Acquirer's earnings quality and the choice of payment method in mergers and acquisitions

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Abstract

Purpose – The purpose of this paper is to investigate the role of acquirer's earnings quality on the choice of payment method in mergers and acquisitions (M&A).

Design/methodology/approach – The paper applies a simultaneous equations model to address the concern of endogeneity between earnings quality and payment method in corporate acquisitions. In addition, a propensity score matching model is used for robustness purpose.

Findings – Previous studies imply that short-term accruals have a significant impact on the choice of payment method in M&A. In this study, This paper shows that acquisition financing is not significantly affected by short-term earnings quality once control variables are considered. Instead, this paper finds that it is the long-term earnings quality of the acquirer that matters. Acquiring firms with poor (good) long-term earnings quality prefer lower (higher) cash payment in acquisitions. Their results are robust to different definitions of earnings quality.

Research limitations/implications – Researchers should consider the effect of long-term earnings quality in their future investigations.

Practical implications – Investors should be aware of this issue when evaluating corporate mergers.

Originality/value – This is the first study to examine the impact of long-term quality of earnings on the choice of payment method in M&A.

Keywords Accruals, Acquisitions and mergers, Earnings, Earnings quality,
Long-term quality of accruals, Payment method

Paper type Research paper

1. Introduction

Although the choice of payment method in mergers and acquisitions (M&A) has been intensively researched since the late 1970s, a consensus theoretical framework with supporting empirical evidence has not emerged. About 30 percent of acquisitions involve stock swaps despite the fact that researchers consistently find that returns are higher in cash offers than in stock offers for both acquirer and target firms (Erickson and Wang, 1999). A theoretical framework for these findings therefore must be able to explain the coexistence of stock, cash and mixed financing despite the apparent return superiority of cash payments.

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In order to explain the payment method used in M&A, most theoretical models rely either on information asymmetry (Myers and Majluf, 1984) or tax benefits (Wansley *et al.*, 1983) or managerial ownership (Stulz, 1988). Besides, these three major lines of models, other explanations for the choice of payment method advanced by researchers include free cash flow, relative size, growth opportunity and business cycle among others. These models have been subjected to intensive empirical testing but the results are mixed.

Several researchers have examined the relation between earnings management and M&A financing choice. Specifically, Erickson and Wang (1999) find that acquiring firms manage earnings upwards in the periods prior to the merger agreement and that the degree of income increasing earnings management is positively related to the relative size of the merger. Louis (2004) finds strong evidence of upward manipulation of earnings by acquiring firms in the quarter preceding a stock swap announcement. Botsari and Meeks (2008) examine the UK acquisitions and find evidence consistent with earnings management ahead of share-financed bids.

In this paper, we propose that the earnings quality of the acquirer is a determinant of the payment method used in M&A. Our investigation is different from those of Erickson and Wang (1999), Louis (2004) and Botsari and Meeks (2008) in two important aspects. First, these authors directly compare the size of the short-term abnormal accruals between cash and stock mergers using univariate models that do not control for confounding variables. This diminishes the reliability of their conclusions. We directly test this relationship using a multivariate, deterministic model that has the choice of payment method as the dependent variable and earnings quality as an independent variable along with control variables. The earnings quality has not been tested empirically in a multivariate model before in the literature. Second, these authors focus on short-term accruals management while our research focuses on earnings quality. The two terms are often considered synonymous but are not quite so. As Lee and Masulis (2009) point out, the early accounting literature focused on managerial manipulation and earnings management as the primary cause for reduced information quality. However, the more recent literature places more emphasis on uncertainty about operating fundamentals in addition to the effects of managerial discretion over accounting decisions. Thus, earnings quality is more persistent and long-term in nature as it includes both operating fundamentals and discretionary components. By focusing on earnings quality, the results we report are significantly different from those reported previously in the literature.

To preview our results, we find that there is no significant relationship between short-term abnormal accruals and the payment method used in corporate takeovers once control variables are taken into consideration. Second we find that firms with high (low) long-term earnings quality use more cash (stock) in acquisition financing. These results are robust to different measures of earnings quality and the use of different econometric methodologies. In addition, we find that ownership considerations may trump this relationship in extreme cases. Our results show that acquiring firms with low insider ownership use mostly cash in acquisition financing even if the earnings quality is poor.

The rest of the paper proceeds as follows: Section 2 develops the hypotheses; Sections 3 and 4 present the empirical methods; Section 5 explains the sample construction while Section 6 presents the results. Section 7 describes the robustness tests and Section 8 concludes the paper.

2. Hypotheses development

Some recent studies find evidence that firms engage in waves of acquisitions when their common equities are over-valued, and that such acquisitions are paid for by an exchange of stock (Shleifer and Vishny, 2003; Rhodes-Kropf *et al.*, 2005; Dong *et al.*, 2006). Additionally, evidence is lent by Erickson and Wang (1999), Louis (2004) and Botsari and Meeks (2008) that firms contemplating acquisitions by an exchange of stock deliberately manipulate earnings to inflate their stock price.

On theoretical grounds, there is strong motivation for firms contemplating stock acquisitions to inflate their earnings. As long as some bidders are manipulating earnings, the fear of adverse selection will cause market participants to discount the earnings of all bidders regardless of whether or not they are actually managing their earnings. This creates an incentive for bidders to inflate their earnings within the constraints of generally accepted accounting principles (GAAP) because not to do so would mean taking an unfair hit. Whereas this may be so for uninformed traders, the target firm has a battery of auditors, accountants and investment bankers to assist in the evaluation of the acquirer's financial statements and to render advice on the fairness of the stock exchange ratio. It would appear then that the manipulation of earnings would only be an exercise in futility.

Shleifer and Vishny (2003) suggest that the managers of a target firm may agree to a stock merger even if they know that the bidder's stock is inflated. Their motivation for doing this may be a promise to keep them in key positions, or a golden handshake, or the swapping of target's illiquid stock for the liquid stock of the bidder. There have also been cases in which sophisticated investors were duped by the earnings management of a firm. Louis (2004) cites the case of HFS management that was duped into accepting the overvalued stock of CUC to form Cendant, Forbes and Shelton[1].

There is a cost associated with managing earnings (Watts and Zimmerman, 1983). It follows, therefore, that it would only make sense for the bidder to bear this cost if there is some quid pro quo. The quid pro quo may take two forms for firms that are contemplating making a stock swap offer for a merger. First, if their earnings are going to be discounted anyway for fear of adverse selection, then they might as well inflate their earnings to get to a neutral position after the discount has been applied. Second, if the target is not able to unravel the full complexity of the managed earning, then the bidder might actually get a more favorable stock exchange ratio. However, there is no such incentive for a bidder contemplating a cash offer. This results in our first hypothesis:

H1. Acquiring firms with low (high) short-term earnings quality will finance their acquisition with stock swap (cash).

As suggested by Lee and Masulis (2009), the concept of earnings quality embraces not just earnings management, which typically takes place over a short period just prior to the acquisition, but also operating fundamentals which persist over a long period. Firms planning an acquisition have the choice to finance the acquisition with either cash or stocks. Barring a few cash rich firms like Microsoft and Intel that hold enough cash to undertake a cash acquisition without resorting to the capital market, the choice for most firms contemplating acquisition is to use either a stock swap or to raise money in the capital market for the acquisition. Firms with high long-term earnings quality can raise larger sums of money and at a lower unit cost than firms with low long-term earnings quality (Lee and Masulis, 2009). In addition, a venture into the capital market

will entail additional scrutiny by potential investors into various aspects of the firm's operations. This is likely to be more uncomfortable for firms with low earnings quality than firms with high earnings quality. This leads us to our second hypothesis:

> *H2.* Acquiring firms with low (high) long-term earnings quality will finance their acquisition with stock swap (cash).

