Credit Ratings and the Choice of Payment Method in Mergers and Acquisitions

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Abstract

This paper establishes that credit ratings affect the choice of payment method in mergers and acquisitions. We find that bidders holding a credit rating and/or having a higher rating level are more likely to use cash financing in a takeover. We attribute this finding to the lower financial constraints and enhanced capability of these firms to access public debt markets as implied by their higher debt capacity and/or credit quality. Our results are robust to several firm- and deal- characteristics and are not sensitive to the method used to measure the probability of payment choice or after controlling for endogeneity bias.

***JEL Classification*:** G14; G24; G32; G34

***Keywords*:** Credit Rating, Method of Payment, Mergers and Acquisitions

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Credit Rating Agencies (CRAs) play an important role in the finance world by assessing the creditworthiness of a particular firm, security or obligation (Securities and Exchange Commision (2003)) and assigning a rating. CRAs disclose and disseminate this information (Healy and Palepu (2001)) to the market, alleviating information asymmetry and, consequently, lowering firm's cost of capital. Additionally, prior studies provide evidence on how firm's capability to access public debt markets, implied either by the existence of firm credit rating (Faulkender and Petersen (2006) and Lemmon and Zender (2010)) or rating level (Denis and Mihov (2003)), can influence capital structure decisions. In this respect, Kisgen (2006, 2009) shows that firms often target either specific rating levels or seek to maintain a certain threshold (for instance, investment grade); in particular, in order to secure the rating, firms change their capital structure decisions by issuing equity, buying back debt or through assets sales and dividend cuts.

In turn, the capital structure decision has been proved to be of great importance in the corporate financing decision of merger and acquisition (M&As) investments. Bidding firms conduct M&As with the use of either cash or stock as the sole consideration in the transaction, while some transactions employ a mixture of cash and stock means of payment.[1] A growing body of prior M&A studies has provided evidence that cash-financed acquisitions are to a great extent funded by debt (see, e.g., Bharadwaj and Shivdasani (2003); Faccio and Masulis (2005), Harford, Klasa and Walcott (2009) and Uysal (2011)). Additionally, in the literature relating investment decisions with financial constraints, Fazzari, Hubbard, Petersen, Blinder and Poterba (1988) argue that information asymmetry influences firm investment

[1] The use of cash as a method of payment in corporate takeovers was prevalent during the 80's, it was decreased during the 90's, and it became popular again over the first decade of the new century (Andrade, Mitchell and Stafford (2001), Martynova and Renneboog (2008)).

decisions because it creates financial constraints in the credit markets. Along these lines, Whited (1992), Gilchrist and Himmelberg (1995) and Almeida, Campello and Weisbach (2004) use credit ratings as a measure of firm financial constraints in the credit markets, and suggest that the existence of credit ratings reduces information asymmetry about firm value, thus lowering financial constraints. This allows firms with rated public debt to issue funds in a short notice and according to their investment needs. The above discussion raises two interesting questions with regards to the relationship between bidders' credit ratings, as implied by their capability to access public debt markets, and the choice of method of payment. Does the existence of bidding firms' credit ratings affect the financing decision in M&As? What is the effect of rating level on acquisitions means of exchange?

Motivated by the low financial constraints of (highly) rated firms due to their relatively higher debt capacity (credit quality), we address these questions and examine the role of credit ratings in the choice of payment method in mergers and acquisitions. With regards to debt capacity, numerous prior studies (see, e.g., Cantillo and Wright (2000), Bolton and Freixas (2000), Faulkender and Petersen (2006) and Lemmon and Zender (2010) use credit rating existence as measure of debt capacity. There are two main explanations suggested for the relationship between debt capacity and credit ratings: 1) the demand and supply factors of debt capacity,[2] and 2) the pecking order theory. By arguing that debt capacity is driven by demand and supply factors, these studies demonstrate that firms with credit ratings have relatively more tangible assets and fewer growth opportunities (demand side), and lower levels of information asymmetry and less external frictions of debt in the form of credit rationing and reorganization costs (supply side), thus being more leveraged (Cantillo and Wright (2000) and Faulkender and Petersen (2006)). In particular, Faulkender and Petersen

[2] On the demand side, firms with stable cash flows, higher proportions of fixed assets and low growth opportunities have higher debt capacity and therefore higher demand for debt financing (Myers (1977)). On the supply side, asymmetric information between firm management and investors (Stiglitz and Weiss (1981)), and debt market frictions (Faulkender and Petersen (2006)) can impede firms' ability to issue more debt, mainly due to credit rationing from the lenders and imperfect access to public debt markets.

(2006) empirically show that firms with credit ratings are, in general, more leveraged; more specifically, they use 35% more debt in their capital structure implying relatively higher debt capacity. Secondly, Lemmon and Zender (2010) document that in the group of firms holding a credit rating, the pecking order theory of capital structure is a good first-order description of their financing behavior. That is, firms prefer to use internally generated cash; nevertheless, when it comes to the decision of debt versus equity, financially unconstrained firms choose firstly debt and lastly equity. Specifically, they face favorable borrowing costs up to the point where they do not exceed their debt capacity and therefore the use of extra debt does not constitute a burden in their value (Myers (1977)).

With respect to credit quality, Liu and Malatesta (2005) and Frank and Goyal (2009) argue that the higher the level of credit ratings, the lower the information asymmetry and the adverse selection problem faced by firms. Additionally, evidence from studies that examine the effect of credit rating levels on bond yield spreads (West (1973), Liu and Thakor (1984), Ederington, Yawitz and Roberts (1987), Ziebart and Reiter (1992) and Chen, Lesmond and Wei (2007)) demonstrates a strong negative relationship. This implies that firms with better credit quality face a lower cost of debt and can, therefore, borrow relatively more. Finally, several regulations of financial institutions and other intermediaries are directly tied to credit ratings issued by "Nationally Recognized Statistical Rating Organizations" (NRSROs) (Kisgen (2007)). In particular, a large number of institutional investors are barred from investing in low credit rating firms or below a certain threshold (investment grade) due to concerns related with investors' wealth protection. Thus, firms with high levels of credit ratings overcome these regulatory constraints and face a wider "investor base" when seeking to borrow funds in order to finance specific investment projects. Putting all together, firms of better credit quality are able to borrow more, since they face higher demand and lower financing cost for their debt securities.

In this study, we use a sample of US acquisitions of publicly traded bidders over the period 1998-2009 in order to explore our main hypotheses which are summarized as follows: 1) bidders holding a credit rating (i.e. with higher debt capacity) have better access to the public debt markets. We contend that this lack of financial constraints makes them less reluctant to spend their cash now as it will be relatively easier for them to borrow "fresh cash" in the future whenever needed. Note that cash used in M&A transactions may be sourced either from past operations or from additional debt; the source of accumulated cash is beyond the scope of this paper. The point we wish to make here is that, irrespective of the source of cash, rated bidders are more inclined to make use of it due to their ease of access to the credit markets in the future; 2) bidders with a higher credit rating level (i.e., having better credit quality) also face relatively better opportunities to borrow due to lower cost and higher demand for their debt securities. This analysis leads to our testable hypotheses that the likelihood of a cash offer or the fraction of deal that is paid off with cash versus equity should be higher for 1) rated bidding firms and 2) bidders with higher credit rating level.

Nevertheless, the prior literature, which examined the determinants of the method of payment in acquisitions, finds that this choice is driven either by other variables used to proxy for debt capacity (Faccio and Masulis (2005), Harford et al. (2009) and Uysal (2011)), or other factors such as growth opportunities (Martin (1996)), the need to reduce information asymmetry about the bidder or the target (Hansen (1987), Eckbo, Giammarino and Heinkel (1990) and Chemmanur, Paeglis and Simonyan (2009)), corporate control issues (Amihud, Lev and Travlos (1990), Martin (1996), Ghosh and Ruland (1998) and Faccio and Masulis (2005)), considerations regarding the potential competition for the target (Fishman (1989) and Berkovitch and Narayanan (1990)), agency costs of free cash flow (Jensen (1986)), market timing (Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004)), target status and diversification effects (Faccio and Masulis (2005)) and the mode of

acquisition (Martin (1996)). Thus, we are exploring if and when our hypotheses still hold true, after taking into consideration the effects of all the above factors. In our tests we control for these determinants by including the variables suggested in prior studies.

