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# **Crossing takeover premiums and mix of payment: An empirical test of contractual setting in M&A transactions**

Hubert de La Bruslerie<sup>1</sup>

## Abstract

The Analyses of the tender offer premiums and of the means of payment should not be performed separately. In the empirical literature, these two variables are often considered independently, although they may have an endogenous relationship in a contractual setting. Using a sample of European M&As over the 2000-2010 decade, we show that these two variables are jointly set in a contractual empirical approach. The relationship between the percentage of cash and the offer premium is positive: higher premiums yield payments with more cash.

We highlight that the payment choice is not a continuum between full cash and full share payments. Two different regimes of payment in M&A transactions are empirically characterized. We analyze the major determinants of M&A terms when the offer premium and the means of payment are jointly set. The underlying rationale of an asymmetry of information and a risk-sharing calculus is found to be significant in the setting of the agreement.

Keywords: M&A, takeover premium, means of payment, contract setting  
JEL: G32, G34

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## Introduction

The empirical literature of mergers and acquisitions (M&A) transactions largely examines the acquirer's point of view: Why make the decision to bid for a target? How does the bidder set an offered price? However, according to Faccio and Masulis (2005), "In assessing potential determinants of an M&A payment method, our focus is on a bidder's M&A financing choices, recognizing that targets can also influence the final terms of an M&A deal." We will follow their approach by analyzing a (successful) takeover as a contractual agreement in which both parties find enough interest to produce a success offer. The two key variables defining a contract are the takeover premium and the offered means of payment. The basis of a contractual approach is that these key variables are jointly determined and agreed on as a package. We will not follow the track of numerous empirical studies that looks individually at premiums or means of payment because such an approach is incomplete.

A merger or acquisition is an economic project that generally poses some economic risk both for the target's and the acquirer's shareholders. This risk can be dealt with at the contract setting using an appropriate choice of means of payment. Cash payment, receiving liquidity, is a way for the seller to avoid risk, while shares payment is a way to make the seller bear some of the risk introduced by the project. The means of payment decision is a part of the contract, which is as important as the price itself. The means of payment is a choice to share the expected risk (and profit) from the transaction. This should be particularly true in mixed payment schemes where the relative percentage between shares and cash payment is a parameter to set. In these contexts, the package of a mixed payment percentage and a takeover premium will define the contract, and both have something to do with the asymmetry of information. The endogenous nature of the link between these two variables has not been extensively analyzed in the empirical literature.

This paper tests the hypothesis that global contractual settings link the takeover offer premium and the means of payment. An empirical analysis is developed with regard to a sample of 528 European Union (EU) deals. Empirical studies have often analyzed either the takeover premiums or the means of payment, but rarely both (Eckbo, 2009). From a methodological point of view, we show that systems of simultaneous equations give different results compared to univariate analyses of either the premiums or the means of payment. Our

findings support the view of M&A deals as a global and complex contractual equilibrium. We outline that the means of payment is not a continuous variable but refers to two different regimes of payment in M&A transactions in which full cash or full share payments are “corner solutions.” We find that the major determinants of M&A terms when the premium and means of payment are jointly set include information asymmetry, the risk-sharing calculus between parties and particular characteristics of the deal, such as cross border acquisitions, competition and same-sector transactions.

This paper is organized into three parts. Section 1 presents a review of the literature, and Section 2 presents the sample and variables. The empirical results are analyzed in Section 3. A conclusion follows.

## **1. Literature Review**

### **1.1 Takeover premium**

Takeover premiums have been extensively studied in the empirical corporate finance literature in relation to ownership structure or to the acquirer’s or target’s characteristics. The takeover premium level is often linked with the ownership structure of the target. For example, the high bargaining power of a large blockholder may force acquirers to offer higher bids (Stulz, 1988). The use of controlling devices, such as double voting rights, the separation of votes and cash flow rights, may enhance that positive relationship. The existence of shareholder agreements—commonly observed in Europe—is also viewed as an efficient mechanism of coordination inside the controlling group. It leads to higher firm valuation (Volpin, 2002; Belot, 2010), and it results in higher takeover premiums. Either the existence of an agreement between blockholders or the aggregate voting rights of the controlling party positively influences the takeover premiums for French firms (Belot, 2010). However, premiums are also the consequence of private benefits paid to the inside owners or to incumbent blockholders. The latter trade their benefits for a higher premium; otherwise, the incumbent shareholder will not accept losing his/her control and/or his/her private benefits. Bebchuk (1994), Burkard et al. (2000) and Burkard and Panunzi (2004) all support this view theoretically, and Moeller (2005) provides empirical support.

Deal characteristics are also important. For example, the contestability of the offer can lead to higher prices (Stulz et al., 1990; Song and Walking, 1993). The empirical literature documents a positive relationship between the target cumulative abnormal returns and the competitive nature of the bid.

When the target and the acquirer are from the same economic sector, merging may yield economies of scale and higher profitability. This motivation is measured by the similarity or identity of the SIC codes of the buyer and the seller. Synergy gains will explain higher bids by the bidder (Sundarsanam, 1996). The toehold is defined by the percentage of shares owned by the bidder and should yield a lower asymmetry of information. Betton and Eckbo (2000) showed that a toehold negatively influences the takeover premium.

On the target's side, size is a traditional control variable. A larger target firm size allows the premium to be spread over a larger investment. In line with Officer (2003), the relationship between size and the premium is expected to be negative. The financial leverage of the target is also important because it may signal a monitoring of the target firm by debtors. This is particularly true for blockholder-controlled companies or family firms. Debt leverage will limit private benefits, causing lower premiums. In contrast, higher debt leverage may be used as a power-enhancing tool for the controlling group and, consequently, may help appropriate private benefits. Stulz (1988) mentions that a target's controlling shareholder may force a bidder to pay a higher premium. Thus, the sign of the relationship is not defined.

The takeover process develops in the context of a double information asymmetry between the acquiring and target firms. Hansen (1987) was the first to mention the so-called "double lemons effect," in which each party has private information on his/her own value and has incomplete information on the nature of the assets he/she will receive. The bidder buys assets of uncertain value. Being risk averse, he/she is willing to pay less when facing an information risk. He/she may also want to share the valuation risk by paying with equity of the newly merged group. The target's shareholders will receive shares based on a new economic project, itself based on forecasted profits and synergies. They may also insure themselves by receiving cash and avoiding share payment. Asymmetries of information explain the risk-sharing attitudes of the buyer and the seller and, consequently, the choice of a mix of payments. Hansen (1987) measures the double asymmetry of information using the relative size of the target compared with the size of the bidder. The risk-sharing explanation is developed by

Berkovitch and Narayanan (1990), who introduced the sharing of the synergy gains between the buyer and the target firm's shareholders into the analysis. The seller's appropriation of the synergy gains is linked to the difference in information between the two parties. Chang and Mais (1998) expanded the idea that an exchange of information can help to solve the problem of double information asymmetry. They introduced a prior holding in the target's capital (a "toehold") as a means to reduce the buyer's asymmetry of information. In such a situation, the buyer has better inside knowledge of the target, especially if he/she holds a large portion of capital (Goldman and Qian, 2004). Cheng et al. (2008) used a sample of US firms to compare asymmetries of information, bid premiums and the means of payment. They show that the means of payment and bid premiums are interdependent, with the means of payment heavily conditioning the price paid in the deal for a given asymmetry of information between the two parties. This suggests that the two terms are linked from a contract design perspective.

## 1.2 Means of payment

The literature devoted to the means of payment follows another strand. A payment with shares has no consequence on the cash situation of the firm because the acquirer issues new shares. However, it may have consequence in terms of the following: (i) a signal to the firm's shareholders and (ii) the wealth situation of the final shareholders because of dilution.

In a M&A decision, a bidder faces a choice between using cash and stocks as deal payment consideration. This alternative choice has conflicting effects and follows different motivations. A first rationale follows from the idea that the financing decision is separated from the investment decision. The M&A project is first selected, and then the acquirer considers ways to optimally finance the possible deal. The constraints here are the limits on the financial leverage or the shareholder control structure of the bidder. Generally, bidders have limited cash and liquid assets; thus, cash offers require debt or equity financing. The pecking order theory says that acquirers will first choose internal funds, which are available either as cash holdings or as internally generated cash flow. Initiators with cash available will prefer a cash payment (Martin, 1996). Partial or full payment in shares may express the existence of financial constraints (Myers and Majluf, 1984). However, equity financed transactions make it difficult to retain control when shareholding is concentrated. As Faccio and Lang (2002) noted, this situation occurs frequently in the EU. As a consequence, a bidder implicitly faces a choice of debt or equity financing, which involves a trade-off with corporate

control concerns. Faccio and Masulis (2005) explain mixed payments in takeovers by the structure of control and by the debt level of the acquiring firms. Their empirical tests on European mergers and acquisitions support the idea of a preference for a cash payment when there is a large shareholder with 20% to 60% of the capital of the buyer. The bidder's M&A payment decision is strongly influenced by his/her debt capacity and existing leverage. It can also be strongly influenced by entrenched managers or by the blockholder's desire to maintain the existing corporate governance structure.

Payments in cash, either full-cash or mixed cash payments, need to be financed. The existing literature analyzes the means of payment without questioning the source of funding the M&A transaction at the acquirer's level. The acquirer may issue and sell new equity stock, issue debt, or use the firm's cash holdings. Martynova and Renneboog (2009) analyze the financing decision behind the choice of the means of payment in M&A transactions. Externally financed M&A transactions are funded 30% by equity and 70% by debt. In a sample of European deals, they show that the financing decision and the choice of the means of payment are driven by distinct determinants and are not interdependent. However, they also show significant evidence of an indirect and reverse influence of the means of payment on the internal/external financing choice. There is also an influence of the bidder's choice on whether to share the risk of the transaction with the target's shareholders and/or to buy out these shareholders. In such a situation, equity payments and equity financing are preferred.

The means of payment choice is also sensitive to the genuine context of the deal. Strategic competition between bidders is the first reason given to prefer cash. Fishman (1989) analyzes the strategic role of the means of payment in public takeovers and finds that pure cash offers are dissuasive against competitors and signal high quality target firms. Fishman relates the payment by cash to the future profitability of the target as expected by the competing bidders. However, his model leads to cash-only or share-only payments. Cornu and Isakov (2000) develop a model in the context of a competitive offer between two acquiring firms. To disclose information about his strategy, the first bidder can use a signal through the announcement of a pure cash or a pure share payment. However, since the 1990s, the large majority of mergers and acquisitions are non-hostile, and the means of payment are diversified (Shleifer and Vishny, 2003). The characteristics of the payment scheme have to be analyzed in the context of the known success of the takeover.

The portion of capital the bidder wants to receive (beyond gaining control) is an adjustment variable. That fraction reveals private information about the buyer's real value. If the means of payment discloses private signals to other parties, it will in return also influence the process of negotiation. Hansen's (1987) model explains the probability of paying in cash or in shares but does not focus on mixed payment schemes. A double asymmetry of information may explain the risk-sharing choices and the payment by issuing shares. Eckbo, Giammarino and Heinkel (1990) refer explicitly to the idea of an optimal mixed cash-shares payment. They were the first to highlight that the weighting between these two means of payment will reveal to other parties the respective quality of competitive buyers. Martin (1996) links the cash payment with private information: an acquirer with good growth opportunities will prefer a shares payment.

