



the Autonomous Management School
of Ghent University and Katholieke Universiteit Leuven

Vlerick Leuven Gent Working Paper Series 2011/15

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MATHIEU LUYPART

Mathieu.Luypaert@vlerick.com

TOM VAN CANEGHEM

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MATHIEU LUYPAERT

Vlerick Leuven Gent Management School

TOM VAN CANEGHEM

HUBrussel, Universiteit Antwerpen and Antwerp Management School

The authors thank Evy Bruyland, Wouter De Maeseneire and Jonas Standaert for useful comments on an earlier draft of this article. They also gratefully acknowledge the help of Bram Decroix in collecting the data.

Contact:

Mathieu Luypaert

Vlerick Leuven Gent Management School

Reep 1

9000 Gent

E-mail: Mathieu.Luypaert@vlerick.com

Tel.: +32 16 24 88 24

ABSTRACT

This paper empirically studies the relationship between audit quality and the method of payment in a sample of Belgian M&As between listed as well as private firms during 1997-2009. We investigate whether a high-quality audit reduces the need for contingent payments resulting from information asymmetry about the target's value. In addition, we analyse whether large audit companies limit incentives for bidders to exploit private information on their own value. Using multivariate binary and ordered probit regression models, our results show a lower necessity for contingent payments in M&As where the target is audited by a BigN audit firm, after controlling for several other deal and firm characteristics. Furthermore, we find that the incentive for acquirers to use stock payments in periods of stock market overvaluation is mitigated by a high-quality external audit. Yet, the latter finding does not hold for a sample of privately-held acquirers.

Keywords: Mergers and Acquisitions, Audit Quality, BigN Auditor, Method of Payment

JEL: G34, M42

1. INTRODUCTION

The need for external auditing stems from information asymmetry between insiders and outsiders of the company. 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 providing an independent certification of the information presented in the financial statements. Hence, a high-quality audit is likely to reduce the information asymmetry between informed managers and other stakeholders in the company. However, the role of the external auditor has been questioned after some famous scandals (e.g., Enron, WorldCom, Adelphia, Parmalat) leading to important changes in legislation (like the Sarbanes-Oxley act in 2002), increasing the accountability of audit firms and their independence towards their clients. The recent financial crisis has resulted in a resurgence of criticism towards the function of external auditors, as all big audit firms failed to detect and report on the problems with the subprime loan market that have led to the collapse or bailout of many important financial companies (e.g., Lehman Brothers, AIG, Fannie Mae and Freddie Mac).

In this study, we analyse the effectiveness of the external auditor in reducing asymmetric information in the context of mergers and acquisitions (M&As). M&As constitute an interesting setting to investigate the impact of audit quality as there exists considerable information asymmetry between the acquiring and the target company. A first problem of asymmetric information concerns the target value. Bidders make an offer to target shareholders based upon their estimate of the value of the target (and the expected synergy gains). However, the target company is better informed about its own value than the bidding company. One way to reduce this type of information asymmetry for the bidder is to make the payment for the target contingent upon future performance (Hansen, 1987). If the acquirer offers stock, the value of the offer depends on the assessment of the M&A by the market, resulting in risk-sharing between target and acquirer. In cash-paid transactions, on the other hand, bidders take on the entire risk that the expected synergy value embedded in the acquisition premium will not be realized (e.g., Rappaport and Switzer, 1999). We argue that the need for risk-sharing is affected by the quality of the external financial statement audit. A high-quality financial auditor is expected to reduce uncertainty over the target's financial figures and, consequently, over its value to the acquirer.

A second asymmetric information problem is related to the value of the bidder. Bidders, having private information concerning their own value, may try to exploit this information advantage by offering stock if they are overvalued (Myers and Majluf, 1984; Rhodes-Kropf and Viswanathan, 2004;

Shleifer and Vishny, 2003). This might explain why stock offers are typically found to result in inferior returns for bidding firm shareholders (e.g., Bruner, 2004). Chang *et al.* (2009), however, show that a high-quality audit mitigates information asymmetry and, hence, reduces the impact of market-timing behaviour on the firm's capital structure. We extend their analysis by looking at the impact of auditor quality on the payment choice in M&As. Certification through a high-quality audit should limit the incentives for managers to use stock as a means of payment because of less information discrepancies between in- and outsiders of the firm.

Our study provides important contributions to the existing literature. 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. While the impact of audit quality as well as the determinants of payment methods in M&As have been thoroughly investigated separately, empirical evidence on the relationship between the two is still absent. The literature on the antecedents of the M&A payment decision up till now has mainly focused on asymmetric information, investment opportunities, issues of corporate control, and the impact of the business cycle (e.g., Faccio and Masulis, 2005; Martin, 1996). The literature on the effects of audit quality is very extensive, focusing for example on IPO underpricing, earnings management, litigation rates, and the cost of capital (Khurana and Raman, 2004; Mansi *et al.*, 2004; Lee *et al.*, 2003; Beatty, 1989; Palmrose, 1988). The novelty of our study is that we draw the link between these two streams of literature, by studying upon the role of high-quality external audits in mitigating information asymmetry between the combining companies in M&A transactions. Furthermore, we contribute to the literature on audit quality as well as on payment mode in M&As by investigating a sample of listed and unlisted targets and acquirers in a typical Continental European setting, whereas the majority of studies up till now have focused on listed companies in Anglo-Saxon countries. Some studies do consider private next to public targets (e.g., Faccio and Masulis, 2005; Martin, 1996; Swieringa and Schauten, 2008), but all of these studies neglect the case of private bidders. Nevertheless, certification by a high-quality auditor is likely to have a more pronounced impact on private firms as these companies are typically characterized by higher information risk compared to listed companies due to a more limited product-market scope and lower reporting quality (e.g., De Franco *et al.*, 2011).