We use different econometric methodologies to measure the probability of the choice of payment method and find strong support to our conjectures. In particular, we document that: 1) the likelihood of all cash, or percentage of cash used as payment method in the takeover bid, is positively associated with bidder credit rating existence and is statistically significant, at least, at the 5% level; 2) the likelihood of all cash, or percentage of cash used in the acquisition bid, has also a strong positive relationship with bidding firm credit rating level; 3) unused debt capacity also appears to be a determinant of cash financing in M&As corroborating the view that credit ratings reflect debt capacity enabling to predict the payment method in acquisitions; 4) the credit ratings existence variable that constitutes one of our main variables of interest in our study is endogenously determined, and our results continue to hold and be statistically significant at the 1% level, even after taking into account of the self-selection bias.

This study has several contributions in the M&As, capital structure and credit ratings literature. First, it adds to the existing literature on the determinants of method of payment, and particularly the association between firm's debt capacity as well as credit quality and the use of cash or stock financing in acquisitions. Second, it employs both rating existence and rating level as measures of firm's capability to access public debt markets. Third, it provides further evidence regarding the relation between credit ratings and firm's capital structure decisions; in particular, the financing decision in takeover bids. In general, our results imply that credit ratings mitigate information asymmetry, and consequently they reduce bidding firms' cost of capital; firms holding a (high) rating face lower financial constraints and can issue public debt for investment reasons with relatively less frictions. Our findings also

provide further direct implications for academics and practitioners. In particular, bidding firms with access to public debt markets are able to make cash acquisitions and, therefore, rip the benefits related to that form of payment. More specifically, prior literature shows that bidders using cash currency enjoy non-negative abnormal shareholder returns in acquisitions of public targets (Travlos (1987), Brown and Ryngaert (1991), Moeller, Schlingemann and Stulz (2004) and Schlingemann (2004)), and positive abnormal shareholder returns in acquisitions of private targets (Chang (1998), Moeller et al. (2004) and Officer, Poulsen and Stegemoller (2009)). Moreover, there is empirical evidence that the use of cash meets low target managerial resistance and deters competition from rival bidders during takeover contests (Fishman (1989), Jennings and Mazzeo (1993), Betton, Eckbo and Thorburn (2009) and Chemmanur et al. (2009)).

This study is related with a number of previous works. For instance, studies that examine the determinants of the method of payment choice, such as Hansen (1987), Eckbo et al. (1990), Fishman (1989), Berkovitch and Narayanan (1990), Jensen (1986), Amihud et al. (1990), Martin (1996), Shleifer and Vishny (2003), Rhodes-Kropf and Viswanathan (2004), Faccio and Masulis (2005), Chemmanur et al. (2009), Harford et al. (2009) and Uysal (2011) find that various factors influence the decision between cash and stock exchange in acquisitions. However, Faccio and Masulis (2005), Harford et al. (2009) and Uysal (2011), who study particularly the impact of firm's debt capacity on the cash-stock choice are more directly related to our work. Faccio and Masulis (2005) use bidder's leverage, collateral and interlocking directorships, whereas Harford et al. (2009) and Uysal (2011) use the deviation from bidder's target debt ratios as a measure of debt capacity. We, instead, use credit ratings as a measure of debt capacity. More recently, Alshwer, Sibilkov and Zaiats (2011) study the relationship between financial constraints and the choice of payment method in M&As. Our study focuses particularly on the direct effects of credit ratings on the M&A financing

method using several credit rating variables in the empirical analysis. Faulkender and Petersen (2006), Lemmon and Zender (2010) and Kisgen (2006, 2009) examine the effect of credit ratings on firms' capital structure. In this work, we study the effect of credit ratings on firms' financing decision – that is, in turn, related with their capital structure – in the context of M&As.

The remainder of the paper is organized as follows. Section I documents the related literature on the determinants of the choice of method of payment in M&As presenting also the variables used in the analysis. Section II describes our sample. Section III analyzes the methodology and findings of our empirical tests. We present further robustness checks of our results in Section IV. Finally, Section V concludes the paper.

I. Related Literature on the Determinants of the Method of Payment Choice

A. Debt Capacity, Financial Condition, Market Credit Risk and Method of Payment

Apart from our main measure of debt capacity (rating existence), we also consider variables which are known from the previous literature to be related with debt capacity. Following Faccio and Masulis (2005), we use the variable *Collateral*, which is the ratio of property, plant and equipment (PPE) to book value of total assets at the year-end prior to the acquisition announcement. Hovakimian, Opler and Titman (2001) report a strong positive effect of tangible assets to firm's level of debt. The bidder's size is another variable of relevance in our tests, as larger firms are more diversified and, hence, they have lower probabilities of default, enabling them to issue more debt. To account for this effect, we use the variable *Size*, which is the natural logarithm of the market value of equity 4 weeks prior to the acquisition announcement. Furthermore, we include bidder's financial leverage to control

for its financial condition. The variable *Leverage* is measured by the ratio of firm's total financial debt (long-term debt plus debt in current liabilities) to the book value of total assets in the fiscal year prior to the acquisition announcement. The predicted sign of this variable is ambiguous as Faccio and Masulis (2005) find a negative association between leverage and the likelihood of cash, while Harford et al. (2009) report a positive relation. Finally, in order to capture the effect of market credit conditions, we follow Harford (2005) and use the variable *Interest Rate Spread*, which is the spread between the average rate on commercial and industrial loans and the Federal Funds rate. This variable is provided by the Federal Reserve Senior Loan Officer (SLO) survey, and proxies for the ease of financing (in whatever form) or credit constraints in the economy.[3] We expect that when the spread is low, and therefore firms face relatively lower cost of debt capital, the likelihood of cash acquisition should be higher. Therefore, we predict a negative relationship between interest rate spread and the likelihood of cash deals.

B. Growth Opportunities, Market Timing and Method of Payment

The investment opportunities theory posits that a relation between acquirer valuation and the mode of acquisition exists, as long as firms with more growth opportunities avoid underinvestment problems caused by high levels of debt finance; in response to that, they prefer to use stock (Martin (1996) and Jung, Kim and Stulz (1996)). To proxy for growth opportunities we use bidder's book to market ratio and we expect a positive relation with the likelihood of a cash consideration. The variable *Book-to-Market* is measured as the book value of equity at the fiscal year-end prior to the acquisition announcement divided by the market value of equity 4 weeks prior to the acquisition announcement.

[3] We also use in our empirical analysis additional proxies of market credit conditions; these are the yield spread between BBB-AAA bonds (Longstaff (2004)), and the corporate yield spread (Duffee (1998)). The bond data for the construction of the latter (i.e., corporate yield spread) were collected from TRACE database, and start from 2002. Our general results are qualitatively similar.

Furthermore, according to the market overvaluation theory (Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004)), acquirers favor stock acquisitions when their equity is relatively overvalued to target firms' equity in order to decrease acquisition costs. Alshwer et al. (2011) use *book-to-market* as a proxy of overvaluation. Additionally, Faccio and Masulis (2005) use *Run-Up* to measure bidder overvaluation. *Run-Up* is calculated as the bidder market-adjusted buy-and-hold returns over the period (-205, -6) days prior to the acquisition announcement.

C. Asymmetric Information and Method of Payment

According to Hansen (1987), bidders have higher incentives to finance an acquisition with stock when there is high information asymmetry about target value. Moreover, this asymmetry is likely to increase, as the size of the target rises relative to the bidder, mainly because in larger deals the risks of overpayment and dilution of the dominant shareholders control are greater. To control for information asymmetry, we follow Faccio and Masulis (2005) and employ the variable *Relative Size*, which is estimated as the value of the transaction divided by bidder market value of equity 4 weeks prior to the acquisition announcement.

Consistent with Faccio and Masulis (2005) and Harford et al. (2009), we also take into account the target status. This is justified on the grounds that information asymmetry rises when the target is a small, more opaque private firm. Furthermore, in deals where an unlisted target is involved, the seller's consumption/liquidity needs have to be considered. These sellers are likely to prefer cash due to the illiquid and concentrated nature of their portfolio holdings in an attempt to cash out timely their wealth opportunities. Thus, we use the *Private* variable, which is an indicator variable taking the value of 1 for an unlisted target and 0 otherwise.

D. Firm Control, Monitoring and Method of Payment

In the spirit of Stulz (1988) and Jung et al. (1996), the likelihood of losing control in their firm leads managers to prefer debt or internal resources relative to equity when deciding to finance an acquisition; this is due to the fact that the issuance of new stock is likely to dilute their stake in the bidding firm leading to a loss of control and outside intervention. Thus, managers with higher ownership stakes in the bidding firm are more likely to use cash as a payment form in takeover bids (Amihud et al. (1990), Martin (1996), Ghosh and Ruland (1998) and Faccio and Masulis (2005)).

