determines whether an observation makes it into the nonrandom sample.

In case the selection dependent variable was linear I could directly use the linear two-step Heckman selection model estimation, but because the decision to acquire another firm is categorical, this is not possible as Stata omits the dependent variable due to collinearity. Thus, I need to estimate the Mills ratio first. More specifically, depending whether the firm engages in using equity or not Mills ratio is determined as follows:

$$\hat{\lambda}_i = \frac{\phi(\hat{\omega} * Z_i)}{\Phi(\hat{\omega} * Z_i)} \quad \text{if } M\&A \text{ activity}_i = 1$$

$$\hat{\lambda}_i = \frac{-\phi(\hat{\omega} * Z_i)}{1 - \Phi(\hat{\omega} * Z_i)} \quad \text{if } M\&A \text{ activity}_i = 0$$

where Φ denotes the density distribution function and ϕ the density distribution function of the standard normal distribution. In the second stage, the Mills ratio, $\hat{\lambda}_i$ is added to the main regression which is then estimated by using OLS. According to Edelen and Kadlec's methodology (2004) $\hat{\lambda}_i$ into the OLS regression is similar to adding a correlated omitted variable to a misspecified regression.

The reason I include a sampling bias correction method in the robustness tests is the increased likelihood of certain firms to be included in my samples. This has been overlooked by many M&A concentrated studies even though it is widely acknowledged. I perform this test to the probability of using equity section, as I find that sampling bias is most probably a distorting factor in these tests.

5.2.3 Wilcoxon rank sum

The Wilcoxon signed rank sum test is another example of a non-parametric or distribution free test. The Wilcoxon signed rank sum test is used to test the null hypothesis that the median of a distribution is equal to some value. It can be used a) in place of a one-sample t-test b) in place of a paired t-test or c) for ordered categorical data where a numerical scale is inappropriate but where it is possible to rank the observations. The reason I use the rank sum test, is to test the statistical difference of bidder firm characteristics in hot and non-hot equity markets. Here, I do relax any assumptions on the structure of the underlying distributions, even though there is

reason to believe that the distributions of the two sub-samples are similarly shaped. The test was also performed by Gao (2011) and therefore I apply the similar approach for my samples. This test is used in a univariate analysis, where different firm characteristics of all-stock and other offers are investigated. In addition, I use the Wilcoxon rank sum test in a robustness test, where the results presented in Table 6 are sensitized to sampling bias and the corrected results are compared to the initially presented figures.

5.2.4 Wald test

Related to the logistic regression method described above, the Wald test is a way of testing the significance of specific independent variables in a statistical model. In logistic regression there exists a dichotomous outcome variable and one or more explanatory variables. For each explanatory variable in the model there will be an associated parameter. The Wald test, described by Polit (1996) and Agresti (1990), is one of a number of ways of testing whether the parameters associated with a group of explanatory variables are zero.

If for a particular explanatory variable, or group of explanatory variables, the Wald test is significant, then we would conclude that the parameters associated with these variables are not zero, so that the variables should be included in the model. If the Wald test is not significant then these explanatory variables can be omitted from the model. When considering a single explanatory variable, Altman (1991) uses a t-test to check whether the parameter is significant. For a single parameter the Wald statistic is just the square of the t-statistic and so will give exactly equivalent results. An alternative and widely used approach to testing the significance of a number of explanatory variables is to use the likelihood ratio test. This is appropriate for a variety of types of statistical models. Agresti (1990) argues that the likelihood ratio test is better, particularly if the sample size is small or the parameters are large. However, for the purpose of this study, given the large number of observations and small parameters, I find that the Wald statistic is sufficient for testing the significance of the explanatory variables. I will be applying this method to test the coefficients for the probability of using equity in M&A cases in the robustness tests.

5.2.5 Winsorising

Winsorising is a method where a variable is transformed so that x percent of observations at the tail(s) of a distribution are converted to reflect the x percent value. Practically this means that observations at the tail(s) of a distribution take values in the xth percentile and (100-x)th percentile respectively. Winsorising generally increases robustness of estimators to which the method has been applied to. The method can be applied to one or both tails of the distribution. In this study, I use winsorising to remove uncertainty on whether tail values are caused by randomness or their outlier nature. I winsorise the tails of both the dependent CAR variable and the independent excess cash reserve ratio at 5 percent level on both tails. All other continuous independent variables are winsorised at 1 percent level on both sides.

5.2.6 CAR calculation

The event study procedures are gathered from previous researches by Bowman (1983), Brown and Warner (1980 and 1985), and Kritzman (1994). The parameters for the market model are based on a 2 year window prior to the transaction, including 504 trading days for each of the 988 firms. In order to achieve the possible estimates, I have matched the firm stock returns to main country indexes, i.e. for each firm the index returns of their domicile country is used to derive abnormal returns. The following is the formula for OLS market model to compute abnormal returns:

$$AR_{jt} = R_{jt} (\alpha + \beta R_{mt})$$

where:

AR_{jt} = abnormal return of stock j on day t

R_{jt} = actual return on the jth stock on day t

R_{mt} = return on the market index, value-weighted return

α, β = the market model parameter estimates for stock j for the control period (event day -5 years through -30 day). The coefficients estimated were used to compute the abnormal daily returns for the test period (event day -2 to +2) where

event day $+t(-t)$ represents the n th trading day after (before) the announcement date ($t=0$)

Finally, the daily abnormal returns are cumulated across the event windows $(-t, +t)$. This is done to adjust for 1) potential leakage of information or slow adjustment of prices to announcement information; 2) control the possible inaccuracy of the database of one day. I calculate the cumulative abnormal returns (CAR) for a 5 day window $(-2, +2)$ around the announcement of the transaction. The formula is as follows:

$$CAR_{-t,+t}^i = \sum_{t=-t}^i AR_{i,t}$$

VI. Results

This section provides the results for the tests introduced in Section IV. I provide robustness checks to the methods used in the following section and shed more light on the results introduced here.

6.1 Excess cash ratio

Excess cash ratio, the key dependent variable in my study, is estimated according to Opler et al. (1999). According to Opler et al. (1999) the operational, transactional investment related motives imply that there exists a required level of cash reserves, which consequently forms company specific optimal liquidity levels. Based on these levels cash reserves can be measured for each firm. Reflecting this required cash reserve on annual cash holdings for my sample firms, the excess cash ratio is derived. Following Opler et al. (1999), I perform a pooled time-series cross-sectional OLS regression with year dummies to estimate the firm's required cash reserve. The estimation is performed using a sample of 3,788 firms operating in the EU-15 countries during the period 1999-2010. The total sample totals to 45,336 firm years. The mathematical representation of the estimation is as follows:

$$\begin{aligned} \text{Cash reserve ratio}_{it} = & \beta_1 \text{MTB}_{it} + \beta_2 \text{SIZE}_{it} + \beta_3 \text{NWCAST}_{it} + \beta_4 \text{CAPEXAST}_{it} + \\ & \beta_5 \text{LEV}_{it} + \beta_6 \text{INDSIGMA}_{it} + \beta_7 \text{DIVDUM}_{it} + \gamma \text{YDUM} + \varepsilon_{it} \end{aligned} \quad (1)$$

where i and t index the firm and year, MTB is the market-to-book ratio of equity, $SIZE$ is the logarithm of sales in millions of euros, $CFAST$ is net income over book value of assets, $NWCAST$ is net working capital over book value of assets, $CAPEXAST$ is capital expenditure for year i over book value of assets in year i , LEV is total long-term debt over total assets, $INDSIGMA$ is the mean cash-flow standard deviation of firms in the same 2-digit SIC code industry (cash flow is deflated by total assets and standard deviation is calculated over a period of 5 previous years), $DIVDUM$ is a dummy variable set to one if the firm pays dividends in year t and zero otherwise, $YDUM$ are year dummies.

Figure 2: Distribution of excess cash ratios

Distribution of excess cash reserves for 45,366 firm years. Class widths are 0.5 % and tails are capped at 30%.

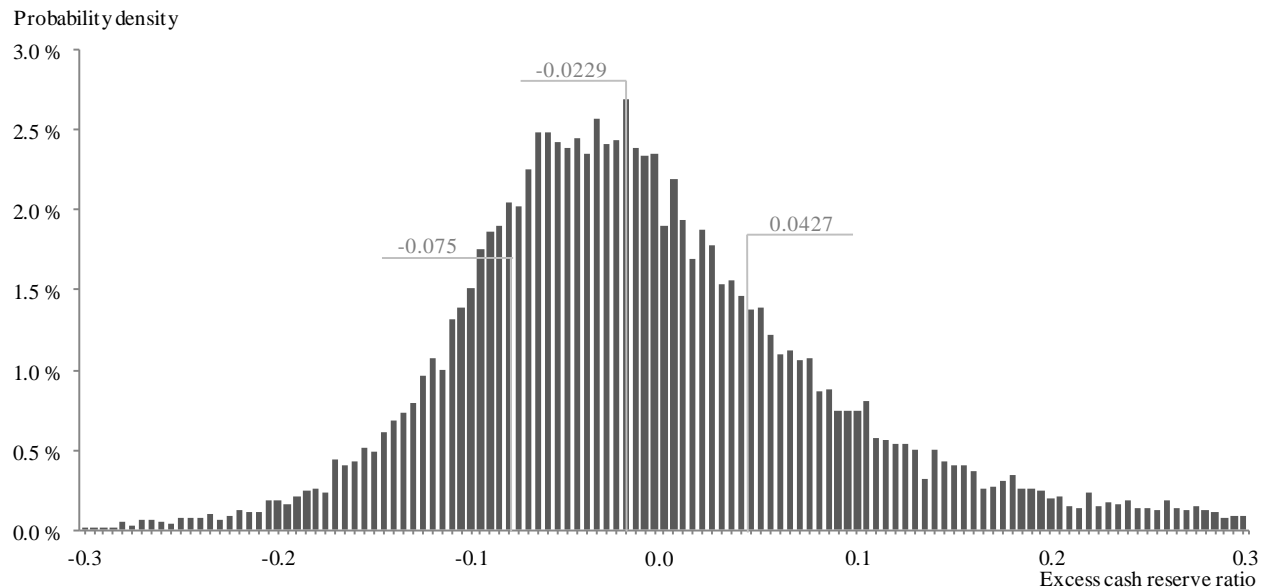


Figure 2 shows the distribution of excess cash reserve ratios across the 45,366 firm years¹⁴. Due to the large number of observations, the distribution tends towards normality. A larger percentage of firm years, are below zero (60.4 percent), whereas the distribution is more skewed towards the right side. Calculating the observations at three standard deviations away from the average, this is 5.4 percent more in the right end than the left end. Based on the distribution the quartile thresholds are as follows: Q1-Q2: -0.075; Q2-Q3: -0.0228; Q3-Q4: 0.043.

¹⁴ The coefficients for Eq. (1) are as follows: $\beta_1 = 0.002$, $\beta_2 = 0.176$, $\beta_3 = 0.000$, $\beta_4 = 0.153$, $\beta_5 = 0.347$, $\beta_6 = 0.022$, $\beta_7 = 0.532$,

Excess cash ratio, defined according to Opler et al (1999), provides the cornerstone for differentiating between cash rich and non-cash rich firms. Table 3 presents results for excess cash ratios. Panel A reports the cash reserves for the bidders as reported at the end of the last whole year prior to the transaction. I again differentiate between hot and non-hot equity markets in reporting the average cash reserves, in absolute terms, relative to bidder total assets (%), and relative to deal value (%). Panel B shows number of bidders, average market-to-book ratios and the excess cash ratios based on excess cash reserve quartiles derived from Sample (2). In table 2, based on a sample of 45,336 firm years, I have derived excess cash reserve ratios for Sample (1). In Panel A cash reserve ratios are shown for firms for the overall sample and the two subsamples for hot and non-hot equity markets. Looking at the differences in cash reserves between hot and non-hot markets, the larger bidder cash reserves in hot equity markets is a direct reflection of the better economic state. Cash is accumulated at a higher rate due to greater demand, whereas the opposite is true for non-hot equity markets. Similarly, the asset base is inflated in market up swings, which is seen in the lower cash reserve ratio (cash reserve / total assets). The most significant difference is seen in the implied deal values, where the cash reserves are 39.03 percent of the deal value on average in hot markets and 69.72 percent in non-hot markets. This is consistent with the merger wave hypothesis (Rhodes-Kropf et al., 2005; Dong et al., 2005), according to which larger deals are completed in market highs due to the fact that it increases financing options¹⁵, appeal to using own stock as method of payment and inflates synergy possibilities.

The quartiles are derived from Sample (2), where the quartile thresholds are -0.0750, -0.0229, and 0.0427 respectively for increasing quartile levels. The distribution of observations is close to uniform implying that bidders in the working sample do not differ largely from the larger firm sample. The percentage of bidders classified to be in Q1 in hot markets shows that the distribution is slightly more skewed to the right (lower end) than compared to the situation in non-hot equity markets. Therefore a bidder low on excess cash reserve is more probable to be in the lower quartile in hot markets than in non-hot markets. Interestingly, market-to-book is higher in the lower ends of the distribution in all market environments. Similarly, price-to-earnings, used as an alternative representation for growth opportunities, is unexpectedly high for the lower

¹⁵ Credit markets are sensitive to market states due to the market-to-market nature, where financing decisions are based on expected cash flows collateral that drive repayment and liquidity.

quartiles (Q1). This is unexpected especially for the non-hot equity subsample, as cash is usually perceived as a more valuable asset in more economic troughs due to liquidity and underinvestment problems. Excess cash ratios, calculated from the median of the firms in each quartile, and characterize the differences in hot markets compared to non-hot equity markets. The excess cash ratio is more dispersed where higher ratios are observed in the top quartile and lower ratios in the bottom quartile compared to non-hot markets.

The number of bidders in each quartile provides an unexpected result: clustering bidders in the highest quartile is more pronounced in non-hot years than in hot-years. There are 3.1 percentage units less bidders in the top quartile compared to the bottom quartile in hot equity markets, whereas in non-hot equity markets the distribution is skewed more to the top quartile (4.5 percentage units more in Q4 than in Q1). If market wide misevaluation would be more apparent in hot equity markets, the skewedness of the distributions would reverse. The statistics, therefore, do not backup the hypothesis that targets would overestimate synergies and accept equity offers in hot-equity markets.

Comparing to Gao (2011), the results shown in Table 3 are both complementary and contradictory. Gao finds that the distribution of observations is significantly skewed to the higher end of the quartiles (49.28 percent of the overall bidders are in Q4). The distribution of European bidders is more uniform, where an equal percentage of bidders are in Q1 as in Q4 (23.57 percent). Even though Gao uses different metrics for the market-to-book ratio, the behavior of the variable is analogous across sub-samples, but different inside the sub-sample. Higher market-to-book ratios are detected in hot-equity markets than in non-hot. However, Gao finds that the ratio is decreasing following decreasing quartiles, whereas I find that highest market-to-book values are seen in the Q1 (26.11x and 29.52x for Q4 and Q1 respectively). As mentioned this is counter-intuitive and is set subject to robustness checks later in the paper.