This paper uses binary as well as ordered probit regression analysis to empirically investigate the impact of audit quality on the method of payment in a sample of 137 M&As between Belgian companies during 1997-2009. We believe Belgium to be an interesting setting to study auditor impact as an external financial statement audit is mandatory for large companies irrespective of whether they are listed, while small companies can opt for a voluntary financial statement audit. Furthermore, the name

of the auditors and the accounting data are publicly available (through the website of the Belgian's central bank or the Belfirst database) as all companies in Belgium (listed and unlisted) are required to file their financial statements with the central bank, and these are subsequently made public. We focus on the impact of bidder as well as target auditor quality after controlling for all other relevant factors in determining the payment method as highlighted by previous research. As suggested in the auditing literature, we use auditor size as a proxy for audit quality (e.g., DeAngelo, 1981; Dye, 1993).

Our empirical results support the notion that BigN auditors succeed in mitigating information asymmetry concerning the target's as well as the acquirer's value. More specifically, we find that the payment type in M&As is less likely to be contingent if the target is a BigN client, because of the reduced need to overcome information asymmetry. Furthermore, acquirers are more likely to opt for a contingent payment mode in periods of stock market overvaluation, but this effect is mitigated by a high-quality external audit of the acquirer. Yet, this market timing behaviour is not found to play a significant role in a subsample of only private acquires. We further show that the target's cash ratio and the acquirer's plant, property and equipment (PPE)/total assets have a significantly positive impact on the probability of settling the M&A with a stock offer or earnout. In line with prior research, we report more contingent payments in horizontal M&As. Finally, we find a higher incidence of stock swaps and earnouts if the acquirer is listed on a stock exchange and the target is a financial company.

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

2. LITERATURE REVIEW AND HYPOTHESES

In this section, we summarize prior literature and present our hypotheses. We start by highlighting the impact of audit firms in reducing information asymmetry, and discuss the relation between auditor size and audit quality. Next, we elaborate on the impact of information asymmetry on the target's and acquirer's value, respectively, and develop hypotheses concerning the effect of audit quality on the method of payment. Finally, we discuss control variables that have been found to explain the payment choice in M&As in prior literature. The different hypotheses and the expected impact of the control variables described in this section, are summarized in Table 1.

Insert Table 1 About Here

2.1. The auditor's role in mitigating information asymmetry

Auditors provide a dual role in financial markets (e.g., Dye, 1993; Mansi *et al.*, 2004; O'Reilly *et al.*, 2006). First, they reduce the information asymmetry for capital market participants (*information role*) by offering an independent verification of the financial statements and by reporting potential breaches in clients' financial accounts. As such, they improve the credibility of the financial reports and make contracting with the firm less costly (Watts and Zimmerman, 1986). Second, they provide investors with a claim on the auditor in the event of an audit failure (*insurance role*).

Following the arguments of DeAngelo (1981) and Dye (1993), we assume superior audit quality supplied by large audit firms. The underlying rationale is that large auditors have more at stake if they fail to report on misstatements. BigN auditors typically have a larger client base and, hence, will lose more in case of reputation damage. Moreover, large auditors have more wealth at risk from litigation (*deeper pockets*) incentivizing them to produce more accurate reports (Dye, 1993; Lennox, 1999). The notion of superior BigN audit quality has been supported by many empirical findings. A BigN audit has, for example, been associated with less underpricing of new issues (e.g., Willenborg, 1999; Beatty, 1989; Balvers *et al.*, 1988; Titman and Trueman, 1986) and higher pre-M&A values (De Franco *et al.*, 2011; Niemi *et al.*, 2008). Several scholars also provide evidence of less earnings management in case of a large auditor (e.g., Becker *et al.*, 1998; Lee *et al.*, 2003).

Furthermore, large auditors seem to give more accurate distress signals (Lennox, 1999) and are confronted with lower litigation rates (Palmrose, 1988). Teoh and Wong (1993) also report that stock price reactions following unexpected positive earnings announcements are higher for companies audited by BigN audit firms. Finally, the cost of equity as well as debt is found to be lower if the company is audited by a BigN auditor (e.g., Khurana and Raman, 2004; Mansi *et al.*, 2004, Pittman and Fortin, 2004). Consequently, large auditors typically charge higher fees compared to smaller auditors (e.g., Firth, 1985; Francis, 1984; Hay *et al.*, 2006; Pong and Whittington, 1994). Blokdijk *et al.* (2006) examine how audits performed by BigN and non-BigN auditors differ and their evidence suggests that the higher audit quality of BigN firms is driven by a less procedural and more contextual approach. Moreover, Blokdijk *et al.* (2003) find that BigN audit firms use lower quantitative materiality levels than non-BigN auditors. Supported by these findings, we will also use auditor size as a proxy for audit quality.

2.2. Information asymmetry on the target's value

In the M&A literature, the choice of payment method has been shown to be an efficient signal in reducing information asymmetry on the target (Bruner, 2004; Eckbo *et al.*, 1990 Fishman, 1989; Hansen, 1987). Hansen (1987) argues that a *lemons* problem will arise if targets have private information on their own value. Given this asymmetric information between targets and acquirers, the target company will only be sold when its value is less than the offer made. The acquirers can protect themselves against this adverse selection 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 means of payment. They attribute their finding to the risk-sharing benefits from paying with stock. These contingent payment features can also be reached using earnouts and by offering convertible bonds or bonds with a junk status. Cash payments and offers consisting out of senior debt securities, on the other hand, are generally considered as fixed payments (Bruner, 2004).

In this paper, we investigate the role of the external financial auditor on the method of payment. If BigN auditors succeed in reducing information asymmetry on the target's financial statements, bidders should be able to estimate the target's value in a more accurate way and, hence, there will be less need to offer a contingent payment. Therefore, our first hypothesis suggests that M&A payments are less likely to be contingent if the target company is audited by a BigN audit firm compared

to a non-BigN auditor or no auditor at all. This hypothesis is tested by including a target BigN dummy in our multivariate regression models.