Furthermore, Shleifer and Vishny (1997) and Burkart, Gromb and Panunzi (1997) argue that blockholders can monitor the action of corporate managers helping align the interests of managers and shareholders and leading to better corporate performance. Among others, one of the major actions that large investors can take to improve corporate performance is to advise and put pressure on bidder's managers to proceed to a potential bid or abandon it. These actions include judgments about the terms of the acquisition bids such as the choice of the payment method. Given the empirical evidence on the wealth effects of stock-financed public acquisitions, which demonstrates a significant reduction of bidder's shareholders wealth (Travlos (1987), Brown and Ryngaert (1991) and Schlingemann (2004)), the likelihood of pure stock takeover deals should be lower when blockholdings are higher. To capture these effects, we use the variable *Blockholder Ownership*, which is a measure of the aggregate holdings of blockholders who own at least 5% of the firm's stock.

E. Pecking Order, Free Cash Flow and Method of Payment

Myers (1984), in his pecking order theory, suggests that managers follow a financing hierarchy; that is, they use firstly internal finance, then debt, and finally external equity financing. Moreover, Jensen (1986) states that firms with large amounts of free cash flow are

likely to conduct value destroying acquisitions with cash. In particular, firms with large amounts of cash, cash flow or sufficient amount of debt capacity are more likely to use cash to finance their various investment projects. To control for this effect, we use the *Cash Flows to Equity* variable, which represents the income before extraordinary items plus depreciation minus dividends on common and preferred stock divided by the number of shares outstanding times the closing stock price at the fiscal year-end immediately prior to the acquisition announcement. We expect a positive association between this variable and the likelihood of a cash acquisition.

F. Hostility, Competition, Mode of Acquisition, Intra-Industry Deals and Method of Payment

In addition, the characteristics of a takeover deal might have an influence on the payment method. In hostile acquisitions, or in cases where more than one acquirers bid for a particular target, the bidder might want to consummate the deal relatively quickly and deter competition (Fishman (1989) and Berkovitch and Narayanan (1990)), thus, choosing cash as medium of exchange. Therefore, we use the *Hostile Deals*, which is an indicator variable taking the value of 1 for hostile acquisitions and 0 otherwise. We also include the variable *Number of Bidders* to proxy for the competition the bidder faces during a takeover; this is measured by the number of acquirers who bid for the target.

Further, in tender offers when the bidder incumbent management desires to close the deal earlier, cash is also preferred. That is because tender offers with stock must be made in accordance with the Securities Act of 1933, which entails a substantial delay, mainly because the registration statement must be reviewed by the SEC (Martin (1996)). *Tender Offers* is a dummy variable taking the value of 1 for acquisitions labeled as tender offers and 0 otherwise.

Finally, we control for the industry diversification effect. Faccio and Masulis (2005) argue that in unrelated industries in which sellers are not well acquainted with the industry risks and prospects of the bidder's business sector, they should be relatively more reluctant to accept stock as a method of payment, primarily because of bidder's overvaluation risk. In this case, sellers are likely to prefer cash in order to mitigate the overvaluation problem. To capture this effect, we use the *Diversifying Deals* variable, which is a dummy variable taking the value of 1 for inter-industry transactions, and 0 for intra-industry transactions. Industries are defined at the 2-digit SIC level from the Thomson Financial SDC.

II. Sample and Data

A. Sample Selection Criteria

We download a sample of US domestic acquisitions announced over the period January 1, 1998 and December 31, 2009 from the Thomson Financial SDC Mergers and Acquisitions Database. The start date of the sample was driven by the availability of data for all variables used in the empirical analysis. The sample consists of both successful and unsuccessful deals. We require deals to have non-missing transaction value and payment method information. Bidders are listed firms and targets are either listed or private firms. The original sample includes 13,048 deals. We remove from the sample all deals classified as repurchases, liquidations, restructurings, divestitures, leveraged buyouts, reverse takeovers, privatizations, bankruptcy acquisitions and going private transactions. This reduces the sample to 10,828 observations. Furthermore, to include in the sample deals that represent a transfer of control, we require that the bidder owns less than 10% of target shares before the announcement and seeks to acquire more than 50% after the acquisition. There are 10,166 transactions that meet these criteria. Further, we drop deals worth less than 1 US$ million and less than 1% of

bidder market value to avoid noise in the analysis. There are 6,819 deals that satisfy the above requirements.

Credit rating information for the bidder is collected from COMPUSTAT. Credit ratings represent the Standard & Poor's (S&P) long-term domestic issuer credit ratings. In our sample, the highest level of bidder one month prior to the acquisition announcement is AAA and the lowest is CCC. Out of the 6,819 transactions, 1,747 transactions involve bidders with a credit rating and 5,072 transactions with unrated firms. The main variables of interest are i) the *Rating Existence*, which proxies for bidders' debt capacity, and it is an indicator taking the value of 1 if a bidding firm has a credit rating one month prior to the acquisition announcement, and 0 otherwise;[4] and ii) the *Rating Level*, which ranges from 1 to 22 and proxies for bidders' credit quality.[5,6]

B. Sample Statistics

Table I presents descriptive statistics for the overall sample and by the three payment methods (i.e., 100% cash, 100% stock, combination of both). For the continuous variables, *F*-statistic is computed to examine if the mean values of different bidder and deal characteristics are equal across the three financing methods. In the case of the categorical variables, χ^2-statistic is used to test for the difference among the three payment methods.

Table I shows that for the entire sample of 6,819 acquisitions, 1,974 targets are acquired with 100% cash, in 2,793 deals there is a mix of cash and stock, and 2,052 acquisitions comprise 100% stock means of transaction. Panel A demonstrates bidder specific characteristics, which are found to differ across the three payment types. The proportion of

[4] As an alternative measure of debt capacity we use an indicator variable taking the value of 1 if a bidding firm has an investment-grade rating (above BBB-) one month prior the acquisition announcement and 0 when the bidding firm has a speculative grade rating (below BBB-) or no rating at all. All our main results remain unchanged.

[5] A higher rating level corresponds to a larger number.

[6] In the robustness checks section (V.A.), we also proxy for bidders' credit quality by using a dummy variable of investment-grade firms (those with a credit rating BBB- or above).

bidders holding a credit rating (*Rating Existence*) is higher in cash financed deals (31.0%) than the other two payment forms, while bidders in stock acquisitions have the lowest one (22.8%). This finding is a first indication in support of our hypothesis regarding debt capacity. Average bidder *Size* for pure cash deals has an intermediate level (4,361.893 US$ million), whereas the average bidder size for pure stock deals is the largest (5,930.680 US$ million). Bidders in cash deals have a higher level of *Leverage* (0.191) relative to bidders in stock deals that have the lowest level (0.155). Moreover, bidders in cash acquisitions exhibit a higher level of *Collateral* (0.364), than bidders in stock deals (0.307). Furthermore, bidders *Book-to-Market* ratio is significantly higher in cash-financed acquisitions (0.519), than in stock acquisitions (0.418), which is consistent with the growth opportunities story. Bidders *Run-Up* is significantly lower in cash deals (-0.010) relative to stock financed acquisitions (0.272). The figures from the *Book-to-Market* and *Run-Up* variables support the overvaluation theory. Regarding bidders' *Blockholder Ownership*, in cash acquisitions they have relatively more concentrated ownership (23.33%), while in stock deals they are the most widely diffused (15.71%). This finding is in line with the corporate control hypothesis. *Cash Flows to Equity* is significantly higher in cash acquisitions (0.048), than in stock acquisitions (-0.051), in support of the free cash flow hypothesis.

Panel B presents the statistics for deal specific characteristics, which, again, appear to be quite different across the three financing categories. The *Interest Rate Spread* is significantly higher in cash-financed acquisitions (2.200), than in stock acquisitions (2.052). Furthermore, the average size of the target relative to the bidder (*Relative Size*) is lower for cash deals (18.6%), than the relative size of pure stock deals (29.0%). Consistent with our previous analysis, the likelihood of a bidder and a target being in the same industry is higher for stock deals as the percentage of *diversifying* deals is lowest in that group (32.51%), while cash deals have a higher proportion of diversifying deals (37.54%). The statistics for the

Hostile deals support the mode of acquisition hypothesis as the percentage of hostile acquisitions is higher in pure cash deals (2.53%) than in pure stock acquisitions (0.78%). Moreover, *Tender Offers* are dominated being financed entirely with cash (9.78%); only 0.98% of Tender Offers are financed with stock. In cash deals the percentage of acquisitions of private targets accounts for 69.55% of the overall sample, while in stock deals it accounts for 51.17%. Finally, the *Number of Bidders* is not statistically different between the three payment forms.

