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Can Auditors Mitigate Information Asymmetry in M&As? An Empirical Analysis of the Method of Payment in Belgian Transactions

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SUMMARY: In this paper, we empirically examine the relationship between the external financial statement audit and the method of payment across a sample of Belgian mergers and acquisitions between listed and private firms over the period 1997–2009. We investigate whether a Big N audit (at the target level) reduces the need for a contingent payment resulting from information asymmetry about the target's value. In addition, we analyze whether a Big N audit (at the bidder level) limits incentives for bidders to exploit private information about their own value. Using multivariate ordered probit and binary regression models, we determine that contingent payments are less common when the target is audited by a Big N auditor after controlling for several other deal and firm characteristics. Furthermore, we find that the incentive to use stock payments in periods of stock market overvaluation is lower for acquirers with a Big N auditor. Finally, target shareholders are more likely to accept a contingent offer if the acquirer's financial statements are certified by a Big N auditor.

Keywords: mergers and acquisitions; audit quality; Big N auditor; method of payment.

JEL Classifications: G34; M4.

INTRODUCTION

The need for external auditing stems from information asymmetry between the insiders and outsiders of the firm. The main purpose of an external financial statement audit is to enhance the credibility of the disclosed financial figures, *vis-à-vis* potential investors, by

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providing an independent certification of the information presented in the financial statements. Hence, a high-quality financial statement audit is likely to reduce the information asymmetry between informed managers and the firm's outside stakeholders. In this study, we analyze the effectiveness of the external financial statement audit in reducing information asymmetry in the context of mergers and acquisitions (M&As). M&As constitute an interesting setting in which to investigate the impact of an external financial statement audit because there is considerable information asymmetry between the acquiring and the target firm. One area of information asymmetry relates to the value of the target firm. Bidders make an offer to target shareholders based upon their estimate of the target value (and their expected synergy gains). However, the target firm is better informed about its own value than the bidder. The bidder may solve this problem by making the payment to the target shareholders contingent upon future performance (Officer, Poulsen, and Stegemoller 2009; Eckbo, Giammarino, and Heinkel 1990; Hansen 1987). If the acquirer offers stock, the value of the offer depends on how the market assesses the M&A, resulting in risk-sharing between the target and the acquirer. In cash-paid transactions, on the other hand, bidders bear the full risk of overvaluation and unrealized synergy gains that was originally embedded in the acquisition premium (e.g., Rappaport and Switzer 1999). We argue that an external financial statement audit will influence the need for risk-sharing by reducing uncertainty about the target's financial figures and, consequently, its value.

A second information asymmetry relates to the value of the bidder. Because bidders have private information about their own value, they may try to exploit this information advantage by offering stock when they are overvalued (Myers and Majluf 1984; Rhodes-Kropf and Viswanathan 2004; Shleifer and Vishny 2003). This might explain why stock offers are typically found to result in inferior returns for bidding firm shareholders (e.g., Bruner 2004). Chang, Dasgupta, and Hilary (2009), however, show that a high-quality external financial statement audit mitigates information asymmetry and, hence, reduces the impact of market-timing behavior on the firm's capital structure. We extend their analysis by examining the impact of audit quality on the method of payment in M&As. The certification of the bidder's financial statements by a high-quality auditor is likely to limit the bidder's incentives to use stock as a method of payment due to lower information asymmetry.

In this paper, we use ordered probit analysis and binary regression analysis to investigate the impact of the external financial statement audit on the method of payment across a sample of 125 M&As between Belgian firms, using data from the period 1997–2009. We believe Belgium to be an interesting setting in which to investigate auditor impact because an external financial statement audit is mandatory for large Belgian firms regardless of whether they are listed.[1] In addition, small firms can opt for a voluntary financial statement audit. Auditor names and accounting data are publicly available because all Belgian firms (both listed and unlisted) are required to file their financial statements with the National Bank of Belgium, and these are subsequently made public. This widespread mandatory audit requirement (unlike in many other countries) stems from the desire to protect all firm stakeholders (e.g., Van Caneghem and Van Campenhout 2012; Gaeremynck, Van Der Meulen, and Willekens 2008). Like many prior studies, our study uses auditor size as a proxy for audit quality (e.g., DeAngelo 1981; Dye 1993). Belgium also provides an interesting setting in this respect because Big N auditors only serve approximately half of the Belgian audit market, whereas the Big N market share typically amounts to more than 90 percent in the public client segment for Anglo-Saxon countries (Weets and Jegers 1997). The more balanced distribution of Big N and non-Big N market shares in Belgium improves the quality of our

[1] According to Belgian law, firms are considered to be large if they have more than 100 employees (average over the year) or if they exceed two of the following thresholds: (1) 50 employees (average over the year); (2) total assets of €3,650,000; and (3) sales of €7,300,000.

statistical tests and might even be a necessary condition for analyzing audit quality effects across a sample of M&As, which is typically a relatively small sample of the overall population.

The contributions of our study can be summarized as follows. To the best of our knowledge, we are the first to investigate the relationship between audit quality and the method of payment in M&A transactions. Although the impact of audit quality and the determinants of payment method in M&As have been thoroughly investigated separately, there is no empirical evidence of the relationship between the two. Whereas some studies have examined the impact of the auditor on M&A transactions (e.g., De Franco, Gavious, Jin, and Richardson 2011; Louis 2005), they have only focused on target or bidder returns. Moreover, these studies typically consider only one aspect of the double-sided information asymmetry problem in M&A transactions. De Franco et al. (2011), for example, focus on target valuation and show that private targets hiring Big N auditors receive significantly higher proceeds. Our study considers audit quality at both the *bidder* and the *target* level. Louis (2005) is one of the only studies that focuses on audit quality at the acquirer level in M&A deals. Louis shows that non-Big N clients realize significantly higher cumulative abnormal announcement returns than do Big N clients, and he attributes this difference to the superior advisory role of small auditors in M&A transactions. However, Dee, Lulseged, and Nelson (2009) argue that the significant outperformance of small auditors in M&A transactions might spuriously capture the acquirer size effect. In models that correct for both auditor type and acquirer size, only the acquirer size effect appears to be significant. Unlike these studies, our paper does not focus on the advisory function of auditors. Rather, we investigate the role of the acquirer's and target's auditor in reducing information asymmetry regarding their own value, as this asymmetry is likely to have a significant impact on the method of payment for the M&A. Although small auditors might have a comparative advantage when providing M&A services for acquiring firms in local markets (e.g., advice about the target's value), Big N auditors might succeed in making financial statements more credible, and hence, might increase the value of their own clients. Accordingly, our results and those of Louis (2005) are not necessarily conflicting but are likely to capture different effects. Next, unlike De Franco et al. (2011), our sample also includes private acquirers. Due to the greater information risk for private acquirers relative to listed acquirers, the double-sided asymmetric information problem is likely to play a more prevalent role in our study. Lennox (2005) argues that investors in unlisted firms have a greater demand for high-quality external auditor certification because they typically suffer more from information asymmetry. Their higher information risk, compared to that of listed firms, stems from their more limited product-market scope, lower reporting quality and lower level of public screening (by e.g., investors and/or financial analysts). Moreover, total stock market capitalization as a percentage of GDP equaled 44.9 percent in Belgium in 2011, which is considerably lower than the same figure in the U.S., where it amounted to 103.6 percent. Thus, given the importance of private firms in Belgium and, by extension, continental Europe, we contend that a study on the impact of audit quality in M&A transactions should include data on private targets as well as acquirers. Finally, despite important differences between the audit settings of Continental European and Anglo-Saxon countries (e.g., lower litigation risk, more widespread audit requirements, and less concentration in the audit market), the bulk of the audit quality literature uses data from Anglo-Saxon countries. Our study carefully explores the specific characteristics of the Belgian audit context.

This paper might also be very relevant in view of current mixed evidence regarding the validity of auditor size as a proxy for audit quality. Recent studies indicating a Big N quality effect provide evidence of the higher accuracy of analyst forecasts for Big N clients (Behn, Choi, and Kang 2008), a lower incidence of fraud among Big N clients (Farber 2005), more accurate audit opinions by Big N auditors (Geiger and Ramma 2006), and a more pronounced effect of legal investor protection (Francis and Wang 2008). In contrast, other recent articles find no evidence of Big N auditors providing higher quality. Lawrence, Minutti-Meza, and Zhang (2011), for example, report that the

effects of Big 4 auditors on discretionary accruals, the *ex ante* cost-of-equity capital, and analyst forecast accuracy are insignificantly different from those of non-Big 4 auditors, and they argue that perceived differences in the prior literature largely reflect client characteristics. Fortin and Pittman (2007) fail to find lower yield spreads or higher ratings on bond issues for private firms with Big 4 auditors. Finally, Louis (2005) shows that acquirers audited by non-Big 4 auditors outperform those audited by Big 4 auditors at merger announcements and explains this finding as a function of the advisory role of auditors in M&A transactions. These mixed findings induce a strong need for further research on the issue in different settings.

Our empirical results suggest that a high-quality financial statement audit reduces information asymmetry with regard to the target's and the acquirer's value. More specifically, we find that the method of payment in M&As is less likely to be contingent if the target is audited by a Big N auditor because of the lower need to overcome information asymmetry problems. Furthermore, acquirers are more likely to opt for contingent payments in periods of stock market overvaluation, but this effect is mitigated when the acquirer engages a Big N auditor. These findings also hold when the market-wide valuation measure is replaced with firm-level data (for the listed firms). In addition, target shareholders are more likely to accept contingent offers when the acquirer's financial statements are certified by a Big N auditor. Our conclusions hold when we control for a potential self-selection bias in various ways. More specifically, we re-estimate our model only for the deals without a pre-M&A auditor change. In addition, we use propensity-score matching to create a balanced sample of Big N and non-Big N acquirers. Also, excluding targets (acquirers) that are larger than the largest target (acquirer) with a non-Big N auditor and all targets (acquirers) that are smaller than the smallest target (acquirer) with a Big N auditor does not alter our conclusions. Finally, our findings prove to be robust to a wide set of sensitivity analyses.

The remainder of this article is organized as follows. In the next section, we discuss the previous literature and formulate our hypotheses. Our sample is introduced subsequently, followed by a detailed discussion of our results and robustness checks. Finally, we summarize our main conclusions.

LITERATURE REVIEW AND HYPOTHESES

In this section, we summarize the prior literature and present our hypotheses. We start by highlighting the role of an external financial statement audit in reducing information asymmetry, and discuss the relationship between auditor size and audit quality. Next, we elaborate on the impact of information asymmetry on the target's and acquirer's valuation, respectively, and develop hypotheses concerning the effect of audit quality on the method of payment. Finally, we briefly discuss control variables that have been found to explain the method of payment in M&As in prior studies.

The Auditor's Role in Mitigating Information Asymmetry

External auditors play a dual role in financial markets (e.g., Dye 1993; Mansi, Maxwell, and Miller 2004; O'Reilly, Leitch, and Tuttle 2006). First, they reduce information asymmetry for capital market participants (the *information role*) by offering an independent verification of financial statements and by reporting potential breaches in clients' financial accounts. As such, they improve the credibility of financial reports and make contracting with a firm less costly (Watts and Zimmerman 1986). Second, they provide investors with a claim on the auditor that they can employ in the event of an audit failure (the *insurance role*). Following DeAngelo (1981) and Dye (1993), we assume that large audit firms provide superior audit quality. The underlying rationale is that large auditors have more at stake if they fail to report on misstatements (*deeper pockets*). Based on

this consideration, it is common to rely on the so-called brand name variable (i.e., Big N versus non-Big N) in distinguishing between large and small(er) audit firms.[2]

Unlike the Anglo-Saxon audit environment, the Belgian context is characterized by weak investor rights and, hence, a dearth of auditor litigation. This is a typical characteristic of countries that feature conservative government-prescribed accounting standards and countries whose banks or governments are the major providers of capital (Vanstraelen 2002). In the absence of a litigation threat, the reputation incentive is the remaining force that generates an audit quality differential. Big N auditors typically have a larger client base,[3] which leads to greater potential losses in case of reputational damage. These losses could stem from clients switching auditors and/or from downward pressure on audit fees. That is, consistent with reputation effects, Dutillieux and Willekens (2009) confirm the existence of a Big 4 brand name premium in the Belgian context. Van Tendeloo and Vanstraelen (2008) argue that the scrutiny of tax authorities in countries with high tax alignment, like Belgium, increases the probability of failure of detection, which might negatively affect auditor reputation. This threat will provide an incentive for Big N audit firms to protect their reputation by providing higher quality financial statement audits.