The empirical literature on the means of payment identifies a different rationale to explain the cash or equity choice (Carleton et al., 1983). Cash acquisitions are found to have better performance post-merger (Linn et al., 2001). The literature on mixed cash-equity payments is relatively recent, even though mixed payment schemes have become increasingly important in mergers and acquisitions, particularly when considering offers for large firms (Betton et al., 2008). Goergen and Renneboog (2004) analyze public takeover bids in Europe during the 1990s. Looking at a sample of 156 offers, they found 93 were pure cash, 37 were pure shares and 18 were mixed payment deals. Among the latter, the portion of cash accounted for 45.9% of the total payment. Faccio and Masulis (2005) considered a larger sample of 3,667 mergers or acquisitions of European firms at the end of the 1990s. The number of mixed payment operations is only 11.3% (with an average proportion of 57% in cash and 43% in shares). The size of a mixed payment takeover bid was five times (1.1 billion USD) greater than the size of a standard pure cash offer (209 million USD). Mixed payment schemes represent a far greater proportion of transactions as the value of transactions rises.<sup>2</sup> However, this discrepancy is largely explained by cross-border transactions, in which a large number of small deals are paid in cash. In recent years, the number of mixed payment takeovers has increased. Martynova and Renneboog (2006) consider 1,721 European takeovers between 1993 and 2001 and discover that 54% were all-cash, 25% were mixed and 20% were all-equity transactions. On average, a mixed payments scheme is comprised of 47% in stocks and 53%

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<sup>2</sup> The high number of all-cash takeovers in their sample is partly explained by the number of cross-border takeovers with US bidding firms, which are generally full payment in cash.



in cash. Ben-Amar and Andre (2009) examined 293 Canadian mergers and acquisitions from 1998-2002. The sample composition was 58% cash-only, 19% stocks-only and 22% mixed payments. However, the latter represented 32.3% of the total value of the transaction, pointing out that mixed payment takeovers occur more frequently in higher value transactions. For mixed payment takeovers, the average percentage of cash was 49% but with a standard deviation of 50%, corresponding to huge differences within payment schemes.

Cross-border M&A transactions are more likely to be paid in cash. This traditional feature is documented by Chevalier and Redor (2007), who show that geographical distance is a good proxy for cultural distance. Geographical distance is also a source of asymmetries of information for transactions. This explains why cross-border acquisitions are more often paid in cash. The dependent variable used by Chevalier and Redor is the percentage paid in cash for US acquiring firms and includes mixed payments. The target shareholders will prefer cash because shares from a foreign firm may not be easily traded. The quality of the assets of a distant company is more difficult to assess. That information asymmetry develops with distance is shown by Chevalier and Redor (2010). Conversely, the tax system will generally favor equity payments. In European tax systems, payment by cash is considered a sale, and the shareholder who exhibits effective gains will thus be subject to income tax. Share payments are an exchange of assets and are not considered taxable effective gains; thus, the target's shareholders can defer later tax liabilities by accepting stock as payment.

### 1.3 The contractual nature of M&A transactions

The chosen means of payment may also reveal the specific characteristics of the transaction. An M&A transaction is an economic project and a contractual agreement with a seller. The target's shareholders are not forced to sell (except in buyout transactions). The risk of asymmetry of information is (partially) solved in such a contractual setting by the level of the premium and by the choice of means of payment. The choices are not univocal but occur in a process conveying private information from one party to the other. La Bruslerie (2011) analyses the interaction of the relationship between offer premiums and the means of payment. If the risk on the target's assets is important and if the acquirer's shareholders are risk averse, the latter may prefer payment in shares. However, if the potential profits after the acquisition are large, the acquirer's shareholder will offer payment in cash to keep more of the resulting profit (Shleifer and Vishny, 2003). The equilibrium between risk and return explains

the choice between means of payment, and a trade-off will develop with the acquisition premium. If a buyer is insured against future bad news through a payment by shares, he/she can offer a better price. This equilibrium may give “corner solutions,” either full cash or full share payments. However, it may also lead to mixed payments, in which the percentage paid in cash is a relevant measure of information asymmetry. The same calculus follows from an inverse point of view by the targets’ shareholders. They are exposed to an information risk on the future gains in synergy and on the expected profit of the newly merged company.

Theoretically, from the buyer’s point of view, (i) correlated activities and economic risk between the target and the acquiring firms will result in a larger payment with cash, and (ii) a trade-off develops between the percentage in cash and the premium paid in the acquisition (La Bruslerie, 2011). For the acquirer, the cash payment portion increases with prospective profit due to synergy gains, as in Shleifer and Vishny (2003). The seller will accept a negative trade-off between a higher (lower) cash payment and a lower (higher) transaction price and, thus, a lower/higher portion of the expected acquisition gain. A mixed payment will develop only between “corner solutions” of full cash or full share payments, in which the expected profit from the acquisition is between two limits.

The regulatory environment may also play a significant role in the contractual setting. Some countries have developed investor protection regulations that facilitate M&A transactions. In the European Union, regulation is effective and gives strong protection to shareholders, including enforcing an equal treatment principle between shareholders. The EU’s 13<sup>th</sup> directive was formally adopted in 2000 and implemented in European countries, although with some local differences. Any takeover bid or private acquisition should be analyzed by the EU administration and comply with anti-monopoly rules. European financial regulation is set at the global level and tries to set up “a unique global financial market.” The accounting policy in Europe should also comply with common rules. As an example, the introduction of the new common IFRS rules was enforced in 2005. Legal rules and procedures are taken at the country level but must conform to the EU “directives.” Their selective introduction in each domestic law system may also explain differences. La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) highlight the importance of the legal system. However, the legal code indicators—flagging Scandinavian, French, Anglo-Saxon or German origins—are found to be insignificant by Faccio and Masulis (2005). We will therefore limit the influence of the regulatory environment by looking only at M&A transactions targeted at firms located in the

seven major European countries (UK, France, Italy, Germany, Spain, Italy and Belgium). We will disregard the recent entries into the European Union, such as Eastern European countries, or tax-haven countries (Luxembourg). The sample is then homogeneous with regard to regulation.

## **2 Data and variables**

### **2.1 Data**

The sample of European takeovers has been built from the Thomson One Banker database. The period is limited to transactions between January 1, 2000, and May 1, 2010. A filter is used to focus on meaningful operations and a minimum transaction value of 50 million USD is required. Only completed deals are considered.<sup>3</sup> Target companies are limited to firms belonging to the seven major EU countries: France, Germany, United Kingdom, Spain, Belgium, Netherlands, and Italy. We select deals in which the types of targeted assets by the acquirer are stock or equivalent stocks (i.e., assets giving rights to stocks). The means of payment examined are only cash or stock.

We excluded offers coming from less-developed countries, thus restricting our sample to North American, European, and Japanese buyers. If the acquirer proposes stocks as a valuable means of payment, it requests that a large transparent market exists for the bidder's stock to be accepted. This is why we restricted both targets and acquirers to be public firms. We thus narrowed the sample to 528 transactions. We checked the mode of payment through the data. Many deals are qualified as "cash only" or "stock only" in the database. Mixed payment transactions were also screened. Those qualified as "hybrid" show a payment scheme with a percentage of cash and stock. We only consider "pure" mixed payment with a percentage of cash and a percentage of stock summing up to one. Some deals are qualified as "unknown." By looking at each operation syllabus, we can allocate many of them to mixed payment schemes. Deals with earn-out payment considerations are excluded because of this uncertainty. Some transactions may involve payment in debt (particularly in the UK). This possibility is proposed alternatively with a cash payment. When analyzing deals with a debt

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<sup>3</sup> The question of a bias in selecting our sample does not arise. We only consider contracted deals, in which an agreement is found between the acquirer and the target. By definition, not completed deals are ones in which an agreement has not been reached. The analysis of their key variables and provisions is not relevant in a contract setting approach in which an agreement reveals an economic equilibrium between the parties.

payment, they generally appear to be equivalent to cash payment. Thus “cash payments” in the paper are defined as in Faccio and Masulis (2005) and include cash, non-contingent liabilities and newly issued notes. We incorporate in the sample a lot of hybrid cash/debt/stock payments and recalculate the percentage of cash and shares summing up to one.

The Faccio and Masulis (2005) sample considered deals from European bidders directed to any country in the world. It gives a large weight to UK firm deals (65% of the sample). We look at M&A targeted at European firms from other major developed countries. Similarly to Faccio and Masulis (2005), our sample is mainly intra-EU: in their sample, 77% of the bids come from European countries, while 79% do in our sample.

Some deals were not documented without a price, or they were initiated by Russian entities or were squeeze-out transactions (2 deals).<sup>4</sup> They were not considered. Thus, we were left with 504 transactions. The analysis of the sample leads us to identify some transactions that are buyback programs launched by the company’s board. Here the target’s shares are the company’s stocks or a subsidiary’s. In these situations we do not have independent targets and acquirers; thus, buybacks were deleted (72 transactions). The remaining core of our sample is 432 transactions, of which 294 are full cash payment, 62 are mixed cash-share (called “hybrid”) and 76 are full share payments. The global value of these deals is 898 billion USD. Some large acquisitions explain this amount: the largest transaction is the Beecham/Glaxo acquisition, which has a transaction value of 76 billion USD. The smallest operation has a transaction value of 50.2 million USD.

## 2.2 Descriptive statistics

When considering the three sub samples of full cash, full share and hybrid (i.e., mixed cash-share) payments, we note differences in the average deal size (see Table 1). As in Faccio and Masulis (2005), we find that cash deals are the most numerous but also have a relatively small size. Hybrid transactions are three times larger than all-cash paid deals (five times in Faccio and Masulis’ sample). Full share payments are important deals. The cumulative values of the

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<sup>4</sup> We also eliminate buyout deals from the analysis. They are not transactions between shareholders of two different and independent firms. They are decisions made by managers on behalf of the controlling shareholders to buy the shares of the firm and do not involve another party.

deals paid fully either in cash or in stock are equivalent (approximately 40% of the grand total each). The mixed payment transactions are not negligible; they represent a cumulative value of 211 billion USD and 24% of the total sample. A test of difference in average size shows that shares and hybrid transactions are not different ( $p=0.34$ ), but the differences in size between full cash and hybrid transactions, on the one hand, and full cash and full share transactions, on the other hand, are significant at the 5% level (both  $p=0.03$ ).

#### INSERT TABLE 1

An important number of deals are private transactions. Direct negotiation between the two parties converged, and a block sale occurred. A total of 66 private transactions are identified, often linked to going public to private operations. All these private acquisition are “cash only” deals.

The sample of targets firms shows a large number of deals targeted at British firms (43%). Martynova and Renneboog (2009) have noticed the same dominance of British firms in their sample. The transactions initiated by acquirers located in the EU represent 79% of the sample (i.e., 340 deals). Cross border deals (21% of the total) will refer to non-EU acquirers.<sup>5</sup> Table 2 analyzes the origin country of the target by means of payment. We introduce a distinction between cross border acquirers coming from the USA and acquirers coming from the rest of the world. We see that pure intra-country deals are paid fully in cash 6 times out of 10 and fully in shares 2 times out of 10. This changes when a non-US acquirer enters into a cross border acquisition in Europe: he/she will 9 times out of 10 pay fully in cash. However, looking at initiators coming from other EU countries or from the USA, they have similar proportions of mean of payment. For instance, we cannot say that US acquirers will systematically pay in cash. They use full cash payment only 3 times out of 4.