[Please Insert Table I About Here]

Table II presents the descriptive statistics by rated and unrated bidders. The statistics from this table will shed further light on the relation between the method of payment and credit ratings. Panel A presents bidder characteristics. Rated bidders are, on average, larger (12,920.240 US$ million) than unrated ones (1,508.230 US$ million). Regarding their leverage, rated bidders have considerably higher levels of leverage (0.306) relative to unrated bidders (0.137); in percentage, this equals with over 100% difference in leverage between the rated and unrated bidders. This provides some preliminary evidence of rated firms' capability to have relatively better access to public debt markets. With regards to bidders' collateral, there is, again, a large difference between the rated (0.477) and unrated (0.305) groups, which lends support to our hypothesis that rated bidders exhibit higher debt capacity than their counterparts. Examining bidders' book-to-market, we are able to find a statistical difference, as rated bidders have higher growth opportunities (0.427) than unrated ones (0.504). Additionally, the statistics for the run-up show that the rated group experiences lower pre-acquisition run-up (0.02) than the unrated group (0.150). This corroborates the overvaluation hypothesis, since the unrated bidders are more overvalued and they are likely to prefer the use of stock instead of cash to take advantage of their relative overvaluation. The average blockholder ownership is lower for the rated bidders (18.435) relative to the unrated ones

(22.956). As for cash holdings, rated bidders exhibit tremendously higher levels (2,272.457 US$ million) relative to the unrated ones (149.318 US$ million).

With respect to deal characteristics, a finding that is worth mentioning is the difference in the relative size of the deal for rated and unrated bidders. The median value of the rated group is 0.086 and is significantly lower than the unrated group (0.111). This has three main implications. First, a deal can be valued very high, so raising large amounts of cash gets more difficult for unrated bidders. Second, the likelihood of unrated bidders to pay with cash decreases as the target size increases and the risk of overpayment is relatively greater. Third, in the case that unrated bidders decide to finance an acquisition with cash, they will have to borrow more than rated bidders relative to their size and, consequently, the magnitude of the change in the leverage will be greater and more volatile. Further, in the rated group the percentage of cash that is used as method of payment is greater (50.641) than the unrated group (45.741). With respect to hostile acquisitions and tender offers, rated bidders execute more deals of these types compared to unrated ones. Finally, we find that rated bidders are involved in less private deals than unrated ones.

[Please Insert Table II About Here]

Table III presents the descriptive statistics of the number of deals and method of payment by each credit rating level. Regarding the percentage of cash that is used in the deal, we are able to discern a specific pattern; that is, the majority of cash is used in the lower credit quality firms, and especially those with speculative grade (below BBB-).[7] This, apparently, contradicts our hypothesis that highly rated firms should have higher likelihood of using cash as a method of payment. Moreover, when we look at the percentage of stock that is used in acquisitions, we find a relatively monotonic increase of stock payment method in higher credit rating levels, except in the case of CCC rated firms, in which the use of stock

[7] In unreported analysis, we conduct a *t*-test for the difference in means of the percentage paid in cash between the investment and speculative grade groups, and we find that the difference is significant at the 1% level.

financing is the highest.[8] However, the observed patterns for both cash and stock financing can be explained by the degree of bidder overvaluation. Specifically, there is an approximately monotonic decrease in the book-to-market for higher rated bidding firms, which means that firms of high credit quality are more overvalued than their counterparts; therefore, it is more likely to use stock as a method of payment in order to time the market and use their expensive stock for the consummation of the deal. In particular, the speculative grade firms are on average less overvalued than the investment grade firms, and this can, at least partially, explain their higher use of cash.

[Please Insert Table III About Here]

From the analysis so far, we have noticed that, for instance, the mere relative size and overvaluation effects do play a significant role in our interpretations of the relationship between credit ratings and the choice of method of payment; hence, in order to establish a more concrete statistical relationship and uncover the net effects of the credit ratings variables, we present, in the next section, a multivariate analysis in the context of different regression equations. The correlation matrix of the above variables is presented in Table IV. Our main variables of interest - *Rating Existence* and *Rating Level* - do not exhibit high correlation with the control variables. This should moderate econometric difficulties (such as multicollinearity concerns) in disentangling any effects of the credit rating variables on the choice of the payment method in takeover deals.

[Please Insert Table IV About Here]

[8] The higher use of stock can be justified by considering their limited ability to issue debt. It is likely that these firms, being very close to financial distress, find it difficult to issue additional debt and opt for stock-swap transaction as the only possible solution. Note, however, that this finding should be treated with caution as there are only 2 observations with CCC level.

III. Empirical Analysis

A. Tobit Regressions

In order to investigate the payment form of acquisitions, we use as dependent variable the fraction of cash as part of the total price offered by the bidder. Since by definition this variable lies in the interval [0, 100], we use a two-boundary Tobit estimator. Thus, we apply a general model of the form:

$$y_i^* = x_i'\beta + u_i, \tag{1}$$

where u_i is an independently distributed error term assumed to be normal with zero mean and variance σ^2. The dependent variable is censored from both the left and the right side so that:

$$y_i = \begin{cases} 0 & if\ y_i^* \leq 0, \\ y_i^* & if\ \ 0 < y_i^* < 100, \\ 100 & if\ 100\ \leq y_i^*, \end{cases} \tag{2}$$

where 0 and 100 are the censoring points as in Faccio and Masulis (2005). The parameters β and σ are estimated using the maximum likelihood method (ML).

A.1. Method of Payment and Credit Ratings Existence

We first examine the relation between bidder credit ratings existence and method of payment by controlling for various bidder-, and deal-specific characteristics. All regressions also control for year fixed effects whose coefficients are suppressed. Additionally, we use heteroskedasticity-robust standard errors adjusted also for bidder clustering due to the presence of repeated acquirers in our sample. Table V presents the results, in which our main variable of interest is the *Rating Existence*. Specification (1) also includes bidder *Size*. We find that the coefficient on rating existence is positive and statistically significant at the 1% significance level. Bidder size has a negative association with the cash consideration in

contrast to our hypothesis for debt capacity.[9] In specification (2) we add other bidder- and deal-specific characteristics. In line with our prediction we find that rating existence still exhibits a positive relation with the cash consideration at the 5% significance level. Furthermore, in our regression we are able to confirm the results from the past literature as we find that most of our control variables have a significant relationship with the cash consideration. More specifically, independent variables that capture firm's financial condition, such as *Leverage* and *Collateral* carry positive and significant coefficients. *Book-to-Market* is consistent with the growth opportunities theory and is positively related with the use of cash. Additionally, we are able to confirm the market timing hypothesis, since we find that *Run-Up* is negatively associated with cash method of payment. That is firms with high pre-acquisition valuations are less likely to use cash in the transaction. Further, we find that the higher the concentration of ownership the more likely the use of cash consideration, as *Blockholder Ownership* holds a positive and statistically significant coefficient at the 5% significance level. The free cash flow hypothesis is also supported by our results, as *Cash Flows to Equity* carries a positive and significant coefficient at the 1% significance level. With respect to the information asymmetry about the target, we corroborate the past literature and find that the *Relative Size* is negatively related with the use of cash in M&As, while the target *Private* status is positively associated with cash financing. Lastly, we document that the mode of acquisition plays a role in the choice of payment method during a takeover deal; in particular, in *Diversifying*, *Hostile* and *Tender Offer* deals, cash is more likely to be the financing choice.[10]

[9] Our results should not be affected by any potential multicollinearity, given the large sample size with sufficient variation in our explanatory variables. We still perform a multicollinearity (VIF) test for all specifications throughout the paper and find that correlation between explanatory variables does not have any material effect on our estimates.