Some studies have specifically focused on the motives for preserving audit quality in countries in which litigation essentially plays no role, offering a clean test of the reputation rationale. Fan and Wong (2005), for example, illustrate that external auditors perform a corporate governance role in East Asia, despite the weak legal environment. Ruiz-Barbadillo, Gómez-Aguilar, and Carrera (2009) examine audit reports for financially stressed firms in Spain, and find that the reputation concerns of Big N audit firms help to maintain auditor independence. In the German context, Weber, Willenborg, and Zhang (2008) show that KPMG's clients sustained negative abnormal returns around the widely publicized accounting scandal of one of its clients (ComROAD AG). Similarly, Skinner and Srinivasan (2012) study the failed audit of Kanebo (a large Japanese cosmetics firm that engaged in a massive accounting fraud) that was conducted by ChuoAoyama, PwC's Japanese affiliate. Consistent with the importance of auditor reputation, they show that approximately one fourth of ChuoAoyama's clients switched auditors after the firm's suspension. In sum, these empirical studies suggest that the reputation incentive leads to a superior auditor size quality effect in settings in which the risk of litigation is limited. In addition to the aforementioned reasons (i.e., loss of clients and/or downward pressure on audit fees), this link can be explained by the fact that, given the international dimension of Big N brand names, reputation concerns in one country (e.g., Belgium) may lead to negative spillover to other countries (e.g., Cahan, Emanuel, and Sun 2009).

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[2] The notion of superior Big N audit quality has been supported by many prior studies. A Big N audit, for example, has been associated with less underpricing of new issues (e.g., Willenborg 1999; Beatty 1989; Balvers, McDonald, and Miller 1988; Titman and Trueman 1986) and higher pre-M&A values (De Franco et al. 2011). Several scholars also provide evidence of less earnings management by Big N auditors (e.g., Becker, DeFond, Jiambalvo, and Subramanyam 1998; Francis, Maydew, and Sparks 1999). Furthermore, Big N auditors are found to provide more accurate distress signals (Lennox 1999) and face lower litigation rates (Palmrose 1988). Teoh and Wong (1993) also report that stock price reactions following unexpected positive earnings announcements are higher for firms audited by Big N auditors. Finally, the cost of debt financing is lower if the firm is audited by a Big N auditor (e.g., Mansi et al. 2004). Blokdijk, Drieenhuizen, Simunic, and Stein (2006) examine how audits performed by Big N and non-Big N auditors differ. Their evidence suggests that the higher audit quality of Big N firms is driven by a less procedural and more contextual approach. Moreover, Blokdijk, Drieenhuizen, Simunic, and Stein (2003) find that Big N auditors use lower quantitative materiality levels than do non-Big N auditors.

[3] Despite their lower concentration in the Belgian audit market, Big N auditors still account for approximately half of the market share in Belgium (Weets and Jegers 1997). In our sample, 52 percent of the audited targets and 62.71 percent of the audited acquirers are Big N clients.

Consistent with the concept of the reputation incentive, several studies provide evidence of superior Big N audit quality in the non-litigious Belgian context. Gaeremynck and Willekens (2003) find that Big N auditors in Belgium are more likely to issue a non-clean audit opinion than are non-Big N auditors when financial difficulties are less apparent, as in the case of firms that voluntarily decide to liquidate. Vander Bauwhede, Willekins, and Gaeremynck (2003) show that Big N auditors constrain income-decreasing earnings management more than non-Big N auditors in the private client segment of the Belgian audit market. Van Caneghem and Van Campenhout (2012) provide evidence of higher leverage ratios for Big N clients and attribute their findings to the higher information quality associated with these firms. As previously mentioned, Dutillieux and Willekens (2009) confirm the existence of a Big 4 brand name premium in the Belgian context. However, other papers fail to find evidence of quality differentiation (e.g., Gaeremynck et al. 2008; Vander Bauwhede and Willekens 2004).

Based on the aforementioned considerations, we will use the Big N dummy variable as a proxy for audit quality.[4] Nevertheless, given the lower concentration in the Belgian audit market (Weets and Jegers 1997; Francis and Wang 2008), we also consider alternative variables as proxies for differences in audit quality between large and small(er) audit firms as a robustness check. One dummy variable is set equal to 1 if the audit firm is among the five largest in Belgium. We also consider the ten largest audit firms using a second dummy variable. A third dummy variable equals 1 if the auditor's market share equals at least 5 percent (e.g., DeFond, Francis, and Wong 2000). The market shares used for these variables are based upon the number of clients as well as the clients' assets. Untabulated results (available upon request from the authors) indicate that the sum of the market shares of the ten largest audit firms in Belgium evolves in a relatively stable manner. The aggregated market share amounts to approximately 50 percent of all clients and increases slightly over the period under study. Moreover, the Big 6 (1997), Big 5 (1998–2001) or Big 4 (2002–2008) audit firms consistently have the largest market shares, which indicates that Big N audit firms dominate the Belgian audit market, although the market is far less concentrated than that of Anglo-Saxon countries.

Information Asymmetry in the Context of Mergers and Acquisitions

A double-sided information asymmetry problem arises in the case of M&As. Both targets and acquirers possess proprietary information about their own value, which influences the method of payment. In what follows, we assume that the bidding firm decides upon the method of payment offered. Of course, we recognize that targets will have to approve the method of payment before they actually accept the deal. However, Faccio and Masulis (2005) explicitly state that "if a target's financing choice is unacceptable to the bidder, then the proposed M&A transaction is likely to be aborted or else the bidder can make a hostile offer on its own terms. For a deal to succeed, the bidder must be satisfied with the financial structure of the deal."

The target's acceptance of the deal is more likely to depend on the premium offered than to depend on the method of payment. Rhodes-Kropf and Viswanathan (2004) argue that fiduciary responsibility requires the target management to accept any offer that yields more than the stand-alone value. In what follows, we build four potential scenarios based on target and acquirer valuation. However, because the bidding firm is not aware of the true value of the target, we focus

[4] Alternatively, audit fees could be used as a proxy for audit effort (and, thus, audit quality). Unfortunately, audit fees have only become publicly available in Belgium as of accounting year 2007, which makes it impossible for us to run our models using audit fees as an alternative proxy for audit quality. However, the observed Big 4 premium in the Belgian context (see Dutillieux and Willekens 2009) provides support for our strategy of relying on the brand name variable.

TABLE 1

Different Scenarios Based upon Bidder Stock Market Valuation and Target Uncertainty

		Acquirer	
		Undervalued	**Overvalued**
Target	High uncertainty	✓ Contingent payments to reduce risk over target.	✓ Contingent payments to reduce risk over target. ✓ Exploit market conditions by offering overvalued stock.
	Low uncertainty	No incentive to offer stock payments.	✓ Exploit market conditions by offering overvalued stock.

This table provides an overview of the incentive for contingent payments based upon whether the acquirer is over- or undervalued, and on target uncertainty.

on uncertainty about target valuation rather than on the extent of target over- or undervaluation. The different scenarios are summarized in Table 1. Finally, we argue that a high-quality external financial statement audit is likely to reduce information asymmetry about target and acquirer and, hence, will affect the method of payment.

In the M&A literature, the method of payment choice has shown to be an efficient signal that reduces uncertainty resulting from information asymmetry about the target's value (Bruner 2004; Eckbo et al. 1990; Hansen 1987). Hansen (1987) argues that a *lemons* problem will arise if targets have private information about their own value. Given this information asymmetry between targets and acquirers, the target firm will only be sold when its value falls below the offer made. Acquirers can protect themselves against this adverse selection problem by offering a stock payment, as the value of such an offer is contingent upon market reactions between the M&A announcement and the completion of the transaction. Officer et al. (2009) show that acquirer abnormal announcement returns in acquisitions of targets that are difficult to value (i.e., privately held targets) are significantly higher if stock is used as the method of payment. They attribute their finding to the risk-sharing benefits resulting from payments with stock. These contingent payment effects can also be realized using earnouts and/or by offering convertible bonds or bonds with a junk status. Cash payments and offers consisting of senior debt securities, on the other hand, are generally considered to be fixed payments (Bruner 2004). As shown in Table 1, we expect contingent payments to be more likely if the target's value is more uncertain.

If external auditors succeed in reducing information asymmetry (and hence, uncertainty) about the target's financial statements, bidders are better able to estimate the target's value, and hence, there will be less of a need to offer a contingent payment. Therefore, we hypothesize that the method of payment is less likely to be contingent if the target company's financial statements are audited by a Big N auditor. We test this hypothesis by including a dummy variable that equals 1 for targets with a Big N auditor. In addition, we control for firms that do not have an external auditor (i.e., small firms that do not voluntarily opt for an external audit) by including a second dummy variable.

A second area of information asymmetry relates to the acquirer's value. Myers and Majluf (1984) argue that managers of an acquiring firm may want to exploit private information on their own value by offering shares when they consider their stock to be overvalued. Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) rely on the information asymmetry between firm insiders and outsiders in explaining M&A activity. Shleifer and Vishny (2003) model the behavior of acquiring managers and conclude that managers in overvalued firms have

an incentive to engage in stock acquisitions (see also Table 1). Faccio and Masulis (2005) and Martin (1996) show that bidding firms are indeed more inclined to pay with stock if the stock is highly valued. Consequently, several studies show lower bidder announcement as well as long-term returns for M&As paid using stock (e.g., Loughran and Vijh 1997; Bruner 2004; Travlos 1987). Although the bidding firm has the right to decide upon the method of payment, the question arises of why target shareholders would be willing to accept stock offers given the potential market-timing behavior of acquirers. Rhodes-Kropf and Viswanathan (2004) argue that targets will accept these stock offers because they tend to over-estimate the value of synergy benefits in an overvalued market.

The market-timing behavior of acquirers rests on the assumption of information asymmetry between the acquiring firm's management and investors, which allows for overvaluation in the market. The extent of overvaluation has often been proxied in prior studies by the stock price run-up in the pre-M&A period (e.g., Faccio and Masulis 2005; Martin 1996). However, because we consider a sample of both listed and private firms, we use the average market-wide price-earnings (P/E) ratio in the year of the transaction to capture stock market overvaluation.[5] If acquirers indeed try to time the market, we expect them to opt for contingent payments in periods of high stock prices (see Table 1). Studies investigating M&A activity at a macro-economic level show that a market-wide increase in stock prices is typically followed by an increase in merger activity (e.g., Verter 2002; Clarke and Ioannidis 1996; Guerard 1985). Dong, Hirshleifer, Richardson, and Teoh (2006) demonstrate that this finding can be explained by a higher likelihood of paying with overvalued stock in periods of bull markets. Furthermore, they argue that target shareholders accept overvalued stock in booming stock markets in order to "cash out" of their firms (see also, Shleifer and Vishny 2003). In addition, privately held firms might be valued at a higher price in periods of booming stock prices because of higher industry multiples or a lower cost of capital (a lower market risk premium) in a discounted cash flow valuation, although high valuation is less visible than with publicly quoted firms. Based on these arguments, we hypothesize a positive impact of the market-wide P/E ratio on the likelihood of contingent payments. Next, for the subsample of M&As initiated by publicly listed acquirers, we also measure acquirer valuation at the firm level. Although this step is not possible for target firms (given the relatively low fraction of listed firms), we proxy individual target valuation using the ratio of the offer price to the target's book value.

