Financial Analyst Coverage, Method of Payment and Wealth Effects in M&As

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Mathieu Luypaert*
Vlerick Leuven Gent Management School
Reep 1, 9000 Ghent, Belgium
mathieu.luypaert@vlerick.com

Tom Van Caneghem
HUBrussel
Stormstraat 2, 1000 Brussel, Belgium
tom.vancaneghem@hubrussel.be

Abstract
This study investigates the impact of the combining companies' financial analyst coverage in mergers and acquisitions (M&As). By analysing both the M&A payment consideration as well as the wealth effects, we unravel the apparent contradiction between the early theoretical models describing the risk-reducing benefits of stock swaps and conflicting recent empirical findings. Our empirical results for a sample of 1762 M&A announcements during 1994-2011 show that low target analyst coverage incites more cash offers and leads to significantly higher abnormal acquirer returns. Furthermore, acquirer shareholders gain a significantly larger fraction of the total M&A gains if the target company is covered by a relatively low number of analysts. These results hold in subsamples of all-cash or all-stock offers. Finally, we demonstrate that acquirer analyst coverage mitigates market-timing behaviour in M&As. A high number of analysts following the acquirer limits the use of stock payments and reduces the negative impact of stock swaps on bidder announcement returns.

Keywords: mergers, acquisitions, financial analyst coverage, information asymmetry, method of payment

*Corresponding author
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1. Introduction

In the M&A literature, it has typically been argued that stock swaps effectively reduce problems arising from asymmetric information over the target company by sharing the risk between target and bidder. If targets have proprietary information on their own value, a *lemons* problem might arise as targets will only sell when their value is less than the offer made. Offering a stock payment could resolve this problem due to its contingent-pricing effect. After all, the value of a stock offer depends on the investors' assessment of the M&A around the announcement (e.g., Officer, 2009; Reuer *et al.* 2004; Eckbo *et al.*, 1990; Fishman, 1989; Hansen, 1987). However, contrary to these predictions, Chemmanur *et al.* (2009) show that acquirers facing a greater extent of information asymmetry in evaluating targets are more likely to use cash offers. They argue that cash offers have the advantage of deterring competition as they signal that the bidder's initial valuation of the target is relatively high. This signalling effect is more important in situations characterized by high levels of information asymmetry.

This study offers a more in-depth explanation for the use of cash in settings of asymmetric information by referring to the value effects for bidding firm's shareholders and the division of M&A gains between targets and bidders. We argue that target companies with a lack of analyst coverage are likely to be significantly undervalued by the market (e.g., Doukas *et al.*, 2005; Hong *et al.*, 2005), which might be exploited by acquirers who gain an information advantage during an extensive due diligence process. This enhanced negotiation position can result in relatively lower prices paid for the target company, leading to a higher fraction of total gains accruing to the acquirer's shareholders. In addition, bidders will try to avoid sharing these gains with target shareholders by offering fixed cash offers instead of contingent stock offers. The cost of a cash offer is independent of the investor's reaction upon deal announcement. Hence, the gains from a more positive assessment of the M&A by the

market will not have to be shared with target shareholders. In stock payments, on the other hand, targets will receive stocks that are worth more if the M&A is observed to be value-creating for the bidder.[1] Emery and Switzer (1999) indeed show that acquirers use their private information to choose the payment method that maximizes the abnormal returns. This might explain why higher levels of uncertainty over the target's value lead to a greater likelihood of cash payments, despite the risk-sharing effects of stock swaps.

A second asymmetric information problem is related to the bidder's value. Bidders, having private information concerning their own value, may try to exploit this information advantage by offering stock if they are overvalued (Myers and Majluf, 1984; Rhodes-Kropf and Viswanathan, 2004; Shleifer and Vishny, 2003). This might explain why stock offers are typically found to result in inferior returns for bidding firm shareholders (e.g., Bruner, 2004). Furthermore, Moeller *et al.* (2007) show that bidder abnormal returns around equity offers are lower the higher the uncertainty over the acquirer's value. In this paper, we investigate whether financial analysts succeed in mitigating the impact of market timing behaviour in M&As. Analysts generate firm-specific information, making temporary deviations of stock prices from their fundamental values due to, for example, investor sentiment less likely (Chang *et al.*, 2006). If financial analysts reduce uncertainty about the acquirer's value, the negative impact of stock as a method of payment should be lower in case more analysts follow the acquirer. Furthermore, acquirers are likely to have fewer incentives to offer stock when their shares are correctly valued in the market.

[1] However, we also recognize that the M&A agreement could condition the number of shares issued to target shareholders, through the use of *caps* and *floors* (e.g., Officer, 2004; Houston and Ryngaert, 1997). Officer (2004) discusses the use of two types of *collars* (i.e. combination of cap and floor): collars that specify a fixed exchange ratio over a range of bidder stock prices with an adjustment to the ratio outside those bonds, and collars that lead to a fixed dollar value as long as the bidder's stock price stays within the collar bounds. In this paper, we rely on the distinction between cash offers and offers that are compensated in stock (or through a mixed offer). These stock payments are at least partly contingent, except for the extreme case where the conditional stock offer provides a fixed dollar amount of stock. Besides, as argued by Officer (2004), detailed information on the type of collars is typically missing or incorrect in the SDC database (our primary data source).

In this paper, we explore the impact of information asymmetry in a sample of 1762 M&As between two publicly quoted US companies during 1994-2011. We analyse both the wealth effects of the combining companies as well as the method of payment. We proxy for information asymmetry by considering the extent of analyst coverage of target and bidder. Analysts play a key role in mitigating information asymmetry by aggregating and synthesizing complex information as well as by providing information that is not widely known by market participants (e.g., Bowen *et al.*, 2008; Chang *et al.*, 2006; Ayers and Freeman, 2003).