[10] In a separate analysis (not reported but available upon request), we investigate whether the effect of our main variables, Rating Existence and Rating Level (see below) on the choice of method of payment is driven by considerations related with market credit risk. Ideally we would use an interaction of Rating Existence and Rating Level with a market credit risk proxy. However, this exercise is infeasible due to multicollinearity found in VIF test. Therefore, we divide the sample in high and low credit risk groups and conduct a Chow test for the

A.2. Method of Payment and Credit Rating Levels

In the previous section we have documented that the relation between the existence of credit ratings and the use of cash as a method of payment is positive and is attributed to the fact that firms with credit ratings have higher debt capacity. In this section, we try to shed light on our second hypothesis: how is credit quality related with the method of payment in M&As? For that reason, we use the *Rating Level* as our main independent variable. Table V (Specifications (3) and (4)) presents the results for this analysis. First, in specification (3) we also add bidder *size*. Our variable of interest has a positive and significant coefficient at the 1% significance level. Bidder size exhibits a negative relationship with the use of cash. In specification (4) we also control for other bidder- and deal-specific characteristics in our sample. Consistent with our prediction, the higher the credit rating level, the higher the likelihood of a cash acquisition. From the remaining control variables, size, book-to-market, run-up, cash flows to equity, relative size, diversifying, hostile, tender offers and private acquisitions carry significant coefficients at conventional levels, with signs consistent to the prior M&A literature.

[Please Insert Table V About Here]

B. Probit Regressions

In this section we try to distinguish the qualitative nature of the choice of the medium of payment by using Probit estimations. In this respect, our dependent variable takes the value of 0 for all stock deals and 1 for mixed and all cash deals, as in Alshwer et al. (2011). Table VI presents the results for the Probit regressions.[11]

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difference in coefficients between these groups. The market credit risk is captured by the Interest Rate Spread, the yield spread between BBB-AAA bonds, and the corporate yield spread variables. Specifically, we find that the effect of Rating Existence is more pronounced in the high risk groups, whereas in the case of Rating Level the difference is statistically insignificant at conventional levels.

[11] A benefit of a Probit estimation is that it allows us to focus on the qualitative decision to finance with cash, stock or a mixture of the two. In many mixed deals the acquirer does not always specify the actual percentage of

B.1. Method of Payment and Credit Ratings Existence

As in the analysis above we examine the relation between credit ratings existence and the likelihood of using cash as the consideration in M&As. Our main variable of interest is the *Rating Existence* and the control variables are the same as in the analysis so far. In specifications (1) and (2) we observe that firms holding a credit rating are more likely to finance the acquisition with cash or mixed form of consideration. The result appears to be strong as in both specifications the rating existence dummy is statistically significant at the 1% and 5% level, respectively.

B.2. Method of Payment and Credit Rating Levels

Next we test the relation between credit rating levels and the likelihood of using cash as the method of payment in M&As. Our main variable of interest is the *Rating Level* and the control variables are as above. In specification (3), which adds only bidder size as control variable, the rating level is significant at the 1% significance level, and in specification (4) which comprises the full model, the rating level is also positive and significant at the 1% significance level. That is, the higher the credit rating the more likely bidders to incorporate cash in a takeover deal. [12]

[Please Insert Table VI About Here]

cash financing, as target shareholders are offered with a choice of cash or stock financing. Thus, the decision is more accurately specified as choosing among cash, stock or a mixture. In that respect, an Ordered Probit regression is preferred, in which the dependent variable is 0 for pure stock deals, 1 for mixed deals, and 2 for all cash deals as in Faccio and Masulis (2005). We have also run the analysis by using Ordered Probit and our results are qualitatively similar for both rating existence and rating level.

[12] We also put as dependent variable the value of 0 for all cash deals and 1 for mixed and all stock deals and find the opposite result. In particular, the dependent variable experiences a negative relationship with both rating existence and rating level, implying that stock method of payment is a decreasing function of rating existence and rating level.

C. Unused Debt Capacity and Method of Payment

Myers and Majluf (1984) propose a specific financial rationale for M&As based on the complementary fit between different levels of debt capacity of bidders and targets. Bruner (1988) concentrates particularly in the case in which target firms with increased growth opportunities face capital constraints regarding the financing of their investment opportunities; the author suggests that it pays always a bidder with higher debt capacity and lower growth opportunities to acquire a capital constrained target, since the higher debt capacity of the combined firm will help the firm to put forward all the positive NPV projects that the constrained firm might pass up. Hence, we argue that considerations of unused debt capacity between the merging firms can influence the likelihood of using cash as a method of payment; this is mainly due to the fact that the unused debt capacity in one of the two merging parties will lead bidders to use cash for the consummation of the deal, since any increase in leverage associated with cash payments will be absorbed by the unused debt capacity of the combined firm.

To measure this effect, we propose the *BRating/TRating* variable, which is the ratio of the bidder credit rating to target firm credit rating and measures the difference in debt capacity between the two merging participants. Furthermore, we follow Bruner (1988) and create an interaction variable between *BRating/TRating* and *Relative Size* of the deal. This can be justified on the grounds that the impact of the unused debt capacity of the merging firms on the choice of cash method of payment should decrease for large transaction values, since it is more difficult to raise large amounts of cash as the size of the deal increases to very high levels.

Table VII presents the results for this analysis, which runs Tobit regressions where the dependent variable is the proportion of cash used in the acquisition. We notice that the number of observations is reduced significantly due to the requirement that target firms

should hold a credit rating, which leaves private deals out of this analysis. In specification (1) we also add bidder *size.* The coefficient on *BRating/TRating* carries a positive and significant coefficient at the 1% significance level. In specification (2) we also add the control variables used in the previous analysis. We find that the coefficient on *BRating/TRating* still carries a positive and significant coefficient at the 5% significance level. This means that the unused debt capacity has a positive relation with the proportion of cash used in the deal. Finally, in specification (3) we also add the interaction variable *BRating/TRating x Relative Size*. The coefficient on *BRating/TRating* still carries a positive and significant coefficient at the 1% significance level. However, as expected, with regards to the coefficient on the interaction variable, a negative and significant coefficient at the 5% significance level is obtained. This suggests that the incremental effect of unused debt capacity on the proportion of cash financing decreases as the relative size of the deal increases. Overall, the results imply that the existence of unused debt capacity constitutes a determinant of the use of cash as a method of payment in M&As lending further support to the relationship of credit ratings with the choice of acquisition financing.

[Please Insert Table VII About Here]

IV. Further Robustness Tests

In the previous analysis, we have provided evidence that firms with higher debt capacity (holding a credit rating) and credit quality (holding a higher credit rating) are more likely to use pure cash or a proportion of cash when they finance an acquisition. In this section, we offer additional auxiliary tests to check the validity of our findings.

A. Investment-Grade Vs Speculative-Grade Firms

In order to shed further light in the relation between credit ratings and the choice of payment method in M&As, we investigate, for robustness reasons, the impact of investment grade credit ratings. Investment-grade firms are the ones rated with BBB- or above as in An and Chan (2008). These firms are, in general, of higher quality relative to the speculative-grade firms (i.e. those with a credit rating below BBB-). In this respect, Chen et al. (2007) demonstrate that investment grade firms generate lower bond yield spreads relative to the speculative grade ones. Furthermore, due to the absence of regulation restrictions regarding allocations in securities of investment grade firms (Kisgen (2007)), these firms enjoy a larger clientele base and a higher demand for their debt securities. If investment grade firms face lower cost of debt capital and have a wider access to investors, then it is plausible that they are able to borrow more, and use cash more frequently as a method of payment in a takeover deal. Thus, we create the variable *Investment Grade* dummy taking the value of 1 for firms rated BBB- and above, and 0 otherwise. Table VIII reports the results.

In specification (1) the dependent variable is the percentage of cash as part of the total price offered by the bidder; and in specification (2) the dependent variable is the choice between all stock or mixed and all cash consideration. In all specifications we also incorporate the control variables employed in previous analysis. The coefficient of the *investment grade* carries a positive and significant coefficient at the 1% significance level in all specifications. These results add further support to our hypothesis that firms with high credit quality are more likely to use cash financing in M&As.

[Please Insert Table VIII About Here]

B. Endogeneity Control

In our analysis we treated the credit rating variables as exogenous to our model; that is the decision to obtain a credit rating, and the level of credit ratings are randomly allocated across our sample firms. However, Liu and Malatesta (2005) and An and Chan (2008) argue that firms determine, at least partially, whether to obtain a credit rating or have a higher rating level after considering the benefits against the potential costs. Therefore, it is likely that the decision to obtain a (high) credit rating is based on firm specific characteristics and failure to account for that would lead to biased estimates in our regressions. To test this hypothesis, we use an Instrumental Variables two-stage method, with the *Rating Existence* choice equation (Probit) being the reduced form, and the method of payment equations (Tobit and Probit) being the structural form.