Table 3: Excess ratios across equity financed offer bidders

Excess cash ratios. Panel A reports descriptive statistics for bidder cash reserve during the overall sample period, and the hot (1999-2000 and 2005-2007) and non-hot (2001-2004 and 2008-2010) equity market years. *Bidder cash reserve* is cash and marketable securities (Thomson Reuters). Sample medians are reported. Panel B reports the *number of bidders*, the median *bidder market-to-book ratio of assets*, and the median *excess cash reserve ratio* for the overall sample and each excess cash ratio quartile. Results are reported for the overall sample period, the hot and non-hot equity market years. *Cash reserve ratio* is cash and marketable securities over total assets. *Excess cash reserve ratio* is the difference between cash reserve ratio and its required level (estimated using a pooled time-series cross-sectional OLS regression with year dummies, following Opler et al. (1999)). All bidder variables are measured at the fiscal year ending prior to deal announcement. Percentage is reported below the number of bidders. Excess cash reserve ratio quartiles are calculated each year based on all EU15 firms.

Panel A: Bidder cash reserve, bidder size and deal value					
	Overall (988)	Hot equity market (577)	Non-hot equity market (411)		
	(1999-2010)	(1999-2000 and 2005-2007)	(2001-2004 and 2008-2010)		
Bidder cash reserve (€mm)	10.99	11.17	10.77		
(% of bidder assets)	6.30 %	5.82 %	6.57 %		
(% of deal value)	50.65 %	39.03 %	69.72 %		
Panel B: Bidder distribution across excess cash reserve ratio quartiles					
	Excess cash reserve ratio quartiles				
	Total	Q4 high	Q3	Q2	Q1
Overall					
Number of bidders	594	140	182	132	140
(%)	100.00 %	23.57 %	30.64 %	22.22 %	23.57 %
Market-to-book ratio	0.97x	0.92x	0.89x	0.99x	1.38x
Price over earnings	20.65x	20.55x	19.37x	18.95x	27.33x
Excess cash ratio	-0.0167	0.0930	0.0064	-0.0492	-0.1366
Hot equity market (1999-2000 and 2005-2007)					
Number of bidders	353	80	98	84	91
(%)	59.43 %	13.47 %	16.50 %	14.14 %	15.32 %
Market-to-book ratio	1.03x	1.00x	0.91x	0.99x	1.47x
Price over earnings	21.01x	22.31x	20.44x	20.04x	26.11x
Excess cash ratio	-0.0222	0.0973	0.0071	-0.0485	-0.1328
Non-hot equity market (2001-2004 and 2008-2010)					
Number of bidders	241	60	84	48	49
(%)	40.57 %	10.10 %	14.14 %	8.08 %	8.25 %
Market-to-book ratio	0.89x	0.66x	0.86x	0.94x	1.14x
Price over earnings	18.42x	16.70x	17.60x	15.07x	29.52x
Excess cash ratio	-0.0052	0.0886	0.0047	-0.0510	-0.1482

6.2 Bidder share performance and CARs

To estimate the announcement effect of excess cash reserve I inspect the share price reaction and the cumulative abnormal returns (CAR) of stock financed acquisition bidders. In the first test, I differentiate between firms with an excess cash ratio of above zero (92nd percentile) and other

firms and pool the firms to achieve an average for cash rich and non-cash rich firms. In the second test, I perform a regression analysis with the dependent variable being the CAR of bidder firms in a -2 to +2 day window of the transaction.

For the 988 firms included in Sample (1), I have gathered two years of daily stock price data. The stock returns are matched to country indexes' returns to derive the regression equation for normal returns. The difference between normal returns and actual returns for a window of -5 to +5 around the announcement of the offer is calculated. The cumulative abnormal returns for a five day period around the announcement is calculated, where cash rich and non-cash rich firms are differentiated.

Acquisitions provide us information of the outcomes of a firm's investment decision. Assuming market efficiency, the outcomes of the transaction are a direct reflection of the investment decision relative to the value of the expected action (Harford, 2005). The prevailing market expectations are based on knowing the cash position of the bidder and therefore the outcome of the investment is compared to alternative ways of using funds – either stock repurchase or another acquisition target. Based on the fact that an acquisition outcome is relative, not absolute, the share price reaction may be considered positive or negative depending on the opportunities that a firm has. While this holds true to acquisitions made fully or partially by cash, the relativeness of the outcome holds true also for fully stock financed acquisitions. Having excess cash and still fully financing an acquisition with stock signals a preference to maintain the stock pile that the firm has accumulated. Whether or not the lagging corporate spending is seen optimal depends on the alternatives that are present.

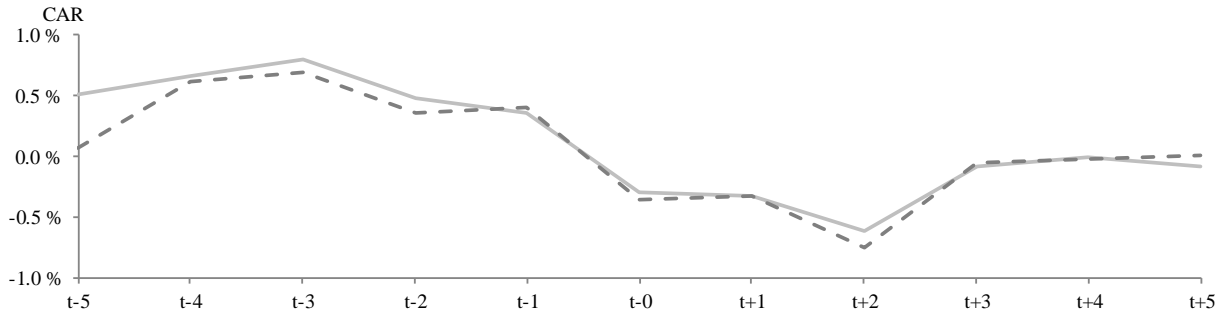
Inspecting the 11 day window (-5 to +5 days) around the acquisition presented in Figure 3, the negative announcement effect of an equity financed acquisition as reported in several previous research papers is corroborated. For the Panel A, inspecting the percentage point change in for the period $t-2$ to $t+2$, the cumulative abnormal returns decrease by 1.11 percent on average. Travlos (1987) and Wansley et al. (1987) find similar results, where an announcement effect of -1.45 percent is documented by Travlos (1987). The results are according to Roll's (1986) hypothesis. In addition, McCardle and Viswanathan (1994) and Jovanovic and Braguinsky

(2002) argue that exhausted internal growth opportunities could be used to explain the negative share price effect of equity bidders.

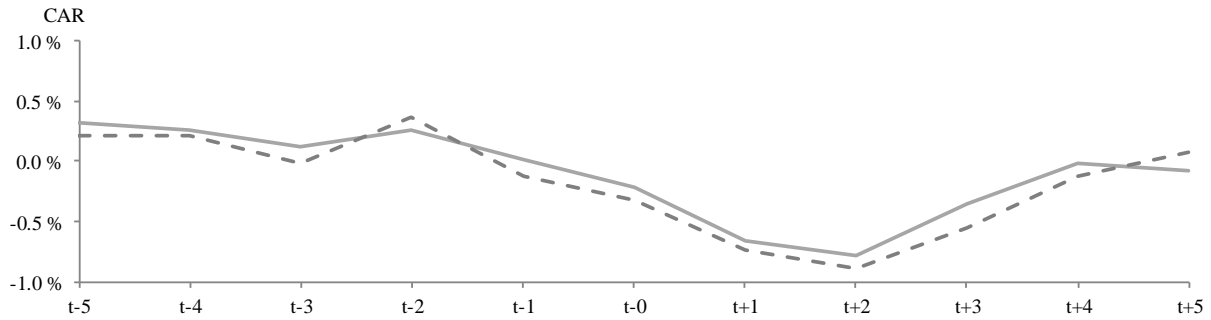
Figure 3: Bidders cumulative abnormal returns around deal announcement

Share price announcement effect. The figure shows the cumulative abnormal return of cash rich firms and non-cash rich firms. The average is calculated for the 988 firms that are included in the M&A sample. Returns are reported for an event window of t-5 to t+5 days, where t=0 is the announcement date of the transaction.

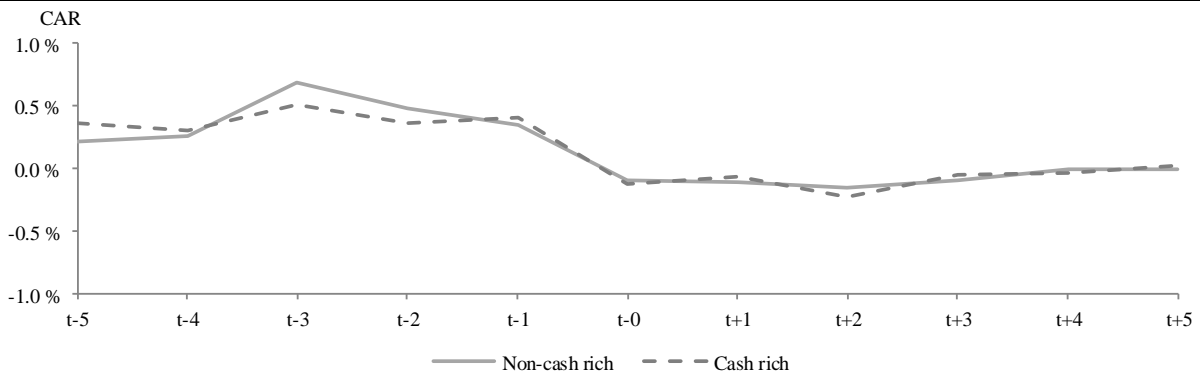
Panel A: All offers



Panel B: Hot equity market offers



Panel C: Non-hot market offers



Differentiating between cash rich and non-cash rich firms, the share price decrease is 1.15 percent and 1.09 percent respectively. Korajczyk et al. (1991) hypothesize that stock bidders bear greater adverse selection risk after stock issues, which would explain the difference between the

two bidder classes. There is, however, a tendency that the share price rebounds to close pre-offer level when inspecting the returns beyond the four day window. For the dissected samples, the announcement effect varies significantly. The negative announcement effect in hot markets is emphasized, whereas for non-hot markets the negative effect is partially diluted. The announcement effect in hot markets, when inspecting again at the t-2 to day t+2 period, is -1.25 percent and -1.04 percent for cash rich and non-cash rich firms. While the announcement effect is more negatively severe in hot markets, the effect is only -0.63 percent and -0.58 percent for cash-rich and non-cash rich respectively in non-hot markets. A difference of -0.62 percent between the cash rich bidder CAR in the five day period is a direct implication of the stronger signaling effect in hot equity markets (Graham and Harvey, 2001; Hansen, 1987). Beyond the five day period, the adverse effect observed in hot equity markets is contradicted with high CARs during days t+3 to t+5. As the share price is seen to have overreacted to the announcement, I believe that markets adjust to this effect. In fact, the CARs converge to near-zero values at t+5. However, the figure envisages the implications of excess cash reserves on bidder CARs that are tested in a multivariate OLS regression in the following subsection.

I construct two regression models to test the announcement effect of cash rich firms. According to Hypothesis 1.1, the first objective of this subsection is to confirm that a high excess cash ratio translates into lower CARs around the announcement of an equity financed acquisition, as shown graphically in Figure 2. I use an equation as follows:

$$\text{Bidder CAR}_i = \alpha_i + \beta_1 \text{Excash}_i + \beta_2 \text{Controls}_i + \gamma \text{INDDUM}_i + \delta \text{YDUM}_i + \varepsilon_i \quad (2)$$

where i indexes the firm; Excash is $\log(1 + \text{Excess cash reserve ratio})$ measured from the latest reported full year figures prior to deal announcement. Control variables include bidder size (i.e. logarithm of total assets in millions of euros), bidder market-to-book ratio of equity¹⁶, bidder profitability is a bidder's return on assets, calculated as net income over book value of equity, overpay measures target shareholder's gain relative to bidder market value of equity, which is calculated by first taking the product of CAR, target market value of equity and the percentage of target stake sought by the bidder, and then dividing this product by bidder market value of equity,

¹⁶ Market-to-book ratio of assets would be used, but market values for debt are not available.

operating cash flow is a variable measured from the cash flow statement of a firm, deflated by total assets, relative deal value (i.e. deal value over bidder market value of equity), and dummy variables for diversifying and cross-border deals. The overpay is included in the model to account for the advantage that equity offers have against cash offers: the true value of equity offers are contingent on the cash flows of the combined firm, so that bidders can reduce this overpayment cost by sharing some of the target's mispricing with the firm and its insiders. Thus, the choice between an all-stock offer and an all cash acquisition is driven by the trade-off between the overpayment cost and the probability that the bid will be successful. Further, according to the Hubris hypothesis (Roll, 1986), firm managers are overly optimistic on value creation capabilities and therefore pay too high premiums on targets.

As stated, market wide information asymmetry is time varying, which should be captured by differentiating between hot and non-hot markets. Misvaluation is most severe in hot markets and causes too many stock offers to be accepted, as discussed by Shleifer and Vishny (2003), which should result in worse announcement effects. I therefore separate Sample (1) into hot and non-hot subsamples following the periods for different market conditions introduced in Section 2.4. If adverse selection of cash reserve were to be an explanation for more severe negative announcement effects for cash rich firms, β_1 is expected to be more negative in hot markets. According to Moeller and Schlingemann (2005) cross-border acquirers have announcement returns of approximately hundred basis points less than domestic acquirers. I therefore expect the cross-border dummy variable to provide a negative β that captures the effect of increased uncertainty. Berger and Ofek (1995) show that corporate diversification strategies destroy value, which derives from the fundamental idea that firms should not attempt to do what investors can do better themselves, i.e. creating a diversified portfolio. Therefore I expect the diversifying dummy variable to have a negative effect on bidder CARs.

Table 4: The negative announcement effect of a bidder's excess cash ratio

The negative announcement effect of a bidder's excess cash reserve. This table reports OLS regression estimates of the announcement effects of a bidder's excess cash reserve. The dependent variable is bidder announcement CAR from day -2 to day +2 from a market model. Models 1 and 2 use the overall sample. Models 3 and 4 (5 and 6) use the deals announced during the hot (non-hot) equity market period. *Cash reserve ratio* is cash and equivalents over total assets. *Excess cash reserve ratio* is the difference between cash reserve ratio and its required level. *Positive excess cash dummy* is one if excess cash ratio is positive and zero otherwise. *Size* is the logarithm of a bidder's book value of assets in million of euros. *Log(market-to-book)* is the logarithm if a bidder's market-to-book ratio of equity. *Profitability* is a bidder's return on assets, calculated as net income over book value of equity. *Overpay* measures target shareholder's gain relative to bidder market value of equity. It is calculated by first taking the product of CAR, target market value of equity and the percentage of target stake sought by the bidder, and then dividing this product by bidder market value of equity. *Operating cash flow* is a flow variable calculated as operating income before depreciation - interest expenses - income taxes - preferred and common dividends, deflated by total assets. *Relative deal value* is deal value divided by bidder total assets. *Diversifying takeover dummy* is one if a target operates in the same industry classified by 1-digit SIC codes and zero otherwise. *Cross-border dummy* is one if the bidder and target domicile nations are different, zero otherwise. p-values are in parentheses. *,** and *** indicate significance at 10%, 5% and 1% respectively.