The exploitation of temporary misvaluation is more likely when greater information asymmetry exists between managers and outside suppliers of capital. Because we assume that external auditors succeed in mitigating information asymmetry, we expect them to reduce the likelihood of market timing behavior. We test this prediction by including an interaction term for the average-wide P/E ratio and a dummy variable that equals 1 for acquirers audited by a Big N auditor. We expect a negative impact of this interaction term on the probability of a contingent offer. Consistent with this prediction, Chang et al. (2009) show that debt ratios of Big N clients are less affected by overvaluation. Finally, we also include the dummy variable for Big N clients as a single term to control for the fact that target shareholders may be more inclined to accept bidder stock if the bidder is audited by a Big N auditor. Unlike for the targets, we do not separately control for acquirers that do not have an external financial statement auditor, as this is the case for only seven acquirers in our total sample. Erickson and Wang (1999) show that acquiring firms try to manage their earnings upwards prior to stock-for-stock mergers. Given that high-quality auditors seem to succeed in reducing earnings management (e.g., Becker et al. 1998;

[5] We also test the robustness of our results by replacing the P/E by the P/B (price-to-book ratio) in our regression models.

Francis et al. 1999), target shareholders are more likely to be confident about the bidder's value and, hence, to accept stock as a method of payment. We therefore expect a positive impact of the ordinal acquirer's audit variable on the likelihood of a contingent offer.

Control Variables

We control for several deal and firm characteristics that have been found to be important determinants of the method of payment in prior studies. One important variable is the industry-relatedness of the transaction. Taking into account shareholder investment preferences, target shareholders are more likely to invest in the shares of the newly combined firm and, hence, to accept stock offers, if the acquiring firm is operating in the same industry as the target firm. Many studies provide evidence of an increased likelihood of stock payment in industry-related M&As (e.g., Swieringa and Schauten 2008; Faccio and Masulis 2005). We test the impact of industry-relatedness by including a dummy variable that captures whether the combining firms were operating in the same four-digit SIC industry before the M&A. Alternatively, we also define relatedness at the two-digit SIC level.

The listing status of bidder and target is expected to be another major determinant of the method of payment. Faccio and Masulis (2005) argue that shareholders of unlisted targets are unlikely to accept stock offers because of the illiquid and concentrated nature of their portfolio holdings. Our sample includes offers initiated by both listed and private bidders. Unlisted bidders may be reluctant to offer stock because they are expected to care more about preserving control. Shareholders of privately held acquirers will avoid diluting their controlling stake. Furthermore, target investors may be unwilling to accept unlisted bidder stock. Therefore, we include two dummy variables in our regression models to capture whether or not target and bidder are quoted on a stock exchange.

We also control for the size of the target relative to that of the bidder. This variable is likely to serve as a proxy for the bargaining power of the target firm relative to that of the acquirer. Ahern (2012) argues that relative target size captures bargaining power in M&A transactions because smaller targets are less likely to withstand a price war. Next, Hansen (1987) predicts that the impact of information asymmetry and, hence, the contingent pricing effect of a stock offer, will be higher if the target is larger relative to the bidder. Findings supporting this prediction have been presented by Faccio and Masulis (2005), Martynova and Renneboog (2009) and Swieringa and Schauten (2008), among others. However, other scholars do not find evidence of a significant impact of relative size on the method of payment (e.g., Martin 1996; Ghosh and Ruland 1998). In addition, following Faccio and Masulis (2005), we also control for the size of the bidding firm, as large bidders typically have a greater debt capacity due to their lower expected bankruptcy costs.[6]

Another important consideration is the relationship of the method of payment with financing decisions. Whereas stock payments generally imply the issue of new shares (or the use of shares in treasury), cash offers are more likely to be financed with available cash reserves or new loans (e.g., Bruner 2004; Martynova and Renneboog 2009). Hence, the payment considerations will also depend on the financing decision. Pecking order theory states that firms prefer internal over external financing and debt over equity in attracting external finance (Myers 1984). We proxy the availability of cash reserves by calculating the bidder's and target's ratio of cash to total assets. Next, the capacity to obtain new loans depends upon several factors. Following Faccio and Masulis (2005), we consider the impact of collateral (measured as property, plant, and equipment [PPE]/

[6] We also estimate alternative models in which we include the target size in addition to that of the bidder (not reported), but this process does not alter our conclusions.

total assets) and pre-M&A leverage (debt/total assets). We consider these variables for bidders as well as targets because the target's PPE and debt capacity may help the acquiring firm to obtain new loans. Moreover, we include the ratio of EBITDA/total assets to capture the cash generating ability of the combining firms.

We face some data limitations due to our focus on a sample that includes many private targets and acquirers. More specifically, we can neither control for the market-to-book ratio of the combining firms nor for their ownership structure. In the absence of detailed ownership data, we focus on the distinction between listed and unlisted firms because ownership will be less dispersed for private firms.

Our hypotheses and the expected impact of the control variables are summarized in Table 2.

SAMPLE

The M&As considered in this study were collected from the Zephyr database, which contains detailed information on more than 500,000 M&As worldwide, with pan-European deals dating back to 1997. No minimum deal value is required for deals to be included in this database. In addition, M&As involving public as well as private bidders are covered. Compared to the SDC Platinum database of Thomson Financial and Mergerstat, the Zephyr database covers smaller deals and has better coverage of European transactions (e.g., Huyghebaert and Luypaert 2010). Auditor and accounting data are obtained from Belfirst. This database contains financial statement data for Belgian and Luxembourg firms. Both Zephyr and Belfirst are commercialized by Bureau Van Dijk.

We use several selection criteria to obtain our final sample. First, we consider M&As between Belgian firms that were completed during the period 1997–2009. This step generates an initial sample of 739 deals. Next, we only consider deals with a real change in control over the target's resources. Hence, the total stake that the bidder aims to achieve in the target post-M&A has to exceed 50 percent for the deal to be retained in our sample. Furthermore, we drop all deals in which the bidding company already owned 50 percent of the target stock before the M&A announcement date. This leaves us with a sample of 646 transactions. In addition, we need data on the method of payment, as this is the focus of our study. This information is available for 102 deals in Zephyr. However, by cross-checking with Thomson's SDC, we were able to collect payment data on 36 additional deals, which generated a total sample of 139 deals. The significant drop in sample size due to this selection criterion is driven by the lack of payment information for the very small deals.[7] Finally, we only retain the deals for which we have auditor information in the pre-M&A year for the combining firms, resulting in a final sample of 125 deals.[8]

Table 3 provides an overview of various deal characteristics of the M&As in our sample by year. First, we observe that nearly one-third (31.20 percent) of all M&As occur between two firms that are operating in the same main industry according to their four-digit U.S. SIC codes. Next, following Bruner (2004), we differentiate between contingent, mixed, and fixed payments.

[7] To test the representativeness of our final sample, we compare the firm characteristics across two datasets (the initial population and the final dataset). This analysis shows that the sample targets and acquirers are larger than the average targets and acquirers in the initial M&A population. Likewise, a considerably larger fraction of sample firms is listed on a stock exchange. This is unsurprising given that the availability of information (especially on means of payment) is significantly higher for M&As of larger and stock-quoted firms. Hence, a limitation of our study is that our conclusions might not be generalizable to the entire M&A population; they might be more generalizable to larger deals with publicly available payment information. Except for the debt ratio, which is found to be higher for the sample firms (and which might be related to the larger fraction of financial firms in our sample), the firm characteristics seem to be comparable across the two groups. A detailed analysis can be obtained from the authors upon request.

[8] This means that we were able to determine whether an external auditor had been appointed and that we succeeded in determining the auditor's name (if applicable).

TABLE 2

Hypotheses on the Determinants of the M&A Mode of Payment

Explanatory Variables	Definition	Hypothesized Effect on Likelihood of Contingent Payment
Hypothesis 1: Target information asymmetry		
TAR_BIGN	Binary variable that equals 1 for targets having a Big N auditor.	−
TAR_NO_AUDIT	Binary variable that equals 1 for targets that do not have their financial statements audited.	+
Hypothesis 2: Acquirer information asymmetry		
PE_BEL20	Average Price/Earnings multiple for the BEL 20 in the year of the transaction.	+
*PE_BEL20 * ACQ_BIGN*	Interaction term between the P/E for the BEL 20 and the ordinal acquirer audit variable.	−
ACQ_BIGN	Binary variable that equals 1 for acquirers having a Big N auditor.	+
Control variables		
RELATED	Dummy variable equaling 1 if target and acquirer are operating in the same four- (two-) digit SIC industry.	+
TAR_LISTED	Dummy variable equaling 1 if the target is publicly quoted.	+
ACQ_LISTED	Dummy variable equaling 1 if the acquirer is publicly quoted.	+
TAR_FIN	Dummy variable equaling 1 if the target's main SIC code starts with 6.	?
ACQ_FIN	Dummy variable equaling 1 if the acquirer's main SIC code starts with 6.	?
REL_SIZE	Target Total Assets/Acquirer Total Assets.	+
ACQ_SIZE	Ln(Acquirer Total Assets).	−
TAR_CASH	Target Cash/Total assets.	−
ACQ_CASH	Acquirer Cash/Total assets.	−
TAR_PPE	Target PPE/Total assets.	−
ACQ_PPE	Acquirer PPE/Total assets.	−
TAR_DEBT	Target Debt/Total assets.	+
ACQ_DEBT	Acquirer Debt/Total assets.	+
TAR_EBITDA	Target EBITDA/Total assets.	−
ACQ_EBITDA	Acquirer EBITDA/Total assets.	−

This table provides an overview of the different explanatory variables in our analysis and presents our theoretical predictions.

All-equity offers and earnouts are considered contingent payments, whereas all-cash offers, debt offers and offers consisting of cash and debt are categorized as fixed payments. Offers consisting of either equity or earnouts and cash are considered mixed offers. We note that 75.20 percent of all M&As are settled with fixed offers, whereas only 19.20 percent of the transactions are paid for by

TABLE 3

Deal Characteristics

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total	%
Number of deals	2	4	6	6	7	16	7	11	17	10	12	16	11	125	100.00%
Related (four-digit SIC)	0	1	1	2	2	7	4	3	7	2	4	2	4	39	31.20%
Diversifying	2	3	5	4	5	9	3	8	10	8	8	14	7	86	68.80%
Contingent offers	0	2	1	1	2	5	3	5	2	1	2	0	0	24	19.20%
All-equity bid	0	2	1	1	2	5	3	4	2	0	2	0	0	22	17.60%
Earnout	0	0	0	0	0	0	0	1	0	1	0	0	0	2	1.60%
Mixed offers	0	0	1	2	1	0	0	0	0	1	1	0	1	7	5.60%
Mix of shares and cash	0	0	1	1	1	0	0	0	0	1	0	0	1	5	4.00%
Mix of earnout and cash	0	0	0	1	0	0	0	0	0	0	1	0	0	2	1.60%
Fixed offers	2	2	4	3	4	11	4	6	15	8	9	16	10	94	75.20%
All-cash bid	1	2	4	3	2	11	4	6	14	8	9	15	9	88	70.40%
Debt	0	0	0	0	2	0	0	0	0	0	0	1	0	3	2.40%
Cash and debt	1	0	0	0	0	0	0	0	1	0	0	0	1	3	2.40%

This table reports the deal characteristics for the M&As included in our sample, year by year. We report the yearly number of deals, the industry-relatedness of the deal (measured at four-digit SIC level), and the method of payment. All-equity offers and earnouts are considered as contingent payments, while all-cash, debt, and offers consisting of cash and debt are categorized as fixed payments. Offers consisting of either equity or earnouts and cash are considered as mixed offers.

means of a contingent offer. Hence, 5.60 percent of the deals are based on mixed offers. Cash is the dominant method of payment (70.40 percent), whereas 17.60 percent of all deals are settled with a stock swap. 4.00 percent of all M&As are paid for using a combination of cash and shares. Debt (2.40 percent), mixed cash/debt (2.40 percent), earnout (1.60 percent), and mixed cash/earnout (1.60 percent) offers are observed less frequently.[9]