This study contributes in several ways to the existing literature. First, we provide additional insights in the M&A payment decision by offering an explanation for a lower incidence of stock offers in acquisitions of targets affected by relatively more information asymmetry, despite the contingent nature of these offers. Up till now, scholars have relied on the benefits of sharing risk in acquisitions characterized by high uncertainty. However, recent empirical literature (Chemmanur *et al.*, 2009) demonstrates an opposite relation. We provide a detailed argumentation on why acquirers may prefer cash offers and test our predictions empirically. To the best of our knowledge, we are the first to explicitly link target analyst coverage to M&A value effects of targets as well as acquirers. In addition, we study whether asymmetric information affects the bargaining position of the combining entities by analysing the division of M&A gains between the two companies. Only few scholars have investigated the division of M&A gains between bidders and targets (e.g., Ahern, 2012; Bauguess *et al.*, 2009; Bradley *et al.*, 1988) and fail to consider the impact of information asymmetry. Finally, we add to the literature on the beneficial impact of financial analyst coverage. We provide a dual test by first studying the impact of target analyst coverage on the M&A type of payment and the wealth effects, and second, by investigating the mitigating impact of acquirer analyst following on market-timing behaviour in M&As.

Our empirical results confirm our hypotheses. After controlling for several deal and firm characteristics, we find that targets followed by relatively fewer analysts are more likely to be offered cash payments. We explain this finding by showing that both bidder and target abnormal returns are negatively related to target analyst coverage. These results also hold in subsamples of all-cash or all-stock offers. Furthermore, bidders seem to succeed in receiving a larger share of gains if the target is followed by a lower number of analysts. Hence, bidders might avoid sharing these higher gains in stock swaps, and opt for fixed cash offers. We also reveal that financial analyst coverage of the acquirers mitigates market-timing behaviour through a lower incidence of stock swaps. Furthermore, higher acquirer analyst coverage reduces the more negative stock reaction upon the announcement of stock offers.

Our conclusions are in line with related work of Chemmanur *et al.* (2009) and Moeller *et al.* (2007). At the same time, we explain why our findings on target information asymmetry and the method of payment differ from theoretical predictions, by referring to the wealth effects resulting from the deal announcement. Our conclusions contrast with Officer *et al.* (2009), who argue that stock swaps are beneficial to acquirer shareholders in stock-paid acquisitions of difficult-to-value targets (as measured by R&D intensity and target idiosyncratic return volatility) because of the risk-reducing characteristics of stock swaps. However, their sample is dominated by acquisitions of private targets, where risk reduction might outweigh the advantage of capturing a larger share of the total M&A gains. We show that target information asymmetry (proxied by low analyst coverage) positively affects bidder returns in our sample, irrespective of the payment method.

The remainder of this article is organized as follows. In section 2, we discuss previous literature and formulate our hypotheses. The sample and methodology are introduced in section 3. Our results are presented in section 4. Finally, we summarize our main conclusions in section 5.

2. Hypotheses

In this section, we summarize prior literature and present our hypotheses. We first elaborate on the role of financial analysts in mitigating information asymmetry. Next, we develop our hypotheses concerning the impact of target financial analyst coverage on the payment consideration and wealth effects in M&As. Finally, we explore the role of bidder's financial analysts in mitigating market-timing behaviour in M&As.

2.1. Financial analyst coverage and information asymmetry

Analysts play a crucial role in reducing the extent of asymmetric information between insiders and outsiders of the firm. Financial analysts synthesize and aggregate complex information that would otherwise not be easily understandable by less sophisticated investors (Chang *et al.*, 2006). Moreover, they collect information that is not widely known by market participants and disseminate this information to investors through the publication of reports containing earnings forecasts as well as stock recommendations. Consistent with the notion that financial analysts add value in the market by reducing information asymmetry, empirical research has shown that high analyst coverage leads to a more rapid incorporation of information in stock prices (Brennan *et al.*, 1993), more informative prices with respect to future earnings (Ayers and Freeman, 2003), higher liquidity (Irvine, 2003), a lower cost of raising equity capital (Bowen *et al.*, 2008), and less earnings management (Yu, 2008).

Several studies provide evidence of an immediate impact of analyst forecasts and recommendations on stock prices (e.g., Brav and Lehavy, 2003; Francis and Stoffer, 1997; Lys and Sohn, 1990; Womack, 1996). Next, also the *extent* of financial analyst coverage has been shown to affect security prices. Chung and Jo (1996) argue that both the monitoring and information intermediary role of financial analysts positively affects a firm's market value. First, by effectively monitoring the company's management, financial analysts help reduce

the agency costs associated with the separation of ownership and control (Jensen and Meckling, 1976). Second, security analysts might influence firm value through their impact on investor cognizance of securities. Indeed, both individual and institutional investors will rely on financial analysts' recommendations when selecting stocks to include in their portfolios. Furthermore, the lower information asymmetry resulting from higher analyst coverage reduces uncertainty about future payoffs (Kelly and Ljungqvist, 2011). Chung and Jo (1996) provide evidence for this conjecture by showing that security analysis activities indeed have a significant positive impact on firms' Tobin's *q* ratios. Doukas *et al.* (2005) use alternative measures of mispricing and confirm the conclusion that weak analyst coverage causes stocks to trade below their fundamental values. In addition, Hong *et al.* (2000) find that momentum strategies work particularly well for companies with low analyst coverage, suggesting that financial analysts succeed in reducing mispricing. Furthermore, the results of a survey conducted by Graham *et al*. (2005) illustrate that CFOs view financial analysts as one of the most influential marginal price setters of their stock.