	Exp. Sign	Overall sample		Hot equity market (1999-2000 and 2005-2007)		Non-hot equity market (2001-2004 and 2008-2010)	
		(1)	(2)	(3)	(4)	(5)	(6)
Excash	(-)	-0.274** (0.02)		-0.287** (0.03)		-0.223 (0.42)	
Positive excess cash dummy	(-)		-0.016 (0.17)		-0.029** (0.02)		-0.004 (0.85)
Size	(+/-)	-0.008 (0.17)	-0.009 (0.11)	-0.002 (0.74)	-0.002 (0.80)	-0.020* (0.09)	-0.023** (0.04)
Market-to-book	(-)	-0.004 (0.11)	0.000 (0.85)	-0.002 (0.39)	0.000 (0.59)	-0.010 (0.17)	-0.008 (0.25)
Profitability	(+/-)	-0.098*** (0.00)	-0.097*** (0.00)	-0.085* (0.08)	-0.084* (0.08)	-0.074*** (0.01)	-0.071** (0.01)
Overpay	(-)	0.014 (0.80)	0.014 (0.89)	-0.106 (0.47)	-0.143 (0.32)	0.286*** (0.01)	0.291*** (0.01)
Operating cash flow	(+/-)	0.082*** (0.00)	0.080*** (0.00)	0.059 (0.16)	0.050 (0.23)	0.027 (0.61)	0.023 (0.66)
Relative deal value	(-)	-0.001 (0.80)	-0.001 (0.66)	0.000 (0.87)	0.000 (0.84)	-0.005 (0.85)	-0.006 (0.81)
Diversifying takeover dummy	(-)	0.010 (0.36)	0.009 (0.42)	0.009 (0.47)	0.007 (0.57)	0.017 (0.47)	0.018 (0.45)
Cross-border dummy	(-)	0.005 (0.69)	0.004 (0.72)	0.005 (0.69)	0.005 (0.72)	0.001 (0.96)	0.001 (0.98)
Constant		0.074* (0.10)	0.082* (0.06)	0.039 (0.47)	0.047 (0.37)	0.174* (0.05)	0.191** (0.03)
Observations		448	448	268	268	180	180

The results based on Eq. (2) are reported in Table 4. The results are according to my hypothesis as the presence of a negative price effect of a bidder's excess cash reserve is confirmed. In model 1, the coefficient of $\log(1+\text{excess cash ratio})$ is -0.274, suggesting that a 1 percent increase in the excess cash ratio leads to a 27.4 basis point decrease in an average bidder's announcement CAR. The result marks the validity of hypothesis 1.1, as excess cash reserves diminish in fact bidder share price returns. The finding is consistent with the hypothesis formalized by McCardle and

Viswanathan (1994) and Jovanovic and Braguinsky (2002) that equity offers convey exhausted growth opportunities. Growth opportunities have an increasing role in determining market values of firms and therefore the negative announcement effect is increasingly negative as excess cash reserves are increasing. In hot equity markets, the negative announcement effect is underlined as the average bidder announcement CAR decreases by 28.7 basis points at 5 percent significance level. In contrast, the negative announcement effect is insignificantly related to excess cash reserve ratios in non-hot markets, which coincides with the adverse selection of cash reserve hypothesis. Reflecting the difference in hot and non-hot markets, the hypothesis of Rhodes-Kropf and Viswanathan (2004) is underlined. From the targets side, the estimation error of synergies is elevated in hot market conditions making them more apt to accept equity offers. In cases where the potential synergies are not reflected at a one-to-one relation across the market, the M&A case is not seen to enhance the combined entity's operating performance in a way that would justify the use of equity. In non-hot market conditions, the effect is diluted as the market-wide overvaluation component is non-existent, which consequently does not provide basis to assume larger estimation errors of synergies. In model 2, the positive excess cash dummy variable is not significant; similarly for model 6, however model 4 shows a coefficient of -0.029 at 5 percent significance further supporting my hypothesis.

Gamba and Triantis (2008) developed a model that endogenized dynamic financing, investment, and retention/ payout policies in order to analyze the effect of financial flexibility on firm value. They find that firms with more flexible capital, i.e. more cash or debt capacity, can partially compensate for costly external financing, indicating that investment and financial flexibility are substitutes to some extent. Now relating this to the hypothesis that maintaining financial flexibility is a reflection of growth, the share price reaction should not decrease along excess cash reserve. Therefore, the findings presented in Table 4 are partially in contradiction with the finding of Gamba and Triantis (2008) as I conclude that investment and financial flexibility are complementary in nature.

Control variables are to a smaller extent statistically significant. Throughout the six models, profitability negatively affects bidder CARs. For models 1 and 2, it decreases CARs by 9.8 and 9.7 basis points for every percentage increase in profitability. I find that the choice of equity financing in M&A cases should be biased towards unprofitable firms with higher market

valuations. Therefore profitability has a negative relation with bidder CARs as investors believe a higher signaling effect for profitable firms. This could be a result of highly profitable firms been seen as having competitive edge against peers, which is expected to diminish over time. Interestingly, market-to-book is not significant. I expected the relation to be negative as higher market-to-book ratios increase the possibility of overvaluation, which is consequently emphasized with equity offers. Overpay is similarly negligent in the overall and hot market sample, but significantly positive for non-hot markets. Reflecting the result to the hypothesized overvaluation component that is missing in non-hot equity markets, the result is surprising. If the trade-off of overpaying and probability of a successful bid is diminished under the low market conditions, overpaying should be significantly negative throughout all samples, and especially in non-hot markets. I find that the positive price reaction from overpaying is an indirect of acquisition rationale: a firm willing to pay high relative values for a target under uncertain market conditions exhibits a strong message of high event outcome expectations. Whether the outcomes present themselves as significant operational improvements through synergies or market positioning, the investors perceive the signal positively. The positive signal from paying with cash that is created from a higher transparency of the valuation levels of the bidder and target (Hansen, 1987) is diminished in cross-border acquisitions. Further, if cross-border acquisitions are associated with more information asymmetries, agency problems, and managerialism, the measures of the acquirer's growth opportunities, market-to-book and 5-year sales growth, play a more important role in explaining the cross-section of acquirer returns. This is, however, not the case here, as conducting a regression analysis for 675 cross-border acquisitions with the same parameters as in model 1, did not provide significantly different values.

Comparing the results of Gao (2011) on U.S. data, the effect of excess cash reserve ratio is similar for European firms. For U.S. firms, the coefficient for $\log(1+\text{Excess cash ratio})$ is slightly more negative, being -0.585 significant at 1 percent. The coefficient difference of 0.311 is not seen dependent on the differences between investor behavior or market efficiencies between the two continents, but more an echo of the sampling methods used and higher level of noise in the European context. Control variables are similarly largely consistent with the findings of Gao. Differences eloquent to mention are market-to-book, size and profitability. Where I find that market-to-book and size are statistically insignificant in explaining equity financed acquisitions, Gao finds both to be significant at 1 percent. Both independent variables are seen to affect

negatively CARs on the basis of overvaluation and asymmetry of information. My findings are similar in direction; however they do not match the magnitude or significance that U.S. data provided. Profitability is controversial: I find profitability to be negative and significant at 1 percent whereas Gao finds it to have no significance. Based on the free cash flow hypothesis, profitability would be assumed to have negative implications on cash offers, but this should not be the case for equity offers.

Transparency to bidder standalone value is expected to affect announcement effects. The probability that the bidder would subject itself to overvaluation speculation is greater if asymmetric information is small. As Gao (2011), I use tangible relative assets (tangible assets diluted by total assets) as a measure of information asymmetry between the bidding firm managers and investors¹⁷. I use a dummy variable, HighT, to indicate a bidder in the highest relative tangible assets quartile. A regression equation is formed where HighT is interacted with bidder excess cash as follows:

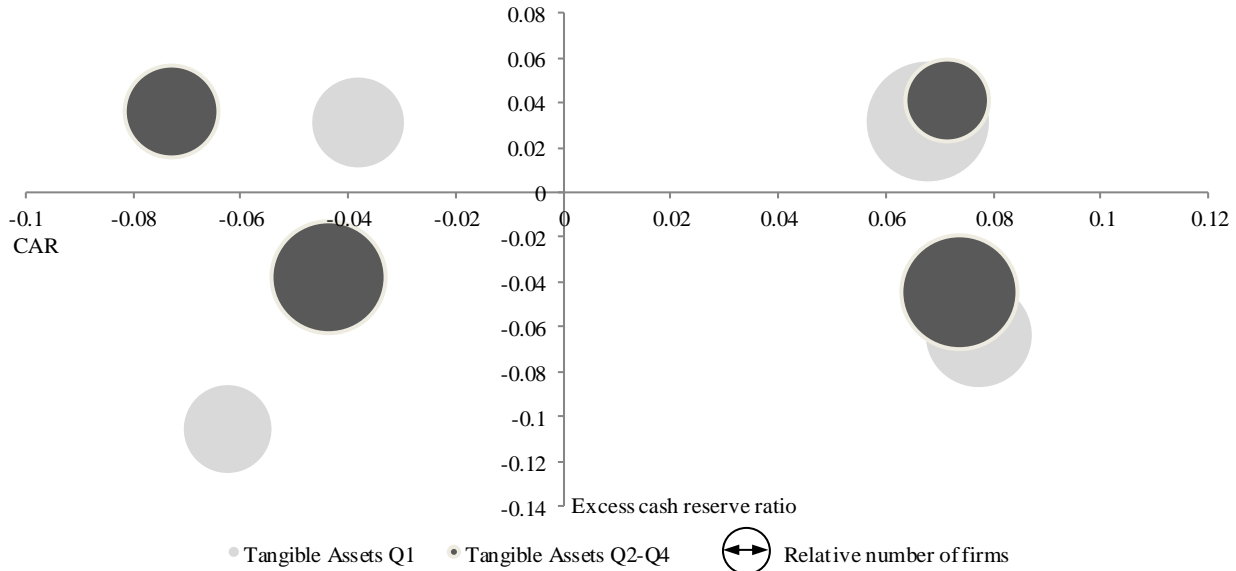
$$\text{Bidder CAR}_i = \alpha_i + \beta_1 \text{Excash}_i * \text{HighT} + \beta_2 \text{Controls}_i + \gamma \text{INDDUM}_i + \delta \text{YDUM}_i + \varepsilon_i \quad (3)$$

Figure 4 shows a bubble chart of the Bidder CARs and excess cash ratios across Sample (1). HighT bidders are differentiated from the rest of the bidders by a color scheme: dark grey - bidders having a tangible assets ratio in quartile 2 through quartile 4; light grey - bidders having a tangible assets ratio in quartile 1 (HighT). The figure captures partially the reasoning for why I use the methodology applied by Gao (2011), as when inspecting the distribution of HighT bidders it becomes apparent that the observations tend towards the top right quadrant. The size of the bubble, indicating the relative number of firms in each of the four quadrants, includes 30.5 percent of firms with high tangible assets ratios in the top right quadrant, while there are only 18.7 percent of firms with lower ratios. The distributions are relatively similar in the top left and bottom right quadrants. The bottom left quadrant shows, however, that even though the relative number of firms in having high tangible asset ratios exhibit lower CARs and lower excess cash ratios.

¹⁷ Methodology following Harris and Raviv (1991) and Leary and Roberts (2010).

Figure 4: Bidder CAR vs. excess cash ratio

The figure shows the bidder CARs and excess cash ratios, while differentiating between bidders having a high (top quartile) tangible assets ratio (tangible assets / total assets). The x-axis is the bidder cumulative abnormal returns for a five day window around the announcement of the offer. The y-axis is the excess cash reserve ratio as estimated from the latest annual statement available. The bubble size is the relative number of firms in the corresponding group. The figure consists of 453 bidder.



Myers identified already in 1984 that asymmetric information may be unnecessary if transaction costs alone can produce pecking order if they are higher for debt than for retained earnings and higher yet for external equity. In addition, if asymmetric information problems are avoided with issuing equity the pecking order financing disappears. Firms do avoid issuing risky securities in ways that involve asymmetric information problems, but financing decisions do not follow the pecking order. Adverse selection of cash reserve is therefore expected to be reflected in a positive β_1 , as tangible relative assets are expected to off-set the uncertainty in bidder valuation levels. In Table 5, this effect is seen in the -0.349 coefficient for excess cash reserve ratio and 0.464 coefficient for the HighT interacted variable in model 1. It can be, thus, concluded that lowering the level of information asymmetry enhances the investor reaction to an equity financed deal. Both results are significant at a 1 percent level. Relating these results to the paradox between Jensen's (1986) free cash flow theory and Myers' and Majluf's (1984) adverse selection of equity theory, the implication is that asymmetries of information imposed on the equity financed deal increase the adverse selection of cash. The discussed paradox is not directly tested in this study¹⁸,

¹⁸ Gao (2011) argues that the agency costs of free cash flow are entirely removed when inspecting purely equity financed transaction. I find that, when linking it to monitoring costs of cash holdings, the free cash flow theory

however the context of excess cash reserve is well argued to reflect it. Excess cash reserve is reported to have a positive effect on CARs where there is low a low level on information asymmetry. Even though, taking a sample of only equity financed acquisitions levies the free cash flow dilemma, the impact of the HighT dummy can be argued that the agency costs of free cash flow outweigh adverse selection of equity. In a study conducted by Drobetz et al. (2010), the authors find results in the similar direction. They study the effects of the two contradicting theories on the valuation levels of German firms and find that the market value of cash is significantly reduced when a firm faces a higher level of information asymmetry.

In model 3, I differentiate between Common Law countries and Code Law countries. Even though the coefficient for $\log(1+\text{excess cash})$ follows the results achieved for the whole sample, the coefficients are significantly negative only for the Common Law countries (statistical significance at 5 percent level). Even though the impact of excess cash reserve is more negative in the UK and Ireland, the abnormal return in these countries is 0.29 percent higher than in Continental Europe. The results are according to the results of La Porta et al. (1997), as abnormal returns are higher in countries with better investor protection, and also reflects the more efficient market prevailing in Common Law countries. The Code Law subsample is relatively small in size, 127 observations, which dilutes the significance of the test. Due to the difference in the sample sizes between the two different legislative regions, the comparison of the coefficients would be based on a relatively unstable platform. Nevertheless, inspecting the regulatory and taxation differences discussed in Section 3.2, the results exhibit two aspects: 1) the effect is more apparent and statistically valid in Common Law countries; 2) information asymmetry is in a pronounced role in countries where investor protection is better. In addition, Drobetz et al. (2010) find that the market value of cash is higher if investor protection is better. Also in this light the presented results are in-line, since better investor protection is assumed to have a levitating effect on bidder CAR's when there are lower levels of information asymmetry. The coefficient of the cross-border dummy is negligible in both legislative areas. This is surprising as several authors, including Udding and Boateng (2009) and Martynova and Renneboog (2009) find that UK based firms engaged in cross-border M&A activity experience higher returns than in other countries.

becomes relevant also in this approach. I argue that maintaining a high cash ratio beyond optimality is adjacent to value destroying investments and therefore can be tested indirectly with different levels of information asymmetries.