#### INSERT TABLE 2

We analyze the industry sectors of the acquirer and the target firm using the Thomson Financial codes. A total of 219 mergers (51%) are between firms in the same industry.

A deal is aimed at buying a large block of stocks, generally giving the initiator a majority of the equity capital. However, the shares purchased at the end of the operation should take into

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<sup>5</sup> In the perimeter of the seven European countries, we considered in selecting the location of target firms.

account the shares previously owned by the bidder. A toehold may explain why the percentage of shares sought is lower, even if it gives a controlling position at the end of the deal. The percentage of shares owned after the transaction is calculated by adding shares and shares previously held. On average, the percentage of acquired shares is 58%, the percentage sought in the deal is 63%, and the percentage owned after the transaction is 73% of the capital. It means that significant toeholds exist, representing on average 15% of the capital. This is explained by the subsidiary feature of many target firms. A total of 101 targets are subsidiaries (19% of the total sample). Among the subsidiary targets sub-sample, the toehold percentage averages 45.6% (median 54.6%) of the capital. The non-subsidiary firms have an average toehold of only 8.5%.

Cash payments exhibit a lower acquired percentage and a lower owned percentage after the deal. This is explained mainly by private block acquisition, in which the average purchased block represents 22% of the capital. However, in that situation, the toehold is more important and shows a significant previous investment in the target's capital (approximately 23%). The cash payment in a typical public takeover is targeted at larger acquisition of capital (an average of 65%). As a result, we see that the aim of M&A transactions is control because the final owned percentage is largely approximately 80 to 90% of the capital of the target firm. We separate cash deals into those following a private acquisition mechanism and those following a public takeover bid. Private deals also seem to follow a rationale of a control building process. The acquirer of a block takes advantage of an opportunity given by a seller even if the size of the block in itself does not give an immediate control of the target. Many blocks are small block acquisitions (with median private acquisition of 16% of the target's capital). In the case of private deals, the acquired block together with prior ownership results in a final equity stake of 45% of the capital, which implies a controlling position. In European M&A transactions, on average, a stake of 56.08% of capital is acquired in full cash deals, compared with 85.66% in hybrid payment schemes and 77.74% in full share payments. The differences in percentages of capital acquired or owned are significant when comparing full cash payments and other payment schemes (at the 1% confidence level).<sup>6</sup>

Looking at mixed hybrid payments, the average percentage paid in cash is 47%. The distribution of the percentage of cash is large. For instance, 25% of the mixed payment deals

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<sup>6</sup> However, the means are not different when considering hybrid and full share payments.

have a cash payment part that is lower than 30% of the transaction value; the other upper mixed payment deals shows a percentage paid in cash above 66%.

The offer premiums are the other term of the transaction. According to the means of payment, they stand between 17 and 28% of the target's share price one day before announcement. Average premiums are similar when comparing full cash and hybrid payment transactions. A t-test rejects the idea of different premiums according to hybrid or full cash payments. Share payment premiums seem to follow another rationale by staying below the others. However, this result is weak because it is significant only at the 10% level (see Table 3).

INSERT TABLE 3

### 2.3 Variables

The variables used in the regression analysis are described in Table 4. Most of them are taken from the Thomson One Banker database.

The financial condition of the acquirer is a first explanation of the choice of means of payment and of the price paid. Cash holding/accessibility of the acquirer is identified with ACQ\_PC\_CASH and ACQ\_PC\_EBITDA. Raising debt is also a substitute for internal cash payment: it depends on the debt capacity of the acquiring firm as measured by the acquirer's financial leverage, ACQ\_LEV. The idea here is simply that highly leveraged firms are more likely to choose equity financing. These variables are drawn from the acquirer's financial report at the end of the year prior to the deal. Target leverage is also an element that can influence the acquirer's capacity to finance the deal. In a successful merger, a low leveraged subsidiary with a good debt capacity will help the initiator to finance the deal using debt and cash. TARG\_LEV is a variable that measures the target's financial leverage. It is set as the ratio of the equity value of the target (valued using the offer price) divided by the total enterprise value of the target (with equity also taken at the offer price) minus one. These leverages are market valued.<sup>7</sup> The cash situation of the target is also an element of interest because a large cash balance allows the buyer to partially finance an acquisition with the target's own cash. We use the variable TARG\_PC\_CASH. A large cash-flow from the target

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<sup>7</sup> We also considered book leverage, which gave similar empirical results.

is also an element that helps to repay debt issued by the initiator when implementing the transaction. For that purpose, we consider its operating margin ratio, EBIT\_ROA.

#### INSERT TABLE 4

The target Tobin's Q may be proxied by the ratio of its equity valued at the offer price compared with the book value of equity at the last financial report; it is named TARG\_Q. The Q values measure the growth opportunities of the buyer and of the seller. It is also a proxy of possible market overvaluation of the acquirer's stock value. The PERC\_ACQ\_SH\_ISSUED variable is used as a proxy for assessing the control situation of the acquirer. As in Faccio and Masulis (2005), this variable is set using a 20% control threshold. Another dummy takes into account the subsidiary feature of the target (DUM\_SUBSIDIARY).

The competitive nature of the takeover has been identified in the literature as a strong argument for cash payments. The idea is simple: cash is a signal of the will of the bidder to acquire a target and deter competition by other potential bidders (Fishman, 1989; Berkovitch and Narayanan, 1990; Cornu and Isakov, 2000). The competitive context can be measured by a dummy variable (DUM\_CHALLGD\_DEAL). A dummy for the friendly attitude of the target is also used (FRIEN\_ATTITUD).

We introduce a variable for toehold (which is set comparing the percentage of shares owned after the transaction and the percentage acquired through the transaction). The variable TOEHOLD gives the percentage of shares previously owned. A dummy DUM\_TOE is also used when a toehold exists. Toeholds may limit asymmetry of information.

The double asymmetry of information is measured using the relative size of the target compared with the size of the bidder. A first measure of asymmetry following Hansen (1987) is the relative net asset values using book data (ASYMMETRY1). The relative size is also measured by comparing the total book assets of the acquirer (ASYMMETRY2). This measure considers the total economic resources involved in takeovers where the motivation is control on assets. Furthermore, it is not influenced by the debt policy of the acquirer.

The deal characteristics are measured using the premium (OFFER\_PREMIUM\_1W) or the means of payment either in the dummy form (DUM\_CASH, DUM\_SH, DUM\_HYBRID) or



in percentage (PERC\_CASH)<sup>8</sup>. We introduce ex ante features of the deal: PERC\_SOUGHT is the percentage of capital initially sought by the initiator. It may be used by comparing it with the ex post stake of capital effectively acquired, PERC\_SH\_ACQUD. The DESEQ variable measures the imbalance from the acquirer's point of view between the stakes of capital as wanted ex ante and effectively received ex post. It is measured by subtracting the later variable to the former. The institutional context of the deal is acknowledged with a dummy for domestic acquisitions (DOMESTIC\_ACQ) and a dummy for intra EU transactions (DUM\_EU\_ZONE flagging initiators that are incorporated in the EU). The TRANS\_VAL value is in absolute size; it is used to see if the absolute amount of the transaction influences its outcome. The economic context of the deal and the purpose of business diversification is followed with a dummy SAME\_SECTOR variable.

The asymmetry, the leverage, and the Tobin's Q variables are winsorized at the 1% and 99% percentiles. We checked the correlation between the variables. Cross correlations between ASYMMETRY2 and TRANS\_VAL, ACQ\_PC\_CASH and TARG\_PC\_CASH, ACQ\_PC\_CASH and ACQ\_PC\_EBITDA, PERC\_SOUGHT and DUM\_TOE, PERC\_ACQ\_SH\_ISSU and ASYMMETRY1, PERC\_ACQ\_SH\_ISSU and ASYMMETRY2, ACQ\_PC\_CASH and TARG\_LEV, TARG\_Q and EBIT\_ROA, PERC\_ACQ\_SH\_ISSU and TOEHOLD are important (above 0.30). Thus, we disregard the redundant explaining variables. The correlation matrix among information asymmetry measures (see Table 5) shows that the variables ASYMMETRY1 and ASYMMETRY2 are highly correlated.

INSERT TABLE 5

The descriptive statistics of the variable are presented in Table 6. The proxy of asymmetry of information shows that the bidder is relatively better informed than the target. The Tobin's Q value of the target and the acquirer are similar (3.6 vs. 3.3). An average toehold of 14% for those firms holding shares (30% of the sample) is evidenced. The acquirer seeks a percentage of 61% of the target's capital. He/she gets only 58%, and as a consequence, we see a 3% disequilibrium. Due to previous toeholds, the percentage sought after the transaction is 76%,

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<sup>8</sup> Premiums are calculated using a one-week time lag between the offer price and the prior stock price. We obtained similar results when using a four-week lag.

but the acquirer ends the transaction with a cumulative stake of 73%. The average offer premium is 28.7%.

INSERT TABLE 6

### **3 Empirical tests**

#### 3.1 Methodology and hypotheses

According to Faccio and Masulis (2005),

« Since we expect both bidder and target preferences to affect the offer price and its form of consideration, we would ideally like to simultaneously estimate equations capturing the two parties' preferences. However, identification requires information about a target's stand-alone value relative to its purchase price (takeover premium) as well as the form of payment. Access to information about a target's stand-alone value is unavailable, given that most of these firms are privately held. This precludes estimating the alternative purchase prices conditional on form of payment. As a consequence, we have chosen to estimate a reduced form equation that includes both parties' preferences as explanatory variables. »

The test we implement considers the transaction characteristics as a whole. Cash payment and premiums are jointly set. We intend to set up a simultaneous equations model explaining the means of payment and the takeover premium. The same methodology was used by Officer (2003) to take into account the endogeneity between the premium and the existence of the termination fee paid to the bidder. However, in a first step, we analyze separately the determinants of the payment decision and those of the premium.

The variables conditioning the setting of the contract are mentioned in Table 7. We considered a limited sub-sample of variables after taking into account colinearities. The expected relationship of each one versus either the percentage of cash (covering the three situations of full share/mixed/full cash payments) or the premium paid is also mentioned. We introduce a distinction between the three main explicative theories: (i) the financing decision explanation, (ii) the asymmetry of information and contractual setting approach, and (iii) the conditioning by the environmental characteristics of the deal.