It is important to note that considerations parallel to the ones outlined as the basis of *H1* and *H2* do not arise for the target. Earnings management prior to an acquisition is typically a short period phenomenon. By the time the acquirer initiates the bid, it is too late for the target to manage its earnings (Erickson and Wang, 1999). The long-term earning quality consideration affects procurement of funds for acquisition from the capital market – a consideration that is irrelevant for the target.

Several researchers have noted the importance of managerial ownership as a determinant of the acquirer's financing plan (Stulz, 1988; Amihud *et al.*, 1990; Ghosh and Ruland, 1998). Amihud *et al.* (1990) find that bidding firm managers with substantial ownership interest are more likely to finance acquisitions with cash to prevent dilution of their ownership. Stulz (1988) shows that managers of firms with low levels of ownership may not value control highly and thus are unconcerned with further dilution of ownership. Morck *et al.* (1988), Denis *et al.* (1997) and Lins (2003) also show that the effect of managerial ownership on the likelihood of stock financing is non-linear. So another purpose of this paper is to explore the intersection of these findings with our previously two formulated hypothesis regarding the effect of earning quality on the merger financing plan of the firm. The issue of interest from the perspective of this research, therefore, is whether the ownership considerations hold sway even when they are at odds with the earnings quality prescriptions regarding the mode of acquisition financing.

Agency theory predicts that managers of an acquiring firm will devise a plan that will best suit their ownership interest in the firm. Prior research consistently finds that returns are higher in cash offers than in stock offers for both acquirer and target firms (Erickson and Wang, 1999). The tradeoff for managers is thus between return and control. When managerial ownership is low, management is most interested in increasing returns because their bonuses, the value of their stock options and other incentive programs depend upon the earnings of the firm. Because of low managerial ownership, loss of equity control is not a concern for managers, and acquisition with cash is preferable to a stock swap consideration. On the other hand, when managerial ownership is high, equity control is assured and ceases to be a major priority. Return considerations dominate again in this situation, and cash as a medium of acquisition becomes preferable. It is only in the intermediate range of managerial ownership that the dilution and loss of equity control becomes a major concern for managers and dominates return consideration so that stock or mixed stock and cash considerations become the preferred financing plan. Empirical evidence in the literature supports this proposition. Following prior research we use a cut off of less than 5 percent for low managerial ownership and more than 20 percent for high managerial ownership. This provides the basis for our third hypothesis:

> *H3.* Managerial self-interest may override the impact of earnings quality on the choice of payment method in corporate takeovers. High and low managerial ownership will favor cash acquisition while intermediate levels of ownership will favor stock or mixed acquisition regardless of earnings quality.

3. Measures of earnings quality

There is no agreed-upon metric for the earnings quality construct. Two general approaches are used in existing literature. The first is based on deducing quality from accounting information. The measures based on this approach are typically related to the level of accruals (Sloan, 1996); the estimation error in accruals (Dechow and Dichev, 2002); and earnings variability (EARNVAR) (Francis *et al.*, 2004, 2005). The second approach focuses on the association between earnings and stock returns (Francis and Schipper, 1999; Ecker *et al.*, 2006). This approach extracts information about earnings from stock prices by assuming the market is efficient. In this study, we use accounting measures to deduce the earnings quality of a firm because of their widespread use in extant literature and their established significant market effects (Francis *et al.*, 2004, 2005).

3.1 Absolute abnormal accruals (ABN_ACC)

Short-term earnings quality is measured by the absolute value of ABN_ACC. The computation of ABN_ACC is based on the modified Jones (1991) model. First, the following cross-sectional regression is estimated for each of the Fama and French (1997) 48 industry groups with at least 20 firms in year t:

$$TA_{j,t}/Asset_{j,t-1} = \beta_1*1/Asset_{j,t-1} + \beta_2*\Delta \text{Rev}_{j,t}/Asset_{j,t-1} \\ + \beta_3*PPE_{j,t}/Asset_{j,t-1} + \varepsilon_{j,t} \tag{1}$$

where TA is total accruals, ΔRev is change in revenue, and PPE is plant and equipment. The industry- and year-specific parameter estimates obtained are then used to estimate firm-specific normal accruals (NA) as a percentage of lagged total assets:

$$NA_{j,t} = \beta_1*1/Asset_{j,t-1} + \beta_2*\Delta \text{Rev}_{j,t}/Asset_{j,t-1} + \beta_3*PPE_{j,t}/Asset_{j,t-1} + \varepsilon_{j,t} \tag{2}$$

ABN_ACC in year t are equal to the absolute value of the difference between the firm-specific actual accruals and the estimated normal accruals. The literature is somewhat conflicted regarding the impact of accruals management on earnings quality. Tucker and Zarowin (2006) show that accruals management may improve earnings quality but Leuz *et al.* (2003) suggest the opposite. Leuz *et al.* believe that accruals management withholds important information from investors. We follow Leuz *et al.* and interpret high levels of ABN_ACC as an indication of poor short-term earnings quality.

3.2 Long-term quality of accruals (LTQAC)

We use LTQAC as a measure of long-term earnings quality. LTQAC is measured by the standard deviation of residuals from regressions relating accruals to cash flows over a multi-year period before the merger. A high (low) standard deviation implies a low (high) LTQAC. Following Francis *et al.* (2005):

$$TCA_{j,t} = \phi_{0,j} + \phi_{1,j} CFO_{j,t-1} + \phi_{2,j}CFO_{j,t} + \phi_{3,j}CFO_{j,t+1} \\ + \phi_{4,j}\Delta \text{Rev}_{j,t} + \phi_{5,j}PPE_{j,t} + v_{j,t} \tag{3}$$

where:

$TCA_{j,t}$ = total current accruals in year t.

$CFO_{j,t}$ = firm j's cash flow from operations in year t.

$\Delta\text{Rev}_{j,t}$ = firm j's change in revenues between year $t - 1$ and year t.

$\text{PPE}_{j,t}$ = firm j's gross value of PPE in year t.

All variables are scaled by lagged assets. $\text{LTQAC}_{j,t}$ is the standard deviation of firm j's residuals $(v_j)_t$ calculated over years $t - 4$ through t (Francis *et al.*, 2005).

Unlike abnormal accruals generated by the modified Jones (1991) model, the long-term accruals quality measure has the advantage of taking uncertainty into consideration so that a firm that has consistently large residuals may still have a good accruals quality because its accruals though large do not vary (Francis *et al.*, 2005).

3.3 Earnings variability

A supplementary measure of long-term earnings quality we use is EARNVAR. EARNVAR is computed as the standard deviation of the firm's earnings over the seven years before the acquisition. Earnings is defined as earnings before extraordinary items divided by total assets. EARNVAR is inversely related to earnings quality – higher EARNVAR means lower earnings quality.