The descriptive statistics that indicate the relationship between auditor type and method of payment are summarized in Table 4. We distinguish between Big N clients, non-Big N clients, and small firms that choose not to have their financial statements audited. The Big N auditors are defined as the N largest international audit firms. For our sample period, Big N refers to the six largest audit firms until 1998 (i.e., Arthur Andersen, Ernst & Young, Coopers & Lybrand, Deloitte & Touche, Price Waterhouse, and KPMG), the five largest audit firms between 1998 and 2001 (due to the merger of Price Waterhouse and Coopers & Lybrand, which created PwC), and finally, the four largest audit firms as of the demise of Arthur Andersen, following the Enron scandal. Panel A in Table 4 shows that the number of targets with a Big N auditor is similar to the number of targets with a non-Big N auditor (52 and 48, respectively). Twenty-five targets are small firms that did not opt for voluntary audits. We also note that the fraction of contingent deals is higher for the non-Big N targets (25.00 percent compared to 17.31 percent for Big N targets), although the difference is not significant. Concerning the acquirers, we note that the majority are audited by Big N audit firms (74 versus 44 non-Big N acquirers) and that only 7 of the acquirers in our sample do not have their financial statements audited. Panel B distinguishes between listed and unlisted targets and acquirers. We clearly observe that the method of payment and the auditor type varies well across listed and privately held firms. For the acquirers, the number of listed and non-listed firms is nearly equal (71 out of 125 bidders are listed), whereas the fraction of listed targets is considerably smaller (23 of 125 targets). This finding is consistent with the European sample of Faccio and Masulis (2005), in which listed targets represent only 15.87 percent of all deals. The percentage of non-listed firms with a Big N auditor in our sample equals 36.27 percent for the target firms (37 of 102 non-listed firms) and 50.00 percent for the acquiring firms (27 of 54 non-listed firms).

Table 5 reports summary statistics for the firm variables that may play a role in determining the method of payment and that, hence, will be controlled for in the multivariate regression models. These firm characteristics are measured in the year before the transaction. To limit the influence of potential outliers, we winsorize all firm variables at the 5 percent level. Table 5 indicates that the acquirers are significantly larger than their targets. Furthermore, the targets hold a significantly larger fraction of their total assets in cash and tangible assets than the acquirers do, although the two groups have similar debt ratios. Also, the acquirers in our sample are less profitable, as measured by their EBITDA/total assets, than their targets are. Concerning the binary variables, we observe that a larger fraction of the acquirers are listed on a stock exchange (56.80 percent compared to only 18.40 percent for the targets). Finally, 19.20 percent of the targets and 33.60 percent of the acquirers operate in a financial industry (as is indicated by main SIC code starting with 6).

MULTIVARIATE RESULTS

This section provides an overview of our multivariate regression results. We first report results based on an ordered probit regression analysis controlling for potential self-selection bias. Next, we estimate binary probit regressions to explain the likelihood of a contingent M&A payment. Finally, we perform several other robustness checks.

[9] Earnouts can be defined as deferred payments that are contingent on future post-M&A performance (see, for example, Bruner 2004).

TABLE 4

Type of Auditors and Method of Payment

Panel A: Univariate Relation between the Type of Auditor and the Method of Payment

	Contingent		Mixed		Fixed		Total		p-value of Chi-Square Test Big N versus Non-Big N or No Auditor
	n	%	n	%	n	%	n	%	
Targets									
Big N	9	17.31%	2	3.85%	41	78.85%	52	100.00%	0.6661
Non-Big N	12	25.00%	1	2.08%	35	72.92%	48	100.00%	
No audit	3	12.00%	4	16.00%	18	72.00%	25	100.00%	
Acquirers									
Big N	11	14.86%	5	6.76%	58	78.38%	74	100.00%	0.2934
Non-Big N	12	27.27%	2	4.55%	30	68.18%	44	100.00%	
No audit	1	14.29%	0	0.00%	6	85.71%	7	100.00%	

Panel B: Type of Auditor and Method of Payment for Listed versus Unlisted Firms

		Contingent		Mixed		Fixed		Total	
		n	%	n	%	n	%	n	%
Targets									
Listed	Big N	3	20.00%	0	0.00%	12	80.00%	15	100.00%
	Non-Big N	4	50.00%	0	0.00%	4	50.00%	8	100.00%
	Big N	6	16.22%	2	5.41%	29	78.38%	37	100.00%
Unlisted	Non-Big N	8	20.00%	1	2.50%	31	77.50%	40	100.00%
	No audit	3	12.00%	4	16.00%	18	72.00%	25	100.00%
Acquirers									
Listed	Big N	10	21.28%	5	10.64%	32	68.09%	47	100.00%
	Non-Big N	8	33.33%	1	4.17%	15	62.50%	24	100.00%
	Big N	1	3.70%	0	0.00%	26	96.30%	27	100.00%
Unlisted	Non-Big N	4	20.00%	1	5.00%	15	75.00%	20	100.00%
	No audit	1	14.29%	0	0.00%	6	85.71%	7	100.00%

This table provides summary statistics on the univariate relation between the type of auditor of target and bidder (Big N, non-Big N or no audit at all), and the method of payment. All-equity offers and earnouts are considered as contingent payments, while all-cash, debt and offers consisting of cash, and debt are categorized as fixed payments. Offers consisting of either equity or earnouts and cash are considered as mixed offers. Panel B distinguishes between listed and unlisted firms.

Ordered Probit Regression Models

Following Faccio and Masulis (2005), we estimate ordered probit regression models to investigate the antecedents of the method of payment. The regression results are presented in Table 6. The dependent variable equals 0 for purely fixed payments, 1 for mixed payments, and 2 for purely contingent payments. The impact of the target's external financial statement audit is

TABLE 5

Firm Characteristics

Panel A: Continuous Variables

	Targets			Acquirers			p-value for Difference	
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	Parametric t-test	Wilcoxon Rank-Sum Test
SIZE	9.40	9.16	2.00	11.38	11.34	2.24	0.0000	0.0000
CASH	13.69%	6.24%	16.36%	9.27%	3.34%	12.51%	0.0256	0.0272
PPE	26.24%	13.93%	28.77%	12.13%	1.02%	23.88%	0.0001	0.0000
DEBT	44.91%	31.20%	56.55%	41.57%	25.12%	43.72%	0.6259	0.5822
EBITDA	10.05%	8.60%	15.37%	3.49%	1.46%	7.36%	0.0001	0.0000

Panel B: Binary Variables

	Targets		Acquirers		p-value for Difference	
	n	Percentage	n	Percentage	Parametric t-test	Wilcoxon Rank-Sum Test
Listed	23	18.40%	71	56.80%	0.0000	0.0000
Financial (SIC code starting with 6)	24	19.20%	42	33.60%	0.0097	0.0100

In this table, we report the mean, median, and standard deviation of the firm characteristics for the acquirers, and targets in our sample. All variables are winsorized at 5–95 percent, i.e., extreme values are replaced by the corresponding percentiles. The p-values of two-tailed significance tests are also reported. The firm characteristics are defined as follows:

Variable Definitions:
SIZE = natural logarithm of total assets;
PPE = ratio of property, plant, and equipment relative to total assets;
DEBT = ratio of debt relative to total assets; and
EBITDA = ratio of EBITDA relative to its total assets.

investigated by including two dummy variables. The first dummy equals 1 if the acquirer is audited by a Big N audit firm. The second dummy variable captures small targets that do not opt for a voluntary financial statement audit. For the acquirer, we only include one dummy variable (which equals 1 for Big N clients) because only seven acquirers do not have their financial statements audited.[10] We also control for other factors that have been found to influence the method of payment in prior studies, as described in the previous section and summarized in Table 2. Because a large fraction of the acquirers (33.60 percent) and targets (19.20 percent) are financial firms, we add two dummy variables that capture their impact. All of the banks, insurance firms, real estate firms, and holdings are considered financial firms, i.e., they are all firms with an SIC code that begins with 6. Because certain accounting data are missing for some observations, we also report the results that we obtained using models in which we only include acquirer characteristics or include no firm

[10] We also test the robustness of our results by estimating our regression models for a sample without these seven observations, and our conclusions remain valid. These results are not reported but may be obtained from the authors on request.

TABLE 6

Ordered Probit Regression Models

	(1)	(2)	(3)
C1	12.2292**	11.1664***	9.5048***
	(0.0120)	(0.0028)	(0.0003)
C2	12.6222***	11.5375***	9.7730***
	(0.0098)	(0.0019)	(0.0002)
TAR_BIGN	−0.9809**	−0.9668**	−0.6122*
	(0.0328)	(0.0304)	(0.0660)
TAR_NO_AUDIT	−0.0400	−0.2920	−0.0033
	(0.9396)	(0.5258)	(0.9931)
PE_BEL20	1.0100***	0.8978***	0.6091***
	(0.0036)	(0.0010)	(0.0025)
*PE_BEL20 * ACQ_BIGN*	−0.5430***	−0.4944***	−0.2979***
	(0.0020)	(0.0007)	(0.0081)
ACQ_BIGN	7.2623***	6.3677***	3.6809**
	(0.0017)	(0.0006)	(0.0102)
RELATED	1.0178**	0.9583***	0.9680***
	(0.0167)	(0.0067)	(0.0011)
TAR_LISTED	−0.2081	0.0318	0.2111
	(0.7932)	(0.9604)	(0.6205)
ACQ_LISTED	1.7467***	2.0436***	1.3213***
	(0.0007)	(0.0000)	(0.0000)
TAR_FIN	1.7121***	1.5253***	1.4788***
	(0.0066)	(0.0028)	(0.0003)
ACQ_FIN	0.1243	−0.4127	−0.5837*
	(0.7979)	(0.4037)	(0.0995)
REL_SIZE	−0.0002		
	(0.3388)		
ACQ_SIZE	−0.2544**	−0.2472***	
	(0.0253)	(0.0084)	
TAR_CASH	−3.3315***		
	(0.0094)		
ACQ_CASH	0.5734	0.2645	
	(0.7082)	(0.8571)	
TAR_PPE	0.4151		
	(0.6376)		
ACQ_PPE	1.0250	1.5095	
	(0.2636)	(0.0597)	
TAR_DEBT	−0.0997		
	(0.7575)		
ACQ_DEBT	−0.0908	0.1084	
	(0.8780)	(0.8361)	
TAR_EBITDA	−1.6048		
	(0.2121)		
ACQ_EBITDA	−3.1341	−0.9747	
	(0.3707)	(0.6838)	
Pseudo R^2	0.3642	0.3169	0.2476
n	95	105	125

(continued on next page)

TABLE 6 (continued)

*, **, *** Indicate significance at the 10 percent, 5 percent, and 1 percent level, respectively, according to a two-tailed test.
This table presents the regression output from ordered probit regression models where the dependent variable equals 0 for purely fixed payments, 1 for mixed payments, and 2 for purely contingent payments. The p-values are reported in parentheses. The explanatory variables are defined as follows:

Variable Definitions:
TAR_BIGN (*ACQ_BIGN*) = binary variable that equals 1 for targets (acquirers) having a Big N auditor;
TAR_NO_AUDIT = binary variable that equals 1 for targets that do not have their financial statements audited;
PE_BEL20 = average price/earnings multiple for the BEL 20 in the year of the transaction;
RELATED = binary variable equaling 1 if target and acquirer are operating in the same four-digit SIC industry;
TAR_LISTED (*ACQ_LISTED*) = binary variable equaling 1 if the target (acquirer) is publicly quoted;
TAR_FIN (*ACQ_FIN*) = binary variable equaling 1 if the target (acquirer)'s main SIC code starts with 6;
REL_SIZE = ratio of target's total assets relative to the acquirer's;
ACQ_SIZE = natural logarithm of the acquirer's total assets;
TAR_CASH (*ACQ_CASH*) = ratio of target (acquirer) cash relative to its total assets;
TAR_PPE (*ACQ_PPE*) = ratio of target (acquirer) property, plant, and equipment relative to its total assets;
TAR_DEBT (*ACQ_DEBT*) = ratio of target (acquirer) debt relative to its total assets; and
TAR_EBITDA (*ACQ_EBITDA*) = ratio of target (acquirer) EBITDA relative to its total assets.

variables at all. A check of the correlations among the various explanatory variables (see Appendix A) reveals that none are too highly correlated (the pairwise correlations do not exceed 0.5). The variance inflation factors never exceed five. All regressions are run using White's heteroscedasticity-corrected standard errors.