2.3. Information asymmetry on the acquirer's value

Myers and Majluf (1984) argue that managers of the acquiring firm may want to exploit private information on their own value by offering shares, when they consider their stock to be overvalued. Shleifer and Vishny (2001) and Rhodes-Kropf and Viswanathan (2004) apply this idea of asymmetric information between firm insiders and outsiders to explain M&A activity. Shleifer and Vishny (2001) model the behaviour of acquiring managers and conclude that managers in overvalued firms have an incentive to engage in stock acquisitions. Ang and Cheng (2006), Faccio and Masulis (2005) and Martin (1996) show that bidding companies are indeed more inclined to pay with stock for their M&As if their stock is highly valued. Consequently, several studies show lower bidder announcement as well as long-term returns in M&As paid for with stock (e.g., Ang and Cheng, 2006, Loughran and Vijh, 1997, Bruner, 2004; Travlos, 1987). While the bidding company has the right to decide upon the method of payment, the question may arise why target shareholders are willing to accept stock offers given the market-timing behaviour of acquirers. However, Rhodes-Kropf and Viswanathan (2004) suggest 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 behaviour of acquirers rests of course on the assumption of information asymmetry between the acquiring firm's management and investors, allowing 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, as we consider a sample of both listed as well as private companies, we use the average market-wide price-earnings (P/E) ratio in the year of the transaction to capture stock market overvaluation. If acquirers indeed try to time the market, we expect them to opt especially for contingent payments in periods of high stock prices. 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, Melicher *et al.*, 1983). Dong *et al.* (2006) demonstrate that this finding can be explained by a higher likelihood of paying with overvalued stocks in periods of bull markets. Furthermore, they state that target shareholders accept overvalued stock in booming stock markets in order to "cash out" of their firms (see also, Shleifer and Vishny, 2003). Also 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 (lower market risk premium) in a discounted cash flow valuation, although this is less visible compared to publicly quoted companies. Following the above-outlined arguments, we hypothesize a positive impact of the market-wide P/E ratio on the likelihood of contingent payments. However, as we assume that large auditors succeed in mitigating information asymmetry, we expect them to reduce the likelihood of market timing behavior. Therefore, we also include an interaction term between the average-wide P/E ratio and an acquirer BigN dummy in our multivariate models, and conjecture a negative impact on the probability of a contingent offer. Consistent with this prediction, Chang *et al.* (2009) show that debt ratios of BigN clients are less affected by overvaluation.

2.4. Control variables

Several prior studies have identified other factors that may capture information asymmetry on the target's value. Hansen (1987) predicts that the impact of information asymmetry, and hence, the contingent pricing effect of a stock offer, is higher if the target is relatively larger compared to the bidder. Therefore, we control for the relative size of target to acquirer in our regression models. Supportive findings for this prediction have been presented by Faccio and Masulis (2005), Gulllan *et al.* (1997), Swieringa and Schauten (2008), and Zhang (2003), among others. However, other scholars do not find evidence of a significant impact of the relative size on the method of payment (e.g., Martin, 1996, Ghosh and Ruland, 1998).

Information asymmetry between acquirers and targets is only one of the theories that have been developed to explain the choice between contingent and fixed payments. Another important consideration is the relation with the financing decision. While stock payments generally imply the issue of new shares (or using shares in treasury), cash offers are more likely to be financed with available cash reserves or new loans (e.g., Bruner, 2004, Martynova and Renneboog, 2009). Hence, the payment consideration will also depend upon the financing decision. The pecking order theory states that companies prefer internal over external financing, and debt over equity in attracting external finance (Myers, 1984). We proxy for the availability of cash reserves by calculating the bidder's and target's ratio of cash on total assets. Next, the capacity to obtain new loans depends upon several factors. Following Faccio and Masulis (2005), we look at the impact of collateral (measured as property, plant and

equipment (PPE)/total assets) and pre-M&A leverage (debt/total assets).¹ We consider these variables for bidders as well as targets as the target's PPE and debt capacity may help the acquiring company in obtaining new loans. Moreover, we include the ratio of EBITDA/total assets to capture the cash generating ability of the combining companies.

The management of the acquiring company might also take into account investment preferences of target shareholders in deciding upon the payment type. Target shareholders are more likely to invest in the shares of the newly combined company and, hence, to accept stock offers if the acquiring company is operating in the same industry as the target company. Many studies indeed 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 capturing whether the combining companies were operating in the same four-digit SIC industry before the M&A. Alternatively, we also define relatedness at two-digit SIC level.

The listing status of bidder and target is likely to be another major determinant of the payment method. 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 also includes offers initiated by listed as well as private bidders. Unlisted bidders may be reluctant to offer stock as 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, capturing whether or not target and bidder are quoted on a stock exchange.

3. SAMPLE

The M&As 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 in order for deals to be included in this database. Also, 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 deals of smaller value and has a better coverage of European transactions (e.g., Huyghebaert and Luybaert, 2010). Auditor as well as accounting data are

¹ As a robustness check, we also estimate the models with financial leverage instead of total leverage.

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 impose several selection criteria to obtain our final sample. First, we consider M&As between Belgian companies, completed during 1997-2009. This results in 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% in order for the deal to be retained in our sample. Furthermore, we drop all deals where the bidding company already owned 50% of target stock before the M&A announcement date. This leaves us with a sample of 646 transactions. In addition, we need data on the method of payment in these transactions, 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, leading to a total sample of 139 deals. The significant drop in sample size due to this selection criterion is especially driven by the lack of payment information for the very small deals. Finally, we only retain the deals where we have auditor information in the pre-M&A year for at least one of the combining companies, resulting in an ultimate sample of 137 deals. For 133 transactions, we were able to collect data on the acquirer's auditor. Information on the target's auditor has been found for 129 transactions. This means that for 125 deals, we have information on both the acquirer's as well as the target's auditor.²

Table 2 provides an overview of various deal characteristics of the M&As in our sample, year by year. First of all, we clearly see that the sample is dominated by acquisitions, only 3 transactions (2.19%) are classified as real mergers.³ Next, almost one-third (31.39%) of all M&As is between two companies that are operating in the same main industry, according to four-digit US SIC codes. Concerning the method of payment, we notice that cash is the dominant means of payment (71.53%), while 16.06% of all deals are settled with a stock swap. 3.65% of all M&As are paid for with a combination of cash and shares. Debt (2.92%), mixed cash/debt (2.92%), earnouts (1.46%) and mixed cash/earnout (1.46%) offers are observed less frequently.⁴

Insert Table 2 About Here

² This means that we were able to check whether an auditor has been appointed or not, and that we succeeded in identifying the auditor's name if an external financial audit has taken place.