4. Model formulation

Earnings quality and the choice of payment method in acquisitions could be endogenously related. The choice of payment method is affected by earnings quality because of the effect of earnings quality on stock value. But earnings quality might be affected by the acquiring firm's payment method as it has been observed that acquiring firms manage their earnings to inflate the share price before making stock-financed acquisitions (Erickson and Wang, 1999; Louis, 2004). Given the possibility of endogeneity between earnings quality and the payment method employed for acquisition, we formulate the following simultaneous equation model for testing our hypotheses:

$$
\begin{aligned}
\%\text{Cash} = {}& \text{EARN\_QUAL} + \text{FINLEVER} + \text{ASSETS} + \text{RUN\_UP} + \text{RELSIZE} \\
& + \text{MTB} + \text{INDR} + \text{UNLISTED\_TGT} + \text{SUBSID} + \text{BLOCK} \\
& + \text{INSIDER} < 5 + \text{INSIDER} > 20 + \text{INSIDER} < 5{*}\text{EARN\_QUAL} \\
& + \text{INSIDER} > 20{*}\text{EARN\_QUAL}
\end{aligned}
\tag{4.1}
$$

$$
\begin{aligned}
\text{EARN\_QUAL} = {}& \%\text{Cash} + \text{FINLEVER} + \text{ASSETS} + \text{RELSIZE} + \text{MTB} \\
& + \text{INSIDER\_OWN} + \text{DIVDEND}
\end{aligned}
\tag{4.2}
$$

Eight different versions of this model are used to investigate the research hypotheses. The %Cash variable is cash as a percentage of the total payment made for the acquisition. EARN_QUAL is earnings quality of the acquiring firm and is measured by the four proxies described earlier (ABN_ACC, LTQAC, discretionary long-term accruals quality (DiscLTQAC), and EARNVAR). FINLEVER is financial leverage of the acquiring firm, and is measured as the acquirer's total debt before acquisition divided by total assets. Leverage is inversely related to the likelihood of using cash financing (Faccio and Masulis, 2005). ASSETS are measured as the log of total assets of the acquiring firm. Firms with a large asset base are likely to have more debt capacity and use cash financing in acquisitions. RUN_UP is measured as the one-year buy and hold market-adjusted stock return of the bidder before the acquisition. Acquirers prefer to pay with stock when they believe their stock is overvalued. RELSIZE is measured as the deal size relative to the

sum of the acquirer's pre-acquisition market capitalization plus the deal size. Acquirers prefer stock financing for large acquisitions because of the related information asymmetry (Hansen, 1987). MTB is the acquirers' market-to-book ratio of equity prior to the acquisition. Martin (1996) finds that bidders with high growth opportunities (high market-to-book) prefer stock financing in acquisitions. INDR is a (0,1) dummy variable to measure the industry relatedness of the merging firms. It has a value of 1 if the firms are in the same two-digit SIC code, and equals 0 otherwise. The target firm is more likely to accept stock financing as the payment method in a same-industry merger because of the relatively lower level of information asymmetry. UNLISTED_TGT is a (0,1) dummy variable that has a value of 1 if the target is a stand-alone unlisted firm, and is 0 otherwise. An unlisted target is likely to prefer cash payment in acquisition (Faccio and Masulis, 2005). SUBSID is a (0,1) dummy variable that has a value of 1 if the unlisted target is a subsidiary of another firm, and is 0 otherwise. A target firm that is an unlisted subsidiary would prefer cash financing in an acquisition because of liquidity concerns. BLOCK is a (0,1) dummy variable that has a value of 1 if outside blockholders own more than 5 percent of the stock of the acquiring firm as reported in compact disclosure or SEC filings on Lexis-Nexis, and is 0 otherwise. INSIDER < 5 is a (0,1) dummy variable that has a value of 1 if the insider ownership of the acquiring company stock is less than 5 percent, and is 0 otherwise. INSIDER > 20 is a (0,1) dummy variable that has a value of 1 if the insider ownership of the acquiring company stock is greater than 20 percent, and is 0 otherwise. INSIDER_OWN is the percentage ownership of the acquiring company stock owned by insiders. DIVIDEND is measured as total dividends divided by net income. Firms with high dividend payouts are less likely to use cash financing in acquisitions.

In equation (4.2) of the simultaneous estimation model, earnings quality is affected by a number of variables in addition to the payment method (%Cash). FINLEVER of the acquiring firm is a control variable because firms might increase earnings management when they are close to violating debt covenants (Jo *et al.*, 2007). ASSETS and MTB of the acquiring firm are control variables because Watts and Zimmerman (1978) find that large and/or high-growth firms have greater incentive to engage in earnings management. We include RELSIZE as an independent variable because Erickson and Wang (1999) find that the degree of accruals manipulation is an increasing function of the economic benefits at stake in the merger. Earnings quality is affected by insider ownership (INSIDER_OWN) of the acquiring firm due to the personal benefits at stake (Coles *et al.*, 2006). Finally, DIVDIEND is included because some firms have the incentive to manage earnings given their desire to maintain a smooth dividend payout.

5. Sample construction

Our sample consists of M&A announced by publicly traded US companies between January 1993 and December 2004. Availability of mergers and acquisition data and that of certain other variables constrains the research period to the years selected. For example, insider ownership data is only available from 1992, the year when compact disclosure began providing the data through proxy statements. M&A data used in this study are collected from Thomson One. Leveraged and management buyouts are excluded. Following Louis (2004), financial and regulated firms are also excluded.

Our final sample consists of 786 M&As that took place between 1993 and 2004. Our sample size is comparable to that of Louis (2004). His sample included 373 M&As of either pure stock swaps or pure cash purchases that took place between 1992 and 2000.

6. Results

6.1 Descriptive statistics

Descriptive statistics for the variables in the simultaneous estimation model are reported in Table I. Panel A reports the statistics for the full sample while panel B reports statistics by payment method. Our sample consists of 391 (49.7 percent) pure stock deals, 194 (24.7 percent) pure cash deals, and 201 (25.6 percent) mixed payment deals. For comparative purposes, we focus below on the descriptive statistics by payment method given in panel B. Firms that undertake pure stock financed deals have the poorest LTQAC with a mean (median) of 0.059 (0.046). This compares with a mean (median) long-term accruals quality of 0.038 (0.026) for cash-financed deals and 0.049 (0.031) for deals with mixed-financing. EARNVAR exhibits similar characteristics. Firms that undertake pure stock offers have a higher EARNVAR mean (median) of 0.078 (0.055) than the mean (median) of 0.052 (0.032) for firms that undertake pure cash offers. The same holds true for the size of ABN_ACC. Consistent with the univariate results of Erickson and Wang (2009) and Louis (2004), firms that acquire with stock have a higher ABN_ACC mean (median) of 0.062 (0.054) than the mean (median) of 0.047 (0.037) for firms that acquire with pure cash. This finding, by substantiating the results of prior univariate research, shows definitively that our conclusions based on deterministic techniques that run contrary to prior beliefs are not a construct of our data set. DiscLTQAC is also the poorest for firms that undertake stock-financed acquisitions with a mean (median) standard deviation of 0.031 (0.021). In sum, all measures show a steady deterioration in the earnings quality of acquiring firms from the ones that finance with pure cash to the ones that finance with pure stocks, with mixed cash and stock financing occupying an intermediate position. This finding lends initial support to our hypothesis that earnings quality has a significant impact on acquisition payment method. On average, the acquirers in stock-financed deals are smaller than the acquirers in cash-financed deals. FINLEVER of cash-financed acquirers is higher than that for stock-acquirers. Average DEAL VALUE for stock-financed acquisitions is much larger than that for cash-financed deals. The one-year buy-and-hold stock return (RUN_UP) prior to the acquisition is the highest for stock-financed acquisitions with a mean (median) of 103.9 percent (34.8 percent). The mean (median) value of insider equity ownership, INSIDER_OWN, is 0.377 (0.075) for stock-payers and 0.332 (0.052) for cash-payers. Pure stock offers have block ownership mean (median) of 0.185 (0.098); pure cash and mixed offers have comparable levels of block ownership. In our sample, stock-financed deals target stand-alone unlisted firms or subsidiaries of other companies more frequently than cash-financed deals.