The results presented in Table 6 provide support for our two hypotheses. First, we observe that the likelihood of a contingent payment is significantly lower if the target company is audited by a Big N audit firm.[11] This finding suggests that the incentive to share the M&A-risk through a stock payment or earnout is less substantial if the target is a Big N client, supporting the notion that a high-quality audit reduces the information asymmetry related to the target's value in M&A transactions. Second, we find that acquirers are significantly more likely to offer contingent payments in periods of high P/E ratios, which indicates that they try to time the market by offering overvalued stock.[12] This observation is consistent with earlier findings by Dong et al. (2006), Verter (2002), and Clarke and Ioannidis (1996), among others. Nevertheless, the coefficient of the interaction term for the market-wide P/E ratio and the acquirer audit variable is found to be significantly negative, which confirms our hypothesis that acquirers see fewer opportunities to exploit private information on their own value if they are audited by a Big N auditor. Finally, the acquirer audit variable as a single term has a significantly positive effect on the likelihood of using a contingent payment. This finding suggests that target shareholders are more willing to accept stock offers or earnouts if the acquirer's financial statements are certified by a Big N auditor. Taken together, our results suggest that Big N auditors (at both the target and the acquirer level) reduce information asymmetry. This conclusion holds under different specifications (i.e., with and without the inclusion of firm characteristics).

Some of the control variables are also found to be significant in explaining the method of payment. More specifically, acquirers are more likely to opt for contingent payments in industry-

[11] This variable is found to be significant at the 5 percent level in the first two models but only at the 10 percent level in model 3.

[12] We also test the robustness of our results when the market-wide P/B is used instead of the P/E. These models can only be estimated for the deals after 2000 because no P/B information is provided for the earlier years. Our results prove to be robust.

related transactions. This finding might indicate that target shareholders are more likely to accept shares of the newly combined firm if the acquiring firm is operating in the same industry as the target firm. This conclusion is consistent with prior empirical findings (e.g., Swieringa and Schauten 2008; Faccio and Masulis 2005). The acquiring firm's listing status is another major determinant of the method of payment. As expected, the likelihood of a contingent payment is significantly higher if the acquiring firm is quoted on a stock exchange. This finding supports the idea that shareholders of private acquirers avoid diluting their controlling stake and that shareholders of target firms are unwilling to accept unlisted bidder stock. Nevertheless, the target's listing status is not found to be significant in our regression models. We also observe that acquisitions of targets in the financial industry are more likely to be settled with contingent payments. The results also indicate that larger acquirers are less likely to opt for contingent payments. This finding might be explained by the relatively larger debt capacity of these firms, which increases their ability to offer all-cash payments (Faccio and Masulis 2005). We do not detect a significant influence of relative size on the method of payment; these results support the previous findings by Martin (1996) and Ghosh and Ruland (1998). Next, consistent with the idea that firms prefer to use available cash reserves rather than external financing, the target's cash ratio is significantly and negatively associated with the likelihood of a contingent payment. The acquirer's cash position, on the other hand, is not found to be significant. The level of PPE of the target and acquirer are not found to affect the method of payment. Likewise, the combining firms' debt levels and cash generating ability (proxied by EBITDA) bear no significant relationship to the method of payment.

The results presented in Table 7 show that our findings are robust to the use of alternative proxies for large auditors. The coefficients for the different dummy variables capturing large target auditors (which indicate the top 5 auditors, the top 10 auditors, and the auditors with a market share of at least 5 percent based on their number of clients and on those clients' assets) are found to be significantly negative. Our findings regarding the impact of the acquiring firm's auditor are also robust, showing that large auditors succeed in mitigating market timing behavior. The impact of the dummy variable indicating whether the acquiring firm's auditor is in the top 10 (based on client assets) is somewhat weaker but is still significant at the 10 percent level.

Controlling for Potential Self-Selection

The endogenous nature of auditor choice could induce self-selection bias due to Big N auditors refusing to audit certain types of firms or due to clients' preference for either Big N or non-Big N auditors based on their specific characteristics (e.g., Lawrence et al. 2011; Lennox and Pittman 2010; Doyle, Ge, and McVay 2007). Therefore, we control for potential selection bias in two alternative ways. First, Lennox and Pittman (2010) argue that screening and selection are more likely to engender endogeneity if audit firm tenure is short. On this basis, we control for auditor switching before the M&A. Because the auditor is appointed for a period of three years according to Belgian law, we investigate a three-year pre-M&A period. Our results show that only 0.80 percent of the acquirers and 4.80 percent of the targets in our sample transitioned from a non-Big N auditor to a Big N auditor (or *vice versa*) during the three-year period before the M&A, which indicates auditor changes based on a future M&A seldom occur. Moreover, estimating our model for the subsample of deals without an auditor change pre-M&A (for either the bidder or the target) does not affect our findings. These results are not reported but can be obtained from the authors upon request.

Second, we use propensity-score matching as developed by Rosenbaum and Rubin (1983). This technique has been used in recent studies such as Lawrence et al. (2011), Armstrong, Jagolinzer, and Larcker (2010) and Doyle et al. (2007). The purpose of the technique is to match Big N and non-Big N clients with regard to a broad range of firm characteristics. This methodology

TABLE 7

Alternative Auditor Size Proxies

	(1)	(2)	(3)	(4)	(5)	(6)
C1	11.4554**	12.4280**	11.6136**	11.6991**	7.2887*	11.8465**
	(0.0190)	(0.0200)	(0.0164)	(0.0213)	(0.0622)	(0.0255)
C2	11.8554**	12.7960**	12.0137**	12.1050**	7.6656*	12.2558**
	(0.0156)	(0.0166)	(0.0134)	(0.0176)	(0.0505)	(0.0214)
TAR_TOP5_CLIENTS	−1.3306**					
	(0.0129)					
TAR_TOP10_CLIENTS		−0.8154*				
		(0.0752)				
TAR_>5%_CLIENTS			−1.1425**			
			(0.0105)			
TAR_TOP5_ASSETS				−1.3926**		
				(0.0113)		
TAR_TOP10_ASSETS					−1.4663***	
					(0.0063)	
TAR_>5%_ASSETS						−1.4095**
						(0.0102)
TAR_NO_AUDIT	−0.1790	−0.0107	−0.1164	−0.3012	−0.3488	−0.2473
	(0.7563)	(0.9839)	(0.8214)	(0.6015)	(0.5514)	(0.6552)
PE_BEL20	0.8954**	1.0027**	0.9685***	0.9390**	0.5645**	0.9721**
	(0.0119)	(0.0103)	(0.0046)	(0.0108)	(0.0484)	(0.0109)
PE_BEL20 ∗ ACQ_TOP5_CLIENTS	−0.4667***					
	(0.0093)					
ACQ_TOP5_CLIENTS	5.8957**					
	(0.0104)					
PE_BEL20 ∗ ACQ_TOP10_CLIENTS		−0.5140***				
		(0.0080)				
ACQ_TOP10_CLIENTS		6.5968***				
		(0.0064)				
PE_BEL20 ∗ ACQ_>5%_CLIENTS			−0.5178***			
			(0.0027)			
ACQ_>5%_CLIENTS			7.0301***			
			(0.0024)			
PE_BEL20 ∗ ACQ_TOP5_ASSETS				−0.4981***		
				(0.0072)		
ACQ_TOP5_ASSETS				6.5980***		
				(0.0057)		
PE_BEL20 ∗ ACQ_TOP10_ASSETS					−0.2777*	
					(0.0563)	
ACQ_TOP10_ASSETS					3.4401*	
					(0.0673)	
PE_BEL20 ∗ ACQ_>5%_ASSETS						−0.5226***
						(0.0069)
ACQ_>5%_ASSETS						7.1344***
						(0.0052)
RELATED	1.1197***	1.0027**	0.9647**	1.0981***	1.1448***	1.0968***
	(0.0076)	(0.0234)	(0.0225)	(0.0086)	(0.0076)	(0.0086)
TAR_LISTED	−0.4207	−0.3263	−0.1833	−0.2995	−0.4255	−0.2105
	(0.5763)	(0.6670)	(0.8166)	(0.6981)	(0.5370)	(0.7944)

(continued on next page)

TABLE 7 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)
ACQ_LISTED	1.8018***	1.4947***	1.7477***	1.8977***	1.7056***	1.9631***
	(0.0006)	(0.0008)	(0.0005)	(0.0006)	(0.0006)	(0.0007)
TAR_FIN	1.9090***	1.3104**	1.7162***	1.9670***	1.5732***	1.9798***
	(0.0006)	(0.0307)	(0.0056)	(0.0006)	(0.0058)	(0.0008)
ACQ_FIN	−0.0750	0.2225	0.2460	−0.0007	0.1607	0.1152
	(0.8862)	(0.6688)	(0.6014)	(0.9988)	(0.7499)	(0.8174)
REL_SIZE	−0.0001	−0.0001	−0.0002	−0.0002	−0.0001	−0.0002
	(0.6599)	(0.4028)	(0.2978)	(0.3957)	(0.6074)	(0.2827)
ACQ_SIZE	−0.1402	−0.1665	−0.2668**	−0.2155*	−0.1113	−0.2742**
	(0.1927)	(0.2017)	(0.0213)	(0.0596)	(0.2948)	(0.0208)
TAR_CASH	−3.2007**	−2.9432**	−3.4514***	−3.3649***	−3.0975***	−3.5204***
	(0.0105)	(0.0166)	(0.0081)	(0.0086)	(0.0091)	(0.0079)
ACQ_CASH	0.4751	0.0571	0.6349	0.7944	0.2638	0.8309
	(0.7648)	(0.9695)	(0.6812)	(0.6288)	(0.8618)	(0.6060)
TAR_PPE	0.8784	0.2990	0.2247	0.7127	0.6327	0.6890
	(0.2960)	(0.7378)	(0.7992)	(0.3978)	(0.4457)	(0.4214)
ACQ_PPE	0.8418	1.0873	1.1022	0.8665	0.9341	0.8504
	(0.3285)	(0.1829)	(0.2412)	(0.3343)	(0.2558)	(0.3623)
TAR_DEBT	−0.0547	−0.1758	−0.1164	−0.0413	−0.0147	−0.0610
	(0.8680)	(0.6010)	(0.7230)	(0.8999)	(0.9648)	(0.8541)
ACQ_DEBT	0.0034	−0.1493	−0.0522	0.1559	−0.0357	0.1860
	(0.9954)	(0.8076)	(0.9313)	(0.7973)	(0.9556)	(0.7548)
TAR_EBITDA	−1.7487	−1.6188	−1.5409	−1.7151	−1.5317	−1.9681
	(0.1724)	(0.1996)	(0.2233)	(0.1758)	(0.1877)	(0.1390)
ACQ_EBITDA	−3.6940	−2.4634	−3.7963	−4.4347	−4.2117	−4.7210
	(0.2762)	(0.4839)	(0.2833)	(0.2053)	(0.2184)	(0.1860)
Pseudo R^2	0.3717	0.3316	0.3725	0.3796	0.3452	0.3847
n	95	95	95	95	95	95

*, **, *** Indicate significance at the 10 percent, 5 percent, and 1 percent level, respectively, according to a two-tailed test, respectively.