³ None of the deals in our sample are marked as hostile. This is not surprising given the relatively high ownership concentration in a Continental European context.

⁴ Earnouts can be defined as deferred payments that are contingent upon future post-M&A performance (see, for example, Bruner, 2004).

Descriptive statistics on the type of auditor are summarized in Table 3. We distinguish between BigN clients, non-BigN clients and small companies that are not obliged to have a financial auditor in Belgium but can still voluntarily choose to have their financial statements audited.⁵ The BigN auditors are defined as the N largest international audit firms. For our sample period, this 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 between 1998 and 2001 (due to the merger of Price Waterhouse and Coopers&Lybrand, creating PWC), and finally, the 4 largest as of the demise of Arthur Andersen, following the Enron scandal. Table 3 shows that the majority of the acquirers is audited by a BigN audit firm. For the listed acquirers, the fraction of BigN clients even amounts to 67.12%. This is similar to the percentage of quoted BigN audited targets (61.54%). The unlisted targets are almost equally distributed between BigN and non-BigN clients. Furthermore, 24.27% are considered as small companies that do not need to have their financial statements audited.

Insert Table 3 About Here

Table 4 shows that the large majority of the acquirers are audited by a BigN auditor (60.90%). 33.08% of the acquirers is audited by a non-BigN auditor, while 6.02% is considered as small and, hence, has no obligation to have its financial statements audited. If we look at the targets, we notice that 41.86% is a BigN client, while 38.76% is audited by a non-BigN auditor and 19.38% of the targets are not obliged to have an external auditor. Table 4 also links the auditor type of the combining companies to the method of payment. Following Bruner (2004), we differentiate between contingent and fixed payments. All-equity offers, earnouts, and mixed offers consisting of either equity or earnouts and cash are considered as contingent payments, while cash, debt and mixed offers of cash and debt are categorized as fixed payments. We notice that the percentage of acquirers having a BigN auditor is considerably lower for contingent payments (51.61%) compared to fixed payments (63.71%). The same conclusion appears if we look at the targets: 35.48% of the targets in the deals with a contingent payment are audited by a BigN auditor, while this amounts to 43.88% for the fixed payments. Both findings seem to support our predictions developed in section 2 of this paper. However, to really draw conclusions, we will further test our hypotheses in a multivariate setting (see section 4).

Insert Table 4 About Here

Table 5 reports summary statistics for the firm variables that may play a role in determining the method of payment, and 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 5% level. Table 5 demonstrates that the acquirers are significantly larger compared to their targets. Furthermore, targets hold a significantly larger fraction of total assets in cash and tangible assets, while they seem to have similar debt ratios. Finally, acquirers in our sample are less profitable, measured by EBITDA/total assets compared to their targets.

Insert Table 5 About Here

4. MULTIVARIATE RESULTS

This section provides an overview of our multivariate regression models. We first report our binary probit regression models explaining the likelihood of a contingent M&A payment. Next, we test whether our results hold in different subsamples. Finally, we also check the robustness of our findings when using ordered probit regressions.

4.1. Binary probit regression models

The results of our multivariate binary probit regressions are presented in Table 6.⁶ The dependent variable in these regressions equals one if the M&A is settled with a contingent payment, and zero otherwise. In panel A, we also categorize mixed offers of stock/earnouts and cash as contingent offers, while we exclude them in panel B. The impact of the auditor type is investigated by

⁵ Firms are considered to be large if they have more than 100 employees (average over the year), or if they exceed one of the following criteria: (i) 50 employees (average over the year); (ii) total assets of 3,650,000 EUR; (iii) and turnover of 7,300,000 EUR.

⁶ The use of logit instead of probit regressions results in similar conclusions. These results are not reported in the paper but can be obtained from the authors upon request.

including a BigN dummy. We also control for other factors found to influence the M&A decisions in prior studies as described in the previous section and summarized in Table 1. As a large fraction of acquirers (35.04%) and targets (20.44%) are financial companies, we also add two dummy variables capturing their impact. All banks, insurance companies, real estate companies, and holdings are considered as financial companies, i.e. all firms with a SIC code starting with 6. We report models where we include the auditor type for both target and acquirer (available for 125 M&As), as well as models where we separately include the acquirer (133) and target (129) auditor type. As certain accounting data are missing for some observations, we also report models where we only include acquirer characteristics or no firm variables at all. A check of the correlations among the various explanatory variables reveals that none are too highly correlated (pairwise correlations do not exceed 0.5). All regressions are run using White's heteroscedasticity-corrected standard errors.

Insert Table 6 About here

The results in Table 6 provide supporting evidence for our two hypotheses. First of all, we observe that the likelihood of a contingent mode of payment is significantly lower if the target company is audited by a BigN company. This suggests that the incentive to share the M&A-risk through a stock payment or earnout is less important if the target is a BigN client, supporting the notion that a higher-quality audit by a BigN auditor reduces information asymmetry on the target's value in M&A transactions. Second, we find that acquirers are significantly more likely to offer contingent payments in periods with high P/E ratios, indicating that they try to time the market by offering overvalued stock. This confirms earlier findings of Dong *et al.* (2006), Verter (2002), and Clarke and Ioannidis (1996), among others. Yet, the coefficient of the interaction term between the market-wide P/E ratio and the acquirer BigN dummy is found to be significantly negative, confirming our hypothesis that acquirers see less opportunities to exploit private information on their own value if they are audited by a BigN company. Taken together, our empirical evidence on the impact of the combining companies' external auditors is consistent with the notion of the superior capacity of BigN auditors in reducing information asymmetry (as documented in section 2.1). This conclusion holds in both panels (i.e., irrespective of whether we include mixed payments or not) and under different specifications (i.e., with and without the inclusion of firm characteristics).