INSERT TABLE 7

The percentage of cash in a financial constraint approach is supposed to be positively linked with the acquirer's cash holding and Ebitda, and with the target's operating margin. The flow of funds variables are the ones considered by the debt and credit markets. The percentage paid in cash should be negatively linked with leverage, with the absolute size of the transaction and the percentage of acquired shares. The overvaluation hypothesis introduces a negative relationship with cash features when the acquirer wants to time the stock market to finance the transaction. The asymmetry of information introduces a risk sharing preference. The existence of a toehold will favor cash in the means of payment scheme. The toehold is a way to access better information and to reduce the asymmetry problem. The bidder will be willing to pay more in cash when he/she is less exposed to information asymmetry and enjoys improved information. The existence of a toehold or the subsidiary status of a target is viewed as a device to reduce the asymmetry, and the acquirer does not need to issue shares for risk-sharing purposes. Conversely, the absence of economic diversification due to same industry M&As will favor shares in the payment scheme. The premium is linked in the contractual setting with the means of payment. At equilibrium, for hybrid payments, the acquirer may be willing to pay a slightly higher premium (i.e., to abandon a higher part of the M&A net value to the seller) if he/she can seize a larger part of the future profits and avoid dilution by paying more with cash. Conversely, the target's shareholders will capture the actual value of future gains by accepting more immediate cash. The environmental features are known: cross border and challenged deals are more largely paid in cash. Governance pressure may also explain lower share payments if the number of new shares issued following the acquisition is high. If the initiator's shareholders fear dilution or loss of control, they will be prone to pay more in cash if there is an important blockholder in the target's capital who may become an important blockholder in the newly merged company. This control feature is not explicitly addressed in the list of regressors because of the colinearity between the information asymmetry variables and PERC\_ACQ\_SH\_ISSU.

Looking at the offer premium relationships, liquid and profitable firms can pay more. The same may be true if they have a large Tobin's Q to time the market and issue highly priced shares. The asymmetry of the information approach says that the asymmetry of information is a risk that is balanced by lower prices and premiums. Targets that are subsidiaries, or where toehold stakes held by the acquirer exist, are more transparent to the buyer and can command a higher price. The same is true if the opportunity growths of the target are large. The

percentage of cash has a trade-off relationship with the premium paid. The context of the deal will also influence the price with an increase of cash payments if it is challenged or if it is a cross border deal. Similarly, for large size targets, the bidder will pay more in shares.

The DESEQ variable takes into account the possibility that the final terms are not equilibrium terms from the buyer's point of view. It is the difference between the percentage of shares sought in the deal and the percentage effectively bought. A positive discrepancy means that the acquirer should have paid more to obtain a higher stake of capital. Thus, we expect a negative sign.

The acquirer's Q ratio is a double face variable: it can signal an overvalued share value and a possibility to time the market by the bidder's managers (Betton et al., 2008). However, it may also signal the positive economic qualities of the firm (Martin, 1996). Former shareholders may not want to share growth opportunities with new blockholders. To avoid the dilution of the former shareholders, the payment in shares to new shareholders is voluntarily limited. Financial constraints or limitation may explain equity payment and financing: this will occur when the percentage of shares acquired or the size of the deal is large.

### 3.2 Determinants of the payment decision

The means of payment decision may be analyzed as a continuum between 0 and 100% cash payment. This approach views the determinants as playing a continuous role to explain the cash percentage. Traditionally a linear model will imply that a significant given determinant explains at the same time a full cash, a full equity or a mixed payment. The hypothesis of a unique set of determinants over the scope of cash percentage payments is very strong and questionable. The alternative hypothesis is that there are possibly three different regimes of means of payment, each one explaining either the full-cash, the full equity, or the mixed cash-equity payments. The idea of three regimes is based on the hypothesis that the full equity and the full cash payments are "corner solutions" for a rational investor (La Bruslerie, 2011). Even a methodology using Tobit regression, as the one implemented by Faccio and Masulis (2005), relies on the hypothesis of a unique set of determinants. A Tobit model does not allow for the possibility of different rationales in choosing the means of payment.

An explanatory Probit analysis to identify the variable influencing the decision of each means of payment against the other two is not sound. We cannot conclude that, when choosing a hybrid payment and rejecting full cash or full share payments, the acquirer is indifferent between the last two. We analyze pure alternative choices using a Probit analysis of a means of payment against another one. With three different means of payment, this yields three Probit analyses. Table 8 confirms that a larger offer premium increases the possibility of a hybrid or a cash payment. The asymmetry variable is not significant, but when the target is a subsidiary or when the acquirer has a toehold, the probability of a hybrid payment increases compared with a full share one. It means that the lower asymmetry of information linked with such a situation does not result in a risk sharing full share payment. The presence of an important internal cash flow favors cash payment. The challenged deals are also more frequently paid in cash. As Martynova and Renneboog (2009), we do not find a significant or consistent relationship between the bidder's financial condition (i.e., leverage) and the means of payment. A leveraged target causes the deal to be paid more frequently with shares or hybrid payments. The explanation here should be set in conjunction with the no relevance of the acquirer's debt leverage. The latter may have a fair financial structure before the deal and considers the new financial structure of the group after the merger. This rationale impacts the deal when it implies merging with a relatively indebted target. Thus, the acquisition of a leveraged target is paid more often with shares to limit the side effect of the acquisition on the acquirer's own leverage. This explanation goes along with the dynamic debt capacity limitation, which will occasionally stress the cash payment scheme.

#### INSERT TABLE 8

The acquirer's Q is positively linked with share payment, which is in line with the stock overvaluation explanation. It does not support the idea of privately known growth opportunities at the acquirer's level, which would lead him to prefer cash payments (Martin, 1996). The target's Q ratio is significant and negatively linked with cash payment. Good opportunity growths at the target's level may favor full or partial payment with shares. This is in line with what was expected because the acquirer is facing an information risk about the opportunity growth of the target. A large part of the latter's value exceeds the assets accounted for in the balance sheet. Therefore, a higher exposure to risky information on the off-balance sheet value may push the acquirer to cover that risk using share payment.

We used an ordered Logit model where the dependent variable equals two in full cash, one in hybrid, and zero in full equity payment considerations (as in Faccio and Masulis, 2005). We also use a multinomial Logit test of the three cases in the spirit of Martynova and Renneboog (2009). This was inconclusive, and no convergent results were obtained with the full set of explaining variables. We focus on a restricted model with 5 dependent variables plus a constant. Four out of five variables are significant. The size of the target increases the probability to use hybrid and full cash payments, which is controversial. We obtain the expected positive relationship with the premium and a negative relationship with the asymmetry of information proxy. However, the ordered Logit model introduces a unique set of parameter values and uses cuts to create three classes. A restricted multinomial Logit is concurrently run. It tests jointly the difference between all-cash and hybrid payments and the difference between all-cash and all-share payments. The variables are not significant in the first case but are with regard to the full cash/full share payment alternative. The probability of choosing the full cash payment increases with the offer premium and the target leverage. The probability of choosing the share payment increases with the information asymmetry and the absolute value of the transaction (see Table 9). This is in line with the observation that a large deal size leads more often to share payments. This result illustrates that full cash and full share are opposite corner solutions (Carleton et al., 1983). At the same time, the variables explaining the choice between cash and hybrid payments seem to be different ones because none of the previous variables are significant. This result supports the idea that hybrid payment choice follows a different rationale and is explained by other variables. The overall regime of payment explanation covers these two different rationales for means of payment.

INSERT TABLE 9

### 3.2.1 Modeling alternate cash/share payments

We used a restricted list of 8 independent variables to explain the alternate full cash/full share payments (see Table 10). The asymmetry variable that fits the best is ASYMMETRY2. Both the Probit and the OLS estimates confirm the previous results. The cash payment probability is negatively linked with the absolute transaction value, the same sector dummy, the domestic acquisition dummy and the asymmetry of information. It is positively explained by the acquirer's relative cash flow and the offer premium. This is consistent with the cash availability explanation and the financial limitation theory (Martin, 1996). The percentage of

share payment increases when the target and the acquirer are in the same sector. This is consistent with the risk diversification analysis: when the merger does not develop in a context of economics diversification, the buyer is more prone to reduce his/her risk by paying with shares. The asymmetry of information favors full share payments, and full cash payments are less probable with large sized transactions. The contractual approach of M&A terms is supported with a significant positive link between full cash payment and offer premiums.<sup>9</sup>

#### INSERT TABLE 10

The results between the two estimates according the samples of firms in Tables 9 and 10 suggest that the nature of the determinants of the payment changes, particularly if we consider alternate “corner” choices, i.e., full cash or full equity payments. We also use an OLS linear probability model instead of a Probit (see Table 10). The fitted values of the Probit model and of the linear model of the dummy alternate choice between full cash and full share payments are estimated. The correlation between the two fitted values is fairly good (+0.67).<sup>10</sup> This means that, although imperfect, a linear estimate of the binary choice is a good proxy for the Probit model.<sup>11</sup> Therefore, using a linear fitted value to explain the binary choice is acceptable and will later allow us to use a system of two linear equations (instead of a nonlinear system of equation).

#### 3.2.2 Hybrid payment choice and regimes of payments

Some determinants may be specific to hybrid means of payments. An estimate of the explaining variable of the cash percentage in hybrid payments is performed using a limited set of eight variables because of the limited number of mixed payment transactions in our subsample. Table 11 shows that the percentage paid in cash is negatively linked with the offer

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<sup>9</sup> We also ran a restricted Tobit model of the alternate share/cash payments. The Tobit estimates are not convergent and we cannot discuss their significance. The asymmetry of information seems to go along with share payment. A Logit model (not reported) fits the data even better than the Probit one and get similar results.

<sup>10</sup> We calculated their respective cumulative density functions (cdf). The mean values of the two fitted cdf values using Probit and OLS linear estimates are, respectively, 0.855 and 0.783; they have the same standard deviation (0.149).

<sup>11</sup> OLS regressions on dummies may not respect the normality condition for residuals. We checked the normality of the residuals. The skewness test and the Bera-Jarque test confirm normality at the 1% level. However, kurtosis confirms normality only at the 10% level. We introduced a linear model for the alternate cash/shares choice because it will simplify the estimate of our two equations system below.

premium. This is opposite to what is expected. The significant constant means that, on average, a 51% cash/49% share mixed payment scheme is considered. Other variables do not seem to be influential.

#### INSERT TABLE 11

The cash-share alternative shows explanatory variables different from the hybrid payment setting. In the latter case, the information asymmetry is not significant. Furthermore, the signs of the premium variable are not very coherent with opposite influences on the propensity to use cash according the regimes of payment. This diversification risk sharing effect determines a corner solution with either full cash or full share payments and has no impact on the choice of hybrid schemes. The size of the transaction negatively impacts a full-cash payment. The deal size is not significant in hybrid payments (when analyzing simple correlations, not reported).

The conclusion we draw from the first step of the analysis is that the means of payment choice is a decision that follows different regimes (Carleton et al., 1983). In given contexts, some determinants are important to justify full cash or share payments. The previous empirics suggest that, for instance, cross country acquisitions and challenged deals are all or nothing conditions that trigger a full-cash payment. Full equity payments are linked with the offer premium. Sellers are paid less in price but more in hopes of future returns by accepting shares on the newly merged firms. Asymmetry of information and risk sharing goals will explain equity payments. These two regimes of payment are “corner solutions”. Hybrid payments introduce a continuum between the last two. They develop a complex scheme with a fine tuning of the two core equilibrium variables of the agreement, which are the price and the relative mix of payment.

In the previous tests, cash payments and offer premiums are viewed in a causal framework, with the latter being exogenous. These variables are a coincidental choice in a contractual approach. They cannot be separated when analyzing M&A transactions. This point is not systematically mentioned in the literature, except by Faccio and Masulis (2005). It is seldom implemented in empirical tests. It implies that the conclusions we derived in the first step of the analysis are questionable because of endogeneity and that some inconsistency may be solved in a larger model of the transactions features.