This table presents the regression output from ordered probit regression models where the dependent variable equals 0 for purely fixed payments, 1 for mixed payments, and 2 for purely contingent payments. The p-values are reported in parentheses.

Variable Definitions:

TAR_TOP5/10_CLIENTS (*ACQ_TOP5/10_CLIENTS*) = binary variable that equals 1 for targets (acquirers) having an auditor that is within the 5/10 largest in Belgium according to the number of clients;

TAR_TOP5/10_ASSETS (*ACQ_TOP5/10_ASSETS*) = binary variable that equals 1 for targets (acquirers) having a Big N auditor that is within the 5/10 largest in Belgium according to client assets;

TAR_>5%_CLIENTS (*ACQ_>5%_CLIENTS*) = binary variable that equals 1 for targets (acquirers) having an auditor that has a market share larger than 5 percent in Belgium according to the number of clients;

TAR_>5%_ASSETS (*ACQ_>5%_ASSETS*) = binary variable that equals 1 for targets (acquirers) having an auditor that has a market share larger than 5 percent in Belgium according to client assets;

TAR_NO_AUDIT = binary variable that equals 1 for targets that do not have their financial statements audited;

PE_BEL20 = average price/earnings multiple for the BEL 20 in the year of the transaction;

RELATED = binary variable equaling 1 if target and acquirer are operating in the same four- (two-) digit SIC industry;

TAR_LISTED (*ACQ_LISTED*) = binary variable equaling 1 if the target (acquirer) is publicly quoted;

TAR_FIN (*ACQ_FIN*) = binary variable equaling 1 if the target (acquirer)'s main SIC code starts with 6;

REL_SIZE = ratio of target's total assets relative to the acquirer's;

ACQ_SIZE = natural logarithm of the acquirer's total assets;

TAR_CASH (*ACQ_CASH*) = ratio of target (acquirer) cash relative to its total assets;

TAR_PPE (*ACQ_PPE*) = ratio of target (acquirer) property, plant, and equipment relative to its total assets;

TAR_DEBT (*ACQ_DEBT*) = ratio of target (acquirer) debt relative to its total assets; and

TAR_EBITDA (*ACQ_EBITDA*) = ratio of target (acquirer) EBITDA relative to its total assets.

TABLE 8

Probit Regression Results for Auditor Choice

C	−1.7706***
	(0.0000)
SIZE	0.0968***
	(0.0000)
ROA	−0.1056
	(0.2707)
DEBT	0.0898**
	(0.0157)
CURRENT RATIO	0.0091***
	(0.0000)
LISTED	0.0074
	(0.9480)
% of correct predictions	61.48%
n	14775

*, **, *** Indicate significance at the 10 percent, 5 percent, and 1 percent level, respectively, according to a two-tailed test, respectively.
This table presents the regression output from a binary probit regression model where the dependent variable equals 1 for Big N clients and 0 for non-Big N clients. The p-values are reported in parentheses.

Variable Definitions:
SIZE = natural logarithm of the acquirer's total assets;
ROA = ratio of EBIT to total assets;
DEBT = ratio of debt relative to total assets;
CURRENT RATIO = ratio of current assets relative to current liabilities; and
LISTED = binary variable equaling 1 for publicly quoted firms.

has important advantages. First, matching models do not rely on a specific functional form and thus provide a more direct estimate of the treatment effect (Lawrence et al. 2011). Second, there is no need to define exclusion restrictions as in two-stage selection models (Lennox, Francis, and Wang 2012). We implement the matching procedure in our study by estimating a probit regression to predict the propensity to hire a Big N auditor. Following Lawrence et al. (2011) and Chaney, Jetter, and Shivakumar (2004), we include the firm's size (the natural logarithm of total assets), its ROA (EBIT/assets), its debt ratio (total liabilities/total assets) and its current ratio (current assets/current liabilities) as explanatory variables in our regression models. Finally, because our sample includes both listed and privately held firms, we control for listing status. This model is estimated for the most recent data available in the entire Belfirst database (for all firms with auditor data). The regression output presented in Table 8 shows that firm size, the debt ratio, and the current ratio are significantly positively related to the decision to hire a Big N auditor. These conclusions and the explanatory power of the model are consistent with the findings of Chaney et al. (2004).[13]

[13] Given that firm size is the client characteristic that is primarily responsible for generating a spurious Big N effect, we also re-estimate the regressions using a restricted sample (e.g., Feltham, Hughes, and Simunic 1991; Pittman and Fortin 2004). More specifically, we drop all targets (acquirers) that are larger than the largest target (acquirer) with a non-Big N auditor and all targets (acquirers) that are smaller than the smallest target (acquirer) with a Big N auditor. The ordered probit regression results for this restricted sample indicate that our conclusions concerning both the impact of target auditor size and that of acquirer auditor size are robust. These results are not reported but can be obtained from the authors on request.

TABLE 9

Ordered Probit Regression Models Propensity Scores Matched Sample

	(1)	(2)	(3)
C1	8.0131	6.0947	9.1765***
	(0.1145)	(0.1046)	(0.0062)
C2	8.5671*	6.6085*	9.6564***
	(0.0927)	(0.0772)	(0.0040)
TAR_BIGN	−1.4815*	−1.3154**	−0.9337*
	(0.0528)	(0.0496)	(0.0616)
TAR_NO_AUDIT	−0.4834	−0.5981	−0.1831
	(0.4285)	(0.2840)	(0.6971)
PE_BEL20	0.8452**	0.6584***	0.6210**
	(0.0145)	(0.0067)	(0.0128)
*PE_BEL20 * ACQ_BIGN*	−0.4316**	−0.3606**	−0.3138**
	(0.0195)	(0.0123)	(0.0287)
ACQ_BIGN	5.3219**	4.3868**	3.5364*
	(0.0310)	(0.0205)	(0.0630)
RELATED	1.6185***	1.2900***	1.3143***
	(0.0012)	(0.0036)	(0.0004)
TAR_LISTED	1.0648	0.5833	−0.0304
	(0.2833)	(0.4728)	(0.9642)
ACQ_LISTED	1.9541***	2.1149***	1.5833***
	(0.0018)	(0.0003)	(0.0002)
TAR_FIN	0.6318	0.7229	1.1192**
	(0.4274)	(0.1928)	(0.0340)
ACQ_FIN	0.3870	0.4767	−0.0441
	(0.5842)	(0.4534)	(0.9217)
REL_SIZE	−0.0001		
	(0.7643)		
ACQ_SIZE	−0.4086**	−0.3757**	
	(0.0196)	(0.0252)	
TAR_CASH	−2.2817*		
	(0.0942)		
ACQ_CASH	−0.3892	−1.3366	
	(0.8429)	(0.4503)	
TAR_PPE	1.2297		
	(0.1739)		
ACQ_PPE	−0.9722	0.0794	
	(0.5339)	(0.9562)	
TAR_DEBT	0.4508		
	(0.3046)		
ACQ_DEBT	−0.6092	−0.0362	
	(0.3291)	(0.9465)	
TAR_EBITDA	−2.7139**		
	(0.0406)		
ACQ_EBITDA	−2.7901	−0.9333	
	(0.4531)	(0.7154)	
Pseudo R^2	0.3736	0.3081	0.2700
n	69	76	76

(continued on next page)

TABLE 9 (continued)

*, **, *** Indicate significance at the 10 percent, 5 percent, and 1 percent level, respectively, according to a two-tailed test, respectively.
This table presents the regression output from ordered probit regression models where the dependent variable equals 0 for purely fixed payments, 1 for mixed payments, and 2 for purely contingent payments. The p-values are reported in parentheses.

Variable Definitions:
TAR_BIGN (*ACQ_BIG N*) = binary variable that equals 1 for targets (acquirers) having a Big N auditor;
TAR_NO_AUDIT = binary variable that equals 1 for targets that do not have their financial statements audited;
PE_BEL20 = average price/earnings multiple for the BEL 20 in the year of the transaction;
RELATED = binary variable equaling 1 if target and acquirer are operating in the same four-digit SIC industry;
TAR_LISTED (*ACQ_LISTED*) = binary variable equaling 1 if the target (acquirer) is publicly quoted;
TAR_FIN (*ACQ_FIN*) = binary variable equaling 1 if the target (acquirer)'s main SIC code starts with 6;
REL_SIZE = ratio of target's total assets relative to the acquirer's;
ACQ_SIZE = natural logarithm of the acquirer's total assets;
TAR_CASH (*ACQ_CASH*) = ratio of target (acquirer) cash relative to its total assets;
TAR_PPE (*ACQ_PPE*) = ratio of target (acquirer) property, plant, and equipment relative to its total assets;
TAR_DEBT (*ACQ_DEBT*) = ratio of target (acquirer) debt relative to its total assets; and
TAR_EBITDA (*ACQ_EBITDA*) is the ratio of target (acquirer) EBITDA relative to its total assets.

Next, we calculate propensity scores for all sample firms based on the estimated probit regression coefficients. Of all of the acquiring firms in our sample, 44 are non-Big N clients, whereas 74 are Big N clients. This process allows us to create a balanced sample by matching each non-Big N acquirer with the Big N acquirer that has the closest propensity score. We do not focus on matching based on target propensity scores because the sample contains nearly the same number of non-Big N (48) and Big N (52) targets. Furthermore, the average difference between the propensity scores of the non-Big N and Big N target firms is only an insignificant 1.15 percent (p-value = 0.8402). The ordered probit regression output for the propensity-score matched sample is reported in Table 9, and shows that our conclusions concerning both the impact of target auditor size and that of acquirer auditor size are robust (although the target Big N dummy variable is only significant at the 5 percent level for model 2 and at the 10 percent level for models 1 and 3). These results suggest that our conclusions are not driven by the endogenous nature of the auditor size variable.

Robustness Checks

In addition to ordered probit regressions, we also estimate binary probit regression models to investigate the determinants of the method of payment.[14] In these models, the dependent variable equals 1 if the M&A is settled with a contingent payment and 0 otherwise. These additional regression models are presented in Table 10. The results are consistent with our findings based on the ordered probit regression analysis. Our two hypotheses are again confirmed by the data. A high-quality financial statement audit is found to reduce information asymmetry in M&As. We observe a lower likelihood of stock payments in acquisitions of Big N audited targets (although this finding is only significant at the 10 percent level). In addition, a Big N audit of the acquiring firm is found to reduce incentives for using overvalued stock and

[14] Using logit regressions instead of probit regressions generates similar conclusions. These results are not reported in the paper but can be obtained from the authors on request.

TABLE 10

Binary Regression Results

	(1)	(2)	(3)
C	−14.1057**	−13.1826***	−10.2352***
	(0.0106)	(0.0030)	(0.0004)
TAR_BIGN	−0.9161*	−0.9849*	−0.5699
	(0.0927)	(0.0602)	(0.1063)
TAR_NO_AUDIT	0.1944	−0.1164	0.2314
	(0.7133)	(0.7973)	(0.5507)
PE_BEL20	1.1959***	1.0622***	0.6609***
	(0.0035)	(0.0011)	(0.0030)
*PE_BEL20 * ACQ_BIGN*	−0.6253***	−0.5614***	−0.3133**
	(0.0028)	(0.0012)	(0.0105)
ACQ_BIGN	8.4142***	7.3438***	3.8518**
	(0.0021)	(0.0009)	(0.0126)
RELATED	1.1892***	1.0599***	1.0251***
	(0.0096)	(0.0100)	(0.0015)
TAR_LISTED	−0.1781	0.0254	0.1101
	(0.8293)	(0.9705)	(0.8002)
ACQ_LISTED	2.1030***	2.2961***	1.3639***
	(0.0002)	(0.0000)	(0.0000)
TAR_FIN	1.9225***	1.7121***	1.5065***
	(0.0034)	(0.0017)	(0.0003)
ACQ_FIN	0.0395	−0.5473	−0.6266*
	(0.9398)	(0.2605)	(0.0803)
REL_SIZE	−0.0003		
	(0.1078)		
ACQ_SIZE	−0.3498**	−0.3017***	
	(0.0115)	(0.0039)	
TAR_CASH	−3.8067***		
	(0.0098)		
ACQ_CASH	1.6310	1.2911	
	(0.2568)	(0.3708)	
TAR_PPE	0.2851		
	(0.7523)		
ACQ_PPE	1.2103	1.5457*	
	(0.2720)	(0.0635)	
TAR_DEBT	−0.1849		
	(0.6042)		
ACQ_DEBT	−0.0556	0.1349	
	(0.9233)	(0.7893)	
TAR_EBITDA	−1.1805		
	(0.3444)		
ACQ_EBITDA	−4.1434	−2.0044	
	(0.2777)	(0.4179)	
McFadden R^2	0.4527	0.4049	0.3011
n	95	105	125

*, **, *** Indicate significance at the 10 percent, 5 percent, and 1 percent level, respectively, according to a two-tailed test, respectively.