Regarding the control variables, we only find some firm characteristics to be important in explaining the means of payment. More specifically, in line with the idea that companies prefer using

available cash reserves over external financing, the target's cash ratio is significantly negatively associated with the likelihood of a contingent payment. The acquirer's cash position, on the other hand, is not found to be significant. Also, in line with the findings of Martin (1996) and Ghosh and Ruland (1998), we do not detect a significant influence of the relative size on the method of payment. Surprisingly, the coefficient on the variable capturing the fraction of total assets consisting out of plant, property and equipment (PPE), is significantly positive (although not in all models). So, contrary to our expectations, a higher value of collateral does not incite the acquirer to opt for cash paid transactions. The level of PPE of the target does not seem to affect the payment choice. Likewise, the combining companies' debt levels and cash generating ability (proxied by EBITDA) bear no significant relation with the type of M&A payment.⁷ The results further demonstrate that acquirers are more inclined to choose contingent payments in industry-related transactions. This might indicate that target shareholders are more likely to accept shares of the newly combined company if the acquiring company is operating in the same industry as the target company. This conclusion confirms 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 payment decision. As expected, the likelihood of a contingent payment is significantly higher if the acquiring company is quoted on a stock exchange. This is in line with the notion that shareholders of private acquirers avoid dilution of their controlling stake, while shareholders of target firms are unwilling to accept unlisted bidder stock. Yet, the target's listing status is not found to be significant in our regression models. Finally, we find that acquisitions of financial companies are more likely to be settled with contingent payments.

4.2. Subsample analysis of listed and privately-held acquirers

While prior studies focused on samples of listed acquirers, we test whether our conclusions remain valid in subsamples of publicly quoted and privately-held acquirers. The asymmetric information on the acquirer's value may even be worse for private acquirers, given that these firms have less publication requirements compared to companies that are listed on a stock exchange. In addition, the price of private acquirers' equity is not immediately visible in the market.

⁷ Our conclusions remain valid if we replace total debt by financial debt. These regression models are not reported but can be obtained from the authors upon request.

Panel A of Table 7 presents the results for the M&As initiated by quoted acquirers. As none of the observations with contingent payments are associated with a BigN auditor, the target's BigN dummy quasi perfectly predicts the likelihood of a contingent payment, and consequently, the maximum likelihood estimation of the binary regression model fails to converge. Although this finding clearly confirms our hypothesis that payments for M&As of targets audited by BigN clients are less likely to be contingent, we cannot include this variable in our regression model for this subsample. Moreover, given the relatively small number of observations in this subsample, we only report parsimonious samples where we do not include firm characteristics (as this would further reduce the sample size). The results in this model show that our conclusions from the entire sample are confirmed in this subsample of listed acquirers. BigN auditors seem to reduce information asymmetry on the listed acquirer's value, and hence, reduce the incentive to exploit temporary stock market overvaluation of its equity value. The results for the control variables are also in line with our findings for the overall sample.

Yet, the results in Panel B demonstrate that our conclusions do not hold for privately-held companies. Unlike listed acquirers, these companies do not seem to exploit stock market conditions by offering stock in overvalued markets. The coefficient for the P/E of the market-wide index is not found to be significant in any of the regression models for this subsample. The conclusion concerning the impact of the target's external auditor remains valid. We find that BigN auditors mitigate information asymmetry, and hence, reduce the need for contingent payments. In line with our earlier findings, the results in this subsample demonstrate that contingent deals are more likely in horizontal deals and if the target is a financial company.

4.3. Ordered probit regression models

Following Faccio and Masulis (2005), we also estimate ordered probit regression models to investigate the antecedents of the payment type. In these models the dependent variable equals 0 for purely fixed payments, 1 for mixed payments and 2 for contingent payments. These additional regression models are presented in Table 8. The results are in line with our findings from the binary probit regression analysis. Our two hypotheses are again confirmed by the data. BigN auditors are found to reduce information asymmetry in M&As. We observe a lower likelihood of stock payments in acquisitions of BigN clients. In addition, BigN auditors of acquiring companies limit the incentives for the use of overvalued stock. Finally, the conclusions on the control variables also remain unchanged.

5. CONCLUSIONS

This paper analyses the association between audit quality and the method of payment in a sample of 137 Belgian M&As during 1997-2009. Information asymmetry has been put forward in the literature as one of the determining factors of the method of payment in M&A transactions. Offering a stock swap or earnout may reduce information asymmetry on the target's value by making the payment contingent upon future performance. Also, bidders may use private information on their own value by offering stock when they know that their shares are overvalued.

Our empirical results using binary as well as ordered probit regression models support our predictions that large (BigN) auditors may reduce information asymmetry on both the target's and the acquirer's value. We show that contingent payments are significantly less likely if the target company is audited by a BigN audit firm. This conclusion is valid under different specifications and also holds in subsamples of M&As by listed and privately held acquirers. In addition, BigN auditors are found to reduce the market timing behaviour of publicly quoted acquirers. Finally, the impact of our control variables (firm as well as deal characteristics) are found to be in line with prior empirical studies.

Our findings may have important implications for future research. The results clearly suggest that auditor quality reduces information asymmetry in M&As, and hence, may not only affect the payment choice, but also the height of the premium offered, the probability of whether an announced deal will actually go through, the extent of value creation upon deal announcement, and even synergy realization following the M&A completion. These may constitute interesting avenues for future research. A limitation of our study is that we restrict our sample to Belgian transactions because of data constraints. Although we believe that Belgium is a representative setting for continental European deals, it would be interesting to see whether the same conclusions hold in other geographical regions.