Finally, next to these financial effects, there is some recent evidence on the real effects of analyst coverage. Chang *et al.* (2006) show that firms covered by fewer analysts are less likely to issue equity. Moreover, these firms depend more on favourable market conditions for their equity issuance decisions, suggesting that low analyst following increases the likelihood of market timing behaviour. Doukas *et al.* (2008) illustrate that low analyst coverage also leads to lower external financing and investments due to higher hurdle rates. These conclusions are confirmed by Derrien and Kecskés (2012) who show that a decrease in analyst coverage following broker closures or broker mergers reduces investment, financing and payouts.

2.2. Target financial analyst coverage

Since the seminal paper of Hansen (1987), several scholars have stressed the benefits of offering stock payments when acquiring target companies that are difficult to value (e.g., Officer, 2009; Reuer *et al.*, 2004; Eckbo *et al.*, 1990; Fishman, 1989). When the target company has proprietary information about its own value, a *lemons* problem arises where the target will only sell in case the bidder offers more than the actual value. The bidding company can protect itself against this adverse selection by offering a payment in stock as the value of such an offer is contingent upon market reactions between the M&A announcement and the completion of the transaction. In an efficient market, the stock price reaction will depend upon the investors' expectation of future synergy realization. These desirable contingent-pricing characteristics are expected to matter especially in settings characterized by more information asymmetry. Hansen (1987) predicts that the impact of information asymmetry, and hence, the contingent pricing effect of a stock offer, is higher if the target is relatively larger compared to the bidder. Supportive findings for this prediction have been presented by Faccio and Masulis (2005) and Martynova and Renneboog (2009), among others. Reuer *et al.* (2004) study the role of contingent payouts in international M&As and show that firms lacking acquisition experience typically opt for contingent payouts when purchasing targets in high-tech and service industries, while they tend to avoid this type of payment in host countries with problems of investor protection and legal enforceability. However, recent empirical evidence by Chemmanur *et al.* (2009) suggests an opposite relation. They study the method of payment in M&As between two publicly quoted US companies during 1978-2004 and find that greater information asymmetry faced by the acquirer in evaluating its target leads to a higher likelihood of using cash offers. They argue that cash offers have the advantage of deterring competition because they signal to potential

rival bidders that the initial bidder's private valuation is high. This is likely to be more important in settings characterized by a lot of information asymmetry.

In this paper, we postulate an alternative explanation for the greater likelihood of cash offers in case of high asymmetric information about the target's value (due to low analyst coverage) by referring to the wealth effects of the M&A announcement. Our reasoning relies on the notion that companies with low analyst coverage, and hence more information asymmetry, are typically undervalued by the market (see supra). Companies interested in acquiring these lowly covered companies might obtain superior information (compared to other market participants) during an extensive due diligence process. This creates a relatively stronger negotiation position that is likely to be exploited by the informed bidder through lower takeover premia. Consequently, acquirers of targets that are followed by fewer analysts are expected to realize higher abnormal returns around the M&A announcement. The stronger bargaining position should also allow them to obtain a larger fraction of total M&A gains. In a similar vein, Capron and Shen (2007) argues that the limited information on private compared to publicly quoted companies, creates more value creating opportunities for exploiting private information.

Next, rational bidding companies should try to avoid sharing the incremental gains with target shareholders. This can be achieved by offering fixed cash offers. The cost of such an offer is independent of the investor's reaction upon deal announcement. Hence, the additional gains from a more positive assessment of the M&A by the market will not have to be shared with target shareholders. In stock swaps, on the other hand, the total amount paid to target shareholders will be higher if bidder investors react more positively to the announced transaction. Therefore, we expect bidders to offer cash payments especially when targets are covered by fewer analysts. In sum, this leads to the following predictions:

Hypothesis 1a: Bidding companies are more inclined to opt for cash payments if target analyst coverage is relatively low.

Hypothesis 1b: Bidders realize higher returns upon announcement of acquisitions of targets with relatively low analyst coverage.

Hypothesis 1c: Bidders gain a larger fraction of total M&A gains if target analyst coverage is relatively low.

2.3. Bidder financial analyst coverage

In the context of M&A transactions, a double asymmetric information problem arises. Next to uncertainty about the target's value, information asymmetry concerning the acquirer's value might drive the payment consideration. Myers and Majluf (1984) argue that managers of the acquiring firm may want to exploit private information on their own value by offering shares when they consider their stock to be overvalued. Shleifer and Vishny (2003) develop a theoretical model where M&A decisions are driven by stock market overvaluation. They argue that mergers are a form of arbitrage by rational managers operating in inefficient markets. However, the question might arise why target shareholders are willing to accept stock offers given the market-timing behaviour of acquirers. In this view, Rhodes-Kropf and Viswanathan (2004) model target's behaviour and illustrate that targets are likely to accept these stock offers because they tend to over-estimate the value of synergy benefits in an overvalued market. Empirical findings by Ang and Cheng (2006), Dong *et al.* (2006) and Rhodes-Kropf *et al.* (2005) confirm the theoretical predictions that overvaluation is an important motive for firms to make stock acquisitions.