### 3.3 Offer premium

The offer premium is a well-known term describing M&A deals. Its determinants are explored in Table 12. We used a first set of 22 regressors, including a constant and dummies, for means of payment. The latter are not significant. The premium increases with the percentage of shares acquired by the bidder. It also appears that challenged targets are paid more. We reduced the list of regressors to alternative subsets of 10 or 6 variables, without any constant.

#### INSERT TABLE 12

The size of the offer premium increases with the percentage of shares acquired and when the deal is challenged. The percentage of cash payment is significant, meaning that higher cash payments lead to higher premiums. The contractual nature of a transaction appears with asymmetry of information: a bidder that is large relative to the target is less exposed to an information risk and will pay a larger premium (significant at the 5% level in the six variable subset). The target's Q is positively linked with the premium (in the ten variable subset). Opportunity growth at the target level enhances the paid premiums. The negative EU zone dummy means that intra-European initiators will pay less. It evidences the empirical fact that cross-border (i.e., outside Europe initiators) acquisitions will pay higher premiums. The absolute size of the transaction does not significantly influence the premiums.

The DESEQ variable is a proxy of disequilibrium in the transaction between the terms offered by the bidder and the strength of the agreement by the seller. For instance, tight conditions will result in a high value of DESEQ. The negative sign associated with that variable effectively shows a link with relatively low (and insufficient) premiums. Thereafter, we will use linear equations to model the offer premiums either in a large definition with 10 independent variables or a restricted list of 6 variables.

### 3.4 Simultaneous equations

As long as premiums and means of payment are jointly set, we have to use simultaneous equations (Betton and Eckbo, 2000; Officer, 2003). We distinguish two models to assess the

regimes of payment. In each situation there is an endogenous link between the terms of the transactions.<sup>12</sup> We will consider two linear systems of two equations based on different regimes of means of payment. We still have as dependent variables in each couple of equations the offer premium and the percentage of payment. In the cash/shares regime, the dependent is a dummy for either full cash (1) or full share (0) payments; in the mixed payment regime, the dependent variable is the percentage paid in cash.

### 3.4.1 Alternate cash/shares system of equations

The first system of simultaneous equations has a binary choice as endogenous variable for payments. It is a dummy variable representing the percentage of cash payment for full cash (i.e., 100%) and full equity (0%). Here the sample is limited to full cash or full share transactions. The difficulty is that the premium is a continuous variable and the cash payment is a discontinuous variable. As mentioned by Officer (2003), we cannot use a direct standard linear approach in such a situation. We substitute the means of payment equation using the linear continuous proxy identified in Table 10. The probability to have full cash or full share payment is fitted by a linear OLS form instead of a Probit equation.<sup>13</sup> Using this methodology, we estimate the following system of two linear equations.

$$\text{OFFER\_PREMIUM\_1W} = a_1*\text{PERC\_SH\_ACQD} + a_2*\text{PERC\_CASH} + a_3*\text{DESEQ} + a_4*\text{TARG\_Q} + a_5*\text{DUM\_CHALLGED\_DEA} + a_6*\text{ASYMMETRY1} + a_7*\text{TRANS\_VAL} + a_8*\text{SAME\_SECT} + a_9*\text{DUM\_EU\_ZONE} + a_{10}*\text{DUM\_SUBSIDIARY} \quad (1a)$$

$$\text{PERC\_CASH} = b_0 + b_1*\text{TRANS\_VAL} + b_2*\text{SAME\_SECT} + b_3*\text{DOMESTIC\_ACQ} + b_4*\text{ACQ\_PC\_EBITDA} + b_5*\text{OFFER\_PREMIUM\_1W} + b_6*\text{TARG\_LEV} + b_7*\text{DUM\_CHALLGED\_DEA} + b_8*\text{ASYMMETRY3} \quad (1b)$$

A more limited system is also estimated with six explanatory variables for the offer premium instead of ten.

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<sup>12</sup> In a preliminary test, we first estimated a unique system of equations for the global cash/mixed/shares sample. We acknowledge that it ignores the existence of two regimes in the means of payment choice. A positive relationship between the cash percentage and the offer premium is significantly evidenced. This is in line with what was expected. However, the information asymmetry variable is not significant, contrary to expectations. This will illustrate the limit of a unique setting disregarding the regimes of payment.

<sup>13</sup> A non-linear Probit model would have been better. However, it has a non-linear form and leads to a non-linear equations system. We tried to implement it but obtained poor results. Our software package algorithm estimates a non-linear system of equations but assumes non-zero second order derivatives. This is not the case with a Probit equation with a dependent dummy. Thus, the standard deviations of estimates are not relevant, and we cannot assess the significance of the estimated coefficients.

$$\text{OFFER\_PREMIUM\_1W} = a_1*\text{PERC\_SH\_ACQD} + a_2*\text{PERC\_CASH} + a_3*\text{DESEQ} + a_4*\text{TARG\_Q} + a_5*\text{DUM\_CHALLGED\_DEA} + a_6*\text{ASYMMETRY1} \quad (2a)$$

$$\text{PERC\_CASH} = b_0 + b_1*\text{TRANS\_VAL} + b_2*\text{SAME\_SECT} + b_3*\text{DOMESTIC\_ACQ} + b_4*\text{ACQ\_PC\_EBITDA} + b_5*\text{OFFER\_PREMIUM\_1W} + b_6*\text{TARG\_LEV} + b_7*\text{DUM\_CHALLGED\_DEA} + b_8*\text{ASYMMETRY3} \quad (2b)$$

The estimates of the linear systems (1a-b) and (2a-b) are shown in Table 13. A strong and positive relation is identified between the offer premium and the dummy cash/share. The percentage of acquired shares and the target's Q increase with the premium. The disequilibrium variable is negatively significant. The same is true for the dummy EURO\_ZONE, which means that acquirers incorporated in the EU will pay a lower premium than overseas acquirers. The determinants of the cash/share payment alternative are those previously identified: absolute size of transaction, absence of industry diversification and domestic deals. All of these factors increase the probability of a full share payment. The information asymmetry variable is strongly significant, as expected by the risk sharing theory: the shares payment probability increases with the ASYMMETRY2 variable.

#### INSERT TABLE 13

The joint setting between the premium and the mode of payment (either all cash or all shares) is made explicit. The cross relation is positive and significant: premiums are higher with cash payments. A full cash offer will pay a premium increased by 20% compared with a shares payment. Compared to the single equation test, the difference is that the challenged characteristic of a deal is no more significant in explaining the premium. Intra-EU transaction deals will have premiums with a 9% discount compared to cross border deals. The cash/share payment is a regime imposed by cross-country acquisitions and by the economic nature of the acquisition, such as same industry bids, which are more frequently paid by shares. The absence of economic diversification will result in more risky synergies or gains. At the end, asymmetries of information are the driving variable behind the joint choice of the premium paid and the means of payment choice.

In a binary choice between alternate means of payment, it is rather difficult to find a more finely tuned agreement. The bidder can only signal the future value through the premium paid. As a result, the transaction is agreed upon but may present some disequilibrium features. Here the DESEQ variable is negative and significant. It signals that some bidders would have

desired to obtain more shares than they effectively obtained. The explanation for the imbalance is simple: they do not pay enough and the premium offered was too small.

### 3.4.2 Hybrid payment system

The second system of equations has the percentage of cash payment as the dependent variable. It is estimated only on the sample of hybrid payment transactions. The major drawback of the estimation is the low number of available observations (N=32 or 51). We first estimate two systems of equations according to the number of independent variables used in the offer premium equation: ten or six (respectively, panel A and panel B in Table 14).

$$\text{OFFER\_PREMIUM\_1W} = a_1*\text{PERC\_SH\_ACQD} + a_2*\text{PERC\_CASH} + a_3*\text{DESEQ} + a_4*\text{TARG\_Q} + a_5*\text{DUM\_CHALLGED\_DEA} + a_6*\text{ASYMMETRY1} + a_7*\text{TRANS\_VAL} + a_8*\text{SAME\_SECT} + a_9*\text{DUM\_EU\_ZONE} + a_{10}*\text{DUM\_SUBSIDIARY} \quad (3a)$$

$$\text{PERC\_CASH} = b_0 + b_1*\text{SAME\_SECT} + b_2*\text{OFFER\_PREMIUM\_1W} + b_3*\text{TOEHOLD} + b_4*\text{ACQ\_Q} + b_5*\text{TARG\_Q} + b_6*\text{DUM\_CHALLGED\_DEA} + b_7*\text{DESEQ} + b_8*\text{ASYMMETRY1} \quad (3b)$$

Equation (3a) for the offer premium is similar to equation (1a). The more restricted system is the following:

$$\text{OFFER\_PREMIUM\_1W} = a_1*\text{PERC\_SH\_ACQD} + a_2*\text{PERC\_CASH} + a_3*\text{DESEQ} + a_4*\text{TARG\_Q} + a_5*\text{DUM\_CHALLGED\_DEA} + a_6*\text{ASYMMETRY1} \quad (4a)$$

$$\text{PERC\_CASH} = b_0 + b_1*\text{SAME\_SECT} + b_2*\text{OFFER\_PREMIUM\_1W} + b_3*\text{TOEHOLD} + b_4*\text{ACQ\_Q} + b_5*\text{TARG\_Q} + b_6*\text{DUM\_CHALLGED\_DEA} + b_7*\text{DESEQ} + b_8*\text{ASYMMETRY1} \quad (4b)$$

The result in panels A and B of Table 14 do not show a positive relationship between the offer premium and the cash percentage in mixed payment schemes. The offer premiums are positively influenced by the size of the block of acquired shares, by the challenging status of the deal and by the target's Q value. The latter underlines the importance of growth opportunities at the target's level. A new variable appears positively linked with the premium in hybrid payments: the absolute size of the transaction (only at the 10% level). This determinant is not found to be significant in the full cash/full share transactions. The percentage of cash in the payment does not depend significantly on any variables. The result

of our estimate on the hybrid sample is poor. The low number of observations and the large number of independent variables reduces the probability of a variable to appear significant. In particular, the asymmetry of information is not found to be significant.

#### INSERT TABLE 14

We tried to limit the number of variables to increase the number of degrees of freedom. In panel C of Table 14, we reduced the number of regressors. The sample is now 51 observations. We considered four variables in the premium equation and three in the cash payment equation. We then obtained better results: offer premiums are positively correlated with the percentage of shares acquired (PERC\_SH\_ACQ), the opportunities and latent synergies at the target's level (TARG\_Q) and competition (DUM\_CHALLGED\_DEA). The percentage of cash is now positively linked with the offer premium, highlighting a contractual trade-off. This result is in line with the hypothesis. The result changed compared with the univariate estimates in Table 11, where a negative significant relationship was evidenced. The economic diversification also influences the deal but is not in line with the contractual approach. The sign of the acquirer's cash flow variable shows that the financial situation of the acquirers also conditions the setting of the mix of payment in the expected way. However, the quality of the estimates of the cash percentage equation in panel C remains poor.