In order to determine the probability of a bidder holding a credit rating or having a high rating, we follow Denis and Mihov (2003), Liu and Malatesta (2005), and Faulkender and Petersen (2006) and use variables that have been proposed to account for these effects. Specifically, it has been suggested that a firm is more likely to obtain a credit rating or to have a high rating if it is older, well known, it operates in an industry where the competitors have also credit ratings, it is more profitable, and it has a higher credit quality. Hence, we use: the period in which the bidder firm is covered in the CRSP database before the acquisition announcement as a proxy for bidder age; a dummy variable equals to 1 when the firm stock is traded on the NYSE and 0 otherwise as a proxy for firm visibility; the log of 1 plus the percentage of firms with credit ratings on the same 3-digit SIC-level as a proxy of firm's probability to obtain a credit rating when the competitors already hold one; the ratio of bidder earnings before interest, taxes, depreciation and amortization to total assets as a proxy for the bidder profitability; and bidder Altman (1968) Z-score as a proxy for bidder credit quality.

Table IX presents the results of this analysis for all different methodologies we have used so far (i.e., Tobit and Probit). In both structural equations (2) and (3), our main variable of interest is positively related with the dependent variables at the 1% level of significance. For sensitivity reasons, in the lower part of Table IX we present the Durbin-Wu-Hausman (DWH) augmented regression test of endogeneity, which tests for the significance in the correlation of the errors between the reduced and normal equations. From this analysis we observe that the errors in all models are correlated and are significant at the 1% level of significance, a result that further leads us to reject the null hypothesis of no endogeneity for the variable Rating Existence. Furthermore, it is worth noting that after considering the potential determinants of holding a credit rating, the coefficients in both models are substantially higher than in the ordinary case; this constitutes further evidence that the Rating Existence is endogenously determined, and that our previous results were biased downwards due to a self-selection bias.

[Please Insert Table IX About Here]

With regards to the correction for endogeneity in the case of the continuous variable *Rating Level*, we apply an Instrumental Variables two-stage method, with the Rating Level choice equation (OLS) being the reduced form, and the method of payment equations (Tobit, and Probit) being the structural form. Table X shows the results for this analysis. In both structural equations (2) and (3), our main variable of interest is positively related with the dependent variables at the 1% level of significance. However, in the lower part of Table X, the DWH test for endogeneity does not reject the null hypothesis of no endogeneity of the main variable of interest in both models (2) and (3). Therefore, since we are not able to identify the existence of endogeneity bias for the rating level in these regressions, we can base our inferences in the results of Table V. In any case, the results support our hypothesis

regarding the positive relation of rating level with the likelihood of using cash as a method of payment in acquisitions.

[Please Insert Table X About Here]

V. Conclusion

In this paper we present a direct empirical analysis of the relation between credit ratings and the choice of method of payment in M&As. In particular, we examine how rating existence and rating level affect the likelihood of cash being used as consideration in a takeover bid. In our empirical analysis, we use different econometric approaches to examine this relationship, and we are able to confirm our hypotheses establishing a positive relation between bidders' credit ratings and cash payment method. Specifically, both rating existence and rating level are positively associated to the choice of cash in M&A deals. The results are attributed to the lower financial constraints of firms with a (high) credit rating, as implied by their higher debt capacity (credit quality). Our investment grade results also confirm the findings on rating level analysis corroborating the view that cash method of payment is an increasing function of credit quality. Further, unused debt capacity appears to determine positively the choice of using cash method of payment lending further support to the relationship of credit ratings with the choice of payment method. Moreover, our results are robust even after controlling for endogeneity issues regarding the main variables of interest.

Additionally, in response to the questions raised in the introduction, the findings of this paper imply that higher capability to access public debt markets affects the choice of method of payment in M&As. In particular, higher debt capacity favored by the existence of credit ratings allows rated bidding firms to be less reluctant to use cash in an acquisition investment as it is less painful for them to find cash for new investments in the future. Further, high

credit quality offers more opportunities for bidders to raise debt in order to finance a cash acquisition given the lower cost and higher demand for their debt securities.

This study adds to the prior literature, by providing further evidence on how credit ratings affect firm capital structure decisions in general, and financing decisions in the M&As process more specifically. In particular, we establish a direct relationship of credit ratings as a determinant of the choice of payment method. The positive likelihood of using cash as a method of payment in acquisitions in which firms have high debt capacity and/or credit quality can be considered as a high value asset for bidders' shareholders, given the well-documented fact that cash consideration is related with various beneficial outcomes for bidders' shareholders, such as favorable valuation effects and determent of competition in the market for corporate control. Overall, this paper highlights the role of CRAs in firm's capital structure decisions related particularly with the financing decision in takeover bids.

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Appendix A. Variable Definitions

Variable	Definition
	Panel A: Measures of Payment Form
Percentage of Cash	Fraction of cash as part of the total price offered by the bidder to the target shareholders from Thomson Financial SDC.
Cash and Mixed/Stock	Dummy variable: 1 for mixed and all cash deals, 0 for all stock deals from Thomson Financial SDC.
	Panel B: Credit Rating Variable
Rating Existence	Dummy variable: 1 for rated bidders, 0 for unrated bidders.
Rating Level	Continuous variable for rated bidders: 1 to 22, AAA level takes 22 and D takes 1.
Investment Grade	Dummy variable: 1 for investment grade bidders (above BBB- threshold), 0 for speculative grade bidders (below BBB- threshold).
BRating/TRating	The ratio of bidder credit rating level to target credit rating level.
	Panel C: Bidder Characteristics
Size	Firm market value of equity 4 weeks prior to the acquisition announcement from CRSP in US$ million.
Leverage	Firm total financial debt (long-term debt plus debt in current liabilities) divided by the book value of total assets in the fiscal year prior to the acquisition announcement from COMPUSTAT.
Collateral	The ratio of firm's property, plant and equipment to total assets at the fiscal year immediately prior to the acquisition announcement from COMPUSTAT.
Book-to-Market (B/M)	Book value of equity at the fiscal year-end prior to the acquisition announcement divided by the market value of equity 4 weeks prior to the acquisition announcement. Book value of equity is from COMPUSTAT, market value of equity is from CRSP.
Run-Up	Market-adjusted buy-and-hold returns of the firm over the period starting (-205, -6) days prior to the acquisition announcement from CRSP.
Blockholder Ownership	Aggregate holdings of blockholders who own at least 5% of the company's stock from Thomson One.
Cash Flows to Equity	Income before extraordinary items plus depreciation minus dividends on common and preferred stock divided by the number of shares outstanding times the closing stock price at the fiscal year-end immediately prior to the announcement from COMPUSTAT.
	Panel D: Deal Characteristics
Interest Rate Spread	The spread on the interest rate charged for all industrial and commercial loans over intended federal funds rate. The spread is from the Survey of Terms of Business Lending published by the Federal Reserve Bank of New York in its E2 release.

Relative Size	The ratio of the target's market value to bidder's market value of equity 4 weeks prior to the acquisition announcement from CRSP in US$ million.
Diversifying Deals	Dummy variable: 1 for inter-industry transactions, 0 for intra-industry transactions. Industries are defined at the 2-digit SIC level from Thomson Financial SDC.
Hostile Deals	Dummy variable: 1 for deals defined as "hostile" or "unsolicited" by Thomson Financial SDC, 0 otherwise.
Tender Offers	Dummy variable: 1 for tender offers from Thomson Financial SDC, 0 otherwise.
Private	Dummy variable: 1 for private targets from Thomson Financial SDC, 0 otherwise.
Number of Bidders	Number of bidders during the takeover deal from Thomson Financial SDC.
	Panel E: Instrumental Variables
Age	Dummy variable: 1 if the firm was at least five-year old before the takeover announcement, 0 otherwise. Firm age is based on the period the firm is covered on CRSP.
Firm Trades on NYSE	Dummy variable: 1 if the firm stock was trading on the NYSE before the takeover announcement, 0 otherwise. Exchange codes are from CRSP.
IndFrac	Log of 1 plus the fraction of firms in the same 3-digit SIC level that have credit ratings from COMPUSTAT.
Profitability	The ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to total assets from COMPUSTAT.
Altman-Z	It is calculated from the formula Z = 6.56 (Working Capital/Total Assets) + 3.26 (Retained Earnings/Total Assets) + 6.72 (EBIT/Total Assets) + 1.05 (Book Value of Equity/Book Value of Total Liabilities).