This market-timing behaviour of acquirers is likely to affect the investor's reaction upon deal announcement. By offering a stock payment, managers of acquiring companies

signal to the market that they are over-valued. Consequently, several studies provide evidence of lower bidder announcement as well as long-term returns in M&As paid for with stock (e.g., Loughran and Vijh, 1997; Travlos, 1987). However, the argument of temporary stock market overvaluation rests on the assumption of asymmetric information. As argued before, financial analysts generate firm-specific information, making deviations of stock prices from their fundamental values less likely. Hence, the negative reaction of investors to the announcement of a stock offer is expected to be mitigated by greater analyst coverage. Consistent with this prediction, Moeller *et al.* (2007) show that acquirer abnormal returns are negatively related to information asymmetry and diversity-of-opinion proxies for stock offers but not for cash offers. Besides, acquirers are likely to have fewer incentives to offer stock in the absence of information asymmetry. Chang *et al.* (2006) investigate financing decisions for a large set of US companies during 1985-2000 and show that firms covered by fewer analysts rely more on favourable market conditions for their equity issuance decisions. Following these arguments, we expect that acquirers followed by relatively more analysts are less likely to offer stock in M&A transactions. In sum, we conjecture the following:

Hypothesis 2a: Bidders are more inclined to opt for cash payments if they are covered by a relatively high number of analysts

Hypothesis 2b: The negative impact of stock payments is mitigated by higher bidder analyst coverage

3. Sample and methodology

3.1. Sample

We analyse a sample of M&As between two publicly quoted US companies during 1994-2011. Our sample starts in 1994 as I/B/E/S covers analyst recommendations as from 1993 onwards. We focus on the number of analyst recommendations for the last month of the fiscal year preceding the M&A announcement. Our sample period captures the two most recent M&A waves of the 1990s (fifth wave) and mid-2000s (sixth wave). The M&A transactions are identified through Thomson Financial SDC Platinum database. We impose several selection criteria to obtain our final sample. First, we only include deals where the method of payment is captured by SDC (either cash, stock or a mix of both). Second, we only consider deals with a real change in control over the target's resources. Hence, the total stake that the bidder aims to achieve in the target post-M&A has to exceed 50% in order for the deal to be retained in our sample. Furthermore, we drop all deals where the bidding company already owned 50% of target stock before the M&A announcement date. We also exclude all financial companies (i.e., companies with a primary SIC code that starts with 6). Finally, we require both target and bidder to have accounting and stock price data available on, respectively, Compustat and CRSP. These selection criteria leave us with a sample of 1762 M&As.

The deal characteristics of our sample are presented in Table 1. We observe that 85.64% of all announced deals in our sample are completed by the moment of our data collection (May, 2012). We further notice that 23.50% of all deals are characterized as tender offers while 8.57% where opposed by target management (i.e., hostile offers). Table 1 also reveals that 8.00% of all M&A bids were countered by a rival offer, and 39.39% of the transactions take place between two companies in the same industry (according to four-digit SIC codes). Finally, 42.11% of all M&As in our sample are compensated with cash, while

33.83% are pure stock offers. Hence, 24.06% M&As are paid with a mix of different instruments.

<Insert Table 1>

Table 2 provides an overview of several bidder and target characteristics. Analyst coverage in our sample is found to be significantly higher for bidders compared to targets. Following Chang (2006) and Yu (2008), among others, we assume that firms that are not covered by I/B/E/S have no analyst coverage.[2] The average (median) number of analysts following bidders equals 10.33 (8.00), while it amounts to 5.10 (3.00) for the target companies. Table 2 further reports that the median bidder's market-to-book ratio of equity (2.95) lies significantly above that of their targets (2.05), while the difference in average market-to-book ratios is not found to be significant. We also observe that bidders typically have a lower cash level and a higher debt ratio compared to target companies. Finally and not surprisingly, bidders are significantly larger than their targets, both in terms of total assets as well as market capitalization.

<Insert Table 2>

3.2. Methodology

We start our analysis by studying the determinants of the payment choice in M&As using logit regression models where the dependent variable equals one if the bidder offers an all-cash payment and zero otherwise. We focus on the impact of bidder's and target's financial analyst coverage by looking at the number of analysts following the target and bidder, and control for several deal and firm characteristics that have been shown to influence the type of payment in M&A transactions in prior literature (see infra).

[2] Results from unreported regressions show that our conclusions hold in subsamples of deals where both bidder and target are covered by I/B/E/S.

Next, we apply the event study methodology to analyse the value that is being created in these deals. Abnormal bidder and target returns are computed as the difference between realized returns and expected returns. Expected returns are calculated using the market model, which is estimated during a clean period [-250,-51] relative to the event date (day 0). We use the S&P 500 index as market index and study the significance of these abnormal returns using the standard test developed by Dodd and Warner (1983). The average cumulative abnormal returns over the event windows [-1,+1] and [-1,0] as well as the abnormal return on the event day itself are presented in Table 3. Consistent with prior literature (see Bruner (2004) for a good overview) we show that bidding companies realize small but significantly negative abnormal returns. These returns amount to -1.71% on average over the three-day window surrounding the announcement. The average target CAR on the other hand equals a 24.75% over the same window. We subsequently analyse the determining factors of bidder and target returns in a cross-sectional framework. Following Moeller *et al.* (2004, 2005), we focus on the cumulative abnormal returns over the three-day event window [-1,+1].

<Insert Table 3>

Finally, we also investigate the division of gains between the combining companies. Following Ahern (2012) and Bauguess *et al.* (2009), we use the difference in dollar gains between bidder and target divided by the sum of the bidder's and target's pre-M&A market value of equity. Dollar gains are calculated by multiplying bidder and target abnormal returns with their respective market capitalization at the end of the estimation window (i.e, 50 days before the announcement day). As argued by Ahern (2012), this measure represents the relative gain of the bidder versus the target for each dollar of total market value, without the concern that returns are negative. If we would simply look at the percentage of total dollar gains accruing to bidder shareholders, results would indeed be misleading if dollar returns are

negative for either or both companies. However, we test the robustness of our results in the subsample where both companies realize positive CARs. For this specific subsample, we observe that bidder shareholders obtain 58.11% of the total value created through the M&A, which is in line with the findings of Ahern (2012).

4. Results

In this section, we discuss our empirical results. We start by analysing the antecedents of the M&A payment choice. In a second step, we will then try to explain our findings by exploring the role of analyst coverage in determining bidder as well as target abnormal returns. Finally, we study the bargaining power of the combining companies by analysing the division of M&A gains between targets and bidders.