How should the absence of a significant relationship with the asymmetry of information variable in the case of hybrid M&A be interpreted? We already mentioned the small size of the hybrid sample. Moreover, the simultaneous equation system underlines a complex equilibrium in which many variables are endogenous. The cash payment consideration and bid premium interact strongly and positively. The one equation test of the cash percentage in hybrid payments evidenced a non-significant relationship with the asymmetry of information (see Table 11). The sign of this variable remains not significant in the hybrid system of equations. However, it stays negative and becomes more significant (from the 10% to the 1% level) to explain the choice of payment in the alternate cash/share sample (see Table 13). We conjecture that the asymmetry of information is lower in hybrid payment schemes because of delivered information through the judicious setting of the percentage paid in cash, as suggested in La Bruslerie (2011). The sample is a cross section of successful acquisitions with conditions that are apparently satisfying for the parties. The premiums seem fair, as the DESEQ variable is not significant. An imbalanced situation in which the bidder does not

obtain the number of shares he wants is not evidenced. This is a strong difference with the test for alternate cash/share payments.

Hybrid payment schemes allow a fine tuning when there is more information available regarding the characteristics of the transaction. Even if a negotiation does not formally exist in a tender offer, when using a mixed scheme of payment, the bidder should integrate not only his/her interest but also the seller's. He/she knows that the percentage of cash is screened by the seller. We draw the conclusion that the transaction terms, particularly the percentage paid in cash, reflect some equilibrium in sharing the risk about the future uncertain value of the acquisition.

## Conclusion

The analysis of the offer premiums and of the means of payment should not be performed by considering one variable as exogenous and explicative of the other. We show that these two variables are jointly set up in a contractual approach. More precisely, the relationship between the cash means of payment and the offer premium is positive: higher premiums will yield mixed payment with more cash. A trade-off equilibrium develops: when the seller wants to be paid more, he/she should accept to be paid less in potential future returns (i.e., in new equity shares). The risk sharing nature of an M&A agreement is confirmed and influences the means of payment. The double risk situation relies on a double asymmetry of information between the buyer and the seller, as identified by Hansen (1987). The choice of means of payment is a complex decision that can be done in alternate terms of full cash or full share payments. Hybrid payments follow a different rationale. The fine tuning of the percentage paid in cash is also an important term in a successful transaction and helps in delivering information.

Considering a sample of European M&As over the 2000-2010 decade, the determinants of the means of payment choice are known and confirmed. Firms with a high growth potential and a high stock value may be more prone to finance an acquisition with equity. Financial conditions are not highly significant, as in Martynova and Renneboog (2009). As a result, we show that an empirical analysis should not be performed on a global sample mixing any regime of payment. Full cash and full share payments are corner solutions that will yield different levels of equilibrium between parties. The determinants of the transaction terms are

not the same, and we identified two regimes of payment. Blending all the deals in one sample will assume that a continuum exists from full cash to all-shares payments. Running regressions even through a simultaneous setting on a global sample can be misleading. This will ignore the difference of regimes of payments and the results may be spurious. The existence of regimes of payment in M&A transactions is the first conclusion. We tested the different sets of determinants of M&A terms in a contractual approach in which the offer premium and the means of payment are set jointly. The underlying rationale of asymmetry of information and risk sharing calculus explains the contractual approach. It combines well with known factors, such as cross border acquisitions, competitive transactions or the absolute size of the target, all of which favor cash payment. However, the limited number of hybrid deals in our sample would justify further development.

Table 1 Number and value of European M&A 2000-2010

(Sample of 432 transactions after exclusion of squeeze out and buyback programs of the original sample of 528 deals, 2000-2010; deal values in current million USD; source Thomson One Banker)

	<i>Number</i>		<i>Total value</i>		<i>Av. deal size</i>
Cash	294	68.1%	365192	40.7%	1242.15
Hybrid	62	14.4%	211775	23.6%	3415.72
Shares	76	17.6%	321091	35.8%	4224.89
Total	432		898058		

Table 2 Target country and means of payment

(Number of transactions, sample of 432 European transactions, period 2000-2010, target firms incorporated in Italy, France, the UK, the Netherlands, Germany, Spain and Belgium; Intra European country: target and initiator are from the same country; Intra EU: initiators coming from one of the 6 other countries of the sample; Cross border: initiator incorporated in North America (USA and Canada) or Japan; US acquirers are distinguished)

	<i>Cash (%)</i>		<i>Hybrid (%)</i>		<i>Shares (%)</i>		<i>Total (%)</i>	
Intra European country	137	58.5%	43	18.4%	54	23.1%	234	54.2%
Intra Europe Union	81	76.4%	8	7.5%	17	16.0%	106	24.5%
Cross border US acquirer	35	74.5%	7	14.9%	5	10.6%	47	10.9%
Cross border non US acquirer	41	91.1%	4	8.9%	0	0.0%	45	10.4%
Total	294	68.1%	62	14.4%	76	17.6%	432	100.0%

Table 3 Offer premium by mean of payment

(In %, 432 European transactions, period 2000-2010, premiums are calculated using the stock price 1 day before the announcement of the transaction; source: Thomson One Banker)

<i>Offer premium</i>	<i>Cash</i>	<i>Hybrid</i>	<i>Shares</i>
Average	25.53	27.80	17.29
Median	17.28	21.99	12.45
1st quart	6.95	10.40	4.37
3rd quart	38.74	41.94	31.57
N	217	49	55
t-test	cash vs. shares	cash vs. hybrid	hybrid vs. shares
p-value	0.078	0.574	0.057



Table 4 (LTM: Last Twelve Months: financial information is taken from the last reports prior the announcement; source: Thomson and treatments)

<i>Variables names</i>	<i>Description</i>
ACQ_CASH_HLDG	Acquirer cash and receivables as of the previous financial report (\$mil)
ACQ_EBITDA	Acquirer EBITDA at last financial report (\$mil)
ACQ_LEV	Calculated using the ratio of ACQ_NET_DEBT divided by ACQ_NET_DEBT plus ACQ_NET_ASS
ACQ_MKT_VAL_4W	Acquirer market value of equity 4 weeks prior to announcement (\$ mil)
ACQ_NET_ASS	Acquirer net assets : Total asset at last financial report minus total liabilities (\$mil)
ACQ_NET_DEBT	Acquirer Net Debt: Calculated by adding the acquirer's straight debt, short-term debt, and preferred equity and subtracting cash and marketable securities as of the date of the most recent financial information prior to the announcement of the transaction (\$mil).
ACQ_PC_CASH	Acquirer ratio of cash holding (ACQ_CASH_HLDG) divided by transaction value, TRANS_VAL
ACQ_PC_EBITDA	Acquirer ratio of EBITDA (ACQ_EBITDA) divided by transaction value, TRANS_VAL
ACQ_Q	ACQ_MKT_VAL_4W divided by ACQ_NET_ASS
ASYMMETRY1	Ratio of relative net assets: TARG_NET_ASS divided by ACQ_NET_ASS
ASYMMETRY2	Ratio of transaction value of the target compared with the accounting value acquirer: TRANS_VAL divided by (ACQ_NET_ASS+ACQ_NET_DEBT)
DESEQ	Disequilibrium in the transaction setting: difference between the percentage of shares sought by the acquirer and the percentage of shares acquired.
DOMESTIC_ACQ	Dummy if the target and the acquirer are incorporated in the same country
DUM_CASH	Dummy for full cash payment
DUM_CHALLGED_DEAL	Dummy challenged deal where a third party launched an offer
DUM_EU_ZONE	Dummy if acquirer is incorporated in the EU (limited to 7 countries)
DUM_HYBRID	Dummy for mixed cash-share payment transactions
DUM_SH	Dummy for full share payment
DUM_SUBSIDIARY	Dummy is target is a subsidiary
DUM_TOE	Dummy for toehold shares of the target held before the transaction. See TOEHOLD.
EBIT_ROA	Target EBIT divided by Total Assets for the last 12 months ending on the date of the most current financial information
ENT_VAL	Enterprise Value of the target calculated by multiplying the number of actual target shares outstanding (from the most recent balance sheet released prior to the announcement) by the offer price and then by adding the cost to acquire convertible securities, plus short-term debt, straight debt, and preferred equity minus cash and marketable securities, stated in millions. This data item is for the enterprise value of 100% of the company based on the offering price, regardless of how much was actually acquired in the transaction.
EQ_VAL	Equity Value of the target calculated by multiplying the actual number of target shares outstanding from its most recent balance sheet by the offer price per share plus the cost to acquire convertible securities, stated in millions. This data item is for the equity value of 100% of the company based on the offering price.
FRIEN_ATTITUD	Attitude of the board of the target company (0: not friendly, 1:yes)
OFFER_PREMIUM_1W	Same as previous but 1 week prior
PERC_ACQ_SH_ISSU	Percentage of acquirer's shares issued: Number of common shares issued in the transaction divided by total number of acquirer's shares.
PERC_CASH	Percentage of cash and assimilated (debt) paid in the transaction

PERC_OWN_AFTER	Percentage of shares own after transaction
PERC_SH_ACQ	Percentage of shares acquired in transaction
PERC_SOUGHT	Percentage of shares sought by acquirer in the transaction
SAME_SECTOR	Dummy for same industry codes between target and acquirer. Thomson mid sector codes are used.
TARG_LEV	Ratio of 1 minus EQ_VAL divided by ENT_VAL.
TARG_NET_ASS	Target Net Assets: Total assets minus total liabilities on the date of most recent financial information (\$mil)
TARG_PC_CASH	Ratio of target cash and receivables (TRAG_CASH_HLDG) divided by transaction value, TRANS_VAL.
TARG_Q	Ratio of Enterprise Value to Target Capitalization: Enterprise value is calculated by multiplying the number of actual target shares outstanding by the offer price and then by adding the cost to acquire convertible securities, plus short-term debt, straight debt, and preferred equity minus cash and marketable securities. Capitalization is defined at Short-Term Debt + Long-Term Debt + Shareholder's Equity as of the date of the most current financial information prior to the announcement.
TOEHOLD	Percentage of share of the target held before the transaction. Calculated using the difference between PERC_OWN_AFTER minus PERC_SH_ACQD
TRANS_VAL	Value of Transaction (\$ mil): Total value of consideration paid by the acquirer, excluding fees and expenses.