In Table II, we divide the sample firms into five quintiles by earnings quality and report the mean value of cash paid (%Cash) by acquiring firms in each quintile. Acquiring firms with the best LTQAC quality (quintile 1) have a mean %Cash paid that is about two times higher than those of acquiring firms with the poorest LTQAC quality (quintile 5). The difference is 22.32 percent and is significant at 1 percent. Similar statistics are observed for other measures of earnings quality. The results in Table II show that acquiring firms with higher earnings quality pay significantly more cash for their targets than acquirers with lower earnings quality. This is consistent with the prediction of *H1* and *H2*.

6.2 Short-term accrual quality

Erickson and Wang (1999) and Louis (2004) find that acquiring firms overstate their earnings in the quarter preceding a stock swap announcement. Both the papers find that

	Panel A: full sample[a]				
Variables	Mean	25%	Median	75%	SD
LTQAC	0.051	0.019	0.038	0.070	0.115
EARNVAR	0.069	0.022	0.042	0.087	0.103
ABN_ACC	0.058	0.016	0.036	0.076	0.104
DiscLTQAC	0.025	−0.005	0.012	0.039	0.046
Innate LTQAC	0.026	0.016	0.023	0.033	0.016
Asset ($millions)	6,524.61	785.17	2,700.54	8,404.11	9,952.84
FINLEVER	0.182	0.043	0.173	0.286	0.147
Deal value ($millions)	1,114.12	56.633	197.45	677.96	4,393.10
Run-up (RUN_UP)	0.676	−0.012	0.255	0.606	1.267
Market-to-book ratio (MTB)	4.765	1.968	3.230	5.507	6.192
Insider ownership (INSIDEROWN)	0.327	0.022	0.061	0.261	0.577
Block ownership (BLOCK)	0.174	0	0.114	0.235	0.165
Intra-industry target (INDR)	0.344	0	0	1	0.475
Unlisted target (UNLISTEDTGT)	0.290	0	0	1	0.420
Subsidiary (SUBSID)	0.004	0	0	0	0.062
Log of total assets (SIZE)	4.995	3.314	4.925	6.593	1.549

	Panel B: sample descriptive statistics by payment method						
	Pure stock (n = 391)		Pure cash (n = 194)		Mixed payment (n = 201)		Stock vs cash mean difference
	Mean	Median	Mean	Median	Mean	Median	t-value
Long-term accruals quality (LTQAC)	0.059	0.046	0.038	0.026	0.049	0.031	4.51***
Earning variability (EARNVAR)	0.078	0.055	0.052	0.032	0.069	0.037	5.55***
ABN_ACC	0.062	0.043	0.047	0.034	0.060	0.029	4.99***
Discretionary accruals quality (DiscLTQAC)	0.031	0.021	0.016	0.006	0.021	0.007	3.96***
Asset ($millions)	5,977.17	1,839.78	8,727.31	4,000.26	5,463.55	2,765.60	2.96**
FINLEVER	0.150	0.127	0.190	0.197	0.234	0.235	−3.20***
Deal value ($millions)	1,065.46	174.75	370.14	112.09	1,926.86	498.74	1.71*
Run-up (RUN_UP)	1.039	0.348	0.289	0.180	0.344	0.163	2.29**
Market-to-book ratio (MTB)	5.694	3.893	0.289	0.180	3.860	2.478	1.82*
Insider ownership (INSIDEROWN)	0.377	0.075	0.332	0.052	0.224	0.046	1.24

(*continued*)

Table I.
Sample descriptive statistics for 786 eligible M&A that took place between 1993 and 2004

Block ownership (BLOCK)	0.185	0.098	0.150	0.083	0.178	0.145	1.78*
% of Cash payment (CASH)	0	0	100	100	26.331	16.190	
Intra-industry target (INDR)	0.361	0	0.268	0	0.388	0	2.25**
Unlisted target (UNLISTEDTGT)	0.440	0	0.082	0	0.199	0	9.33***
Subsidiary (SUBSID)	0.003	0	0	0	0.010	0	0.70

Notes: Significant at: *10, **5 and ***1 percent levels; [a]LTQAC is measured by the standard deviation of firm j's residuals from cross-sectional regressions over year $t − 4$ to year t based on the modified Dechow and Dichev (2002) model. EARNVAR is the standard deviation of the firm's earnings over seven years before the M&A event. ABN_ACC is the absolute value of abnormal accruals generated by the modified Jones (1991) approach. Innate LTQAC is an estimate of the innate portion of firm j's long-term accrual quality from Dechow-Dichev (DD) model while DiscLTQAC is the estimate of the discretionary component of firm j's long-term accrual quality. RUN_UP is the cumulative stock buy and hold market-adjusted return of the bidder over the year preceding the announcement month. MTB is the ratio of the market value of equity over the book value of equity prior to deal announcement. INSIDEROWN is the shares owned by corporate insiders divided by total shares outstanding. BLOCK is a (0,1) dummy variable that has a value of 1 if outside blockholders owning more than 5 percent of the stock, and is 0 otherwise. CASH and STOCK are the percentage of cash and stock financed in deals, respectively. INDR equals 1 if the bidder's and the target's primary four-digit SIC code coincides, and equals 0 otherwise. UNLISTEDTGT equals 1 if the target is an unlisted stand-alone company, and equals 0 otherwise. SUBSID equals 1 if the target is an unlisted subsidiary of another firm and equals 0 otherwise

Table I.

Variable	Earnings quality quintile (Q5 = highest earnings quality; Q1 = lowest earnings quality)					Q5-Q1	
	Q5 (%)	Q4 (%)	Q3 (%)	Q2 (%)	Q1 (%)	Diff. (%)	t-stat.
LTQAC	44.13	39.03	26.01	26.10	21.81	22.32***	4.68
EARNVAR	40.27	34.90	30.92	28.41	22.38	17.89***	3.69
ABN_ACC	34.72	31.08	32.66	28.07	23.11	11.61**	2.31
LTQAC (discretionary)	41.51	34.53	29.71	29.27	22.07	19.43***	4.11

Notes: Significant at: **5 and ***1 percent levels; four measures of earnings quality are reported in this table. LTQAC is the long-term quality of accruals. EARNVAR is earnings variability. ABN_ACC is the absolute value of abnormal accruals. DiscLTQAC is the estimate of the discretionary component of a firm's LTQAC. The columns labeled "Q5-Q1" show the difference in the mean values between the best (Q5) and worst (Q1) earnings quality quintiles, along with t-statistic of whether the difference is significantly from 0

Table II.
Mean values of cash paid (%Cash) by acquirers in acquisitions by earnings quality quintile

short-term abnormal accruals are higher in stock mergers than cash mergers using univariate comparisons. However, the authors do not specifically put earnings quality to test in a deterministic model in which the choice of payment method is the dependent variable and earnings quality is an independent variable. The conclusions of Erickson and Wang (1999) and Louis (2004) are, therefore, implied but not tested. We directly test their conclusions with our simultaneous equation model given in equations (4.1) and (4.2).