Table 5: The announcement effect of excess cash reserve accounting for high tangible assets

The weaker negative announcement effect of excess cash reserve for a bidder with high tangible assets. This table reports OLS regression estimates of bidder announcement CAR on bidder excess cash reserve, an interaction term of bidder excess reserve and a high-tangibility-bidder dummy variable (HighT), and control variables. The dependent variable is bidder announcement CAR from day - 2 to day +2 from a market model. A dummy variable, HighT, is interacted with $\log(1+\text{Excess Cash Reserve Ratio})$ (model 1) or positive excess cash dummy (model 2). HighT is one if a bidder belongs to the highest relative tangible assets quartile of the sample. Relative tangible assets is measured as the sum of receivables, inventories and capital investments, deflated by total assets. *Cash reserve ratio* is cash and equivalents over total assets. *Excess cash reserve ratio* is the difference between cash reserve ratio and its required level. *Positive excess cash dummy* is one if excess cash ratio is positive and zero otherwise. *Size* is the logarithm of a bidder's book value of assets in million of euros. *Log(market-to-book)* is the logarithm if a bidder's market-to-book ratio of equity. *Profitability* is a bidder's return on equity, calculated as net income over book value of equity. *Overpay* measures target shareholder's gain relative to bidder market value of equity. It is calculated by first taking the product of CAR, target market value of equity and the percentage of target stake sought by the bidder, and then dividing this product by bidder market value of equity. *Operating cash flow* is a flow variable calculated as operating income before depreciation - interest expenses - income taxes - preferred and common dividends, deflated by total assets. *Relative deal value* is deal value divided by bidder market value of assets. *Diversifying takeover dummy* is one if a target operate in the same industry classified by 1-digit SIC codes and zero otherwise. *Cross-border dummy* is one if the bidder and target domicile nations are different, zero otherwise. p-values are in parentheses. *,** and *** indicate significance at 10%, 5% and 1% respectively.

	Exp. Sign	(1)	(2)	(3)	
				Code Law	Common Law
Excash	(-)	-0.349*** (0.01)		-0.059 (0.76)	-0.322** (0.04)
Excash*HighT	(+)	0.464*** (0.01)		0.098 (0.78)	0.474* (0.06)
Positive excess cash dummy	(-)		-0.024* 0.071		
Positive excess cash dummy*HighT	(+)		(0.03) 0.224		
HighT	(+)	0.015 (0.52)	-0.001 (0.97)	0.073** (0.02)	-0.004 (0.89)
Market-to-book	(-)	-0.002 (0.33)	0.000 (0.89)	0.003 (0.47)	-0.002 (0.49)
Size	(+/-)	-0.008 (0.17)	-0.010* (0.08)	-0.010 (0.26)	-0.009 (0.27)
CAPEX	(+/-)	-0.049 (0.36)	-0.087* (0.07)	0.170 (0.23)	-0.071 (0.30)
Collateral	(+)	-0.006 (0.91)	-0.007 (0.89)	-0.192** (0.03)	0.050 (0.44)
Profitability	(+/-)	-0.092*** (0.00)	-0.095*** (0.00)	-0.178*** (0.00)	-0.059** (0.01)
Overpay	(-)				
Operating cash flow	(+/-)	0.052** (0.03)	0.075*** (0.00)	0.023 (0.76)	0.048 (0.75)
Relative deal value	(-)	-0.001 (0.68)	-0.001 (0.64)	0.030 (0.10)	-0.001 (0.11)
Cross-border dummy	(-)	0.005 (0.64)	0.005 (0.65)	-0.011 (0.46)	0.004 (0.78)
Diversifying takeover dummy	(-)	0.011 (0.34)	0.010 (0.40)	0.026 (0.10)	0.007 (0.62)
Constant		0.066 (0.14)	0.093** (0.04)	0.107 (0.16)	0.080 (0.20)
Observations		411	412	114	297

6.3 Probability of using cash as consideration

Assuming target managers are rational ‘lemon’ bidders are removed by requiring them to use cash as consideration. This lowers the probability of cash rich firms using stock as the completion of the transaction is set contingent to the method of payment. As discussed earlier, target managers may misinterpret overvaluation for synergies. In order to test the relation between excess cash reserves and the propensity of bidders using stock, I form a set of logistic models according to Martin (1996) and Faccio and Masulis (2005). Slightly deferring from the original specifications, I make the same modification for the excess cash variable as Gao (2011), where he sets $\log(1 + \text{Excess Cash Reserve Ratio})$ as the key independent variable. In addition, as Gao (2011) I augment the sample of all-stock financed deals by mixed and cash financed deals in order to construct a model where the dependent variable is one if all stock financed acquisition and 0 otherwise. The regression equation is as follows:

$$\text{Using stock}_i = \alpha + \beta \text{Excash}_i + \gamma \text{Controls}_i + \delta \text{YDUM}_i + \varepsilon_i \quad (4)$$

where the i indexes the firm, Excash is $\log(1 + \text{Excess cash reserve ratio})$, YDUM is a vector of year dummy variables 1999-2010 and Controls is a vector of control variables. Control variables include bidder size (i.e. logarithm of total assets in millions of euros), bidder market-to-book ratio of equity¹⁹, bidder average sales growth in the 4 years prior to deal announcement, bidder industry-adjusted leverage (i.e. long-term debt over total assets), bidder collateral (measured as tangible assets), relative deal value (i.e. deal value over bidder market value of equity), and a dummy variable for diversifying deals and cross-border acquisitions. Hansen (1987) argues that the advantage of making a stock offer increases with relative size of the target compared to the bidder. As relative size increases, the influence of the target’s performance and value on the performance and value of the combined firm increases. Here, overpayment cost is inflated and consequently the advantage of an equity offer is emphasized.

Target managers may overestimate synergies in hot equity markets more probably than in non-hot equity markets, which causes more stock financed offers to be accepted than expected and might distort the β in Eq (4). Hence, I form another equation that differentiates between hot and

¹⁹ Market-to-book ratio of assets would be used, but market values for debt are not available.

non-hot markets where I anticipate the probability to use stock to be lower in non-hot equity markets compared to hot equity markets. This model is represented as follows:

$$\text{Using stock}_i = \alpha_i + \beta_1 \text{Excash}(\text{non-hot years})_i + \beta_2 \text{Excash}(\text{hot years})_i + \gamma \text{Controls}_i + \delta \text{YDUM}_i + \varepsilon_i \quad (5)$$

where $\text{Excash}(\text{non-hot years})$ is the bidder excess cash reserve of the deals announced in non-hot equity markets (2001-2004 and 2008-2010) and $\text{Excash}(\text{hot years})$ is the bidder excess cash reserve of the deals announced in the hot equity markets (1999-2000 and 2002-2005). β_1 is expected to be lower than β_2 . I also perform separate regression for a segmented sample. I pool the EU-15 countries according to legislation, where Continental EU-15 countries are classified into the same pool (Code) and U.K. and Ireland in another pool (Common). This model follows the Eq. (5) with the exception that the variance of the residual is not constrained i.e. variance in group 1 is not constrained to equal the variance in group 2. Here, the underlying hypothesis is that there exist differences between the two regions that are driven by differences in business environments as discussed in Section 3.2.

Inspecting Panel A in Table 6, it can be concluded that there are significant differences in the corporate profiles for all stock offers and other offers. The most notable and controversial difference is the excess cash ratio, which is statistically significantly lower for cash and mixed offers. Reflecting this on the Pecking Order theory, it is clear that underlying assumptions for it are violated. Firms with higher excess cash ratios have more cash on a relative basis compared to bidders using different methods of payment. Compared other bidders, stock bidders have higher market-to-book ratios and higher average sales growth, where the differences 0.391 and 0.134 respectively. The market-to-book difference translates into a difference of $0.466x^{20}$, corresponding a shareholder value of EUR 2.446bn based on average market capitalizations of equity bidders, where the hypothesis that the null hypothesis is rejected at 5 percent. Average sales growth is statistically different at 1 percent significance, which is a reflection of the market-to-book difference. It may be argued that historical growth is translated into future growth opportunities that are consequently echoed in the share price. Size and leverage are not significantly different across the offer types. To the extent that foreign targets are more difficult

²⁰ 0.9732 and 1.4392 for other bidders and stock bidders respectively using $\exp(\log(\text{market-to-book}))$.

to evaluate I expected acquirers to prefer equity as the form of payment more often. In cross-border acquisitions the target is frequently unwilling to accept foreign equity, which forces the acquirer to pay with cash (Gaughan, 2002).

Panel B reports the logistic results. Model 1 is based on Eq. (4). The coefficient for $\log(1+\text{excess cash ratio})$ is -6.229 and statistically significant at 1 percent. This outcome conveys that there exists a negative relation between excess cash and the probability of using equity as a method of payment in M&A. The coefficient of $\log(1+\text{excess cash ratio})$ suggests that a one standard deviation increase in the variable reduces the probability of using stock by 4.59 percent, which is calculated based on the marginal effect²¹. Other independent variables seem to have significant impact on equity offers. $\text{Log}(\text{market-to-book})$ affects positively the decision to use equity as consideration, which has two opposite implications: 1) overvaluation (Rhodes-Kropf et al., 2005; Dong et al., 2006) is seen as a determinant for equity offers; 2) Precautionary motives do not restrain managers from using external financing (assuming market-to-book exhibits growth opportunities). According to the precautionary motive, potential underinvestment problems are induced by costs associated with higher external financing decision and are incurred by higher growth opportunities. In this light, the sign of the four year growth predictor variable is according to theory (Opler et al., 1999). On the other hand, average sales growth increases the probability of using equity by 0.94 percent at 1 percent significance. This is contrary to the precautionary motive as growth opportunities related to future growth should decrease the probability of equity financing.

²¹ Coefficients are translated into marginal effects using .mfx compute in stata. A marginal effect of an independent variable x is the partial derivative, with respect to x . Mathematically represented:

$$\frac{dp}{di} = \frac{dp}{dZ} \cdot \frac{dZ}{di} = f(Z)\beta = \frac{e^{-z}}{(1+e^{-z})^2} \beta$$

Table 6: Logistic estimation of the probability of using stock

Logistic estimation of the probability of using stock. This table reports the results of logistic regressions that examine how excess cash reserve affects the propensity of using stock when a takeover offer is made. Sample period is 1999-2010. The dependent variable is one for an all-stock offer and zero otherwise. In panel A, summary statistics are reported respectively for all takeover offers, all-stock offers and other offers (i.e. cash or mixed). For continuous variables, medians are reported. A ranksum test is used to test the statistical significance of the differences between all-stock offers and other offers. Percentages of ones and zeros for the overall and subsamples are in parentheses. Panel B reports regression estimates. *Size* is the logarithm of a bidder's book value of assets in million of euros. *Log(market-to-book)* is the logarithm of a bidder's market-to-book ratio of equity. *Profitability* is a bidder's return on equity, calculated as net income over book value of equity. *Overpay* measures target shareholder's gain relative to bidder market value of equity. It is calculated by first taking the product of CAR, target market value of equity and the percentage of target stake sought by the bidder, and then dividing this product by bidder market value of equity. *Operating cash flow* is a flow variable calculated as operating income before depreciation - interest expenses - income taxes - preferred and common dividends, deflated by total assets. *Relative deal value* is deal value divided by bidder market value of equity. *Diversifying takeover dummy* is one if a target operate in the same industry classified by 1-digit SIC codes and zero otherwise. *Cross-border dummy* is one if the bidder and target domicile nations are different, zero otherwise. p-values are in parentheses. *, ** and *** indicate significance at 10%, 5% and 1% respectively.

Panel A: Summary statistics							
	Overall	All-stock	Other offers	Difference			
Company characteristics (median)							
Excess cash reserve ratio	-0.044	-0.017	-0.047	0.031***			
log(market-to-book)	0.328	0.364	-0.027	0.391**			
Average sales growth in previous 4 years	0.114	0.240	0.106	0.134***			
Size	9.362	8.211	9.496	-1.284			
Leverage	0.152	0.106	0.159	-0.053			
Collateral	0.388	0.111	0.461	-0.350			
Deal characteristics							
Relative deal value	0.043	0.094	0.038				
Diversifying takeover dummy	1220 (30.3 %)	197 (33.2 %)	1023 (29.7 %)				
Cross-border dummy	1301 (32.3 %)	190 (32.0 %)	1111 (32.3 %)				
Number of deals	4033	594	3439				
Panel B: Logit regression results							
Dependent variable: one for all-stock offers, zero otherwise	(1)		(2)		(3)		
	Exp. Sign	Coef.	Marginal Effect	Coef.	Marginal Effect	Common	Code
Excash	(-)	-6.229** (0.00)	-0.426			-2.321* (0.07)	-5.133*** (0.00)
Excash non-hot equity market years (2001-2004 and 2007-2010)	(-)			-7.650** (0.00)	-0.518		
Excash hot equity market years (1999-2000 and 2005-2007)	(-)			-5.465** (0.00)	-0.370		
Market-to-book	(+)	1.015*** (0.00)	-0.001	1.017*** (0.00)	-0.001	2.724*** (0.00)	4.491*** (0.00)
Average sales growth in previous 4 years	(+/-)	0.005*** (0.00)	0.000	0.005*** (0.00)	0.000	-0.011 (0.17)	0.006 (0.20)
Size	(-)	-0.723** (0.00)	-0.049	-0.706** (0.00)	-0.048	-1.419*** (0.00)	-0.775*** (0.00)
Leverage	(+)	0.193 (0.62)	0.013	0.186 (0.64)	0.013	-0.196 (0.79)	0.612 (0.38)
Collateral	(-)	-3.285** (0.00)	-0.224	-3.308** (0.00)	-0.224	-2.574*** (0.00)	-4.589*** (0.00)
Relative deal value	(+)	-0.021 (0.34)	-0.001	-0.019** (0.39)	-0.001	-0.009 (0.68)	0.000 (1.00)
Diversifying takeover dummy	(+/-)	-0.001 (0.99)	0.000	-0.009 (0.94)	-0.001	0.071 (0.71)	0.087 (0.65)
Cross-broder takeover	(-)	0.488*** (0.00)	0.036	0.497*** (0.00)	0.036	1.077*** (0.00)	0.589*** (0.00)
Constant		5.742*** (0.00)		5.628*** (0.00)		11.827*** (0.00)	7.032*** (0.00)
Pseudo R		0.270		0.271		0.451	0.452
Observations		3785		3785		1473	2266

Size and collateral decrease the probability by 3.37 percent and 3.27 percent respectively, which is seen to be a function of debt capacity. Large firms, with more stable cash flows and more tangible assets used as collateral are more likely to finance M&A partially with debt financed cash (subject to their leverage which is not a statistically significant variable). Bidder size is as expected, where lower bankruptcy costs, better capital market access, and higher regulatory costs of stock offer impose a higher readiness to use cash as consideration for large firms. Collateral is negative and significant at 1 percent, which is according to the theoretical framework of Myers (1977) that states moral hazard to increase inversely to tangible assets. Along moral hazard, cost of debt is increased, which makes equity financing more attractive. Hovakimian et al. (2001) find a positive correlation between tangible assets and leverage, which would imply that leverage should also be inversely correlated to the probability of using equity (Appendix C shows a correlation matrix of all control variables). Leverage and relative deal value are not significantly different across the offer types. Therefore the results are not consistent with Faccio and Masulis (2005) who find that all three variables are significant at 1 percent level and their coefficients are all of the expected signs. In contrast to Faccio and Masulis (2005), Martin (1996) neither finds leverage nor relative deal value significant. Therefore the decision to use equity as a method of payment is not related to the easiness of raising debt capital or financial constraint of raising more debt.