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TABLE 1: HYPOTHESES ON THE DETERMINANTS OF THE M&A MODE OF PAYMENT

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

<i>Explanatory variables</i>	<i>Definition</i>	<i>Hypothesized effect on likelihood of contingent payment</i>
<i>Hypothesis1: Target information asymmetry</i>		
TAR_BIGN	Dummy variable equaling one if the target company is a BigN client	-
<i>Hypothesis2: Acquirer information asymmetry</i>		
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 a dummy variable equaling one if the target company is a BigN client	-
Control variables		
REL_SIZE	Target Total Assets/Acquirer Total Assets	+
ACQ_CASH	Acquirer Cash/Total assets	-
TAR_CASH	Target Cash/Total assets	-
ACQ_PPE	Acquirer PPE/Total assets	-
TAR_PPE	Target PPE/Total assets	-
ACQ_DEBT	Acquirer Debt/Total assets	+
TAR_DEBT	Target Debt/Total assets	+
ACQ_EBITDA	Acquirer EBITDA/Total assets	-
TAR_EBITDA	Target EBITDA/Total assets	-
RELATED	Dummy variable equaling one if target and acquirer are operating in the same four-(two-) digit SIC industry	+
ACQ_QUOTED	Dummy variable equaling one if the acquirer is publicly quoted	+
TAR_QUOTED	Dummy variable equaling one if the target is publicly quoted	+

TABLE 2: DEAL CHARACTERISTICS

This table reports the deal characteristics for the M&As included in our sample, year by year. We report the deal type (mergers versus acquisition), the industry-relatedness of the deal (related versus diversifying) and the method of payment.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total	%
Mergers	0	0	0	0	0	1	0	0	1	0	0	0	1	3	2.19%
Acquisitions	2	4	8	6	7	15	7	14	18	10	13	16	14	134	97.81%
Related (four-digit SIC)	0	1	1	2	2	7	4	4	7	2	5	2	6	43	31.39%
Diversifying	2	3	7	4	5	9	3	10	12	8	8	14	9	94	68.61%
All-cash bid	1	2	6	3	2	11	4	9	15	8	10	15	12	98	71.53%
All-equity bid	0	2	1	1	2	5	3	4	2	0	2	0	0	22	16.06%
Mix of cash and shares	0	0	1	1	1	0	0	0	0	1	0	0	1	5	3.65%
Debt	0	0	0	0	2	0	0	0	1	0	0	1	0	4	2.92%
Mix of cash and debt	1	0	0	0	0	0	0	0	1	0	0	0	2	4	2.92%
Earnout	0	0	0	0	0	0	0	1	0	1	0	0	0	2	1.46%
Mix of cash and earnout	0	0	0	1	0	0	0	0	0	0	1	0	0	2	1.46%

TABLE 3: TYPE OF AUDITORS

This table provides an overview of the type of auditor (BigN versus non-BigN or no audit in case of a small company) with respect to whether the acquirer and target are publicly listed or not.

A_Big	A_small	A_VKT	T_Big	T_small	T_VKT	CONTINGENT
1	0	0	0	1	0	0
1	0	0	0	0	0	1
1	0	0	0	1	0	0
1	0	0	0	0	1	0
1	0	0	0	0	1	0
1	0	0	0	0	0	1
1	0	0	0	1	0	0

		BigN		Non-BigN		No Audit		
		N	%	N	%	N	%	Total
Acquirer	Listed	49	67.12%	24	32.88%	0	0.00%	73
	Unlisted	32	53.33%	20	33.33%	8	13.33%	60
Target	Listed	16	61.54%	10	38.46%	0	0.00%	26
	Unlisted	38	36.89%	40	38.83%	25	24.27%	103

TABLE 4: TYPE OF AUDITOR AND PAYMENT METHOD

This table reports the payment method with respect to the type of auditor (BigN versus non-BigN or no audit in case of a small company). We distinguish between contingent and fixed payments.

		Contingent		Fixed		Total	
		N	%	N	%	N	%
Acquirer	BigN	16	51.61%	65	63.73%	81	60.90%
	Non-BigN	14	45.16%	30	29.41%	44	33.08%
	No Audit	1	3.23%	7	6.86%	8	6.02%
		31	100.00%	102	100.00%	133	100.00%
Target	BigN	11	35.48%	43	43.88%	54	41.86%
	Non-BigN	13	41.94%	37	37.76%	50	38.76%
	No Audit	7	22.58%	18	18.37%	25	19.38%
		31	100.00%	98	100.00%	129	100.00%

TABLE 5: FIRM CHARACTERISTICS

In this table, we report the mean, median, and standard deviation of the firm characteristics for the acquirers and targets in our sample. The firm characteristics are self-contained, whereas the industry variables were defined in Table 2. All variables are winsorized at 5–95%, i.e. extreme values are replaced by the corresponding percentiles. The firm characteristics are defined as in Table 1.

	Acquirers			Targets			<i>p-value for difference</i>	
	<i>Mean</i>	<i>Median</i>	<i>Std. Dev</i>	<i>Mean</i>	<i>Median</i>	<i>Std. Dev</i>	<i>Parametric t-test</i>	<i>Wilcoxon rank-sum test</i>
Firm characteristics								
SIZE	11.45	11.35	2.27	9.44	9.17	2.03	0.0000	0.0000
CASH	8.92%	3.34%	12.27%	12.93%	5.41%	16.15%	0.0343	0.0587
PPE	12.97%	0.99%	25.23%	26.46%	13.63%	29.51%	0.0002	0.0000
DEBT	41.23%	25.12%	43.55%	42.65%	26.59%	55.62%	0.8292	0.4147
EBITDA	3.40%	1.46%	7.18%	9.56%	7.72%	15.05%	0.0001	0.0000