The results of running the model with ABN_ACC as the measure of earnings quality are given in Table III[2]. Results for equation (4.1) are presented in columns 1-8, and results for equation (4.2) are presented in columns 9 and 10. The last column lists the result of running the model using OLS, i.e. without control for endogeneity. This column is added to show how the results are affected by endogeneity. The results show that simultaneous equations perform better in some models. The models in columns 1-8 differ from each other in terms of the control variables used. Column 1 is the base model that uses all the control variables but does not split insider ownership by percentages and also does not contain the interaction terms. Subsequent models in columns 2-8 sequentially add and/or subtract variables to study the impact of various control features. Interestingly, ABN_ACC is not significant in all the eight models. This result contradicts the implication of Erickson and Wang (1999) and Louis (2004). Our results are consistent with an argument advanced in Erickson and Wang (1999) that earnings management is most viable and cost effective when the user of the accounting information is uninformed or unsophisticated. In the case of stock for stock mergers, the user of the information is informed. The target firm has the resources to hire professionals to evaluate the acquirer's financial statements. The acquirer for its part will know that the detection probability of any earnings management is high. The costs of detection could be significant for the acquirer because the target firm may demand a higher exchange ratio or threaten to cancel the transaction if earnings management is detected. Thus, the acquirer may choose not to manipulate earnings upward prior to a stock for stock merger. In addition, given their fiduciary duties to protect the target shareholders, target firm managers have a strong incentive to make sure that the financial statements of the acquirer have not been window dressed. Given this landscape, short-term accruals management before the merger may not take place at all. Even if it does takes place, its magnitude may be relatively restrained and its effect on the choice of payment method limited. In addition, the relatively low impact of short-term accruals may be rendered insignificant once other factors are controlled in the regression model. Thus, in contrast with the implication of Erickson and Wang (1999), Louis (2004) and Botsari and Meeks (2008), our results show that the size of short-term abnormal accruals does not have a significant impact on the choice of payment method in M&As.

6.3 LTQAC and the effect of managerial ownership

6.3.1 Full model regression results. Table IV panel A presents the results of the simultaneous equations when LTQAC is used as a proxy for earnings quality. Results for equation (4.1) are given in columns 1-8, and results for equation (4.2) are presented in columns 9 and 10. The last column gives the results of running the model using OLS so that these results when compared with those in columns 1-10 shed light on the effect of endogeneity. The results show that simultaneous equations perform better in some models. The following descriptions pertain to models in columns 1-8, i.e. the simultaneous equations models. The adjusted R^2 values of the models are 0.15 or higher. In all the models, LTQAC is significantly negatively related to %Cash, that is, poorer long-term accruals quality (high standard deviation) significantly reduces the amount of cash paid. The coefficient on LTQAC is significant at the 5 percent level in all the models except model 3 where the significance drops to 10 percent. The finding supports our *H2* that the preferred mode of financing for acquiring firms with poor long-term earnings quality is stock swap rather than cash. In column 1, the coefficients

Table III.
Simultaneous equations explaining the choice of acquisition financing in M&A earnings quality is measured by ABN_ACC and the complete system model is used

Variables	1	2	3	4	5	6	7	8	Simultaneous equation (2) 1	2-8	OLS regression
Intercept	59.031 *** (7.71)	56.548 *** (7.53)	58.887 *** (7.47)	56.393 *** (7.96)	58.292 *** (7.16)	55.281 *** (7.77)	57.252 *** (7.40)	55.929 *** (7.96)	0.064 *** (12.18)	0.055 *** (5.42)	93.795 *** (10.85)
CASH	–	–	–	–	–	–	–	–	−0.0001 ** (−2.47)	−0.0001 (−1.28)	–
ABN_ACC	−26.748 (−1.14)	0.737 (0.04)	−70.076 (−1.47)	−54.340 (−1.44)	−0.407 (−0.02)	−0.336 (−0.02)	−10.144 (−0.30)	−7.233 (−0.22)	–	–	89.330 (1.39)
FINLEVER	−1.771 (−0.16)	−1.372 (−0.13)	0.329 (0.03)	0.145 (0.01)	−1.434 (−0.13)	−1.081 (−0.10)	−1.006 (−0.09)	−0.986 (−0.09)	−0.041 ** (−2.40)	−0.082 *** (−3.73)	−4.601 (−0.36)
ASSET	0.0003 * (1.84)	0.0003 ** (2.07)	0.0003 (1.55)	0.0003 * (1.72)	0.0003 ** (2.00)	0.0003 (2.07)	0.0003 ** (2.10)	0.0003 ** (2.10)	1.033×10^{-7} (0.18)	3.657×10^{-7} (1.12)	0.000 (1.02)
RUN_UP	−0.117 (−0.26)	−0.058 (−0.13)	−0.090 (−0.20)	−0.098 (−0.22)	−0.049 (−0.11)	−0.048 (−0.11)	−0.067 (−0.15)	−0.062 (−0.14)	–	–	1.626 (0.89)
RELSIZE	−186.8 *** (−4.37)	−178.6 *** (−4.95)	−173.7 *** (−4.22)	−173.9 *** (−4.24)	−157.7 *** (−3.91)	−158.1 *** (−3.92)	−162.9 *** (−3.91)	−161.9 *** (−3.90)	−7.505 (−1.11)	58.987 *** (7.45)	−216.78 *** (−4.53)
MTB	−0.811 *** (−3.18)	−0.808 *** (−3.16)	−0.815 *** (−3.19)	−0.815 *** (−3.20)	−1.231 (−1.48)	−0.956 (−1.43)	−0.869 *** (−2.88)	−0.856 *** (−2.88)	0.0002 (0.65)	0.0006 (1.21)	−0.184 (−0.29)
INDR	−6.728 ** (−2.14)	−7.085 ** (−2.26)	−6.454 ** (−2.05)	−6.552 ** (−2.08)	−7.200 ** (−2.29)	−7.082 ** (−2.26)	−7.048 ** (−2.24)	−7.039 ** (−2.24)	–	–	−7.131 * (−1.93)
UNLISTED TGT	−33.02 *** (−9.37)	−33.35 *** (−9.45)	−32.26 *** (−9.06)	−32.44 *** (−9.14)	−33.17 *** (−9.38)	−33.23 *** (−9.41)	−33.40 *** (−9.45)	−32.34 *** (−9.45)	–	–	–
SUBSID	7.609 (0.31)	8.386 (0.34)	7.417 (0.30)	7.654 (0.31)	8.026 (0.32)	8.240 (0.33)	9.122 (0.37)	8.880 (0.36)	–	–	−27.901 (−1.00)
INSIDEROWN	−1.285 (−0.54)	–	–	–	–	–	–	–	0.007 ** (2.03)	–	–
BLOCK	−13.647 (−1.40)	−12.317 (1.26)	−13.694 (1.45)	−12.527 (1.35)	−12.178 (−1.25)	−11.946 (−1.28)	−11.963 (−1.22)	−12.407 (−1.35)	–	–	−8.177 (−0.75)
INSIDER5	–	−1.128 (−0.24)	−1.460 (−0.31)	–	−2.925 (−0.48)	–	−1.679 (−0.34)	–	–	0.0010 (0.11)	1.062 (0.19)
INSIDER20	–	−2.912 (−0.28)	−4.372 (−0.80)	–	−16.359 (−0.96)	–	−3.784 (−0.32)	–	–	0.043 ** (2.03)	12.304 (0.61)

(continued)