One unexpected result in Table 6 is the coefficient for the cross-border transaction dummy. This finding is also contrary to the assumption that foreign shareholders would be disinclined to accept shares of foreign firms (Gaughan, 2002). It could be assumed a higher proportion of cross-border acquisitions to be financed with cash, following the home-bias effect. The variable imposes a positive relation between the use of equity and cross-border acquisition at 5 percent significance. There are a few explanations that could explain this finding: 1) firms tend to capitalize on the cost advantages by acquiring foreign firms domiciled in low cost countries; 2) as a result of the Eurozone, firms face a larger pool of competitors and generally a large number of firms face expansion pressure, 3) firms having a widely dispersed ownership have a low threshold to use equity financing; 4) the formation of the euro has mitigated currency risk and reduced home bias (Martynova and Renneboog, 2006). These all potentially account to the positive relation of equity financing and cross-border activity, however, the results are counter-intuitive and therefore are further inspected in Section 6.4.

In model 2, differentiating between hot and non-hot equity markets the effect is amplified further. In hot markets the log odds of using equity, decreases by a factor of 5.65 whereas it decreases by 7.65 in non-hot markets. Further, in non-hot conditions one standard deviation change in $\log(1+\text{excess cash reserve})$, the probability of using stock decreases 5.59 percent, which is clearly lower than in hot markets (-3.99 percent). This underlines an aspect discussed adjacent to Table 1 – targets overestimate synergies and accept too many stock offers in hot markets and reflects on the findings of Hansen (1987), where the ‘contingency pricing effect’ increases the probability of using stock as consideration in the presence of uncertainty about the target’s value. As information asymmetries and agency costs are emphasized in economic troughs, the findings are consistent with theory. There is, however, a contradictory implication of the theory and results presented. If economic troughs increase the value of cash reserves, then the probability of using equity should be less negative than in hot equity markets given excess cash. The reasoning is that cash reserves are perceived more valuable and therefore the threshold to deploy it through acquisitions should increase. In other words, the probability of making a cash or mixed offer should decrease – consequently the probability of using equity should increase. I conclude that this is only a partially off-setting factor, where the probability of equity financing in economic troughs would actually be even lower otherwise.

Dittmar, Mahrt-Smith and Servaes (2002) present evidence that the degree of shareholder rights explains cross country variations in corporate cash holdings; liquid assets are on average higher in countries with lower shareholder rights. Since a majority of Sample (1) includes U.K. bidders, I estimate my primary findings separately for U.K.-Irish and for Continental European bidders. In model 3, the differences between the two legislative areas are apparent. The relation between excess cash and equity financing seems to be more significant in Code Law countries. The negative effect is also more severe in Code Law countries, implying that firms domiciled in the UK and Ireland are less opposed to using equity while internal funds would be available also. Referring to Table 5, this result is slightly contradictory: excess cash reserves are not seen to affect payment method in M&A cases in Common Law countries, however the share price is affected more severely when equity is used. In respect of corporate behavior, there is, thus, a tendency in these countries to make corporate financing decisions that are not as shareholder value increasing as in Code Law countries. This might be a result of higher capital market activity in UK that drives firms to equity markets even though other options are available.

Market-to-book, size, collateral and cross-border acquisitions show similar results as for the pooled sample and are withholding in the same theoretical context.

When marginal effects are considered, Common Law countries in general seem to be more sensitive to changes in predictor variables (please refer to Appendix E for a comprehensive comparison of the marginal effects). I find that for Common Law countries, the probability of using equity is reduced more for one standard deviation change in excess cash reserve, market-to-book and size. Probability of using equity in Common Law countries demonstrates higher sensitivity to excess cash reserve as the probability decrease of using equity is 2.00 percent per one standard deviation. For Code Law countries the corresponding figure is -1.41 percent, which is also significantly lower than the pooled sample. Differences to the pooled sample are a result of lower variance within the different samples sizes, as the distribution for the pooled sample is relatively flatter meaning a larger impact of one standard deviation²². Market-to-book and size impact probabilities at even higher levels than excess cash reserve. A one standard deviation increase in market-to-book increases the probability of using equity by 4.57 percent, which comparing to Code Law countries is 3.14 percent. I assume this is a reflection of the financial market centered environment of especially the UK. An increase in size decreases the probability of using equity by 3.88 percent in Common Law countries whereas it decreases only 1.51 percent in Code Law countries. The choice of equity financing is not significantly affected by increases in the other variables, but a noteworthy point is that when looking at the median leverage in the subsamples, Continental Europe based firms seem to be more leveraged than U.K. or Irish firms, where leverage ratios are 21.5 percent and 14.4 percent respectively. Therefore, a higher leverage constrains additional debt issues or loans and equity is used instead. I do maintain a certain level of caution in drawing conclusions of differences between the two regions as the number of observations vary in the subsamples.

²² When comparing the coefficients of predictor variables and marginal effects, the magnitude of the impact might be ambiguous: the marginal effect in Common Law countries is more severe even though the coefficient is smaller as reported in Table 6. The difference is due to the nature of the Logistic regression, where the direct regression coefficient does not signify change in probability, but rather the magnitude of the contribution of that variable.

6.4 Operating performance

A method used initially by Kim and Weisbach (2008) and applied by Gao (2011) is used to measure how bidder excess cash ratio affects post-acquisition performance. I apply the method of the authors to my sample of mergers in European context 1999-2010 to see if the negative market reaction to acquisition announcements by cash-rich firms is partially explained by the expectations of poor operating performance. The method tracks seven accounting variables that are directly related to the uses of funds for the firms included in the sample. The relation between excess cash reserve and the seven accounting variables are used to derive an understanding of operating performance by triangulation. While operating cash flow is not directly tested, I find the test to be sufficient to provide meaningful results in answering the hypotheses. Operating cash flow return on assets is used as a measure for operating performance in order to remove the effect of short-term investments²³. Average cash flow return on assets is calculated for both the target and the bidder over the pre-merger period (years -3 years through -1). The combined entity cash flow and total assets are an aggregate of the two separate entities. The post-merger operating performance is measured for years +1 through +4²⁴. Operating performance is tested according to the following regression equation:

$$Y_t = \alpha_i + \beta_1 \log(1 + \text{Excess cash reserve ratio}_0) + \beta_2 \log(\text{Cash Reserve ratio}_0) + \beta_3 \log(1 + \text{Total Funds} / \text{Total Assets}_0) + \beta_4 \text{Relative deal value} + \beta_5 \text{Size}_0 + \varepsilon_i \quad (6)$$

where the i indexes the firm, $Y = [(\sum_{i=1}^t V_i - \text{Total Assets}) + 1]$ for $V =$ (funds used on) operations, capital expenditure, long-term debt reduction and acquisitions, and $Y = \ln[(V_t - V_0) / \text{Total Assets}_0 + 1]$ for $V =$ cash, inventory and total assets, for $t=1$ to 4. $t=0$ denotes the year before deal announcement, and $t=1$ to 4 are the 1st to the 4th year after deal completion. At $t=0$, total assets, cash, inventory are the combined figures of bidder and target. At $t=1$ to 4, operating costs, capital expenditure, long-term debt reduction, acquisitions, cash, inventory and total assets are of the combined firm. The explanatory variables are all measured as the $t=0$ and represent

²³ The book value of total assets net of cash is used as the denominator, which slightly defers from the market value of total assets used by Healy, Palepu, and Ruback.

²⁴ Year 0 is excluded to remove the effect of different merger accounting methods. Consolidation may be performed at year end or at the time of the merger. Therefore the results for year 0 are not comparable across the sample.

only bidder characteristics. Explanatory variables include Cash reserve ratio²⁵, Excess cash reserve (the difference between cash reserve ratio and its required level), Total fund (the sum of funds from operations, sales of property, plant and equipment, sale of common and preferred stock, long-term debt issuances, and other sources of funds, aggregated over the same time horizon as the dependent variable), Relative deal value (deal value over bidder market value of equity), and Size (the logarithm of a bidder's pre-acquisition book value of total assets in millions of euros).

The expected signs for each explanatory variable are based largely on the Static Trade-off theory and the expectation of cash reserves to convey growth opportunities. The main focus of the analysis is on the excess cash reserve ratio variable, as it upholds the theoretical frameworks that are referred to in the expected signs. A broad interpretation of Miller and Modigliani (1958) firms adjust capital structures towards optimal levels. Based on this, I expect excess cash reserves to be a discontinuous state, where cash reserves converge toward optimal levels under time. Smith and Watts (1992) document a negative relationship between growth opportunities and debt ratios. Stein (1996), Hertz and Li (2010), and Kim and Weisbach (2008) show that long-term debt reduction is positively related to stock issuance. Therefore I expect excess cash reserves to be positively related to debt reduction. Capital expenditures, acquisitions, and total assets are expected to be positively related to excess cash purely based on the growth opportunities hypothesis. The sign of operating costs is ambiguous as through growth expenses are increasing, but simultaneously cost synergies may affect in the opposite direction when exploited. Healy et al. (1992) show that merged firms have significant improvements in operating cash flow returns, resulting from increases in asset productivity. Based on the asset productivity increase the sign for operating costs is expected to be negative.

²⁵ Based on the correlation matrix (Appendix C, Panel C) the correlations between the explanatory variables are sufficiently low and hence autocorrelation is not seen as a problem in the model used.

Table 7: The effect of excess cash reserve on a bidder's post-acquisition uses of funds

The effect of excess cash reserve on a bidder's post-acquisition uses of funds and changes in assets. This table reports regression results showing how a bidder's excess cash reserve affects its post-acquisition uses of funds and changes in assets. The dependent variable is $Y = [(\sum_{i=1}^t V_i - \text{Total Assets}) + 1]$ for $V =$ (funds used on) R&D, capital expenditure, long-term debt reduction and acquisitions, and $Y = \ln[(V_t - V_0) / \text{Total Assets}_0] + 1]$ for $V =$ cash, inventory and total assets, for $t=1$ to 4. $t=0$ denotes the year before deal announcement, and $t=1$ to 4 are the 1st to the 4th year after deal completion. At $t=0$, total assets, cash, inventory are the combined figures of bidder and target. At $t=1$ to 4, R&D, capital expenditure, long-term debt reduction, acquisitions, cash, inventory and total assets are of the combined firm. *Cash reserve ratio* is cash and marketable securities over total assets measured in the year prior to the announcement. *Excess cash reserve* is the difference between cash reserve ratio and its required level. *Total fund* is the sum of funds from operations, sales of property, plant and equipment, sale of common and preferred stock, long-term debt issuances, and other sources of funds, aggregated over the corresponding horizons. *Relative deal value* is deal value deflated by pre-acquisition bidder market value of assets. *Size* is the logarithm of a bidder's pre-acquisition book value of total assets in million of dollars. *, **, **** indicate significance at 10%, 5%, and 1% respectively. The cross-sectional regressions are specified below.

$$Y_t = \alpha_i + \beta_1 \log(1 + \text{Excess cash reserve ratio}_0) + \beta_2 \log(\text{Cash Reserve ratio}_0) + \beta_3 \log(1 + \text{Total Fund}_t / \text{Total Assets}_0) + \beta_4 \text{Relative deal value} + \beta_5 \text{Size}_0 + \varepsilon_i$$

Y	t	Exp. Sign	log(1+Excess Cash Reserve Ratio)	log(Cash Reserve Ratio)	Total fund	Relative deal size	Size	Obs	Adj. R ²
			β_1	β_2	β_3	β_4	β_5		
Δ Cash	1	(-)	-1.034***	1.039***	0.134***	-0.004	0.023***	437	0.318
	2	(-)	-0.493***	1.510***	0.071***	-0.002	0.034***	428	0.219
	3	(-)	-0.137	1.872***	0.025	-0.004	0.062***	431	0.096
	4	(-)	-0.201	0.453	-0.033	-0.002	0.039**	415	0.013
Σ LT Debt Reduction	1	(-)	-0.981***	0.065	0.159***	0.001	-0.017	442	0.194
	2	(-)	-0.025	0.788	0.072***	0.008	0.002	424	0.146
	3	(-)	0.211	0.809	0.175***	0.003	0.015	429	0.127
	4	(-)	0.721	0.295	0.317***	0.006	-0.006	441	0.163
Δ Inventory	1	(+)	0.030	-0.042	0.024**	0.001	0.002	355	0.006
	2	(+)	0.402***	-0.368	0.015	0.004	0.010*	351	0.034
	3	(+)	0.251	-0.514	-0.016	0.004	0.016*	346	0.012
	4	(+)	0.115	-0.154	0.000	0.004	0.011	345	0.009
Σ CAPEX	1	(+)	-0.311***	0.534***	-0.046***	0.000	0.025***	443	0.119
	2	(+)	-0.492***	0.350***	0.009	-0.001	0.016***	435	0.156
	3	(+)	-0.407***	0.398***	-0.003	0.000	0.018***	435	0.076
	4	(+)	-0.359***	1.527***	-0.156***	-0.002	0.025***	442	0.178
Σ Oper.Costs	1	(-)	-2.715***	3.040***	-0.010	0.010	-0.016	443	0.197
	2	(-)	-2.378***	2.227***	0.112**	0.006	-0.044**	435	0.188
	3	(-)	-1.325***	0.993	-0.253***	0.007	-0.051***	435	0.066
	4	(-)	-2.232***	1.616**	-0.026	0.000	-0.091***	442	0.159
Σ Acquisitions	1	(+)	-0.257**	0.159	-0.094***	-0.001	-0.023***	443	0.082
	2	(+)	-0.195	-0.175	-0.041**	-0.002	-0.017***	443	0.032
	3	(+)	-0.249*	0.369*	-0.085***	0.000	-0.019***	435	0.062
	4	(+)	-0.297**	-0.031	-0.081**	0.000	-0.033**	442	0.070
Σ Total Assets	1	(+)	2.010**	-1.381	0.923**	0.003	0.027	387	0.114
	2	(+)	1.024	-0.936	0.206	0.004	0.034	322	0.004
	3	(+)	0.020	-1.630	0.354	0.009	0.011	298	0.004
	4	(+)	0.561	-2.182	0.656**	0.001	0.002	284	0.008

Table 7 reports the effect of excess cash on the equity financed offer bidder's post-acquisition uses of funds. The most significant impacts of excess cash reserves are on change on cash reserve, capital expenditures and operating costs. The first two years post the transaction, excess cash has a negative impact on cash reserve, implying that cash reserve tends towards normal levels. The sign remains negative through years 3 and 4, however statistical significance is lost. This underlines my hypothesis that excess cash reserve is not a static state that a firm intends to uphold, but rather an adverse situation. Observing capital expenditures and operating costs, negativity of excess cash effect is significant for all four years after the transaction. As the two dependent variables are a direct reflection of investments and operational growth, excess cash negativity is seen as a contradiction to growth opportunities. Operational efficiency enhancement due to synergies may be used to explain relative operational cost reduction, but the perception of excess cash reserve as a catalyst for the improvement cannot be made. Based on the coefficients it can be concluded that the relation between excess cash reserves and growth metrics does not reflect growth, but rather operational improvement. The results are consistent with the findings of Healy et al. (1992) and Cornett and Tehranian (1992) who also report operational improvements. When the operating cash flow of the combined entity is measured, the change for years 2-4 is positive, where changes are on average 3.4 percent, 6.4 percent, and 5.6 percent respectively. As total assets are also increasing along excess cash reserves at $t=1$ and $t=2$ as at least 5 percent significance, it can be stated that cash richness anticipates operational enhancement after equity financed transactions. The expected negative share price reaction is thus off-set by higher expected synergies and consequently higher fundamental improvement. Overall, regardless of the slight discrepancies in the results, the findings are essentially consistent with my hypothesis.