Table 6 Descriptive statistics of the variables  
 (after filtering variables; observations above the 99% and below the 1% distribution  
 eliminated for the ASSYMMETRY, TARG\_Q, ACQ\_G, ACQ\_LEV and TARG\_LEV  
 variables, variable definitions, see table 4)

<i>Series</i>	<i>Obs</i>	<i>Mean</i>	<i>Std.Err</i>	<i>Minimum</i>	<i>Maximum</i>
ACQ_CASH_HLDG	417	4268.3931	47547.7185	0.0060	966677.8710
ACQ_EBITDA	422	4361.2206	35518.5197	-686.9000	707896.9590
ACQ_LEV	413	0.2755	1.7507	-7.2377	31.6685
ACQ_MKT_VAL_4W	306	16992.8120	35820.3673	7.3350	446828.4730
ACQ_NET_ASS	424	18910.2834	202762.2048	-1021.5450	4104939.1990
ACQ_NET_DEBT	423	3555.8100	57384.7745	-959364.8320	597080.3370
ACQ_PC_CASH	417	11.8988	73.8880	0.0001	1015.2740
ACQ_PC_EBITDA	422	14.3714	128.3267	-8.0298	2460.0518
ACQ_Q	275	3.6032	5.0729	-8.2937	43.8388
ASYMMETRY1	410	0.6592	1.2935	-0.3266	10.3594
ASYMMETRY2	413	0.9617	2.8396	-10.5519	31.0473
DESEQ	479	1.8823	7.3729	-51.7620	65.4400
DOMESTIC_ACQ	528	0.6042	0.4895	0.0000	1.0000
DUM_CASH	528	0.5568	0.4972	0.0000	1.0000
DUM_CHALLGED_DEA	528	0.0606	0.2388	0.0000	1.0000
DUM_EU_ZONE	528	0.6439	0.4793	0.0000	1.0000
DUM_HYBRID	528	0.1174	0.3222	0.0000	1.0000
DUM_SH	528	0.1439	0.3514	0.0000	1.0000
DUM_SUBSIDIARY	528	0.1913	0.3937	0.0000	1.0000
DUM_TOE	528	0.3011	0.4592	0.0000	1.0000
EBIT_ROA	418	0.0914	0.0871	0.0020	1.0070
ENT_VAL	503	7745.4877	25648.6558	13.0360	442807.6090
EQ_VAL	504	6432.4035	23458.5490	52.0780	432124.5420
FRIEN_ATTITUD	528	0.6742	0.4691	0.0000	1.0000
OFFER_PREMIUM_1W	423	28.7704	40.9218	-99.2400	340.4400
PERC_ACQ_SH_ISSU	528	6.2662	14.8454	0.0000	96.9700
PERC_CASH	417	92.4949	20.1322	1.2390	100.0000
PERC_OWN_AFTER	487	73.1246	36.3815	0.2990	100.0000
PERC_SH_ACQD	483	58.0259	39.7593	0.2620	100.0000
PERC_SOUGHT	500	61.1850	39.7712	0.2940	100.0000
SAME_SECT	528	0.5814	0.4938	0.0000	1.0000
TARG_LEV	491	0.0946	0.2311	-0.8834	0.6701
TARG_NET_ASS	520	2332.6581	6395.0014	-5520.8350	91946.0490
TARG_PC_CASH	513	1.2113	6.0299	0.0001	93.9707
TARG_Q	485	3.2921	4.2978	0.3750	34.6180
TOEHOLD	528	14.1002	26.9098	0.0000	99.4570
TRANS_VAL	528	1804.0272	6586.9736	50.2420	75960.8470

Table 7 - Expected sign between the percentages paid in cash and the offer premium and possible determinants

(According to three main theoretical approaches: Financial constraint theory, asymmetry of information and contract theory, environment and firm characteristics; AI: asymmetry of information; ns: no sense)

<i>Dependant variable</i>	<i>Perc cash</i>			<i>Premium</i>		
	Financial constraint	Contractual & AI	Environment	Financial constraint	Contractual & AI	Environment
PERC_SH_ACQD	-					
TRANS_VAL	-			-		
SAME_SECT		-				
DOMESTIC_ACQ			-			-
ACQ_PC_EBITDA	+					
TARG_PC_CASH	+			+		
FRIEN_ATTITUD		-	-			-
OFFER_PREMIUM_1W		+		ns	ns	ns
DUM_TOE		+			+	
EBIT_ROA	+			+		
ACQ_LEV	-					
TARG_LEV	-					
ACQ_Q	-			+		
TARG_Q		+/-			+	
DUM_CHALLGED_DEA			+			+
PERC_SOUGHT	-					
DUM_SUBSIDIARY		+			+	
ASYMMETRY1/2		-			-	
DESEQ					-	
PER_ACQ_SH_ISSU			+			
PERC_CASH	ns	ns	ns		+	

Table 9 - Determinants of ordinal choices between cash, hybrid and shares payments (Ordered values: Cash(2), Hybrid(1), Shares(0); ordered Logit and multinomial Logit estimates; cut are estimated limits between classes; multinomial estimates of cash vs. hybrid alternate choice and cash vs. shares choice; robust covariance estimate are used to adjust for heteroscedasticity; variables definition: see Table 4; European M&A transactions; 2000-2010; a: 1% significance level; b: 5% significance level; c: 10% significance level)

<i>Ordered Logit</i>			<i>Multinomial</i>		
			<i>Cash vs. Hybrid</i>		
<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>
Constant	1.6488	0.0000 <sup>a</sup>	Constant	-0.1998	0.7886
TRANS_VAL	0.0000	0.0313 <sup>b</sup>	TRANS_VAL	0.0000	0.4542
TARG_LEV	1.3210	0.0547 <sup>c</sup>	TARG_LEV	1.2509	0.5662
OFFER_PREMIUM_1W	0.0101	0.0457 <sup>b</sup>	OFFER_PREMIUM_1W	0.0193	0.3102
ACQ_Q	0.0292	0.4495	ACQ_Q	0.0054	0.9703
ASYMMETRY1	-0.5641	0.0001 <sup>a</sup>	ASYMMETRY1	-0.2361	0.5068
Cut(1)	-0.0624	0.7118	<i>Cash vs. Shares</i>		
Cut(2)	1.0000	0.0000 <sup>a</sup>	Constant	1.3898	0.0000 <sup>a</sup>
			TRANS_VAL	-0.0001	0.0812 <sup>c</sup>
			TARG_LEV	1.9682	0.0347 <sup>b</sup>
			OFFER_PREMIUM_1W	0.0192	0.0075 <sup>a</sup>
			ACQ_Q	0.0290	0.5985
			ASYMMETRY1	-0.7349	0.0002 <sup>a</sup>
N=221			N =221		
Log Likelihood=-178.68			Log likelihood=-176.13		

Table 11 - Determinants of hybrid payment choices

(Dependent: percentage paid in cash in hybrid transactions; OLS estimates; robust covariance estimate are used to adjust for heteroscedasticity; variables definition: see Table 8; European M&A transactions; 2000-2010; N=32; a: 1% significance level; b: 5% significance level; c: 10% significance level)

<i>Hybrid choice</i>		
<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>
Constant	51.0912	0.0000 <sup>a</sup>
SAME_SECT	-4.4922	0.6156
OFFER_PREMIUM_1W	-0.3073	0.0249 <sup>b</sup>
TOEHOLD	0.0437	0.8300
ACQ_Q	-2.0908	0.1970
TARG_Q	4.8004	0.2109
DUM_CHALLGED_DEA	2.8683	0.7878
DESEQ	-1.4388	0.3140
ASYMMETRY1	3.6990	0.2869

Table 5 Correlation matrix between asymmetry of information, leverage and Tobin's Q variables

(ASYMMETRY1: Ratio of target and acquirer's net assets using accounting value; ASYMMETRY2: Ratio of the transaction value divided by the acquirer's accounting total value; ACQ\_LEV: Ratio of the acquirer's net debt to the sum of his net book value and his net debt; TARG\_LEV: One minus the equity book value divide by the enterprise total value; TARG\_Q: Ratio of Enterprise Value to Target Capitalization; ACQ\_Q: Acquirer's market value 4 week before transaction divided by his net asset value)

	ASYMMETRY1	ASYMMETRY2	ACQ_LEV	TARG_LEV	TARG_Q	ACQ_Q
ASYMMETRY1	1.0000					
ASYMMETRY2	0.5914	1.0000				
ACQ_LEV	0.0620	-0.2532	1.0000			
TARG_LEV	0.1963	0.0080	0.0307	1.0000		
TARG_Q	-0.1014	0.1433	0.0191	-0.2035	1.0000	
ACQ_Q	0.2064	0.3245	0.0715	-0.0958	0.2906	1.0000

Table 8 Determinants of alternate choice of a mean of payment

(Probability to choose one mean of payment against another specified one, Probit estimates; Cash: full cash payment; Hybrid: mixed payment; Shares: full share payment; robust covariance estimate are used to adjust for heteroscedasticity; variable definitions: see Table 8; European M&A transactions; 2000-2010; a: 1% significance level; b: 5% significance level; c: 10% significance level)

<i>Hybrid (vs Shares)</i>			<i>Cash(vs Hybrid)</i>			<i>Cash(vs shares)</i>		
<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>
Constant	-22.2048	0.0800 <sup>c</sup>	Constant	2.8109	0.0882 <sup>c</sup>	Constant	5.6542	0.0001 <sup>a</sup>
PERC_SH_ACQD	0.1946	0.1105	PERC_SH_ACQD	-0.1394	0.0949 <sup>c</sup>	PERC_SH_ACQD	0.0139	0.7239
TRANS_VAL	-0.0001	0.3734	TRANS_VAL	0.0000	0.3166	TRANS_VAL	-0.0001	0.0502 <sup>c</sup>
SAME_SECT	-0.1866	0.7943	SAME_SECT	-0.2052	0.5513	SAME_SECT	-1.3944	0.0012 <sup>b</sup>
DOMESTIC_ACQ	-1.4828	0.3293	DOMESTIC_ACQ	-0.8200	0.0317	DOMESTIC_ACQ	-1.9726	0.0003 <sup>a</sup>
ACQ_PC_EBITDA	0.8945	0.4544	ACQ_PC_EBITDA	0.3827	0.0490 <sup>b</sup>	ACQ_PC_EBITDA	0.0789	0.3920
TARG_PC_CASH	-3.1509	0.2592	TARG_PC_CASH	0.7372	0.6882	TARG_PC_CASH	-0.0108	0.7447
FRIEN_ATTITUD	1.8546	0.1231	FRIEN_ATTITUD	0.6267	0.2897	FRIEN_ATTITUD	1.0383	0.0765 <sup>c</sup>
OFFER_PREMIUM_1W	0.0556	0.0255 <sup>b</sup>	OFFER_PREMIUM_1W	0.0102	0.1122	OFFER_PREMIUM_1W	0.0328	0.0003 <sup>a</sup>
DUM_TOE	13.0029	0.0896 <sup>c</sup>	DUM_TOE	-0.3448	0.6447	DUM_TOE	0.0990	0.8498
EBIT_ROA	-2.7898	0.5621	EBIT_ROA	-0.5510	0.9076	EBIT_ROA	-3.8303	0.1185
ACQ_LEV	1.8367	0.0277 <sup>b</sup>	ACQ_LEV	-0.0018	0.9902	ACQ_LEV	-0.1373	0.5536
TARG_LEV	-9.6022	0.0067 <sup>a</sup>	TARG_LEV	0.6923	0.5723	TARG_LEV	-4.8995	0.0036 <sup>a</sup>
ACQ_Q	-0.1631	0.3295	ACQ_Q	0.0748	0.1580	ACQ_Q	-0.1164	0.0377 <sup>b</sup>
TARG_Q	-0.5685	0.0119 <sup>b</sup>	TARG_Q	0.3353	0.0557 <sup>c</sup>	TARG_Q	-0.1802	0.0087 <sup>a</sup>
DUM_CHALLGED_DEA	17.2773	0.0079 <sup>a</sup>	DUM_CHALLGED_DEA	-0.5239	0.2823	DUM_CHALLGED_DEA	7.7897	0.0001 <sup>a</sup>
PERC_SOUGHT	0.0521	0.4737	PERC_SOUGHT	0.0997	0.2040	PERC_SOUGHT	-0.0352	0.3689
DUM_SUBSIDIARY	3.5970	0.0137 <sup>b</sup>	DUM_SUBSIDIARY	-0.5314	0.4415	DUM_SUBSIDIARY	0.1833	0.8201
ASYMMETRY1	-0.0859	0.7589	ASYMMETRY1	-0.2211	0.2821	ASYMMETRY1	-0.2415	0.2537
N=50			N=138			N=132		