TABLE 6: MULTIVARIATE REGRESSION RESULTS

Panel A: Probability of a contingent payment (including mixed payments)

The dependent variable in this table equals one if the bidder offers a contingent payment and zero otherwise. All-equity offers, earnouts, and mixed offers consisting of either equity or earnouts and cash are considered as contingent payments. The explanatory variables are defined as in Table 1. The p-values are reported in parentheses. Variables that are significant at the 10% level are highlighted in bold.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
C	-3.5794 (0.0043)	-4.1136 (0.0000)	-3.7270 (0.0000)	-1.7187 (0.0007)	-1.7261 (0.0000)	-1.5774 (0.0000)	-3.5761 (0.0039)	0.9068 (0.0000)	-3.9955 (0.0000)
TAR_BIGN	-0.7639 (0.0954)	-0.6924 (0.1017)	-0.4911 (0.1214)	-0.8389 (0.0402)	-0.8039 (0.0288)	-0.6485 (0.0233)			
PE_BEL20	0.1754 (0.0474)	0.1997 (0.0025)	0.1660 (0.0033)				0.1829 (0.0352)	0.0660 (0.0012)	0.1845 (0.0008)
PE_BEL20*ACQ_BIGN	-0.0529 (0.0966)	-0.0677 (0.0122)	-0.0441 (0.0370)				-0.0605 (0.0551)	0.0259 (0.0028)	-0.0585 (0.0049)
REL_SIZE	-0.0002 (0.4128)			-0.0001 (0.3553)			-0.0003 (0.1254)		
ACQ_CASH	0.5468 (0.7037)	0.4923 (0.7058)		1.2798 (0.3240)	1.0623 (0.3719)		0.6373 (0.6247)	1.2352 (0.5354)	
TAR_CASH	-2.8172 (0.0210)			-2.2999 (0.0526)			-2.3859 (0.0541)		
ACQ_PPE	0.6857 (0.4193)	1.5111 (0.0382)		0.2120 (0.7735)	0.7619 (0.2504)		0.2636 (0.7515)	0.6749 (0.1125)	
TAR_PPE	0.4841 (0.5642)			0.2130 (0.7775)			0.1076 (0.8954)		
ACQ_DEBT	-0.4780 (0.4329)	-0.0969 (0.8417)		-0.2462 (0.6791)	0.2175 (0.6333)		-0.5407 (0.3668)	0.4571 (0.5387)	
TAR_DEBT	0.1039 (0.7562)			0.2787 (0.4089)			0.1911 (0.5766)		
ACQ_EBITDA	-3.6061 (0.2537)	-2.5679 (0.2913)		-2.0809 (0.4337)	-1.7850 (0.4291)		-2.1481 (0.4750)	2.2004 (0.4858)	
TAR_EBITDA	-0.5956 (0.5937)			-0.7268 (0.5181)			-0.3509 (0.7572)		
RELATED	1.2641 (0.0024)	0.9466 (0.0092)	0.8926 (0.0046)	1.0844 (0.0027)	0.7438 (0.0187)	0.7559 (0.0105)	1.0587 (0.0079)	0.3442 (0.0184)	0.8581 (0.0050)
ACQ_QUOTED	1.4391 (0.0003)	1.4846 (0.0000)	1.3019 (0.0000)	1.3301 (0.0006)	1.1201 (0.0010)	1.0900 (0.0003)	1.1492 (0.0011)	0.3156 (0.0000)	1.2767 (0.0000)
TAR_QUOTED	-0.4798 (0.4056)	-0.3002 (0.5288)	0.1059 (0.7765)	-0.3827 (0.4857)	-0.1730 (0.6878)	0.1725 (0.6172)	-0.4921 (0.3377)	0.4604 (0.4140)	-0.0030 (0.9933)
ACQ_FIN	0.0614 (0.8896)	-0.4718 (0.2798)	-0.4140 (0.2210)	0.0400 (0.9218)	-0.3609 (0.3639)	-0.4861 (0.1460)	-0.1935 (0.6484)	0.4121 (0.1347)	-0.5160 (0.1314)
TAR_FIN	1.4857 (0.0080)	1.2857 (0.0043)	1.2452 (0.0008)	1.3374 (0.0185)	1.2004 (0.0169)	1.1505 (0.0027)	1.4277 (0.0038)	0.4339 (0.0057)	1.1868 (0.0018)
McFadden R-squared	0.3585	0.2971	0.2602	0.2912	0.2076	0.1891	0.3167	0.2637	0.2545
N	95	105	125	97	107	129	96	109	133

Panel B: Probability of a contingent payment (excluding mixed payments)

The dependent variable in this table equals one if the bidder offers a contingent payment and zero otherwise. Only all-equity offers and earnouts are considered as contingent payments (excluding mixed payment offers). The explanatory variables are defined as in Table 1. The p-values are reported in parentheses. Variables that are significant at the 10% level are highlighted in bold.

	1)	2)	3)	4)	5)	6)	7)	8)	9)
C									
TAR_BIGN									
PE_BEL20									
PE_BEL20*ACQ_BIG									
REL_SIZE									
ACQ_CASH									
TAR_CASH									
ACQ_PPE									
TAR_PPE									
ACQ_DEBT									
TAR_DEBT									
ACQ_EBITDA									
TAR_EBITDA									
RELATED									
ACQ_QUOTED									
TAR_QUOTED									
ACQ_FIN									
TAR_FIN									
McFadden R-squared									
N									

TABLE 7: SUBSAMPLE OF LISTED AND PRIVATELY-HELD ACQUIRERS

This table presents the probit regression results for the subsamples of listed (Panel A) and private (Panel B) acquirers. The dependent variable in this table equals one if the bidder offers a contingent payment and zero otherwise. All-equity offers, earnouts, and mixed offers consisting of either equity or earnouts and cash are considered as contingent payments. The explanatory variables are defined as in Table 1. The p-values are reported in parentheses. Variables that are significant at the 10% level are highlighted in bold.