4.1. Choice of payment consideration

Table 4 reports the results of a logit regression model where the dependent variable equals one if the bidder offers an all-cash payment and zero otherwise. So, we distinguish between fixed cash offers and offers that are at least partly compensated with stock (i.e., full stock and mixed payments). We focus on the role of analyst coverage of both target and bidder (with regard to testing H1a and H2a). In addition, we add several control variables that have been shown to determine the M&A payment choice in prior literature. First, the type of deal is controlled for by including dummy variables capturing respectively whether it is a tender, a hostile or an industry-related offer (at 4-digit SIC level). Next, we include several important acquirer characteristics that might be linked to the underlying financing decision. After all, while stock payments generally imply the issue of new shares (or using shares in treasury), cash offers are more likely to be financed with available cash reserves or new loans (e.g., Harford *et al.,* 2009; Martynova and Renneboog, 2009; Vermaelen and Xu, 2010). In

particular, we look at the bidder's market-to-book ratio of equity, cash ratio, debt ratio, and size proxied by the natural logarithm of its market capitalization.[3] Moreover, we control for the relative size of the target compared to the bidder (=deal value/bidder's market capitalization) as Hansen (1987) predicts that the impact of information asymmetry, and hence, the contingent pricing effect of a stock offer, is higher if the target is relatively larger compared to the bidder. Finally, we add dummies capturing whether the deal took place during the fifth (1994-2000) or sixth (2003-2007) M&A wave.[4] We report both the models with and without firm-specific variables. A check of the correlations among the various explanatory variables reveals that none are too highly correlated (pairwise correlations do not exceed 0.5). The variance inflation factors never exceed five. All regressions are run using White's heteroscedasticity-corrected standard errors.

<Insert Table 4>

The results in Table 4 are consistent with our hypotheses. Consistent with H1a, we observe that M&As of targets covered by fewer analysts, and hence affected by higher information asymmetry, are more likely to be cash offers. This finding is highly significant (at 1% level) and contrasts with the predictions of Hansen (1987), but it confirms more recent findings by Chemmanur *et al.* (2009). So the benefits of risk-reduction through stock swaps seem to be outweighed by other driving factors. We argue that an important factor is the bargaining power of the acquirer, and hence, the expected value creation around the deal announcement. This will be discussed in detail in section 4.2. Consistent with H2a, we observe that acquirers that are covered by more analysts are less likely to opt for stock payments. This suggests that financial analysts may reduce the opportunities to exploit overvaluation by the market. These results are in line with Chang *et al.* (2006), who show

[3] Alternatively, we capture size by the book value of assets or sales.
[4] Replacing these M&A wave dummies by year dummies does not affect our conclusions.

that firms covered by fewer analysts are more likely to rely on overpricing for their equity issuance decisions.

Concerning the control variables, we find that cash payments are more likely in tender offers and hostile offers. Offering cash increases the probability of acceptance in this type of transactions (e.g., Martin, 1996; Faccio and Masulis, 2005). The likelihood of stock offers is found to be greater in industry-related transactions. Taking into account shareholder investment preferences, target shareholders could be more inclined to invest in the shares of the newly combined company and, hence, to accept stock offers if the acquiring company is operating in the same industry as the target company. This result also holds when we define industry relatedness at two-digit instead of four-digit US SIC level. Many studies indeed provide evidence of an increased probability of stock payment in industry-related M&As (e.g., Faccio and Masulis, 2005). Remarkably, cash-rich bidders are less likely to offer full cash offers. However, this confirms earlier findings by Pinkowitz *et al.* (2010). We also find that large bidders are more likely to pay in cash. This conclusion remains unchanged when we measure size in terms of book values of assets or sales, instead of market values (not reported). Again in contrast with Hansen's (1987) predictions, we find that relatively large deals are more likely to be paid in cash. Finally, we observe a highly significant impact of our two dummy variables capturing the fifth and sixth M&A wave. More specifically, the use of stock is more likely in the high-tech M&A wave of the 1990s, whereas cash seems to be more popular it the mid-2000s (when private equity companies were found to be of greater importance).

We also perform several robustness checks. First, following Faccio and Masulis (2005), we estimate ordered probit regression models where the dependent variable equals zero for full stock payments, one for mixed payments and two for purely cash payments. These models lead to exactly the same conclusions as the binary logit regressions. Second,

we include the ownership stake of the largest target's and bidder's shareholder. Faccio and Masulis (2005) and Martynova and Renneboog (2009) argue that a potential change in control could discourage bidders from paying through stock swaps. We do not include these variables in the base case models as ownership information (through Thomson Ownership) is not available for all deals in our sample. The results from these unreported regression models show that neither the target's nor the bidder's largest shareholder stake is significant in determining the method of payment. Second, we also add several target characteristics (market-to-book ratio of equity, cash ratio, debt ratio, and size) next to the bidder characteristics, but this does not alter our conclusions. In addition, we control for personal tax implications for target shareholders by including the compounded daily target stock returns from 300 days until 50 days before the M&A announcement. Target shareholders can delay shareholder capital gains through the use of stock offers and this advantage is likely to be more important if the target stock price has increased strongly in the pre-M&A period (e.g., Ayers *et al.*, 2004; Hayn, 1989). Consistent with this reasoning, we indeed find that cash offers are less likely if the target stock price increased relatively more during the pre-M&A period. However, our main conclusions are not affected by the inclusion of this variable. Likewise, our findings are unaffected when we include year dummies instead of the M&A wave dummies. Our conclusions also remain valid in subsamples of only completed, industry-related and diversifying transactions.