(continued on next page)

TABLE 10 (continued)

This table presents the regression output from binary probit regression models where the dependent variable equals 1 if the bidder offers a contingent payment and 0 otherwise. The p-values are reported in parentheses.

Variable Definitions:
TAR_BIGN (*ACQ_BIGN*) = binary variable that equals 1 for targets (acquirers) having a Big N auditor;
TAR_NO_AUDIT = binary variable that equals 1 for targets that do not have their financial statements audited;
PE_BEL20 = average price/earnings multiple for the BEL 20 in the year of the transaction;
RELATED = binary variable equaling 1 if target and acquirer are operating in the same four-digit SIC industry;
TAR_LISTED (*ACQ_LISTED*) = binary variable equaling 1 if the target (acquirer) is publicly quoted;
TAR_FIN (*ACQ_FIN*) = binary variable equaling 1 if the target (acquirer)'s main SIC code starts with 6;
REL_SIZE = ratio of target's total assets relative to the acquirer's;
ACQ_SIZE = natural logarithm of the acquirer's total assets;
TAR_CASH (*ACQ_CASH*) = ratio of target (acquirer) cash relative to its total assets;
TAR_PPE (*ACQ_PPE*) = ratio of target (acquirer) property, plant, and equipment relative to its total assets;
TAR_DEBT (*ACQ_DEBT*) = ratio of target (acquirer) debt relative to its total assets; and
TAR_EBITDA (*ACQ_EBITDA*) = ratio of target (acquirer) EBITDA relative to its total assets.

to increase the likelihood that target shareholders will accept stock offers or earnouts. Finally, the conclusions regarding the control variables remain unchanged.

We also consider individual firm valuation instead of using market-wide measures. Because this information is only available for publicly listed firms, we focus on the subsample of M&As initiated by listed acquirers. Given that the P/E ratio might be temporarily negative for individual firms, we focus on the P/B in these regression models (measured at the end of the year preceding the M&A transaction). In addition, because these regressions are estimated using a smaller sample of deals (only deals by listed acquirers with P/B data available), we estimate more parsimonious models (including only the control variables that were found to be significant in the previous models). The results presented in Table 11 clearly illustrate that our conclusions remain valid. The significantly positive impact of individual acquirer valuation (P/B) indicates that acquirers try to exploit temporary overvaluation by offering stock payments. However, the significantly negative impact of the interaction term with the Big N dummy variable shows that the use of Big N auditors mitigates this effect. In addition, our findings on the impact of the target auditor and the control variables remain unchanged.

Because only 18.40 percent of all targets are quoted, we cannot test the impact of individual target firm P/B (or P/E) ratios in the multivariate regression models. Rather, we focus on the ratio of the offer price to the target firm's book value. This information is available for 84 of the 125 transactions and amounts to 3.19 on average (1.50 median). Given that we only have the necessary data for a subsample of deals, we again estimate the parsimonious models including only the control variables that we found to be significant earlier. In addition, we also test the interaction effect with the target's audit quality dummy variable. We find that none of these additional variables has a statistically significant impact (see Table 12). The p-values for the single term and for the interactions with target audit quality exceed the 10 percent level. Our conclusions regarding the impact of acquirer valuation and audit quality are robust. Granted, the target firm Big N dummy variable does not attain statistical significance in these models. Nevertheless, we wish to emphasize that these models are estimated based on a sample of just 72 observations. In addition, our findings regarding the control variables remain unchanged except that the acquirer size variable is not found to be significant in these models.

We also control for the impact of hiring an investment bank, as these professional firms might offer specialized advice and generate better performance. They might also act as a "quality stamp," conveying to the public that clients have acted as careful fiduciaries. We

TABLE 11

Acquirer Valuation at Firm Level

	Ordered Probit Model		**Binary Probit**
C1	2.0103		
	(0.5467)		
C2	2.2821	*C*	0.9551
	(0.4907)		(0.7594)
TAR_BIGN	−1.7280**	*TAR_BIGN*	−1.6677*
	(0.0296)		(0.0621)
TAR_NO_AUDIT	0.0476	*TAR_NO_AUDIT*	0.0977
	(0.9642)		(0.9287)
ACQ_PB	1.7535***	*ACQ_PB*	1.6853***
	(0.0011)		(0.0013)
ACQ_PB ∗ *ACQ_BIGN*	−0.9024***	*ACQ_PB* ∗ *ACQ_BIGN*	−0.8083***
	(0.0019)		(0.0022)
ACQ_BIGN	2.7054**	*ACQ_BIGN*	3.4545***
	(0.0192)		(0.0015)
RELATED	1.8223*	*RELATED*	1.4255
	(0.0597)		(0.1543)
TAR_LISTED	1.0434	*TAR_LISTED*	1.8145
	(0.3765)		(0.1327)
TAR_FIN	3.7739***	*TAR_FIN*	3.9759***
	(0.0000)		(0.0001)
ACQ_FIN	1.7865*	*ACQ_FIN*	2.4029**
	(0.0737)		(0.0304)
REL_SIZE	0.8467	*REL_SIZE*	0.5490
	(0.5966)		(0.7147)
ACQ_SIZE	−0.2557	*ACQ_SIZE*	−0.6237**
	(0.4481)		(0.0432)
TAR_CASH	−12.3139***	*TAR_CASH*	−13.4569***
	(0.0002)		(0.0001)
Pseudo R^2	0.4450	McFadden R^2	0.5112
n	42		42

*, **, *** Indicate significance at the 10 percent, 5 percent, and 1 percent level, respectively, according to a two-tailed test, respectively.

The dependent variable in the first column (Ordered Probit Model) equals 0 for purely fixed payments, 1 for mixed payments, and 2 for purely contingent payments. In the binary probit model, the dependent variable equals 1 if the bidder offers a contingent payment, and 0 otherwise. The p-values are reported in parentheses.

Variable Definitions:
TAR_BIGN (*ACQ_BIGN*) = binary variable that equals 1 for targets (acquirers) having a Big N auditor;
TAR_NO_AUDIT = binary variable that equals 1 for targets that do not have their financial statements audited;
ACQ_PB = acquirer price-to-book ratio;
RELATED = binary variable equaling 1 if target and acquirer are operating in the same four-digit SIC industry;
TAR_FIN (*ACQ_FIN*) = binary variable equaling 1 if the target (acquirer)'s main SIC code starts with 6;
REL_SIZE = ratio of target's total assets relative to the acquirer's; and
ACQ_SIZE = natural logarithm of the acquirer's total assets.

TABLE 12

Models with Ratio of Offer Price/Target Book Value

	Ordered Probit Model		Binary Probit
C1	11.4444		
	(0.0244)**		
C2	11.8500**	*C*	−10.7636**
	(0.0216)		(0.0257)
TAR_BIGN	0.2236	*TAR_BIGN*	0.3338
	(0.6860)		(0.5330)
TAR_NO_AUDIT	−0.7070	*TAR_NO_AUDIT*	−0.2978
	(0.3257)		(0.7148)
OFFER PRICE/BV ∗ *TAR_BIGN*	0.0389	*OFFER PRICE/BV* ∗ *TAR_BIGN*	0.0807
	(0.5430)		(0.2479)
OFFER PRICE/BV ∗ *TAR_NO_AUDIT*	0.1789	*OFFER PRICE/BV* ∗ *TAR_NO_AUDIT*	0.1623
	(0.1025)		(0.1482)
OFFER PRICE/BV	0.0087	*OFFER PRICE/BV*	0.0005
	(0.8573)		(0.9924)
PE_BEL20	0.8341**	*PE_BEL20*	0.8108**
	(0.0323)		(0.0281)
PE_BEL20 ∗ *ACQ_BIGN*	−0.4251**	*PE_BEL20* ∗ *ACQ_BIGN*	−0.4027**
	(0.0294)		(0.0327)
ACQ_BIGN	5.2908**	*ACQ_BIGN*	5.0622**
	(0.0410)		(0.0407)
RELATED	0.7410*	*RELATED*	0.6828
	(0.0671)		(0.1090)
TAR_LISTED	−0.5084	*TAR_LISTED*	−0.4551
	(0.4437)		(0.4701)
TAR_FIN	2.4741***	*TAR_FIN*	2.3619***
	(0.0020)		(0.0019)
ACQ_FIN	−0.1584	*ACQ_FIN*	−0.3115
	(0.7436)		(0.5283)
REL_SIZE	−0.0310	*REL_SIZE*	−0.0406
	(0.5676)		(0.4399)
ACQ_SIZE	−0.0050	*ACQ_SIZE*	−0.0550
	(0.9634)		(0.6126)
TAR_CASH	−5.3615***	*TAR_CASH*	−4.8717**
	(0.0075)		(0.0177)
Pseudo R^2	0.3540	McFadden R^2	0.3921
n	72	n	72

*, **, *** Indicate significance at the 10 percent, 5 percent, and 1 percent level, respectively, according to a two-tailed test, respectively.

The dependent variable in the first column (Ordered Probit Model) equals 0 for purely fixed payments, 1 for mixed payments, and 2 for purely contingent payments. In the binary probit model, the dependent variable equals 1 if the bidder offers a contingent payment, and 0 otherwise. The p-values are reported in parentheses.

Variable Definitions:

TAR_BIGN (*ACQ_BIGN*) = binary variable that equals 1 for targets (acquirers) having a Big N auditor;

TAR_NO_AUDIT = binary variable that equals 1 for targets that do not have their financial statements audited;

OFFER PRICE/BV = ratio of the offer price compared to the target's book value;

PE_BEL20 = average price/earnings multiple for the BEL 20 in the year of the transaction;

(continued on next page)

TABLE 12 (continued)

RELATED = binary variable equaling 1 if target and acquirer are operating in the same four-digit SIC industry;
TAR_FIN (*ACQ_FIN*) = binary variable equaling 1 if the target (acquirer)'s main SIC code starts with 6;
REL_SIZE = ratio of target's total assets relative to the acquirer's; and
ACQ_SIZE = natural logarithm of the acquirer's total assets.

collected data on the use of investment banks through both the Zephyr and Thomson's SDC databases. In 26.4 percent of the transactions in our sample, an investment bank advising the acquiring firm has been identified. This figure is in line with the findings of Russo and Perrini (2006) based on their sample of European M&As but is significantly lower than what has been documented in previous studies based on U.S. data (Hayward 2003; Kale, Omesh, and Harley 2003).[15] We empirically test the impact of investment bank advice by including two dummy variables in our regression models. Following Schiereck, Sigl-Grüb, and Unverhau (2009), we categorize investment banks as "first tier" (the top 10 advisors) or others based on deal values using the league tables in Thomson's M&A database.[16] In addition, we include a separate dummy variable to control for those observations without investment bank involvement. Our results in Table 13 demonstrate that these additional dummies are not significant in explaining the likelihood of contingent payments and indicate that our conclusions concerning the bidders' and target firms' financial statement auditors remain unaffected. The insignificance of these investment bank dummy variables could be driven by two opposing effects. On the one hand, hiring financial advice is more likely in case of stock offers, given the more complex nature of these deals (as outlined above). On the other hand, the risk-reducing benefits of offering stock might be less necessary when investment banks succeed in mitigating information asymmetry about the target's value.