Variables	Simultaneous equation (1)								Simultaneous equation (2)		OLS regression
	1	2	3	4	5	6	7	8	1	2.8	
INSIDER5*ABN_ACC	–	–	88.576* (1.67)	73.882* (1.82)	–	–	–	–	–	–	–103.09 (–1.48)
INSIDER20*ABN_ACC	–	–	68.372 (1.13)	38.633 (0.84)	–	–	–	–	–	–	–47.69 (0.18)
INSIDER5*MTB	–	–	–	–	0.437 (0.50)	0.147 (0.22)	–	–	–	–	
INSIDER20*MTB	–	–	–	–	2.063 (1.02)	0.541 (0.43)	–	–	–	–	
INSIDER5*MTB*ABN_ACC	–	–	–	–	–	–	1.687 (0.38)	1.254 (0.29)	–	–	
INSIDER20*MTB*ABN_ACC	–	–	–	–	–	–	1.697 (026)	0.752 (0.13)	–	–	
DIV	–	–	–	–	–	–	–	–	0.001 (0.47)	–0.001 (–0.18)	0.001 (0.01)
Adjusted R^2	0.153	0.146	0.150	0.150	0.145	0.147	0.144	0.146	0.022	0.083	0.159
Obs	786	786	786	786	786	786	786	786	786	786	786

Notes: Significance at: *10, **5 and ***1 percent levels; the definition of each variable is given in Table I; t – values are in parentheses:

$$\%Cash = ABN\_ACC + FINLEVER + ASSETS + RUN\_UP + RELSIZE + MTB + INDR + UNLISTED\_TGT + SUBSID + BLOCK + INSIDER < 5 + INSIDER > 20$$
$$+ INSIDER < 5*ABN\_ACC + INSIDER > 20*ABN\_ACC \qquad (4.1)$$

$$ABN\_ACC = \%Cash + FINLEVER + ASSETS + RELSIZE + MTB + INSIDER\_OWN + DIVDEND \qquad (4.2)$$

Table III.

Table IV.
Simultaneous equations explaining the choice of acquisition financing in M&A

Panel A: earnings quality is measured by LTQAC and the complete system model is used

Variables	Simultaneous equation (1)								Simultaneous equation (2)		OLS regression
	1	2	3	4	5	6	7	8	1	2.8	
Intercept	48.546*** (10.11)	45.167*** (8.67)	47.052*** (8.39)	47.932*** (10.31)	50.783*** (8.20)	49.847*** (10.56)	53.263*** (8.51)	48.482*** (10.42)	0.071*** (17.69)	0.070*** (15.38)	100.839*** (11.36)
CASH									−0.0001*** (−3.30)	−0.0001*** (−3.19)	
LTQAC	−67.747** (−2.24)	−60.864** (−2.08)	−101.912* (−1.84)	−110.79** (−2.50)	−58.701** (−2.33)	−59.345** (−2.12)	−73.263** (−2.13)	−79.287** (−2.32)			−123.167* (−2.05)
FINLEVER	−2.978 (−0.28)	−3.083 (−0.30)	−2.383 (−0.23)	−2.425 (−0.23)	−5.126 (−0.49)	−4.638 (−0.44)	−2.295 (−0.22)	−2.486 (−0.24)	−0.072*** (−5.86)	−0.076*** (−6.19)	−13.120 (−1.09)
ASSET	0.0004*** (2.26)	0.0004*** (2.12)	0.0004*** (2.17)	0.0003* (1.70)	0.0003** (2.06)	0.0003** (1.94)	0.0003** (2.10)	0.0004** (2.15)	−6.60 × 10$^{−7}$**** (3.71)	−6.49 × 10$^{−7}$**** (3.71)	0.000 (0.63)
RUN_UP	−0.032 (−0.07)	0.040 (0.09)	−0.020 (−0.04)	−0.028 (−0.06)	−0.014 (−0.03)	−0.007 (−0.02)	−0.001 (−0.01)	−0.037 (−0.08)			3.987* (1.75)
RELSIZE	−204.7*** (−5.91)	−178.6*** (−4.95)	−180.0*** (−4.98)	−179.7*** (−4.98)	−177.8*** (−4.93)	−178.5*** (−4.96)	−179.8*** (−4.98)	−177.7*** (−4.92)	−9.012* (−1.87)	−4.407 (−1.00)	−187.63*** (−5.02)
MTB	−0.811*** (−3.18)	−0.803*** (−3.14)	−0.812*** (−3.17)	−0.816*** (−3.19)	−2.055*** (−2.60)	−1.917*** (−3.26)	−0.976*** (−2.63)	−0.909*** (−3.05)	0.0007** (2.47)	0.0008*** (2.63)	−0.152 (−0.26)
INDR	−6.687*** (−2.19)	−6.849*** (−2.25)	−6.673*** (−2.18)	−6.755*** (−2.22)	−6.853*** (−2.25)	−6.886*** (−2.26)	−6.774*** (−2.22)	−6.982*** (−2.29)			−5.078 (−1.45)
UNLISTED TGT	−32.68*** (−9.75)	−32.12*** (−9.53)	−32.03*** (−9.47)	−31.86*** (−9.49)	−32.16*** (−9.55)	−31.92*** (−9.53)	−32.04*** (−9.46)	−32.00*** (−9.52)			
SUBSID	6.936 (0.28)	5.372 (0.21)	6.255 (0.25)	5.971 (0.24)	−1.632 (−0.06)	−0.234 (−0.01)	8.866 (0.35)	9.730 (0.38)			−28.094 (−1.02)
INSIDEROWN	1.061 (0.48)								0.005* (1.73)		
BLOCK	5.908* (1.71)	5.873* (1.70)	5.887* (1.70)	5.902* (1.70)	5.425 (1.56)	5.445 (1.58)	6.042* (1.74)	6.125* (1.76)			−10.965 (−1.08)
INSIDER5		3.799 (1.07)	0.101 (0.02)		2.273 (0.46)		2.916 (0.74)			0.0003 (0.06)	−2.662 (−0.52)
INSIDER20		4.424 (1.13)	2.670 (0.48)		0.922 (0.16)		3.444 (0.80)			0.004 (0.92)	5.688 (0.92)
INSIDER5*LTQAC			74.610 (1.06)	76.487* (1.72)							54.865 (0.78)
INSIDER20*LTQAC			36.230 (0.50)	59.700 (1.16)							−3.707 (−0.04)

(continued)