Table I

Sample Descriptive Statistics by Payment Method

The table presents descriptive statistics for a sample of US public acquisitions announced over the period between January 1, 1998 and December 31, 2009 drawn from the Thomson Financial SDC Mergers and Acquisitions Database. The sample is further classified by the method of payment used in the transaction. The financing category "Cash" includes payments made solely in cash. The financing category "Mixed" includes payments consisting of both cash and stock. The financing category "Stock" includes payments made solely in common stock. Panels A and B describe the mean and median values for bidder-, and deal-specific characteristics, respectively. Credit ratings represent the Standard & Poor's (S&P) long-term domestic issuer credit ratings from COMPUSTAT. All variables are defined in Appendix A. The *F*-statistic tests the null hypothesis of no difference between the mean values when the method of payment is cash, mixed and stock. The χ^2-statistic tests the null hypothesis of no difference between the mean values when the method of payment is cash, mixed and stock for the categorical variables in our sample.

			Method of Payment						
	Total Sample (N=6,819)		Cash (N=1,974)		Mixed (N=2,793)		Stock (N=2,052)		Test Statistics (*p*-value)
Variable	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	
Panel A: Bidder Characteristics									
% Rating Existence	25.620	-	31.003	-	23.917	-	22.758	-	χ^2 = 24.628 (0.000)
Size	4,431.941	491.321	4,361.893	620.342	3,380.333	368.792	5,930.680	588.082	*F* = 10.26 (0.000)
Leverage	0.182	0.133	0.191	0.153	0.194	0.144	0.155	0.105	*F* = 25.90 (0.000)
Collateral	0.351	0.241	0.364	0.256	0.367	0.247	0.307	0.205	*F* = 15.45 (0.000)
Book-to-Market	0.484	0.377	0.519	0.415	0.507	0.405	0.418	0.302	*F* = 16.60 (0.000)
Run-Up	0.114	-0.050	-0.010	-0.073	0.091	-0.066	0.272	-0.002	*F* = 42.14 (0.000)
% Blockholder Ownership	21.731	17.190	23.331	23.310	22.477	18.030	15.711	8.700	*F* = 115.77 (0.000)
Cash Flows to Equity	0.003	0.047	0.048	0.059	0.008	0.050	-0.051	0.030	*F* = 26.05 (0.000)
Panel B: Deal Characteristics									
Interest Rate Spread	2.137	2.09	2.200	2.170	2.157	2.100	2.052	2.050	*F* = 123.59 (0.000)
Relative Size	0.283	0.105	0.186	0.066	0.347	0.139	0.290	0.114	*F* = 18.44 (0.000)
% Diversifying Deals	36.090	-	37.538	-	37.701	-	32.505	-	χ^2 = 11.328 (0.004)
% Hostile Deals	1.466	-	2.533	-	1.217	-	0.780	-	χ^2 = 1.015 (0.602)
% Tender Offers	4.561	-	9.778	-	3.509	-	0.975	-	χ^2 = 24.956 (0.000)
% Private	64.482	-	69.554	-	70.677	-	51.170	-	χ^2 = 156.462 (0.000)
Number of Bidders	1.028	1	1.033	1	1.030	1	1.021	1	*F* = 1.96 (0.141)

Table II

Sample Descriptive Statistics by Credit Ratings

The table presents descriptive statistics for a sample of US public and private acquisitions announced over the period between January 1, 1998 and December 31, 2009 drawn from the Thomson Financial SDC Mergers and Acquisitions Database. Panels A and B describe the mean, median and number of observations for bidder- and deal-specific characteristics, respectively, for credit rated and unrated bidders. Credit ratings represent the Standard & Poor's (S&P) long-term domestic issuer credit ratings from COMPUSTAT. Stock price data is from CRSP, accounting data is from COMPUSTAT. All variables are defined in Appendix A. Statistical tests for differences in means and equality of medians for each characteristic of rated versus unrated bidders are also presented in parentheses.

	With Credit Rating (1)			Without Credit Rating (2)			Difference (1)-(2)	
Panel A: Bidder Characteristics	**Mean**	**Median**	**N**	**Mean**	**Median**	**N**	**(p-value) Mean**	**(p-value) Median**
Size	12,920.240	3,092.009	1,747	1,508.230	296.317	5,072	(0.000)	(0.000)
Leverage	0.306	0.273	1,718	0.137	0.072	4,782	(0.000)	(0.000)
Collateral	0.477	0.346	1,436	0.305	0.210	3,930	(0.000)	(0.000)
Book-to-Market	0.427	0.360	1,725	0.504	0.386	4,798	(0.000)	(0.001)
Run-Up	0.018	-0.038	1,707	0.150	-0.054	4.566	(0.000)	(0.840)
% Blockholder Ownership	18.435	13.880	1,563	22.956	18.705	4,206	(0.000)	(0.000)
Cash Flows to Equity	0.060	0.062	1,681	-0.018	0.041	4,722	(0.000)	(0.000)
Panel B: Deal Characteristics								
Interest Rate Spread	2.137	2.090	1,747	2.138	2.090	5,072	(0.906)	(0.735)
Relative Size	0.275	0.086	1,747	0.286	0.111	5,072	(0.665)	(0.000)
Percentage of Cash	50.641	50.540	1,747	45.741	42.355	5,072	(0.000)	(0.000)
% Diversifying Deals	36.463	-	1,747	35.962	-	5,072	(0.707)	-
% Hostile Deals	3.034	-	1,747	0.927	-	5,072	(0.000)	-
% Tender Offers	9.788	-	1,747	2.760	-	5,072	(0.000)	-
% Private	41.442	-	1,747	72.417	-	5,072	(0.000)	-
Number of Bidders	1.057	1	1,747	1.018	1	5,072	(0.000)	-

Table III

Percentage of Cash/Stock and Bidder Book-to-Market by Credit Rating Level

Credit ratings are from COMPUSTAT and represent the Standard & Poor's (S&P) long-term domestic issuer credit ratings. Number of deals is the number of acquisitions by bidders' credit rating level one month prior to the acquisition announcement for a sample of US acquisitions over the period 1998-2009. Percentage of Cash and Percentage of Stock is the total percentage of cash and stock that is used in the deals. The remaining percentage out of the 100% (not reported in the table) represents what is classified as "other" by SDC. Book-to-Market is the book value of equity at the fiscal year-end prior to the acquisition announcement divided by the market value of equity 4 weeks prior to the acquisition announcement. Book value of equity is from COMPUSTAT, market value of equity is from CRSP.

Credit Rating Level	Number of Deals	Percentage of Cash	Percentage of Stock	Book-to-Market
D	-	-	-	-
C	-	-	-	-
CC	-	-	-	-
CCC-	-	-	-	-
CCC	2	0.00	87.15	0.336
CCC+	6	49.59	36.92	0.568
B-	42	40.77	56.15	0.368
B	73	40.06	46.12	0.479
B+	197	57.83	31.58	0.462
BB-	189	59.19	31.63	0.437
BB	129	62.61	29.01	0.537
BB+	88	59.48	30.86	0.416
BBB-	152	48.95	41.96	0.489
BBB	229	52.50	39.89	0.423
BBB+	158	47.17	45.31	0.427
A-	133	42.88	49.40	0.436
A	178	41.81	53.06	0.347
A+	83	48.62	44.62	0.353
AA-	40	28.26	67.50	0.273
AA	26	65.36	31.62	0.275
AA+	4	50.00	47.01	0.738
AAA	18	28.94	69.47	0.229

Table IV

Variables Correlation Matrix

The table presents pair-wise correlations of the variables. The sample consists of US public and private acquisitions announced over the period between January 1, 1998 and December 31, 2009. All variables are defined in Appendix A.