Next, our findings appear to be robust to alternative specifications of analyst coverage. More specifically, we explore the impact of the natural logarithm of the number of analyst recommendations. In addition, we replace the number of analyst recommendations by the number of EPS estimates. Also, focussing only on bidders and targets that are covered by at least one analyst does not change our conclusions. Finally, we capture the informativeness of the analyst forecasts by analysing the dispersion in analyst forecasts (i.e., standard

deviation in analyst EPS estimates during the final month of the year preceding the M&A announcement scaled by the company's stock price) as well as the forecast error (i.e., difference between the median EPS estimate and the actual value scaled by the stock price). The inclusion of these variables do not alter our previously described conclusions.

4.2. Bidder and target abnormal returns

We explore the driving factors of bidder and target M&A gains by estimating OLS regression models where the dependent variable equals the cumulative abnormal returns over the event window [-1,+1]. The explanatory variables of interest are the number of target analysts (with regard to testing H1b) and an interaction term between the number of acquirer analysts and a full stock-payment dummy (with regard to testing H2b). We include the same control variables as in previous models.

<Insert Table 5>

The results in Table 5 confirm our prediction (i.e. H1b) that acquirers realize higher returns if there is more uncertainty about the target's value as proxied by the number of analysts following the target. The coefficient equals -0.0025, revealing that each additional analyst following the target company reduces the bidder abnormal returns with 0.25%. This might indicate that these targets are typically undervalued by the market. Consistent with this view, we also observe that the positive effect of the M&A on the target's stock price is higher if they were covered by relatively few analysts before the M&A. The significant impact of the target analyst coverage variable also holds in the subsamples of all-stock and all-cash transactions. We build upon these findings to explain the higher likelihood of cash payments in difficult-to-value targets. Rational bidders will try to avoid sharing the extra gains with target shareholders by offering fixed cash payments. However, this reasoning is based on the assumption that the fraction of the additional gains accruing to bidders is higher than that

accruing to target shareholders. This will be explored further in section 4.3. Our results extend the findings of Officer *et al.* (2009) who report higher acquirer returns following stock-swap acquisitions of difficult to value targets, by showing that the impact of information asymmetry also holds in cash offers.

Consistent with prior literature, we document a significantly negative impact of stock swaps on the acquirer and target abnormal returns (e.g., Travlos, 1987; Huang and Walkling, 1987). As predicted (i.e., H2b), this negative impact is found to be mitigated by acquirer analyst coverage. The impact of the interaction term between the number of acquirer analysts and the all-stock dummy is significantly positive. The variable capturing acquirer analyst coverage as a single term is also found to be significantly positive for the total sample. However, in line with Moeller *et al.* (2007), we find that bidder value creation is negatively related to information asymmetry for stock offers but not for cash offers. After all, bidder information asymmetry will only be relevant if they opt to pay for the M&A using their own stock. While Moeller *et al.* (2007) rely on diversity-of-opinion and idiosyncratic volatility, we focus on the extent of analyst coverage to proxy for information asymmetry.

The conclusions on the control variables are consistent with prior literature. First, we observe that tender offers result in both higher acquirer as well as target abnormal returns. Next, the bidder's cash ratio is negatively related to the bidder CARs, while having a positive impact on target CARs. This confirms the findings of Harford (1999), who shows that cash-rich bidders typically undertake value-decreasing M&As. Large bidders seem to underperform (e.g., Moeller *et al.,* 2004) while targets gain more if they are relatively large compared to the bidder and if the bidder's size is relatively large. We also observe lower target announcement returns during the sixth wave (mid-2000s). Finally, our results are again found to be robust to the alternative specifications as discussed in the previous section.

4.3. Division of M&A gains between bidders and targets

We argue that the larger bidder gains in acquisitions of targets that are affected by relatively more information asymmetry should elicit cash payments if bidders would try to avoid sharing the additional gains with target shareholders. However, this argument is only valid if the bidder will succeed in attracting a larger fraction of these additional gains and this will depend upon the bargaining power of the two companies. Table 6 reports the result of OLS regression models where the dependent variable equals the difference in dollar gains between bidder and target divided by the sum of the bidder's and target's pre-M&A market value of equity, as used by Ahern (2012) and Bauguess *et al.* (2009) (see section 3.2).[5]

<Insert Table 6>

Consistent with H1c, the results clearly show that the share of M&A gains accruing to bidder shareholders is significantly negatively related to the number of target analysts. So, bidders seem to have a better negotiation position if the target is characterized by information asymmetry. Hence, rational bidders might indeed have a good reason to opt for cash payment in acquisitions of targets influenced by high information asymmetry as, doing so, they can avoid to share the additional gains with the target shareholders. In addition, we observe that analyst coverage of the bidder increases their bargaining power. We also show that bidders succeed in attracting a larger share of total gains if they have relatively low cash ratios and if targets are relatively small compared to their own size. Finally, they seem to have larger bargaining power in deals that took place during the fifth wave of the 1990s.

[5]As argued before, we could also work with the percentage of total dollar gains accruing to bidder shareholders. However, the results would only lead to valid conclusions on the division of gains for deals where both companies realize positive CARs. We test the robustness of our results in this specific subsample and find that our conclusions are not affected. These results can be obtained from the authors upon request.

5. Conclusions

A double problem of information asymmetry arises in M&As as information on both the value of the target and bidder might be unevenly distributed. In this paper, we explore the role of financial analyst coverage in reducing the information asymmetry by investigating the wealth effects as well as the payment consideration in a sample of 1762 M&A announcements during 1994-2011.