Variables	Simultaneous equation (1) 1	2	3	4	5	6	7	8	Simultaneous equation (2) 1	2.8	OLS regression
INSIDER5*MTB	–	–	–	–	1.465* (1.76)	1.261** (2.14)	–	–	–	–	–
INSIDER20*MTB	–	–	–	–	0.885 (0.88)	0.957 (1.38)	–	–	–	–	–
INSIDER5*MTB*LTQAC	–	–	–	–	–	–	3.740 (1.56)	3.006* (1.73)	–	–	–
INSIDER20*MTB*LTQAC	–	–	–	–	–	–	3.760 (0.62)	8.097 (1.21)	–	–	–
DIV	–	–	–	–	–	–	–	–	−0.001 (−0.93)	−0.001 (−0.97)	0.000 (0.02)
Adjusted R^2	0.161	0.157	0.156	0.158	0.160	0.162	0.163	0.163	0.103	0.097	0.166
Obs	786	786	786	786	786	786	786	786	786	786	786
				Panel B: earnings quality is measured by LTQAC and a reduced form estimation model is used							
Intercept	53.240*** (14.73)	48.552*** (11.16)	50.563*** (10.33)	52.102*** (14.65)	53.939*** (10.13)	56.903*** (19.05)	49.556*** (10.66)	52.895*** (14.85)	0.070*** (17.69)	0.070*** (15.38)	
CASH	–	–	–	–	–	–	–	–	−0.0001*** (−3.30)	−0.0001*** (−3.19)	
LTQAC	−73.360** (−2.57)	−67.486** (−2.37)	−107.59* (−1.98)	−122.52*** (−2.79)	−63.906** (−2.24)	−62.971** (−2.20)	−80.480** (−2.38)	−91.56*** (−2.74)	–	–	
FINLEVER	–	–	–	–	–	–	–	–	−0.072*** (−5.86)	−0.076*** (−6.19)	
ASSET	–	–	–	–	–	–	–	–	-6.60×10^{-7}*** (3.61)	-6.49×10^{-7}*** (3.71)	
RELSIZE	−216.7*** (−5.58)	−188.10*** (−5.29)	−189.3*** (−5.52)	−189.4*** (−5.33)	−188.3*** (−5.30)	−181.1*** (−5.17)	−188.9*** (−5.31)	−187.6* (−5.28)	−9.012* (−1.87)	−4.407 (−1.00)	
MTB	−0.780*** (−3.41)	−0.757*** (−3.24)	−0.764*** (−3.27)	−0.760*** (−3.26)	−2.077*** (−2.65)	−2.044*** (−3.51)	−0.901*** (−2.65)	−0.867*** (−3.19)	0.0007** (2.47)	0.0008*** (2.63)	
INDR	−7.216** (−2.37)	−7.335** (−2.41)	−7.204** (−2.37)	−7.207** (−2.37)	−7.323** (−2.41)	−7.292** (−2.41)	−7.281** (−2.39)	−7.448** (−2.45)	–	–	
UNLISTED TGT	−33.24*** (−10.13)	−32.38*** (−9.81)	−32.36*** (−9.74)	−32.41*** (−9.88)	−32.30*** (−9.79)	−32.24*** (−9.84)	−32.34*** (−9.72)	−32.70*** (−9.95)	–	–	
INSIDEROWN	0.140 (0.06)	–	–	–	–	–	–	–	0.0046* (1.73)	–	
BLOCK	3.283 (1.01)	3.549 (1.09)	3.578 (1.09)	3.489 (1.07)	−3.057 (0.94)	−7.133 (−1.02)	3.809 (1.16)	3.783 (1.14)	–	–	
INSIDER5	–	5.529* (1.69)	2.211 (0.45)	–	0.726 (0.15)	–	4.841 (1.27)	–	–	0.0003 (0.06)	

Table IV.

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Table IV.

Variables	Simultaneous equation (1)								Simultaneous equation (2)		OLS regression
	1	2	3	4	5	6	7	8	1	2-8	
INSIDER20	–	3.703	1.741	–	0.335	–	2.571	–	–	0.004	
		(0.95)	(0.32)		(0.46)		(0.60)			(0.92)	
INSIDER5*LTQAC	–	–	2.211	90.191*	–	–	–	–	–	–	
			(1.35)	(1.82)							
INSIDER20*LTQAC	–	–	39.038	56.076	–	–	–	–	–	–	
			(0.54)	(1.09)							
INSIDER5*MTB	–	–	–	–	1.500*	1.398**	–	–	–	–	
					(1.83)	(2.42)					
INSIDER20*MTB	–	–	–	–	1.027	0.939	–	–	–	–	
					(1.03)	(1.36)					
INSIDER5*MTB*LTQAC	–	–	–	–	–	–	2.970*	4.911*	–	–	
							(1.64)	(1.76)			
INSIDER20*MTB*LTQAC	–	–	–	–	–	–	4.187	8.597	–	–	
							(0.70)	(1.31)			
DIV	–	–	–	–	–	–	–	–	–0.001	–0.001	
									(–0.93)	(–0.97)	
Adjusted R^2	0.159	0.157	0.155	0.157	0.158	0.161	0.164	0.164	0.103	0.097	
Obs.	786	786	786	786	786	786	786	786	786	786	

Notes: Significant at: *10, **5 and ***1 percent levels; the definition of each variable is given in Table I:

$$\%Cash = LTQAC + RELSIZE + MTB + INDR + UNLISTED\_TGT + BLOCK + INSIDER < 5 + INSIDER > 20 + INSIDER < 5*LTQAC + INSIDER > 20*LTQAC \quad (4.1)$$

$$LTQAC = \%Cash + FINLEVER + ASSETS + RELSIZE + MTB + INSIDER\_OWN + DIVDEND \quad (4.2)$$

on ASSETS and SUBSID have the expected positive sign and the coefficients on FINLEVER, RUN_UP, RELSIZE, MTB and INDR have the expected negative signs. INSIDER_OWN, as an aggregate measure, is insignificant in column 1. This does not necessarily mean that insider ownership is irrelevant to the mode of financing acquisitions. As we argued earlier, cash financing is likely to be the preferred mode of financing at both ends of the ownership spectrum and stock financing in between. Block ownership is positively and significantly related to the percentage of cash financing. Block owners may prefer cash financing because stock-financed acquisitions typically reduce the wealth of the acquiring firm's shareholders.

In model 2 (column 2), INSIDER_OWN is replaced by INSIDER < 5 and INSIDER > 20. The coefficient on INSIDER < 5 and INSIDER > 20 are positive but insignificant. Managers of firms with low insider ownership are likely to make cash acquisitions to benefit from the higher returns associated with cash acquisitions. Thus, the motivation is return. Managers of firms with high insider ownership are also likely to make cash-financed acquisitions but their motivation is to avoid dilution of ownership (Amihud *et al.*, 1990). In Table IV panel A, the coefficient on INSIDER < 5 and INSIDER > 20 are insignificant. It suggests that managers at either end of the ownership spectrum do not necessarily prefer cash-financed acquisitions whether it is for increased returns or ownership dilution.

In models 3 and 4 of Table IV, we examine how LTQAC interacts with insider ownership in affecting the choice of payment method in acquisitions. When the effect of insider ownership is channeled only through the interaction with LTQAC, as in model 4, the coefficient on INSIDER < 5*LTQAC is significantly positive at the 10 percent level. This provides evidence that managers with low insider ownership prefer cash over stock in financing acquisitions even though the acquiring firm's accruals quality is poor. This supports the prediction of *H3*. The effect of managerial ownership on the acquisition financing decision can also be seen in models 5 and 6 where the coefficient on INSIDER < 5*MTB is positive and significant at 10 and 5 percent in columns 5 and 6, respectively. This shows that managers of acquiring firms that have high growth opportunities prefer to pay with cash rather than with stock even when cash should be preserved for investment activities. In models 5 and 6, the coefficient on INSIDER > 20*MTB is insignificant. It shows that acquiring managers with high levels of stock ownership do not always prefer higher levels of cash financing. Their likely intention is to retain control of the acquiring firm. In models 7 and 8, we consider the interaction between insider ownership, growth opportunity, and accruals quality. Consistent with the earlier results, the coefficient on INSIDER < 5*MTB*LTQAC is significantly positive at the 10 percent level in column 8. Also consistent with the other models, the coefficient on the interaction variable INSIDER > 20*MTB*LTQAC is insignificant.