To further assess the robustness of our findings, we perform several other sensitivity checks. The regression output of these additional tests is not reported in the paper but can be obtained from the authors on request. We first examine the effect of replacing the two dummy variables concerning the target's external audit (Big N and no audit) with one ordinal variable (which equals 0 for targets without external auditors, 1 for small audit firms, and 2 for Big N clients). This variable is found to be significantly negative in explaining the likelihood of contingent payments, confirming our earlier findings. To further explore the issue of voluntary financial statement audits, we perform an additional robustness check by including a dummy variable that captures whether targets or acquirers are categorized as "small" (i.e., as having the option of a voluntary audit). These dummy variables are not found to be important to the

[15] The lower fraction of deals with investment bank involvement in Europe might be driven by distinct transaction characteristics. Servaes and Zenner (1996) show that investment banks are more likely to be hired in large, hostile acquisitions that are at least partly paid for with stock. First, hostile deals seldom occur in the Belgian context. Only one deal in our sample has been identified as hostile. Second, cash payments are much more prevalent in transactions in Continental European countries than in U.S./U.K. transactions. In our sample, 70.40 percent of deals are pure cash offers, while this amounts to only 44.06 percent for Hayward's (2003) U.S. sample. The larger fraction of cash deals in the Belgian setting might be driven by the more concentrated ownership structure. Belgian firms are typically controlled by reference shareholders (e.g., families, investment funds, pension funds) who are less likely to issue stock because doing so would dilute their stake in the firm.

[16] The following investment banks have been identified as the top 10 financial advisors in European M&As over the sample period (1997–2009): Goldman Sachs, Morgan Stanley, Bank of America Merrill Lynch, J.P. Morgan, UBS, Rothschild, Citi, Deutsche Bank, Credit Suisse, and Lazard.

TABLE 13

Ordered Probit Regression Models Controlling for Investment Bank Reputation

	(1)	(2)	(3)
C1	12.0656**	10.9002***	9.5721***
	(0.0130)	(0.0055)	(0.0003)
C2	12.4639**	11.2727***	9.8423***
	(0.0105)	(0.0039)	(0.0002)
TOP_TIER_INV_BANK	1.1831	0.3543	−0.8193
	(0.1983)	(0.7217)	(0.3688)
NO_INV_BANK	−0.5053	−0.3461	0.0097
	(0.3182)	(0.4943)	(0.9815)
TAR_BIGN	−1.1667**	−1.0736**	−0.5892*
	(0.0121)	(0.0156)	(0.0784)
TAR_NO_AUDIT	−0.0884	−0.3230	0.0211
	(0.8710)	(0.5020)	(0.9558)
PE_BEL20	1.0677***	0.9329***	0.6021***
	(0.0021)	(0.0006)	(0.0022)
PE_BEL20 ∗ ACQ_BIGN	−0.5708***	−0.5147***	−0.2939***
	(0.0012)	(0.0004)	(0.0074)
ACQ_BIGN	7.5643***	6.6033***	3.6761***
	(0.0011)	(0.0004)	(0.0090)
RELATED	0.9592**	0.8925**	1.0504***
	(0.0241)	(0.0139)	(0.0007)
TAR_LISTED	−0.5960	−0.1545	0.2707
	(0.4520)	(0.8000)	(0.5638)
ACQ_LISTED	1.8974***	2.1382***	1.3430***
	(0.0011)	(0.0001)	(0.0000)
TAR_FIN	1.6970***	1.5321***	1.5225***
	(0.0059)	(0.0031)	(0.0002)
ACQ_FIN	0.0361	−0.5029	−0.5235
	(0.9383)	(0.2924)	(0.1358)
REL_SIZE	−0.0002		
	(0.2239)		
ACQ_SIZE	−0.2950**	−0.2829***	
	(0.0129)	(0.0070)	
TAR_CASH	−3.1428**		
	(0.0105)		
ACQ_CASH	0.6394	0.3193	
	(0.6778)	(0.8291)	
TAR_PPE	0.5069		
	(0.5679)		
ACQ_PPE	1.4246	1.8007**	
	(0.1160)	(0.0305)	
TAR_DEBT	−0.0830		
	(0.8003)		
ACQ_DEBT	−0.0969	0.1208	
	(0.8707)	(0.8182)	

(continued on next page)

TABLE 13 (continued)

	(1)	(2)	(3)
TAR_EBITDA	−1.6717		
	(0.1987)		
ACQ_EBITDA	−3.5191	−1.1888	
	(0.2963)	(0.6137)	
Pseudo R^2	0.3740	0.3206	0.2523
n	95	105	125

*, **, *** Indicate significance at the 10 percent, 5 percent, and 1 percent level, respectively, according to a two-tailed test, respectively.
This table presents the regression output from ordered probit regression models where the dependent variable equals 0 for purely fixed payments, 1 for mixed payments, and 2 for purely contingent payments. The p-values are reported in parentheses.

Variable Definitions:
TOP_TIER_INV_BANK = binary variable that equals 1 for acquirers hiring a high-reputable investment bank;
NO_INV_BANK = binary variable that equals 1 for acquirers not hiring an investment bank;
TAR_BIGN (*ACQ_BIGN*) = binary variable that equals 1 for targets (acquirers) having a Big N auditor;
TAR_NO_AUDIT = binary variable that equals 1 for targets that do not have their financial statements audited;
PE_BEL20 = average price/earnings multiple for the BEL 20 in the year of the transaction;
RELATED = binary variable equaling 1 if target and acquirer are operating in the same four-digit SIC industry;
TAR_LISTED (*ACQ_LISTED*) = binary variable equaling 1 if the target (acquirer) is publicly quoted;
TAR_FIN (*ACQ_FIN*) = binary variable equaling 1 if the target (acquirer)'s main SIC code starts with 6;
REL_SIZE = ratio of target's total assets relative to the acquirer's;
ACQ_SIZE = natural logarithm of the acquirer's total assets;
TAR_CASH (*ACQ_CASH*) = ratio of target (acquirer) cash relative to its total assets;
TAR_PPE (*ACQ_PPE*) = ratio of target (acquirer) property, plant, and equipment relative to its total assets;
TAR_DEBT (*ACQ_DEBT*) = ratio of target (acquirer) debt relative to its total assets; and
TAR_EBITDA (*ACQ_EBITDA*) = ratio of target (acquirer) EBITDA relative to its total assets.

method of payment. More importantly, the inclusion of these additional variables does not affect our main conclusions. Next, we estimate industry relatedness at the two-digit SIC level, and our findings remain unaffected. We also estimate alternative models in which we include target size in addition to bidder size. The former variable is not found to be significant and does not alter our conclusions. In addition, we estimate the models with financial leverage instead of total leverage. This process yields similar conclusions. Finally, we control for M&As that take place in high-tech industries because these M&As might be affected by greater risk-taking (Reuer, Shenkar, and Ragozzino 2004). Again, our results are found to be robust.

CONCLUSIONS

In this paper, we analyze the association between audit quality and the method of payment in a sample of 125 Belgian M&As during the period 1997–2009. Information asymmetry has been identified in the literature as one of the determining factors of the method of payment in M&A transactions. Our empirical results support our prediction that a high-quality audit reduces the information asymmetry related to both the target's value and the acquirer's value. We show that contingent payments are significantly less likely if the target firm is audited by a Big N auditor. This conclusion is valid under different specifications. In addition, a Big N audit of the acquiring firm is found to reduce market timing behavior by acquirers. Also, target shareholders are more likely to accept contingent offers when the acquirer's financial statements are certified by a Big N auditor.

These findings provide support for the theory that a Big N quality effect reduces information asymmetry in the Belgian context. In addition, we show that audit quality significantly affects a firm's financial choices related to strategically important projects such as M&As. Finally, we also show that high-quality audits mitigate the market timing behavior of managers.

Our findings have important implications for future research. The results clearly suggest that a high-quality financial statement audit reduces information asymmetry in M&As. Hence, audit quality may affect not only the method of payment but also the premium offered, the probability of deal completion, the extent of value creation on deal announcement, and even synergy following the M&A. These topics should prove to be interesting avenues for future research. In addition, one limitation of our study is that our sample is restricted to Belgian transactions. Although we believe that Belgium is a representative setting for continental European deals, it would be interesting to determine whether the same conclusions hold in other geographical regions. Finally, our sample only includes deals for which information regarding the method of payment is publicly available. Because these deals typically involve larger firms, our results might not be generalizable to the entire population of smaller M&A transactions.

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APPENDIX A

Correlation Matrix

	RELATED	*TAR_LISTED*	*ACQ_LISTED*	*TAR_FIN*	*ACQ_FIN*	*REL_SIZE*	*ACQ_SIZE*	*TAR_CASH*	*ACQ_CASH*	*TAR_PPE*	*ACQ_PPE*	*TAR_DEBT*	*ACQ_DEBT*	*TAR_EBITDA*	*ACQ_EBITDA*
RELATED	1.00	−0.01	−0.11	0.07	−0.17	−0.08	−0.20	0.14	0.07	−0.20	0.02	−0.21	−0.04	−0.05	−0.01
TAR_LISTED	−0.01	1.00	−0.11	0.18	0.23	−0.05	0.18	−0.05	−0.14	−0.09	0.06	−0.12	0.01	−0.17	−0.11
ACQ_LISTED	−0.11	−0.11	1.00	0.01	−0.05	−0.12	0.41	−0.15	−0.09	0.00	0.11	0.09	0.05	−0.05	−0.03
TAR_FIN	0.07	0.18	0.01	1.00	0.46	−0.04	−0.02	0.11	−0.02	0.15	0.30	0.09	−0.04	−0.13	0.10
ACQ_FIN	−0.17	0.23	−0.05	0.46	1.00	−0.06	0.18	0.18	0.09	0.24	0.39	0.12	0.03	0.03	−0.03
REL_SIZE	−0.08	−0.05	−0.12	−0.04	−0.06	1.00	−0.21	−0.05	0.26	−0.09	−0.05	0.04	0.14	−0.04	−0.14
ACQ_SIZE	−0.20	0.18	0.41	−0.02	0.18	−0.21	1.00	−0.16	−0.20	0.07	0.35	0.04	0.14	0.03	0.16
TAR_CASH	0.14	−0.05	−0.15	0.11	0.18	−0.05	−0.16	1.00	0.10	−0.20	−0.13	−0.26	−0.26	0.20	−0.25
ACQ_CASH	0.07	−0.14	−0.09	−0.02	0.09	0.26	−0.20	0.10	1.00	−0.21	−0.12	−0.07	−0.20	0.01	−0.06
TAR_PPE	−0.20	−0.09	0.00	0.15	0.24	−0.09	0.07	−0.20	−0.21	1.00	0.46	0.48	0.32	0.18	0.23
ACQ_PPE	0.02	0.06	0.11	0.30	0.39	−0.05	0.35	−0.13	−0.12	0.46	1.00	0.43	0.32	0.03	0.23
TAR_DEBT	−0.21	−0.12	0.09	0.09	0.12	0.04	0.04	−0.26	−0.07	0.48	0.43	1.00	0.35	0.03	0.34
ACQ_DEBT	−0.04	0.01	0.05	−0.04	0.03	0.14	0.14	−0.26	−0.20	0.32	0.32	0.35	1.00	0.04	0.24
TAR_EBITDA	−0.05	−0.17	−0.05	−0.13	0.03	−0.04	0.03	0.20	0.01	0.18	0.03	0.03	0.04	1.00	0.09
ACQ_EBITDA	−0.01	−0.11	−0.03	0.10	−0.03	−0.14	0.16	−0.25	−0.06	0.23	0.23	0.34	0.24	0.09	1.00

This table provides an overview of the Pearson correlations between the control variables. All variables are winsorized at 5–95 percent, i.e., extreme values are replaced by the corresponding percentiles. The firm characteristics are defined as in Table 2.