Panel A: Listed acquirers

C	-10.9021 (0.0009)
PE_BEL20	0.6231 (0.0021)
PE_BEL20*ACQ_BIGN	-0.1837 (0.0031)
RELATED	2.3565 (0.0111)
ACQ_FIN	-2.4964 (0.0321)
TAR_FIN	3.2093 (0.0085)
McFadden R-squared	0.5588
N	60

Panel B: Privately-held acquirers

	(1)	(2)	(3)
C	-0.7576 (0.4219)	-0.3643 (0.1646)	-1.2498 (0.1662)
TAR_BIGN	-0.6311 (0.1191)	-0.6867 (0.0859)	
PE_BEL20	0.0361 (0.6179)		0.0663 (0.3419)
PE_BEL20*ACQ_BIGN	-0.0139 (0.6259)		-0.0251 (0.3688)
RELATED	0.6887 (0.0814)	0.6751 (0.0839)	0.5345 (0.1565)
ACQ_FIN	-0.4295 (0.3646)	-0.4331 (0.3635)	-0.5754 (0.2116)
TAR_FIN	1.5284 (0.0033)	1.5260 (0.0031)	1.3053 (0.0117)
McFadden R-squared	0.1598	0.1556	0.1223
N	62	62	63

TABLE 8: ORDERED PROBIT REGRESSION MODELS

The dependent variable in this table equals 0 for purely fixed payments, 1 for mixed payments and 2 for contingent payments. The explanatory variables are defined as in Table 1. The p-values are reported in parentheses. Variables that are significant at the 10% level are highlighted in bold.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
C1	2.8221 (0.0201)	3.6340 (0.0000)	3.4819 (0.0000)	1.5368 (0.0028)	1.6966 (0.0000)	1.5775 (0.0000)	2.9559 (0.0135)	3.8114 (0.0000)	3.7447 (0.0000)
C2	3.1655 (0.0111)	3.9565 (0.0000)	3.7344 (0.0000)	1.8478 (0.0005)	1.9812 (0.0000)	1.8065 (0.0000)	3.2730 (0.0078)	4.1139 (0.0000)	3.9894 (0.0000)
TAR_BIGN	-0.8131 (0.0503)	-0.6689 (0.0833)	-0.4526 (0.1259)	-0.9029 (0.0162)	-0.8003 (0.0174)	-0.6228 (0.0191)			
PE_BEL20	0.1318 (0.1358)	0.1732 (0.0074)	0.1501 (0.0057)				0.1457 (0.0886)	0.1880 (0.0035)	0.1683 (0.0015)
PE_BEL20*ACQ_BIGN	-0.0537 (0.0866)	-0.0724 (0.0068)	-0.0452 (0.0318)				-0.0649 (0.0270)	-0.0813 (0.0015)	-0.0586 (0.0040)
REL_SIZE	-0.0009 (0.4063)			-0.0015 (0.1747)			-0.0003 (0.7533)		
ACQ_CASH	-0.1999 (0.8940)	-0.3064 (0.8200)		0.7284 (0.5770)	0.5409 (0.6401)		0.0726 (0.9557)	0.1098 (0.9303)	
TAR_CASH	-2.7874 (0.0168)			-2.3916 (0.0332)			-2.3589 (0.0474)		
ACQ_PPE	1.0517 (0.2351)	1.5953 (0.0327)		0.7357 (0.3548)	0.8563 (0.2167)		0.4923 (0.5635)	1.1368 (0.0986)	
TAR_PPE	0.5244 (0.5432)			0.3710 (0.6341)			0.1150 (0.8892)		
ACQ_DEBT	-0.4104 (0.4978)	-0.0314 (0.9485)		-0.1305 (0.8212)	0.2887 (0.5252)		-0.5010 (0.3864)	-0.1878 (0.6827)	
TAR_DEBT	0.0793 (0.8105)			0.1926 (0.5669)			0.1690 (0.6169)		
ACQ_EBITDA	-2.8099 (0.3462)	-1.9338 (0.3990)		-2.2344 (0.4077)	-1.5215 (0.4933)		-1.2536 (0.6428)	-1.0288 (0.6226)	
TAR_EBITDA	-0.8825 (0.4237)			-0.9528 (0.4047)			-0.5655 (0.6120)		
RELATED	1.1185 (0.0076)	0.9033 (0.0095)	0.8452 (0.0041)	0.9432 (0.0101)	0.7405 (0.0169)	0.7287 (0.0103)	0.9555 (0.0146)	0.7730 (0.0198)	0.8150 (0.0042)
ACQ_QUOTED	1.3700 (0.0006)	1.3738 (0.0000)	1.2266 (0.0000)	1.2782 (0.0011)	1.0451 (0.0027)	1.0403 (0.0007)	1.0965 (0.0014)	1.2456 (0.0001)	1.2020 (0.0000)
TAR_QUOTED	-0.3970 (0.4667)	-0.2083 (0.6609)	0.2172 (0.5662)	-0.3797 (0.4953)	-0.0794 (0.8576)	0.2698 (0.4474)	-0.3906 (0.4275)	-0.2940 (0.5210)	0.1141 (0.7512)
ACQ_FIN	0.1989 (0.6523)	-0.4270 (0.3357)	-0.3942 (0.2520)	0.2065 (0.6206)	-0.3484 (0.3897)	-0.4608 (0.1714)	-0.1316 (0.7592)	-0.5613 (0.1729)	-0.4938 (0.1578)
TAR_FIN	1.2950 (0.0296)	1.2450 (0.0074)	1.2690 (0.0008)	1.1728 (0.0546)	1.2129 (0.0166)	1.1821 (0.0022)	1.2958 (0.0123)	1.1671 (0.0087)	1.2188 (0.0017)
Pseudo R-squared	0.2973	0.2378	0.2105	0.2507	0.1663	0.1556	0.2551	0.2099	0.2083
N	95	105	125	97	107	129	96	109	133