When inspecting the adjusted R-squared figures, it becomes apparent that the explanation power of the model decreases along years after the transaction. This conveys that the static independent variables, all except Total Funds, become weaker in explaining the performance of a firm as time progresses. The result is intuitive, as economy and industry trends power change in firm behavior and historical events are lessened in value. Gao (2011) finds opposing results, as the explanatory power is increased from $t=1$ to $t=4$. I find that the difference arises from differences in specifying Total funds, where I take a net value of all financing activities whereas Gao inspects the cash inflows only.

Given that generalization cannot be made to the findings, as there are significant differences across industries, which are not accounted for in Eq. 6. For example, TMT (telecom, media and technology) firms are more apt to maintain high cash reserves irrespective of past M&A activity. I therefore, perform a robustness test on the results in Section 7.4, by matching firms to a selected peer group and inspect corporate behavior in a more enclosed universe. While excess cash is shown to impact changes in cash reserve and capital expenditures negatively, the cash reserve ratio of the bidder at the time of announcement has opposite implications. This highlights the need to adjust for industry differences, as the cash reserve ratios vary across industries also. Based on Table 7, changes in cash reserve are positively affected by high cash ratios. Similarly capital expenditures are increased as a result of having high cash ratios in the announcement year.

VII. Robustness tests

Econometrical models are subject to assumptions that are made when defining the model itself. In order to test the results presented thus far, I have included four additional tests to shed more light in explaining firm and investor behavior. In this section I test how industry and GDP growth affects the decision to use equity, correct for sampling bias in probability of using equity, formalize an econometric model that introduces possible determinants for using equity in cross-border acquisitions, and analyze post-acquisition performance by matching cash rich firms to non-cash rich industry peers.

7.1 Growth opportunities adjusted bidder announcement effects of excess cash

Market-to-book has been argued to be an insufficient proxy for growth (Gao, 2011) and thus insufficient to capture the relation between excess cash ratio and growth opportunities. Hence, I perform a cross-sectional regression for Eq. (4) for all industries separately, where the constant term better absorbs the average cash reserve and reflects growth opportunities in each industry. In addition, I interact the $\log(\text{excess cash reserve ratio})$ with a ternary variable marking level of growth for the five year historical GDP²⁶ growth of the domicile country for each firm. I calculate

²⁶ Gross domestic product (GDP) is a measure of the economic activity, defined as the value of all goods and services produced less the value of any goods or services used in their creation. The calculation of the annual growth rate of GDP volume is intended to allow comparisons of the dynamics of economic development both over time and between economies of different sizes.

the GDP growth of the bidder domicile country because excess cash reserves are held in order to finance growth opportunities that are assumed to be prevalent in the domicile country as greenfield investments and similar cross-border investments are significantly rarer and therefore domicile investments are more likely. The GDP growths are retrieved from Eurostat database and are adjusted for inflation. Industry growths are calculated from the aggregate sales growth of firms operating in the specific industry. Differing from the GDP growth, the industry growth is calculated for the previous 2 years for two reasons: 1) to capture the most recent trend; 2) maintain a high sample size for the first years of the sample. When defining different categories of growth, I calculate the 33rd and 67th percentiles. The growth averages are calculated to be 4.63 percent for High growth, 2.95 percent for Medium growth, and -0.19 percent for the Low growth category. GDP growth, categorized in three levels are descending from left to right. In addition, Table 8 is constructed so that the average industry growth over the two year period prior to the inspected M&A case are sorted in descending order. Here, it is important to acknowledge that the industry growth figures are averages calculated without a time dimension, i.e. the growth figures do not signify growth over any certain time period.

I expect the coefficient of excess cash ratio to have a negative relation with growth. This is to say that where economic and industry growth is high, the probability of using equity as consideration decreases given cash richness. According to Jensen (1986) the positive monitoring effects of debt issues are not as strong for firms with high growth opportunities but no free cash flow. Such organizations will engage regularly in capital market activity to obtain capital. The contradictory aspect in the analysis, as mentioned in prior sections, is the translation of growth into firm value. Where growth enables higher valuation multiples, the probability of using equity is increasing regardless of cash reserve levels. This aspect is accounted by including the same control variables as in Eq. (4). When inspecting the other end of the spectrum, that is low GDP and industry growth I expect the value of cash reserves to increase the probability of using equity. This derives from the cash precautionary hypothesis under economic troughs.

Table 8: Effect of excess cash reserve on probability of using equity - Adj. for growth rates

Effect of excess cash reserves on probability of using equity adjusted for industry and country growth. This table reports coefficients for excess cash using the model $Equity_i = \alpha_i + \beta_1 Excash_i + \beta_2 Controls_i + \delta YDUM_i + \varepsilon_i$. Industries are classified according to ThomsonReuters SIC codes. p-values are in parentheses. *, **, **** indicate significance at 10%, 5%, and 1% respectively.

	Exp. Sign	High growth	Medium Growth	Low growth	Avg. industry growth acq-t-1	Obs
Agriculture, Forestry, Fishing	(-)	-9.150** (0.02)	-3.432 (0.34)	-5.658 (0.16)	14.70 %	278
Services	(-)	-4.970*** (0.00)	-1.395*** (0.13)	-7.843** (0.00)	12.77 %	851
Transportation & Public Utilities	(-)	0.151 (0.94)	-1.995 (0.53)	-2.898 (0.49)	8.38 %	818
Manufacturing	(-)	-2.993 (0.19)	-2.255 (0.21)	-2.706* (0.10)	4.81 %	725
Wholesale & Retail	(-)	-4.158*** (0.01)	-4.051*** (0.00)	-1.076 (0.20)	3.11 %	318
Mining & Construction	(-)	-4.690* (0.08)	-2.250*** (0.01)	-1.440 (0.30)	2.58 %	679
Avg. GDP growth acq. t-1		4.63 %	2.95 %	-0.19 %		
Obs.		1268	1210	1191		3669

Table 8 provides two main results: 1) GDP growth is seen to influence the decision to use equity more than industry growth; 2) certain industries seem exhibit highly significant negative relations with excess cash and equity offers independent of GDP growth. Agriculture, Forestry and Fishing – industry is calculated to have the highest growth levels, which is translated into the most negative coefficient on excess cash reserve at 1 percent significance. Where this result is according to the growth hypothesis, statistical significance is lost with other levels of GDP growth. This implies that even though the industry has been observed to grow at substantial rates, the macroeconomic environment has not been suitable for using equity instead of cash as consideration. Looking at the lower end of industry growths, Mining and Construction industry grew only by 2.58 percent on average at the year prior to the acquisition. When GDP growth was high (4.63 percent on average) the excess cash reserve had only a negative relation with equity offers at 10 percent significance. This is surprising given that in medium growth macroeconomic environments, the coefficient was less negative but statistically significant at 1 percent. The second fastest growing industry, Services, exhibits a highly significant coefficients throughout all GDP growth categories. The interesting aspect in the industry is the magnitude of the coefficients in High growth category versus the Low growth category. The industry, with low capital

requirements, does not behave in a way that would enforce the growth hypothesis. Overall, while the coefficients are significantly negative in the High GDP growth category, both the strength of the coefficient and statistical significance is decreased in the Low GDP growth category. This underlines the precautionary hypothesis, that cash reserves are maintained under uncertain growth environment. The robustness test, hence, can be concluded to strengthen the theoretical frameworks that have been built around this certain empirical fragment.

7.2 Sample selection bias correction for probability of using equity financing

There exists some evidence that a firm's characteristics determine whether the firm is active in the M&A market or not. I therefore perform self-selection corrections for the sample according to a two-step procedure by Heckman (1976, 1979). In the first stage, I estimate a Probit model of the probability that a firm makes a takeover offer in a year. The explanatory variables used in the Probit model are logarithm of excess cash ratio, logarithm of sales to proxy size, logarithm of market-to-book ratio, sales growth over the previous four years, working capital deflated by total assets, long-term debt over total assets, and standard deviation of operating cash flows over the previous four years. In the second stage, I calculate the inverse Mill's ratio for each observation and include it in the estimations of Table 6, Panel B.

In model 1, I have included the results presented initially in Table 6, Panel B. Model 2 presents results for the same model, with the difference that it includes the inverse Mill's ratio derived by the Heckman procedure. The differences of the coefficients are presented in the third column of the table.

Table 9: Sampling bias corrected probability of using equity in M&A cases

Logistic estimation of the probability of using stock. This table reports the results of logistic regressions that examine how excess cash reserve affects the propensity of using stock when a takeover offer is made. Sample period is 1999-2010. The dependent variable is one for an all-stock offer and zero otherwise. *Size* is the logarithm of a bidder's book value of assets in million of euros. *Log(market-to-book)* is the logarithm if a bidder's market-to-book ratio of equity. *Profitability* is a bidder's return on equity, calculated as net income over book value of equity. *Relative deal value* is deal value divided by bidder market value of equity. *Diversifying takeover dummy* is one if a target operate in the same industry classified by 1-digit SIC codes and zero otherwise. *Cross-border dummy* is one if the bidder and target domicile nations are different, zero otherwise. Inverse Mill's ratio refers to the ratio of the probability density function to the cumulative distribution function of a distribution p-values are in parentheses. *, ** and *** indicate significance at 10%, 5% and 1% respectively.

	Exp. Sign	Model 1	Model 2	Difference
Excash	(-)	-6.229*** (0.00)	-5.895*** (0.00)	-0.334
Market-to-book	(+)	0.015*** (0.00)	-0.013*** (0.01)	0.028
Average sales growth in previous 4 years	(+/-)	0.005*** (0.00)	0.001*** (0.00)	0.004
Size	(-)	-0.723*** (0.00)	-0.045 (0.86)	-0.678
Leverage	(+)	0.193 (0.62)	-0.004 (0.99)	0.197
Collateral	(-)	3.285*** (0.00)	-3.294*** (0.00)	6.579
Relative deal value	(+)	-0.021 (0.34)	-0.004 (0.26)	-0.017
Diversifying takeover dummy	(+/-)	-0.001 (0.99)	0.000 (1.00)	-0.001
Cross-border takeover	(-)	0.488*** (0.00)	0.044*** (0.00)	0.444
Inverse Mill's Ratio	(+/-)		0.482*** (0.00)	
Constant		5.742*** (0.00)	-0.651 (0.31)	6.393
Chi-squared		535.06	542.24	
Wald test		0.000	0.000	

Inspecting Table 9 it becomes apparent that coefficients presented previously in Table 6 are robust, but the model is subject to sampling bias. When accounting for sampling bias the coefficient of excess cash ratio is slightly diminished, but it still remains significant at 1 percent. The models 1 and 2 sustain the Wald test, which is signified by the high chi-squared value. The inverse mill's ratio (IMR) in model 2 is significant at 1 percent. This suggests that there is selection bias in the sample, which decreases the robustness of the tests. When the coefficient of IMR is positive there are unobserved variables that both increase the probability of selection and a higher than average score on the dependent variable. As a result there are changes in both the coefficients of the control variables and their statistical significance. The importance of size is

decreased in model 2, which is controversial to the findings of Gao (2011) and Harford (2005). In addition, the coefficient of cross-border dummy is significantly lowered, which is more according to intuition and theoretical frameworks. However, the coefficient is still positive and significant at 1 percent, which contradicts to some extent the findings of Grinblatt and Keloharju (2001). Signs and significances of the control variable coefficients are largely consistent with the non-sampling bias corrected coefficients. Statistical significance of size variable is lost, which signifies that firm size does not affect the choice of payment method. The difference in Models 1 and 2 is an opposition to the findings of Faccio and Masulis (2005) as they propose that bidder size increases the probability of using cash in M&A cases. Statistical significance for collateral is also achieved in model 2, which emphasizes the moral hazard of having few tangible assets and high growth opportunities as proposed by Myers (1977). In general, the results do not vary significantly between model 1 and 2, which implies the sampling bias not to affect the interpretations presented in Section 6.3.

7.3 Probability of using equity financing in cross-border M&A cases

I find a similar trend of increasing proportion of cross-border deals in European context as Moschieri (2009). The proportion of cross-border deals in the inflated sample (Sample 3) increased from 15.1 percent in 1999 to 23.8 percent in 2010. There are several reasons for this increase: 1) growth by market expansion; 2) acquisition of special resources; 3) benefits of international diversification. Nevertheless, the increase in relative size of cross-border acquisitions compared to domicile acquisitions does not explain the result showed in Table 6. As discussed in Section 5.3 M&A cases where the bidder and the target are domiciled in different countries has a positive relation to the probability of using equity as consideration. Whether this is a function of the consolidation of currencies and an increased pressure for cross-border expansion, the result requires further scrutiny.

As reported by Gaughan (2002) targets may be reluctant to accept foreign equity and thus the probability of using cash in cross-border acquisitions is increased. I find that the propensity to accept equity is contingent on certain pre-acquisition factors, which could explain the findings reported in Table 6. First, a bidder having operations in the target country prior to the event might lower the threshold to accept equity. I use international sales as a proxy for the international

presence. The variable used in Table 10 is deflated by the total sales to represent the proportion of international sales. Even though country sales data is not available, I expect that the coefficient is still positive as higher proportions of international sales increases the probability that the bidder firm has sales also in the target domicile country, which is hypothesized to increase the probability of using equity. Similarly, cross-listing is seen as a threshold lowering factor, as accessing the capital markets is easier in the target domicile. In addition, I estimate shareholder presence by the number of shareholders in the specific country. This is seen to increase the probability of offering equity as consideration. Credit rating dummy is included also to show how easily accessible data, without geographic boundaries, affects the payment of method in cross-country M&A cases. I have included all three major credit rating agencies, namely Standard and Poor's, Fitch, and Moody's in determining whether the bidder has a credit rating or not in the year prior to the event. The same control variables as in Eq. (4) are used in order to maintain unity across the tests used in my study. The equation is presented as:

$$\begin{aligned} \text{Using stock}_i = & \alpha_i + \beta_1 \text{Excash}_i + \beta_2 \text{Cross-listing dummy}_i + \beta_3 \text{Presence in target} \\ & \text{country}_i + \beta_4 \text{International sales}_i + \beta_5 \text{Credit rating dummy}_i \\ & \gamma \text{Controls}_i + \delta \text{YDUM}_i + \varepsilon_i \end{aligned} \quad (7)$$

where Excach is $\log(1 + \text{excess cash ratio})$, Cross-listing dummy is one if the bidder is listed in the country of target, Presence in target country is the number of shareholders in the target firm country, International sales is the percentage of international sales diluted by total sales, and Credit rating dummy is one if the bidder firm has a credit rating from one of the three largest credit rating agencies. For the control variables please refer to Eq. (4).