6.3.2 Results of reduced-form regressions. Although most of the coefficients in Table IV panel A have the expected signs, some of the variables are insignificant in all the eight models. Hahn and Hausman (2002) show that if the degree of endogeneity is not sufficiently strong, statistical inference based on simultaneous equations will pose a significant bias. Donald and Newey (2001) and Stock *et al.* (2002) recommend re-estimating the models using only the strong variables in a reduced-form regression. The results of the re-estimated models using only the significant variables are reported in Table IV panel B. Consistent with the results in panel A, the coefficient on LTQAC

is negative and significant at 5 percent in each of the eight models except models 4 and 8 where the significance rises to 1 percent. This evidences that acquiring firms with poorer accruals quality prefer stock over cash for financing their acquisitions. The influence of managerial ownership on the financing plan of the acquirer is even more evident in the reduced form models of panel B. INSIDER < 5 in model 2 is significant at 10 percent, whereas in the full model it was not significant; INSIDER < 5*LTQAC in model 4 is significant at 10 percent as before; INSIDER < 5*MTB is significant at 5 percent in models 5 and 6 as before; and INSIDER < 5*MTB*LTQAC is significant at 10 percent in model 8 as before. The observation in model 8 clearly provides evidence that when insider ownership is relatively small, managers opt for cash-financed acquisitions even though earnings quality and growth opportunities suggest the opposite tact. In sum, the results reported in Table IV panels A and B confirm that earnings quality has a significant impact on the choice of payment method in acquisitions. All the findings remain unchanged after adding industry dummies to control for unobserved industry effects and dummies to control for hot M&A periods[3].

7. Robustness tests
The first robustness test we conduct is designed to ensure that our results are not driven by a preferred payment method in a particular industry – the so-called industry cluttering effect. Francis *et al.* suggest that AQ can be decomposed into an industry specific component or innate accruals and a firm specific component or discretionary accruals. Innate accruals reflect industrial characteristics that are beyond the control of the firm manager. Following Francis *et al.* we decompose LTQAC into its innate and discretionary components and substitute discretionary LTQAC (DISC_LTQAC) for LTQAC in the reduced form model. The unreported results are consistent and similar to those reported in Table IV panel B.

In another robustness test earning quality is measured by EARNVAR. Unlike the results using LTQAC, the coefficient on EARNVAR is significant in model 7 only.

In the third robustness test, we use Tobit models instead of simultaneous equations. The dependent variable in a Tobit model is truncated on either side. In our models, the percentage of cash paid (%Cash) variable is bounded between 0 and 100 and thus fulfils the bounded variable condition for which Tobit models are used. We find that the effect of earnings quality is much stronger in the Tobit regressions as compared to those reported using simultaneous regressions. The coefficient of LTQAC is negative and significant at the 1 percent level in all the regressions. Using EARNVAR or discretionary LTQAC proxies also give consistent but stronger results. These findings provide robust evidence in support of our *H2* and *H3*.

In the last robustness test, we use the propensity score matching technique to address the issue of endogeneity in our analysis. In this test, the choice of payment method is the outcome variable and earnings quality is the treatment variable. Observations are assigned to the treatment group if the earnings quality measure is above the median (i.e. poor earnings quality). Similarly, observations are assigned to the control group if the earnings quality measure is below the median (i.e. good earnings quality). Matched pairs are formed by selecting observations from the treatment and control groups that have the closest propensity scores (Villalonga, 2004; Colak and Whited, 2007). The result in Table V confirms that poor long-term earnings quality (LTQAC, EARNVAR and DiscLTQAC) makes acquiring firms more likely to

| | LTQAC | | ABN_ACC | | EARNVAR | | Disc_LTQAC | |
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
				Treatment variable = earnings quality				
Intercept	0.6397	0.1100	−0.8110	0.4073	0.1659	0.5089	0.1252	0.8761
CASH	−0.00811	<0.0001	−0.00078	0.8938	−0.00361	0.0568	−0.00971	0.0357
FINLEV	−4.1532	<0.0001	1.1244	0.3357	−3.8989	<0.0001	−4.3873	<0.0001
ASSET	−7.21 × 10⁻⁶	0.4012	0.000036	0.0081	−0.00001	0.1284	−0.00001	0.3200
RUNUP	0.2410	0.0267	0.0616	0.6864	0.0573	0.2724	0.5023	0.0436
STANDAL	0.0344	0.8631	−0.4788	0.4281	0.4214	0.0264	−0.4087	0.3416
RELSIZE	−556.5	0.0101	−109.0	0.7817	92.3417	0.6372	−349.5	0.3452
SUBSD	−1.4936	0.3435	−14.0160	0.9928	−0.5886	0.6674	−12.6703	0.9865
INDR	0.00507	0.9761	0.2343	0.4925	0.3688	0.0247	0.3770	0.1728
MTB	0.0355	0.0307	−0.0782	0.2520	0.0195	0.1719	0.0660	0.1695
INSIDER5	−0.2870	0.2332	−0.9259	0.0378	0.3414	0.0734	0.2935	0.3555
INSIDER20	0.5326	0.4108	−13.5996	0.9843	0.3864	0.0686	0.5853	0.1276
BLOCK	1.2030	0.0212	0.1204	0.9080	0.5262	0.1768	1.0584	0.1954
Model fitness								
AIC	960.80		282.27		1,007.35		397.41	
p-value	<0.001		0.115		<0.001		<0.001	

Notes: This table reports the effect of earnings quality on the choice of payment method in acquisition financing; the propensity score matching method is used to control for potential endogeneity in the selection process; payment method is the outcome variable and earnings quality is the treatment variable

Table V.
Propensity score model
coefficient estimates

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use stock rather than cash as the means of payment in corporate takeovers. The negative coefficient on CASH has a p-value of less than 0.0001 for LTQAC, 0.0568 for EARNVAR, and 0.0357 for Disc_LTQAC. Consistent with our earlier result, the impact of short-term earnings quality (ABN_ACC) is insignificant.

8. Summary
The various theories of M&A financing have been put through extensive empirical tests but the results have been mixed. A comprehensive model identifying the determinants of the acquirer's financing plan has yet to emerge. In this paper, we propose that the earnings quality of the acquirer has a significant influence on the acquirer's choice of payment method. We formulate a simultaneous equations model based on the possibility that earnings quality and the choice of payment method may be simultaneously determined.

Contrary to the implication of previous studies, we find that short-term abnormal accruals have no significant impact on the choice of payment method in M&A if control variables are included. However, the choice of payment method is significantly affected by the acquiring firm's long-term earnings quality. We find a significant negative relationship between the acquiring firm's long-term earnings quality and the cash paid in acquisitions. Our results are robust to different measures of earnings quality and the use of different econometric methodologies.

We also find that ownership consideration may trump this relationship in extreme cases. Managers with low insider ownership prefer cash over stock even if the earnings quality of their firm is poor. We also find that acquiring firms with high insider ownership do not always prefer to pay with cash for acquisitions. In these extreme cases, the choice of payment for them is likely determined by a trade-off between protecting personal wealth and maintaining equity control of the acquiring firm.

Notes
1. See *Securities and Exchange Commission* vs *Walter A. Forbes and E. Kirk Shelton*, Civil Action No. 01-987 (AJL) (D.N.J. Feb 28, 2001) (Release No. AAER 1372, Lit Rel No. 16910).

2. Since income increasing accruals are more likely to be associated with the use of stock financing than income decreasing accruals, we reran the model (equations (4.1) and (4.2)) using signed abnormal accruals instead of ABN_ACC. The results were qualitatively similar to using ABN_ACC. We also adjusted the ABN_ACC for performance as suggested by Kothari *et al.* (2005). We reran the model (equations (4.1) and (4.2)) using performance adjusted accruals. The results were qualitatively similar to using ABN_ACC.

3. The hot M&A period is a (0,1) dummy variable that has a value of 1 for the period between 1997 and 2000. This period is identified based on the statistics reported in Mergerstat. We follow Song (2007) and Moeller *et al.* (2005) in treating this as the hot M&A period.

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