First, we unravel the apparent contradiction between the early theoretical models stating that the incidence of stock swaps should be higher if the target is affected by relatively high information asymmetry, on the one hand, and conflicting recent empirical findings, on the other hand. We show that rational bidders have incentives to offer cash in acquisitions of targets that are covered by relatively few analysts because they expect to realize higher gains and avoid sharing these gains with target shareholders. These higher gains stem from undervaluation of the target and more bargaining power of the bidders in this type of transactions. Second, our results show that analyst coverage of the acquirers mitigates market-timing behaviour through a lower incidence of stock swaps. Moreover, the typically more negative stock reaction upon the announcement of stock offers seems to be reduced by high analyst coverage of the acquirer. These conclusions remain valid under alternative specifications and in different subsamples.

Our findings may have important implications for academia as well as practice. Our results clearly add to the available literature on the beneficial impact of analyst coverage in reducing information asymmetry. Furthermore, financial analysts seem to succeed in mitigating the market-timing behaviour of companies. Also, we provide additional insights in the antecedents of the payment consideration in M&A transactions. We show that rational bidders take into account the expected value creation through the M&A when they decide upon the type of payment. Finally, investigating these issues in other geographic settings and,

especially in cross-border M&As where the impact of information asymmetry is likely to be higher, may constitute interesting avenues for future research.

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Table 1: Deal characteristics

This table reports the deal characteristics for the M&As included in our sample, year by year. We observe the yearly number of announced and completed deals, the amount of tender offers, hostile offers, offers where a rival bidder is identified, the industry-relatedness of the deal (according to 4-digit SIC level) and the method of payment (stock, mixed or cash).

	ANNOUNCED	COMPLETED	TENDER OFFER	HOSTILE OFFER	RIVAL OFFER	RELATED (4-DIGIT)	STOCK	MIXED	CASH
1994	70	51	17	9	7	34	39	8	23
1995	108	89	25	12	9	41	60	16	32
1996	108	91	25	11	5	39	58	18	32
1997	145	125	38	11	9	52	73	28	44
1998	167	153	37	9	4	66	71	43	53
1999	204	173	49	14	18	70	85	45	74
2000	166	148	43	9	10	62	70	40	56
2001	120	103	29	12	8	51	38	39	43
2002	70	67	20	3	3	25	20	17	33
2003	67	59	18	4	7	38	15	24	28
2004	64	58	8	5	5	27	12	20	32
2005	83	75	8	10	8	33	13	25	45
2006	82	69	9	12	8	28	9	16	57
2007	69	62	17	4	4	22	3	15	51
2008	67	46	21	6	15	33	6	14	47
2009	61	55	24	7	7	25	8	25	28
2010	70	60	19	6	6	31	9	16	45
2011	41	25	7	7	8	17	7	15	19
All	**1762 (100%)**	**1509 (85.64%)**	**414 (23.50%)**	**151 (8.57%)**	**141 (8.00%)**	**694 (39.39%)**	**596 (33.83%)**	**424 (24.06%)**	**742 (42.11%)**

Table 2: Bidder and target characteristics

This table reports summary statistics on bidder and target characteristics in the year before the M&A.

	Bidders			**Targets**			*p-value for difference*	
	Average	*Median*	*St. Dev.*	*Average*	*Median*	*St. Dev.*	*Parametric t-test*	*Wilcoxon rank-sum test*
Number of analysts	10.33	8.00	9.26	5.10	3.00	5.87	*0.0000*	*0.0000*
M/B	5.50	2.95	27.18	6.56	2.05	84.22	*0.6164*	*0.0000*
Cash Ratio	18.66%	10.54%	20.50%	23.74%	13.71%	24.86%	*0.0000*	*0.0002*
Debt Ratio	48.93%	49.26%	23.26%	46.81%	43.86%	28.17%	*0.0150*	*0.0000*
Total Assets ($ mio)	9400.39	1396.99	26360.44	992.39	142.99	3224.78	*0.0000*	*0.0000*
Market Capitalization ($ mio)	15526.27	1893.58	42791.63	1076.21	181.09	3761.04	*0.0000*	*0.0000*

Table 3: Bidder and target CARs

This table reports the bidder and target cumulative abnormal return (CAR) over different windows surrounding the M&A announcement date (day 0). Expected returns are calculated using the market model, which is estimated during a *clean* period [-250,-51] relative to the event date (day 0).

	Bidder CAR			*Target CAR*		
Event window	[-1,+1]	[-1,0]	[0]	[-1,+1]	[-1,0]	[0]
CAR (%)	-1.71%***	-1.35%***	-1.38%***	24.75%***	18.60%***	17.05%***

Table 4: Logit regression on the likelihood of all-cash payments

This table reports the results of logit regression models where the dependent variable equals one if the bidder offers an all-cash payment and zero otherwise. The following explanatory variables are included in the model: the number of target and acquirer financial analysts, dummies capturing respectively whether it is a tender, an hostile or an industry-related offer (at 4-digit SIC level), the bidder's market-to-book ratio of equity, cash ratio and debt ratio, the relative deal value (=deal value/bidder's market capitalization), the natural logarithm of the bidder's market capitalization and dummies capturing whether the deal took place during the fifth (1994-2000) or sixth (2003-2007) M&A wave. *t*-statistics are calculated using White heteroscedasticity-consistent standard errors. ***, ** and * indicate significance at the 1, 5, and 10% levels, respectively.