Table 10: Cross-border M&A cases - Determinants for using equity

Logistic estimation of the probability of using stock. This table reports the results of logistic regressions that examine how excess cash reserve affects the propensity of using stock when a takeover offer is made. Sample period is 1999-2010. The dependent variable is one for an all-stock offer and zero otherwise. *Cross-listing dummy* is one when the bidder firm is listed in the target country. *Target country* investors is the number of shareholders in the target country. *International sales* is the percentage of bidder foreign sales over total sales. *Credit rating dummy* is one if the bidder has a credit rating and zero otherwise. *Size* is the logarithm of a bidder's book value of assets in million of euros. *Log(market-to-book)* is the logarithm if a bidder's market-to-book ratio of equity. *Profitability* is a bidder's return on equity, calculated as net income over book value of equity. *Relative deal value* is deal value divided by bidder market value of equity. *Diversifying takeover dummy* is one if a target operate in the same industry classified by 1-digit SIC codes and zero otherwise. *Cross-border dummy* is one if the bidder and target domicile nations are different, zero otherwise. Inverse Mill's ratio refers to the ratio of the probability density function to the cumulative distribution function of a distribution p-values are in parentheses. *,** and *** indicate significance at 10%, 5% and 1% respectively.

		(1)	(2)	(3)	(4)
	Exp. Sign	Coef.	Coef.	Coef.	Coef.
Excash	(-)	-1.655 (0.25)	-1.565 (0.27)	0.861 (0.73)	-1.621 (0.26)
Cross-listing dummy	(+)	0.645 (0.35)			
Presence in target country	(+)		-0.003 (0.61)		
International sales	(+)			1.612*** (0.01)	
Credit Rating dummy	(+)				-0.171 (0.58)
Market-to-book	(+)	2.050*** (0.00)	2.040*** (0.00)	2.472*** (0.00)	2.053*** (0.00)
Average sales growth in previous 4 years	(+/-)	0.006 (0.15)	0.006 (0.15)	0.012 (0.12)	0.006 (0.16)
Size	(-)	-1.010*** (0.00)	-0.984*** (0.00)	-1.224*** (0.00)	-0.974*** (0.00)
Leverage	(+)	-0.124 (0.89)	-0.180 (0.84)	0.986 (0.45)	-0.137 (0.88)
Collateral	(-)	-3.913*** (0.00)	-3.930*** (0.00)	-3.964*** (0.00)	-3.921*** (0.00)
Relative deal value	(+)	1.031*** (0.01)	0.999*** (0.01)	2.482*** (0.00)	1.015*** (0.01)
Diversifying takeover dummy	(+/-)	0.261 (0.25)	0.287 (0.21)	0.295 (0.34)	0.269 (0.24)
Constant		12.682*** (0.00)	12.496*** (0.00)	14.641*** (0.00)	12.415*** (0.00)
Pseudo R		0.4262	0.4256	0.4447	0.4257
Observations		1218	1218	825	1218

The negative effect of excess cash reserves loses significance when only cross-border acquisitions are considered. Where Table 6 presented significantly negative coefficients for excess cash reserve ratio, the results in Table 10 does not reinforce the previous findings. Throughout all four models the coefficient is negative but insignificant. Therefore, in cross-border acquisitions the use of equity is not reflected on the availability of internal reserves. In

light of the announcement effect, cross-border acquisitions do not deviate significantly from domicile M&A cases, which signifies that bidder firm irrationality is increased in cross-border acquisitions. This is surprising, as the amount of uncertainty is inflated in foreign acquisitions, which gives basis to expect higher levels of bidder diligence. Cross-listing is not found to be a significant determinant of using equity. Even though the coefficient is positive and proximately significant at 10 percent, it cannot be decisively concluded to increase this probability. Similarly the number of shareholders and credit rating do not convey significance even though positive. On the other hand, international sales are seen positive and significant. High international concentration may be a result of small local markets or merely a mirror image of size, the increased probability of having sales in the target country is a determinant of using equity. Having sales in the target country increases the awareness of the bidder firm and therefore decreases the threshold of target firms to accept equity from the bidder.

7.4 Comparing post-transaction operating performance with a matched firm sample

I avoid the bias created because of a superior pre-event performance by comparing the performance of merging firms with those of matched firms. The approach is similar to that of Mikkelsen and Partch (2002), where the authors concluded that there are no adverse effects of high liquid assets on corporate performance. Mikkelsen and Partch (2002) find that firms with high liquid assets outperformed their peers, which gives basis to expect cash-rich firms experience more beneficial changes than non-cash rich firms. Firms are matched on acquiring and target firms' performance (defined as cash flow to market value of assets) in year -1 from their respective industries. I use four criteria in matching cash rich firms in Sample (4) to non-cash rich firms: 1) total assets between 50 percent and 150 percent; 2) same domicile country; 3) same 2-digit SIC code; and 4) revenues between 25 percent and 200 percent. I include all the firms that meet the set criteria and calculate averages for the peer group. I remove all firms, for which a peer group is not matched and consider thus a significantly smaller sample of firms. The number of peers naturally varies for each firm, where the peer group size varies from 1 to 12. Acknowledging this slightly distorts the sample towards firms domiciled in larger countries, where the pool of peer firms is larger, I impose a relative minimum number of peers- criteria

according to the respective pool set²⁷. Sales and assets are matched from the year prior to the acquisition of the M&A firm. I obtained the values I have utilized matrix calculation in order to achieve the correct peer groups for each of the 691 firms included in Sample (4). The average is taken of the change and not the actual financial statement items. Out of the 80 cash rich firms in Sample 3, I retrieved a peer group for 45 percent (36 firms).

Table 11 reports the differences in operating metrics for cash rich firms against their non-cash rich peers. Specifically, I use the equation $Y = \ln[(V_t - V_0) / \text{Total Assets}_0] + 1$ to calculate changes for the different items measured. As I report differences in changes in financial statement items, a negative difference should be interpreted such that the change in cash rich firms is lower than that of non-cash rich firms. The method can be represented as: Difference $CR_i(Y) - NCR_i(Y)$, where CR_i is a cash rich firm and NCR_i is a non-cash rich firm. The reason I report the differences and not a differentiated average of change for the peer sets is simply that averaging a change for the different firms does not convey the correct comparison: the sole purpose of the robustness test is to adjust for specific operating environments that cash rich firms and their peers endure. Taking the average of the changes and averaging them will not portray this correctly.

Based on the results presented in Table 11, cash rich firms tend to adjust their cash reserve levels more than their non-cash rich peers. The change is especially significant during the first year after the acquisition, where the mean difference is 23.0 percent. The difference, however, moves in the opposite direction as time post-transaction is increased. This partially fortifies the findings in Section 6.4, where excess cash reserve is reported to have a negative relation with post-acquisition uses of cash reserves. I mentioned previously there exists a negative relation between excess cash reserve and change in cash reserve for the four years post transaction. The peer set analysis underlines the fact that firms with excess cash diminish their cash reserves more than non-cash rich peers. The standard errors still imply that there is significant variance in the observed differences. As the peer groups are matched to account for the macroeconomic and industry changes, the use of cash reserve can be stated to be different depending on cash richness, but the validity of this conclusion is lessened by high variance.

²⁷ E.g. for the UK the number of peers is required to be at least five, whereas it is one for small countries such as Finland.

Table 11: Matched firm analysis on post-acquisition uses of funds

Relative post-acquisition uses of funds based on a matched peer group. This table reports the differences in operating performance of cash rich and non-cash rich bidders. The cash rich bidders are matched to a peer group of 1-12 firms and differences in changes is calculated for each set of comparables. The metrics used to model operating performance are modeled as $Y = \ln[(V_t - V_0) / \text{Total Assets}_0 + 1]$ for $V = \text{cash, inventory and total assets}$, for $t=1$ to 4. $t=0$ denotes the year before deal announcement, and $t=1$ to 4 are the 1st to the 4th year after deal completion. At $t=0$, total assets, cash, inventory are the combined figures of bidder and target. At $t=1$ to 4, R&D, capital expenditure, long-term debt reduction, acquisitions, cash, inventory and total assets are of the combined firm.

		Exp. Sign	Mean	Median	Standard deviation	Standard error
Δ Cash	1	(-)	-0.230	-0.234	0.389	0.108
	2	(-)	-0.079	-0.086	0.413	0.115
	3	(-)	0.059	0.099	0.375	0.104
	4	(-)	0.067	0.229	0.498	0.138
Σ LT Debt Reduction	1	(+)	0.081	0.054	0.420	0.116
	2	(+)	0.145	0.046	0.237	0.066
	3	(+)	0.241	0.112	0.512	0.142
	4	(+)	0.106	0.107	0.258	0.072
Δ Inventory	1	(+)	0.011	0.019	0.024	0.007
	2	(+)	0.022	0.008	0.038	0.011
	3	(+)	0.027	-0.003	0.055	0.015
	4	(+)	0.059	0.048	0.088	0.024
Σ CAPEX	1	(+)	0.000	-0.014	0.091	0.025
	2	(+)	0.013	0.007	0.089	0.025
	3	(+)	0.001	-0.005	0.080	0.022
	4	(+)	0.010	0.000	0.077	0.021
Σ Oper.Costs	1	(-)	-0.069	-0.148	0.413	0.115
	2	(-)	-0.218	-0.249	0.423	0.117
	3	(-)	-0.225	-0.190	0.419	0.116
	4	(-)	-0.302	-0.230	0.491	0.136
Σ Acquisitions	1	(+)	-0.197	-0.186	0.173	0.048
	2	(+)	-0.136	-0.124	0.251	0.069
	3	(+)	-0.108	-0.071	0.180	0.050
	4	(+)	-0.067	-0.042	0.191	0.053
Σ Total Assets	1	(+)	0.418	0.230	1.072	0.297
	2	(+)	0.785	0.204	1.864	0.517
	3	(+)	0.246	0.318	1.110	0.308
	4	(+)	0.829	0.961	0.417	0.116

Reflecting on the operating cash flow of cash rich firms, the operational improvement is higher than the average of all firms included in Sample (4). The changes in operating cash flow for years 2-4 are 2.7 percent, 8.9 percent, and 5.6 percent respectively. For non-cash rich firms the changes are lower throughout the three years. This is different from the findings of Opler (1999), where excess cash reserves were diminished due to operating losses. In my findings the cash reserve diminishes for cash rich firms while operating performance is improved. From the growth perspective, capital expenditure was stated to have a negative relation with excess cash. Based on Table 11, capital expenditure is higher for cash-rich firms throughout the four year inspection

period. I find this to be a function of the higher growth opportunities that are prevalent for cash-rich firms. Opposite, the change in combined operating costs is lower for cash rich firms, which has again two opposite interpretations: 1) cost synergies are captured more effectively; 2) growth opportunities are not ventured. I base a considerable amount of my argumentation on the assumption that growth increases operating costs. Further, acquisitions are relatively smaller for cash rich firms as indicated by the negative sign throughout the four years, which implies that the propensity of cash rich firms to engage in new M&A activity is smaller than for their peers. Whether or not growth can be experienced while eluding increases in operating costs is debatable, I do not find sufficient evidence to assume the contrary. The robustness test essentially confirms my findings in Section 6.4, as excess cash reserves are negatively related to post-acquisition cash reserves, while operating performance in enhancement and growth opportunities are not exploited.

VIII. Summary and conclusions

Rational choice theory is a framework for understanding and often modeling social and economic behavior. There has been several research papers established on the topic of capital structure and mergers and acquisitions. I find that the reason it has been so keenly investigated over the past half century is the fact that the results are found relatively often to contradict the hypothesis of rational behavior. It has been shown that managerial behavior cannot be captured in a function accounting for all different circumstances and factors. The frameworks constructed by Miller and Modigliani (1958), Myers and Majluf (1984), and Jensen (1986) are cited more often than most academic researchers, but still modern research is focused on finding more accurate ways to define the somewhat fundamental theories that were established many years ago. This thesis ventures in explaining firm and investor behavior in circumstances that may give rise to falsify assumptions made previously. The study has been largely motivated by Gao (2011), who finds that excess cash holdings do have effect on M&A parameters. In my study, I have provided a more elaborate approach on the subject with more recent data and different geographical focus. Having a European focus, the samples have liberated me to analyze differences across different legislation, i.e. Common Law versus Code Law. This approach is new in the context of using solely equity financed acquisitions in inspecting the differences between the two legislative areas.

Overall, my thesis is an attempt to portray a distinct area in corporate finance theory in European context.

7.1 Main findings

I use a similar approach as Gao (2011) in his paper, where the topic is segmented into three main areas: 1) bidder announcement of equity financed merger or acquisition; 2) the probability of using equity in mergers and acquisitions; 3) post-transaction performance of combined entity. Broadly speaking, the results are according to my hypotheses and theoretical frameworks. Table 12 provides a concise summary of the main findings in each of the three areas.

According to McCardle and Viswanathan (1994) and Jovanovic and Braguinsky (2002) market participants interpret equity offers as a negative signal about the firm's true value. They base their argument on exhausted growth opportunities. Regardless of what the reasons are for the low announcement effect for stock bidders around the announcement, the fact most, if not all, researchers agree on is that equity offers underperform cash offers in the short-term. I show in this study that the negative price effect is more severe for cash rich firms and that the severity of the announcement effect is magnified along excess cash reserve. From the targets side, the estimation error of synergies is elevated in hot market conditions making them more apt to accept equity offers. The reasons lay in the signaled overvaluation that firms experience when theoretically cheaper sources of finance are available. Here, when there is uncertainty on the value of the bidders' assets, information asymmetry assumes an important role. As monitoring costs are increased along excess cash reserves, the role of the transparency of assets is emphasized. I show evidence that the negative announcement effect is statistically diluted with high levels of transparency in bidders. The result fortifies Jensen's free cash flow theory, as he argues that information asymmetry is the main reason for the negative announcement effect of an equity financed transaction.

Comparing the two different legislations that prevail in the EU-15 countries, I find that bidder CARs are 0.29 percent higher in Common Law countries than in Code Law countries, which is according to the findings of La Porta et al. (1997). However, the results show that Common Law countries are more sensitive to adverse selection costs. In addition, the levitating effect of lower

asymmetries of information is also found to be more significant in Common Law countries. Reflecting this on the country characteristics, two conclusions may be made: 1) the negative effect of excess cash reserves is more apparent and statistically valid in Common Law countries; 2) information asymmetry is in a pronounced role in countries where investor protection is better.