Table 10 – Determinants of alternate cash-shares choice

(Dependant is dummy full cash(1)/full share(0) payment; restricted model with 8 variables; Probit estimates; robust covariance estimate are used to adjust for heteroscedasticity; variable definitions: see Table 8; European M&A transactions; 2000-2010; a: 1% significance level; b: 5% significance level; c: 10% significance level)

<i>Restricted cash/share alternative Probit</i>			<i>Dummy cash/shares Linear OLS estimate</i>		
<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>
Constant	0.8768	0.0001 <sup>a</sup>	Constant	0.8946	0.0000 <sup>a</sup>
TRANS_VAL	-0.00003	0.0051 <sup>a</sup>	TRANS_VAL	-0.00001	0.0000 <sup>a</sup>
SAME_SECT	-0.5050	0.0138 <sup>b</sup>	SAME_SECT	-0.0890	0.0427 <sup>b</sup>
DOMESTIC_ACQ	-0.5947	0.0042 <sup>a</sup>	DOMESTIC_ACQ	-0.1314	0.0037 <sup>a</sup>
ACQ_PC_EBITDA	0.1661	0.0003 <sup>a</sup>	ACQ_PC_EBITDA	0.0001	0.0284 <sup>b</sup>
OFFER_PREMIUM_1W	0.0113	0.0030 <sup>a</sup>	OFFER_PREMIUM_1W	0.0012	0.0206 <sup>b</sup>
TARG_LEV	0.9332	0.0430 <sup>b</sup>	TARG_LEV	0.1169	0.2902
DUM_CHALLGED_DEA	1.2746	0.0077 <sup>a</sup>	DUM_CHALLGED_DEA	0.1684	0.0008 <sup>a</sup>
ASYMMETRY2	-0.0560	0.0802 <sup>c</sup>	ASYMMETRY2	-0.0221	0.0629 <sup>c</sup>
N=283			N=283		
Log=-102.99			R2=0.14		



Table 12 – Determinants of the offer premiums

(Dependant is offer premium in percentage calculated 1 week before the announcement; OLS estimates; robust covariance estimate are used to adjust for heteroscedasticity; variable definitions: see Table 8; European M&A transactions; 2000-2010; N=a: 1% significance level; b: 5% significance level; c: 10% significance level)

<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>
Constant	-0.7471	0.9558	PERC_SH_ACQD	0.2632	0.0000 <sup>a</sup>	PERC_SH_ACQD	0.2134	0.0000 <sup>a</sup>
PERC_SH_ACQD	0.2812	0.0027 <sup>a</sup>	PERC_CASH	0.1761	0.0000 <sup>a</sup>	PERC_CASH	0.1590	0.0000 <sup>a</sup>
TRANS_VAL	-0.0002	0.1283	DESEQ	-0.3941	0.1184	DESEQ	-0.4447	0.0105 <sup>b</sup>
SAME_SECT	2.9794	0.4617	TARG_Q	1.3944	0.0017 <sup>a</sup>	TARG_Q	1.1784	0.1120
DOMESTIC_ACQ	-3.9001	0.3742	DUM_CHALLGED_DEA	17.0925	0.0214 <sup>b</sup>	DUM_CHALLGED_DEA	17.5179	0.0022 <sup>a</sup>
DUM_EU_ZONE	-9.7539	0.1453	ASYMMETRY1	-0.6691	0.6957	ASYMMETRY1	-1.9458	0.0344 <sup>b</sup>
ACQ_PC_CASH	-0.2524	0.3435	TRANS_VAL	-0.0003	0.2531			
ACQ_PC_EBITDA	0.0049	0.9920	SAME_SECT	0.0623	0.9870			
TARG_PC_CASH	0.6611	0.0694 <sup>c</sup>	DUM_EU_ZONE	-8.4132	0.0562 <sup>c</sup>			
FRIEN_ATTITUD	-7.4393	0.1904	DUM_SUBSIDIARY	2.5055	0.6379			
PERC_CASH	0.1485	0.4745						
DUM_TOE	-3.5457	0.5552						
DESEQ	-0.3440	0.1468						
EBIT_ROA	-44.4597	0.2285						
ACQ_LEV	0.2357	0.9036						
TARG_LEV	9.7053	0.4958						
ACQ_Q	0.4360	0.4465						
TARG_Q	1.2156	0.0580 <sup>c</sup>						
DUM_CHALLGED_DEA	13.0422	0.0628 <sup>c</sup>						
DUM_SUBSIDIARY	-7.5133	0.2729						
DUM_CASH	10.6170	0.6223						
DUM_HYBRID	9.5223	0.3843						
ASYMMETRY1	0.6669	0.7093						
N=156			N=316			N=316		
R2=0.26			R2=0.15			R2=0.14		

Table 13 – Determinants of offer premiums and full cash/full share payments - Simultaneous linear equation estimates

(Dependants are offer premiums in percentage calculated 1 week before the announcement and cash payment (either 0% or 100%); linear system of two equations; PERC\_CASH is 0 or 100%; see equations (1a-b) and (2a-b) in the text; robust covariance estimate are used to adjust for heteroscedasticity; variable definitions: see Table 8; European M&A transactions; 2000-2010; a: 1% significance level; b: 5% significance level; c: 10% significance level)

Panel A			Panel B		
Dep OFFER_PREMIUM_1W			Dep PERC_CASH		
<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>
PERC_SH_ACQD	0.2343	0.0000 <sup>a</sup>	Constant	87.3147	0.0000 <sup>a</sup>
PERC_CASH	0.2266	0.0000 <sup>a</sup>	TRANS_VAL	-0.0008	0.0061 <sup>a</sup>
DESEQ	-0.4139	0.1223	SAME_SECT	-8.6669	0.0696 <sup>c</sup>
TARG_Q	1.2724	0.0162 <sup>b</sup>	DOMESTIC_ACQ	-11.9831	0.0146 <sup>b</sup>
DUM_CHALLGED_DEA	10.8204	0.2199	ACQ_PC_EBITDA	0.0080	0.5882
ASYMMETRY1	-1.5695	0.4023	OFFER_PREMIUM_1W	0.1564	0.0147 <sup>b</sup>
TRANS_VAL	-0.0002	0.5213	TARG_LEV	9.8302	0.3541
SAME_SECT	-0.7300	0.8647	DUM_CHALLGED_DEA	14.6167	0.1070
DUM_EU_ZONE	-8.8572	0.0672 <sup>c</sup>	ASYMMETRY2	-2.0069	0.0100 <sup>a</sup>
DUM_SUBSIDIARY	-0.3900	0.9474			
N=255			N=255		
R2=0.13			R2=0.11		
Panel A			Panel B		
Dep OFFER_PREMIUM_1W			Dep PERC_CASH		
<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>
PERC_SH_ACQD	0.1911	0.0001 <sup>a</sup>	Constant	87.3147	0.0000 <sup>a</sup>
PERC_CASH	0.1972	0.0000 <sup>a</sup>	TRANS_VAL	-0.0008	0.0061 <sup>a</sup>
DESEQ	-0.4794	0.0703 <sup>a</sup>	SAME_SECT	-8.6669	0.0696 <sup>c</sup>
TARG_Q	0.9757	0.0550 <sup>c</sup>	DOMESTIC_ACQ	-11.9831	0.0146 <sup>b</sup>
DUM_CHALLGED_DEA	12.4101	0.1564	ACQ_PC_EBITDA	0.0080	0.5882
ASYMMETRY1	-2.8159	0.1117	OFFER_PREMIUM_1W	0.1564	0.0147 <sup>b</sup>
			TARG_LEV	9.8302	0.3541
			DUM_CHALLGED_DEA	14.6167	0.1070
			ASYMMETRY2	-2.0069	0.0100 <sup>a</sup>
N=255			N=255		
R2=0.13			R2=0.12		

Table 14 – Determinants of offer premiums and of cash percentage in hybrid payments - Simultaneous linear equation estimates

(Dependants are offer premiums in percentage calculated 1 week before the announcement and percentage paid in cash in hybrid payments; linear system of two equations; see equations (1a-b) and (2a-b) in the text; robust covariance estimate are used to adjust for heteroscedasticity; variable definitions: see Table 8; European M&A transactions; 2000-2010; N=a: 1% significance level; b: 5% significance level; c: 10% significance level)

Panel A					
Dep OFFER_PREMIUM_1W			Dep PERC_CASH		
<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>	<i>Variables</i>	<i>Coefficient</i>	<i>p-val</i>
PERC_SH_ACQD	0,2311	0,0889 <sup>c</sup>	Constant	51,0912	0,0001 <sup>a</sup>
PERC_CASH	-0,3002	0,1437	SAME_SECT	-4,4922	0,6334
DESEQ	-1,0003	0,6201	OFFER_PREMIUM_1W	-0,3073	0,1526
TARG_Q	4,0443	0,0993	TOEHOLD	0,0437	0,8916
DUM_CHALLGED_DEA	33,6948	0,0146 <sup>b</sup>	ACQ_Q	-2,0908	0,3555
ASYMMETRY1	0,9525	0,8202	TARG_Q	4,8004	0,3162
TRANS_VAL	-0,0007	0,0928 <sup>c</sup>	DUM_CHALLGED_DEA	2,8683	0,8394
SAME_SECT	4,1792	0,6494	DESEQ	-1,4388	0,5094
DUM_EU_ZONE	9,6868	0,4247	ASYMMETRY1	3,6990	0,5056
DUM_SUBSIDIARY	2,7048	0,8521			
N=32			N=32		
R2=0,15			R2=ns		
Panel B					
Dep OFFER_PREMIUM_1W			Dep PERC_CASH		
<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>
PERC_SH_ACQD	0,2987	0,0068 <sup>a</sup>	Constant	51,0912	0,0001 <sup>a</sup>
PERC_CASH	-0,2390	0,1566	SAME_SECT	-4,4922	0,6334
DESEQ	-0,2526	0,8806	OFFER_PREMIUM_1W	-0,3073	0,1526
TARG_Q	3,2981	0,1476	TOEHOLD	0,0437	0,8916
DUM_CHALLGED_DEA	23,1298	0,0484 <sup>b</sup>	ACQ_Q	-2,0908	0,3555
ASYMMETRY1	1,4349	0,7006	TARG_Q	4,8004	0,3162
			DUM_CHALLGED_DEA	2,8683	0,8394
			DESEQ	-1,4388	0,5094
			ASYMMETRY1	3,6990	0,5056
N=32			N=32		
R2=0,16			R2=ns		
Panel C					
Dep OFFER_PREMIUM_1W			Dep PERC_CASH		
<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>	<i>Variable</i>	<i>Coefficient</i>	<i>p-val</i>
PERC_SH_ACQD	0,2446	0,0001 <sup>a</sup>	OFFER_PREMIUM_1W	0,4695	0,0012 <sup>a</sup>
TARG_Q	3,3741	0,0198 <sup>b</sup>	SAME_SECT	23,7547	0,0026 <sup>a</sup>
TRANS_VAL	-0,0006	0,1292	ACQ_EBITDA	0,0026	0,0279 <sup>b</sup>
DUM_CHALLGED_DEA	22,3073	0,0547 <sup>c</sup>			
N=51			N=51		
R2=0,15			R2=ns		

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