	(1)		*(2)*	
C	-0.6955	***	-1.5401	***
Number of target analysts	-0.0794	***	-0.0937	***
Number of acquirer analysts	0.0467	***	0.0231	**
Tender offer	3.2100	***	3.1593	***
Hostile offer	1.1153	***	1.0393	***
Industry-related offer (4-digit)	-0.5420	***	-0.4485	***
Bidder M/B			-0.0104	
Bidder cash ratio			-1.2873	***
Bidder debt ratio			0.2525	
Relative deal value			0.0078	**
LN(Bidder market cap)			0.1693	***
DUMMY_1994_2000	-0.9310	***	-0.9704	***
DUMMY_2003_2007	0.8434	***	0.8611	***
N	**1762**		**1762**	
McFadden R-squared	**0.3042**		**0.3251**	

Table 5: Determinants of Bidder and target CARs

This table reports the results of OLS regression models where the dependent variable equals the cumulative announcement returns over the event window [-1,+1]. We focus both on the bidder as well as target CARs. The following explanatory variables are included in the model: the number of target financial analysts, a full stock-payment dummy, the number of acquirer financial analysts, dummies capturing respectively whether it is a tender, an hostile or an industry-related offer (at 4-digit SIC level), the bidder's market-to-book ratio of equity, cash ratio and debt ratio, the relative deal value (=deal value/bidder's market capitalization), the natural logarithm of the bidder's market capitalization and dummies capturing whether the deal took place during the fifth (1994-2000) or sixth (2003-2007) M&A wave. *t*-statistics are calculated using White heteroscedasticity-consistent standard errors. ***, ** and * indicate significance at the 1, 5, and 10% levels, respectively.

	Total sample				*All-stock offers*				*All-cash offers*			
	Bidder CAR [-1,+1]		Target CAR [-1,+1]		Bidder CAR [-1,+1]		Target CAR [-1,+1]		Bidder CAR [-1,+1]		Target CAR [-1,+1]	
C	0.0256	*	0.1732	***	-0.0111		0.1177	*	0.0407	*	0.2044	**
Number of target analysts	-0.0025	***	-0.0064	***	-0.0033	***	-0.0050	***	-0.0014	***	-0.0040	*
Stock dummy	-0.0291	***	-0.0637	***								
Stock dummy*Number of acquirer analysts	0.0014	***	0.0007									
Number of acquirer analysts	0.0010	***	0.0005		0.0029	***	0.0015		0.0000		-0.0015	
Tender offer	0.0172	***	0.0898	***	-0.0048		-0.0197		0.0066		0.0785	***
Hostile offer	0.0026		-0.0061		0.0060		0.0478		-0.0131	**	-0.0436	
Industry-related offer (4-digit)	-0.0023		-0.0009		0.0015		0.0143		-0.0003		0.0135	
Bidder M/B	-0.0001		-0.0004		-0.0001		-0.0002		-0.0001		-0.0024	
Bidder cash ratio	-0.0457	***	0.1154	***	-0.0325		0.1099	**	-0.0212		0.0984	
Bidder debt ratio	0.0152		0.0504		0.0531	**	0.0104		0.0083		0.0755	
Relative deal value	0.0001		0.0002	***	-0.0024	*	-0.0031		0.0001	***	0.0002	
LN(Bidder market cap)	-0.0044	***	0.0170	***	-0.0069	**	0.0131	*	-0.0034	**	0.0197	**
DUMMY_1994_2000	-0.0058		-0.0927	***	0.0019		-0.0600		-0.0092		-0.1196	***
DUMMY_2003_2007	0.0016		-0.1087	***	-0.0132		-0.1031	**	-0.0004		-0.1309	***
N	**1762**		**1762**		**596**		**596**		**742**		**742**	
R-squared	**0.0844**		**0.0877**		**0.0822**		**0.0392**		**0.0521**		**0.0611**	
Adjusted R-squared	**0.0771**		**0.0804**		**0.0633**		**0.0194**		**0.0365**		**0.0456**	

Table 6: Division of M&A gains accruing to bidding firm shareholders

This table reports the results of OLS regression models where the dependent variable equals the difference in dollar gains between bidder and target divided by the sum of the bidder's and target's pre-M&A market value of equity. Cumulative announcement returns are calculated over the event window [-1,+1], while the bidder's and target's market capitalization is measured 50 trading days before the announcement. The following explanatory variables are included in the model: the number of target financial analysts, a stock-payment dummy, the number of acquirer financial analysts, dummies capturing respectively whether it is a tender, an hostile or an industry-related offer (at 4-digit SIC level), the bidder's market-to-book ratio of equity, cash ratio and debt ratio, the relative deal value (=deal value/bidder's market capitalization), the natural logarithm of the bidder's market capitalization and dummies capturing whether the deal took place during the fifth (1994-2000) or sixth (2003-2007) M&A wave. *t*-statistics are calculated using White heteroscedasticity-consistent standard errors. ***, ** and * indicate significance at the 1, 5, and 10% levels, respectively.

	Total Sample		All-stock offer		All-cash offers	
C	-0.0704	***	-0.0594	**	-0.0912	***
Number of target analysts	-0.0037	***	-0.0037	***	-0.0043	***
Stock dummy	-0.0025					
Stock dummy*Number of acquirer analysts	0.0001					
Number of acquirer analysts	0.0011	***	0.0024	***	0.0000	
Tender offer	0.0049		-0.0154		-0.0004	
Hostile offer	-0.0112		-0.0115		-0.0082	
Industry-related offer (4-digit)	-0.0032		0.0001		-0.0026	
Bidder M/B	0.0000		-0.0001		0.0000	
Bidder cash ratio	-0.0428	***	-0.0369	*	-0.0273	
Bidder debt ratio	-0.0062		0.0303		-0.0200	
Relative deal value	-0.0004	***	0.0000		-0.0004	***
LN(Bidder market cap)	0.0059		-0.0012		0.0123	***
DUMMY_1994_2000	0.0016	***	0.0140		-0.0045	
DUMMY_2003_2007	0.0085		0.0062		0.0035	
N	**1762**		**596**		**742**	
R-squared	**0.1082**		**0.0904**		**0.1666**	
Adjusted R-squared	**0.1010**		**0.0717**		**0.1529**	