Table 12: Summary of results

Hypothesis	Evidence
Hypothesis 1.1: Excess cash reserves diminish post-acquisition bidder returns in fully stock financed acquisitions	A 1 percent increase in the excess cash ratio leads to a 27.4 basis point decrease in an average bidder's announcement CAR. This finding contradicts the view that excess cash reserve primarily reflects growth opportunities. In hot equity markets, the negative announcement effect is underlined as the average bidder announcement CAR decreases by 28.7.
Hypothesis 1.2: The negative effect of excess cash reserves on bidder CARs is lessened with lower levels of information asymmetry	This effect is seen in the -0.349 coefficient for excess cash reserve ratio and 0.464 coefficient for the HighT interacted variable. Lowering the level of information asymmetry enhances the investor reaction to an equity financed deal
Hypothesis 1.3: The negative effect of excess cash reserves on bidder CARs is emphasized in Common Law countries	Common Law countries exhibit a more negative coefficient (-0.322) for excess cash reserves, whereas Code Law countries exhibit only -0.059. The abnormal return in Common Law countries is 0.29 percent higher than in Code Law countries.
Hypothesis 2.1: Excess cash reserves decrease the probability of using stock as a method of payment in acquisitions	The coefficient for $\log(1+\text{excess cash ratio})$ is -6.229 and statistically significant at 1 percent. The coefficient suggests that a one standard deviation increase in the variable reduces the probability of using stock by 4.59 percent
Hypothesis 2.2: Cash rich firms are less likely to finance cross-border acquisitions with equity than non-cash rich firms	The coefficient on the cross-border dummy is 0.488. The variable imposes a positive relation between the use of equity and cross-border acquisition at five percent significance
Hypothesis 2.3: Probability of using equity in M&A cases is increased for both cash rich and non-cash rich firms in Common Law countries	Probability of using equity in Common Law countries demonstrates higher sensitivity to excess cash reserve as the probability decrease of using equity is 2.00 percent per one standard deviation
Hypothesis 3.1: Post-acquisition bidder operating cash flow performance is better for cash rich firms	Operating costs are significantly negatively related to excess cash reserves throughout the four year period. Simultaneously operating cash flow is increasing for all firms which implies a positive relation in excess cash and operating performance.
Hypothesis 3.2: Cash reserve is decreasing for cash-rich firms post transaction	The first two year post the transaction, excess cash has a negative impact on cash reserve (-1.034 and -0.493 respectively), implying that cash reserve tends towards normal levels.

Regarding the probability of using equity in M&A cases, I find evidence that excess cash reserves lower this probability at 1 percent significance. The marginal effect of one standard deviation change in the excess cash ratio reduces the probability of using equity by 4.59 percent. The availability of internal funds is therefore echoed in the financing decisions made by managers and exhibits rational behavior. In context of irrationality, I find that 85 cash rich firms use equity as a payment method. This behavior is partially explained by industry and GDP growths, as cash reserves are maintained high due to prevailing growth opportunities. The findings for hot- and non-hot markets are not as candid: one standard deviation change in excess cash reduces the probability of using equity in non-hot equity markets by 5.59 percent, while it reduces the probability by only 3.99 percent in hot equity markets. If cash reserves are seen more valuable in economic troughs the use of other payment methods should be emphasized. The results convey that the overvaluation component in hot equity markets trump the increased value of cash reserves in non-hot markets. The off-setting implication of the market overvaluation and cash reserve value is more pronounced in non-hot markets than in hot markets. I provide also evidence that the results vary across industries and GDP growths. I find that the negative effect of excess cash reserves is more pronounced in high growth environments and in industries where capital requirements are lower. Where most results are according to my hypothesis and previous findings, the effect of cross-border acquisitions is contradictory. As reported by Grinblatt and Keloharju (2001), shareholders are more likely to hold equity in domicile firms, which implies that foreign equity would not be accepted by managements and boards in M&A cases. I present, however, that cross-border acquisitions increase the likelihood of using equity as payment method. Correcting the model for sampling bias lowers the positive effect, but still remains positive and significant. This result is not explained by cross-listings, investor presence or credit ratings, but international sales are found to affect the probability positively.

When differentiating between the two different legislative areas, the results show that Common Law countries demonstrate higher sensitivity to excess cash reserves in respect of equity financing. While the Logit regression provides results that imply sensitivities to the contrary, the marginal effects demonstrate the impact on the probability of using equity to be higher in Common Law countries. I find that a one standard deviation increase in excess cash reserve ratio decreases the probability of using equity by 2.00 percent in Common Law countries while the decrease is only 1.40 percent in Code Law countries. Market orientation, higher investor

protection, more dispersed ownership, and lower levels of state involvement are seen as basis for the findings.

Operating performance is tested in this thesis by inspecting the four year performance of equity bidders. Excess cash reserves are negatively related to the changes in cash reserves, which imply that cash holdings are adjusted towards normal levels post transactions. This follows my hypothesis, as capital structures have been reported to tend toward optimal levels regarding corporate leverage. I do not find evidence that cash richness could be used a synonym for growth, as the metrics used to depict growth, operating costs, acquisitions and capital expenditures are likewise negatively related to excess cash reserve ratios. The operating performance is, though, stated to improve along cash richness, which captures the synergistic gains aspect of M&A cases that have strong signalling effects. I derive at this conclusion through triangulation: as operating costs are negatively related to excess cash reserves while operating cash flows are reported to increase after equity financed acquisitions, it can be stated that excess cash reserves are positively related to operating performance. Relative to a matched, non-cash rich peer group, cash rich firms are seen to diminish cash reserves more and improve operational efficiency more than their peers.

7.2 Conclusions and suggestions for further research

The main findings in my thesis shed light on theories such as adverse selection costs, information asymmetry, Pecking Order theory, and Trade-off theory. In the specific circumstances measured in the tests, I provide results that both contemplate and contradict these highly valued theories. Excess cash, a source of financial flexibility and internal resource, is shown to have negative implications on equity financing decisions. Whether the off-setting variables, such as growth versus financial flexibility, are assumed to act simultaneously on firm value, I provide evidence that the off-setting force, adverse selection of cash, is more pronounced. I find that the state of the market affects investor perceptions on how firms finance M&A cases. Overvaluation is reported to affect both target firm and investors perception of the intrinsic value of the bidder, as the signaling effect of cash rich firms is underlined in good market conditions. The differences between different legislations has been proven to also be a factor in determining corporate behavior, where countries with better investor protection, more dispersed ownership, and more favorable M&A taxation directives, use equity more freely as means of payment. Post-

acquisition performance is similarly affected by adverse selection of cash holdings has been proven to affect firm and investor behavior.

Ownership, indicated to be an important factor in corporate finance issues, is overlooked in this study. As mentioned in the limitations section, the retrieval of reliable data on firm ownership would require vast amounts of hand-picking, which acted as the main constraint for it to be included in this study. When optimal behavior is inspected, it would be essential to include controlling variables that have been stated to affect this behavior. Based on my results I can conclude that rationality is not always enforced, as value destroying ventures are partaken. However, there are certain ownership aspects that may contribute in explaining this irrationality. Dilution of control, as reported by Amihud et al. (1990), Stulz (1988), and Jung, Kim and Stulz (1986) is a significant determinant on the likelihood of using equity financing. Similarly, managerial ownership, stated by Martin (1996) and Ghosh and Ruland (1998) is seen as a variable affecting financing decisions. Where I have presented results that account for legislative differences in M&A specific directives, the differences in ownership structure could be used to test the M&A outcomes across different legislations. I have built-on the findings of La Porta (1997) in explaining my results, but there would be need to fortify the relatively dated assumptions made in this thesis.

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APPENDIX A: Mergers and acquisitions terminology

Below, I provide a summary of terminology used in this thesis. The table terms that I find need scrutiny, as may be used interchangeably.

Term	Definition
Acquisition	A purchase of an unspecified interest in a firm, generally via a tender offer for target shares. Used interchangeably with the terms M&A case.
Adverse selection cost	The term refers to a market process in which 'bad' results occurs when buyers and targets have asymmetric information.
Bidder	A firm that engages in M&A activity with the intention to buy an unspecified stake in the target firm
Cash rich firm	Derived from a method used by Opler et al. (1999). Cash richness is observed if the excess cash ratio exceeds 92nd percentile in respective sample.
Equity financing	Capital raised from equity capital markets. Used interchangeably with external equity and stock financing.
Information asymmetry	A situation where one party in a M&A case has more or better information than the other. In this study information asymmetry is measured by proportion of tangible assets of total assets
M&A case	A common abbreviation for mergers and acquisitions. An event where a firm buys a stake in another firm. The term is used free of payment method and interchangeably with the term acquisition.
Offer	The term is used as a synonym for a merger or acquisition. It is used to convey the method of payment when uncertainty of the completion of a transaction is still prevalent. The reader may assume though that the 'offer' term is used knowing the offer is successful.
Target	Refers to a firm that another firm has successfully bought a stake in.

APPENDIX B: Variable definitions

Below, I provide a summary of the definitions of variables used in this thesis. The table includes all the variables used in the main tests and robustness tests.

Variable	Definition
Average sales growth	Calculated as the average sales growth of a firm during four years prior to the M&A event.
CAPEX	Capital expenditures deflated by total assets. Measured from the latest available annual report prior to the M&A event.
Cash reserve ratio	Cash and marketable securities over total assets measured from the latest available annual report prior to M&A event.
Credit Rating dummy	Set as one if the bidder has a credit rating from Moody's, Standard and Poor's, or Fitch in the year prior to the M&A case.
Cross-border acquisitions	A M&A case where the bidder and target are domiciled in different countries.
Cross-listing dummy	A bidder listed in the exchange of the target country.
Collateral	Measured as book value of tangible assets over total assets. Measured from the latest available annual report prior to M&A event.
Diversifying deals	A M&A case where the bidder and target operate in different industries measured from ThomsonReuters SIC-codes.
Excash	The difference between cash reserve ratio and its required level calculated according to Opler (1999). The cash reserve ratio is measured from the latest available annual report prior to M&A event.
International sales	The proportion of total sales that are generated in countries different than the domicile country of the firm.
Leverage	The industry average leverage in a certain year. Measured as long-term debt over total assets.
Market-to-book ratio	The market value of equity deflated by the book value of equity measured at the day of announcement.
Overpay	Measuring the target shareholder's gain relative to bidder market value of equity, which is calculated by first taking the product of CAR, target market value of equity and the percentage of target stake sought by the bidder, and then dividing this product by bidder market value of equity. All metrics are Measured from the latest available annual report prior to M&A event.
Operating cash flow	Cash flows generated by the operative actions of a firm. Measured from the latest available annual report prior to the M&A event.
Presence in target country	The number of bidder shareholders domiciled in the country of the target firm.
Profitability	Calculated as net income over book value of equity as reported in the latest available annual report prior to M&A event.
Relative deal value	Deal value deflated by pre-acquisition bidder market value of assets measured as the sum of market value of equity and book value of debt. Book value of debt retrieved from the latest available annual report prior to the M&A event.
Size	The logarithm of a bidder's pre-acquisition book value of total assets in millions of euros. Measured from the latest available annual report prior to M&A event.
Total fund	The sum of funds from operations, sales of property, plant and equipment, sale of common and preferred stock, long-term debt issuances, and other sources of funds, aggregated over the corresponding horizons.

APPENDIX C: Control variables correlation matrices

I include the correlation matrices in order to provide basis for control variable selection. The models used in this study were formalized in relation to avoid autocorrelation and based on the matrix tables, this was achieved. There are no two variables that would be correlated over 0.6 units (Panel A, Market-to-book and Operating cash flow).

Panel A: Correlation matrix of variables used in bidder announcement effect

	log(1+excess cash reserve)	Market-to-book	log(sales)	Profitability	Overpay	Operating cash flow	Relative deal value	Diversifying deal	Cross-border deal
log(1+excess cash reserve)	1								
Market-to-book	-0.7091	1							
log(sales)	-0.1701	-0.1427	1						
Profitability	-0.2574	0.1481	0.1560	1					
Overpay	0.1107	0.0097	-0.1376	0.0696	1				
Operating cash flow	-0.5187	0.5552	0.2951	0.5488	-0.0028	1			
Relative deal value	0.1589	0.1878	-0.3001	-0.3110	0.0755	0.0904	1		
Diversifying deal	-0.0839	0.0612	-0.0349	-0.0264	0.0165	0.1295	-0.0709	1	
Cross-border deal	0.0523	0.0560	0.0506	-0.0843	0.3513	-0.1009	0.1297	-0.1530	1

Panel B: Correlation matrix of variables used in probability of using equity in M&A cases

	log(1+excess cash reserve)	log(market-to-book)	Avg. Sales grwth.	log(sales)	Leverage	Collateral	Relative deal value	Diversifying deal	Cross-border deal
log(1+excess cash reserve)	1								
log(market-to-book)	-0.4081	1							
Avg. Sales grwth.	0.0351	-0.0028	1						
log(sales)	-0.0815	0.0174	-0.0054	1					
Leverage	0.0019	-0.0344	-0.0354	0.1309	1				
Collateral	-0.0269	-0.0101	-0.0365	0.2641	0.2215	1			
Relative deal value	-0.0106	0.0008	0.0050	-0.1750	-0.0242	-0.0405	1		
Diversifying deal	-0.0237	0.0295	0.0028	-0.0137	-0.0210	-0.0779	0.0161	1	
Cross-border deal	-0.0018	-0.0063	0.0078	0.1477	-0.0047	0.0302	-0.0384	-0.0395	1

Panel C: Correlation matrix of variables used in post-acquisition operating performance

	log(1+excess cash reserve)	log(1+cash ratio)	Total fund	Size	Relative deal value
log(1+excess cash reserve)	1				
log(1+cash ratio)	-0.1967	1			
Total fund	-0.3039	0.2677	1		
Size	0.1928	-0.3295	-0.0929	1	
Relative deal value	-0.0218	0.0656	-0.0223	-0.1366	1

APPENDIX D: Survey results for cash holding rationale

Lins et al. (2010) conduct a survey to 200 corporate managers in trying to find reasons for cash holdings. I present the summary results table from their paper in order to provide reasoning for my research question from a non-quantitative angle. The table reports answers to the question: 'In deciding how much excess cash to hold, how important the following factors are?' Scale is Not important (0) to very important (5).

	% 4 or 5 score	Mean score	Number of respondents
Cash as a buffer against future cash flow shortfalls	47	3.04	188
Minimal cash ensures efficient running of the company	35	2.57	182
Difference between interest rate on cash and interest rate on debt	35	2.50	184
Time it takes to raise money when funds are needed	31	2.43	187
Level of uncertainty about future investment opportunities	31	2.36	186
Ability to issue debt at a 'fair' price when funds are needed	30	2.29	187
Difference between interest rate on cash and cost of capital	26	2.19	182
Size of the undrawn credit facility	23	2.06	182
Transaction costs of raising funds	22	1.96	184
Difference between interest rate in cash and return on other projects	19	1.93	181
Ability to issue equity at 'fair price when funds are needed	19	1.77	181
Using cash to retire debt moves company below target debt level	18	1.64	181
Tax that shareholders would pay if company paid out cash	13	1.48	183
Preference of controlling shareholders	13	1.40	182
Rating agency requirements	12	1.45	179
Signals associated with drawing down the undrawn credit facility	10	1.49	174
Other lender requirements	10	1.23	180
Regulatory requirements	9	1.13	178
Contingent capital (e.g. possible future litigation exposures)	8	1.37	179
Ability to take on projects even if they do not add value to the firm	8	1.08	182
Cannot apply cash to retire debt without incurring accounting charges	7	1.39	176
Cash holdings of other companies in my industry	4	1.21	182

APPENDIX E: Marginal effects of variables on probability of using stock

When comparing Common Law and Code Law countries, I found significant differences in marginal effects. The relations between firm characteristics and using equity differ between the two legislative areas and therefore I present the marginal effects as a separate figure. Marginal effect on probability of using equity financing of one standard deviation increase in underlying explanatory variable.