	Rating Existence	Rating Level	Size	Leverage	Collateral	Interest Rate Spread	Book-to-Market	Run-Up
Rating Existence	1.000							
Rating Level	-	1.0000						
Size	0.5457	0.6865	1.0000					
Leverage	0.3854	-0.4484	0.0691	1.0000				
Collateral	0.2251	0.0993	0.0396	0.2989	1.0000			
Interest Rate Spread	-0.0014	-0.0198	0.0323	-0.0660	-0.0086	1.0000		
Book-to-Market	-0.0565	-0.0908	-0.3093	-0.0431	-0.0075	0.1151	1.0000	
Run-Up	-0.0614	-0.1420	0.0907	0.0037	-0.0318	-0.0579	-0.1989	1.0000
Blockholder Ownership	-0.0960	-0.3241	-0.1141	-0.0361	-0.0320	0.2183	0.0777	-0.0353
Cash Flows to Equity	0.0803	0.0832	0.1635	0.0314	0.0520	-0.0237	-0.2189	0.0126
Relative Size	-0.0052	-0.1319	-0.1573	0.0608	0.0949	-0.0019	0.2014	-0.0365
Diversifying	0.0045	0.0220	-0.0584	0.0407	-0.0585	-0.0290	0.0122	0.0017
Hostile Deals	0.0765	0.0093	0.0670	0.0587	0.0874	0.0070	0.0222	-0.0212
Tender Offers	0.1470	0.1193	0.1538	0.0117	0.0584	0.0243	0.0037	-0.0374
Private	-0.2825	-0.3826	-0.3241	-0.0762	-0.1635	0.0030	-0.0174	0.0553
Number of Bidders	0.0824	0.0234	0.0702	0.0486	0.0821	0.0164	0.0288	-0.0145

	Blockholder Ownership	Cash Flows to Equity	Relative Size	Diversifying	Hostile Deals	Tender Offers	Private	Number of Bidders
Blockholder Ownership	1.0000							
Cash Flows to Equity	-0.0395	1.0000						
Relative Size	-0.0113	-0.1441	1.0000					
Diversifying	0.0038	0.0112	-0.0005	1.0000				
Hostile Deals	0.0094	0.0224	0.0870	-0.0206	1.0000			
Tender Offers	-0.0048	0.0265	0.0137	0.0318	0.1546	1.0000		
Private	0.1526	-0.0114	-0.1067	0.0754	-0.1644	-0.2916	1.0000	
Number of Bidders	0.0044	0.0194	0.0797	-0.0328	0.3461	0.1411	-0.1780	1.0000

Table V

Tobit Regressions of the Payment Form on Credit Rating Existence and Credit Rating Levels

The table presents the results of a two-boundary Tobit model of the percentage of cash financing on credit rating existence, credit rating levels and other bidder- and deal- characteristics for a sample of US acquisitions over the period 1998-2009. See Appendix A for definitions of the variables. All regressions control for year fixed effects whose coefficients are suppressed. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The z-statistics reported in parentheses are adjusted for heteroskedasticity and bidder clustering. N denotes the number of observations.

	All Sample		**Sample with Rating Data**	
	(1)	**(2)**	**(3)**	**(4)**
Constant	97.6277***	-27.4059	214.8737***	16.9016
	(10.18)	(-0.70)	(7.86)	(0.18)
Rating Existence	22.6224***	13.1114**		
	(4.85)	(2.47)		
Rating Level			5.8506***	10.6515***
			(3.70)	(6.70)
Ln (Size)	-4.6084***	1.7348	-22.9477***	-22.7600***
	(-4.35)	(1.28)	(-7.06)	(-7.06)
Leverage		26.7696***		20.8125
		(2.71)		(1.16)
Collateral		9.4079**		-10.0915
		(1.98)		(-1.36)
Interest Rate Spread		4.6358		25.5797
		(0.41)		(0.89)
Book-to-Market		20.7546***		-19.1420**
		(4.34)		(-2.19)
Run-Up		-10.0215***		-11.7698*
		(-4.11)		(-1.91)
Blockholder Ownership		0.2063**		0.0127
		(2.29)		(0.07)
Cash Flows to Equity		34.4618***		52.0139
		(2.86)		(1.48)
Relative Size		-13.2000***		-22.2360***
		(-2.77)		(-2.68)
Diversifying Deals		5.1160		12.5181*
		(1.59)		(1.93)
Hostile Deals		51.6986***		40.8980*
		(3.45)		(1.93)
Tender Offers		116.8612***		110.9063***
		(14.18)		(9.50)
Private		56.0666***		57.0126***
		(11.67)		(6.99)
Number of Bidders		0.7509		3.9110
		(0.10)		(0.40)
N	6,819	4,251	1,747	1,236
Pseudo R^2	0.028	0.055	0.049	0.100

Table VI

Probit Regressions of the Payment Form on Credit Rating Existence and Credit Rating Levels

The table presents the results of the Probit regression analysis of the choice between all cash and mixed payments and all stock on credit rating existence, credit rating levels and other bidder- and deal- characteristics for a sample of US acquisitions over the period 1998-2009. In all models the dependent variable takes the value of 1 for all cash and mixed deals, and 0 for all stock deals. See Appendix A for definitions of the variables. All regressions control for year fixed effects whose coefficients are suppressed. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The z-statistics reported in parentheses are adjusted for heteroskedasticity and bidder clustering. N denotes the number of observations.

	All Sample		**Sample with Rating Data**	
	(1)	**(2)**	**(3)**	**(4)**
Constant	1.3425***	0.2195	2.4873***	1.8194
	(10.34)	(0.31)	(7.91)	(1.01)
Rating Existence	0.2087***	0.1712**		
	(3.85)	(2.13)		
Rating Level			0.0503***	0.1297***
			(3.02)	(5.63)
Ln (Size)	-0.0829***	-0.0196	-0.2491***	-0.3354***
	(-6.78)	(-0.99)	(-7.28)	(-7.00)
Leverage		0.3084**		0.3118
		(2.04)		(1.14)
Collateral		0.1504**		-0.0738
		(2.01)		(-0.59)
Interest Rate Spread		-0.0347		-0.0623
		(-0.16)		(-0.12)
Book-to-Market		0.2139***		-0.2489**
		(2.85)		(-2.03)
Run-Up		-0.0893***		-0.0505
		(-2.85)		(-0.61)
Blockholder Ownership		0.0015		-0.0042
		(1.01)		(-1.60)
Cash Flows to Equity		0.4192***		0.7575*
		(2.98)		(1.74)
Relative Size		-0.0933**		0.0121
		(-2.26)		(0.11)
Diversifying Deals		0.0708		0.0515
		(1.43)		(0.50)
Hostile Deals		0.6974***		0.3238
		(2.97)		(0.98)
Tender Offers		1.6143***		1.8567***
		(10.18)		(7.45)
Private		0.7972***		0.7199***
		(12.62)		(5.97)
Number of Bidders		0.0923		0.1810
		(0.85)		(1.10)
N	6,819	4,251	1,747	1,236
Pseudo R^2	0.134	0.223	0.182	0.339

Table VII

Tobit Regressions of the Payment Form on the Unused Debt Capacity

The table presents the results of the Tobit regression analysis of the percentage of cash financing on the ratio of the bidder to target credit rating level and other bidder- and deal- characteristics for a sample of US acquisitions over the period 1998-2009. See Appendix A for definitions of the variables. All regressions control for year fixed effects whose coefficients are suppressed. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The z-statistics reported in parentheses are adjusted for heteroskedasticity and bidder clustering. N denotes the number of observations.

	(1)	(2)	(3)
Constant	82.1267**	197.4518	205.8989
	(2.52)	(1.20)	(1.28)
BRating/TRating	50.5783***	26.9520**	42.4202***
	(3.92)	(2.45)	(3.37)
BRating/TRating X Relative Size			-68.7589**
			(-2.20)
Ln (Size)	-12.4506***	-8.1216**	-10.2007***
	(-4.38)	(-2.39)	(-2.78)
Leverage		4.2754	-4.7377
		(0.20)	(-0.22)
Collateral		-5.5872	0.4437
		(-0.57)	(0.05)
Interest Rate Spread		-40.3717	-41.5129
		(-0.86)	(-0.91)
Book-to-Market		-17.2664	-11.5146
		(-1.15)	(-0.72)
Run-Up		-11.8879	-10.2334
		(-1.27)	(-1.18)
Blockholder Ownership		-0.0474	-0.0256
		(-0.20)	(-0.11)
Cash Flows to Equity		43.6064	38.9853
		(1.21)	(1.04)
Relative Size		1.0234	66.7706**
		(0.15)	(2.32)
Diversifying Deals		12.9235	14.9358
		(1.38)	(1.64)
Hostile Deals		26.9725*	27.6277*
		(1.78)	(1.89)
Tender Offers		68.0105***	64.7685***
		(5.55)	(5.40)
Number of Bidders		-1.3935	-2.4857
		(-0.20)	(-0.37)
N	318	257	257
Pseudo R^2	0.040	0.082	0.087

Table VIII

Regressions of the Payment Form on the Investment Grade

The table presents the results of the Tobit (specification (1)), and Probit (specification (2)) regression analyses of the choice of the method of payment on investment grade and other bidder- and deal- characteristics for a sample of US acquisitions over the period 1998-2009. See Appendix A for definitions of the variables. All regressions control for year fixed effects whose coefficients are suppressed. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The z-statistics reported in parentheses are adjusted for heteroskedasticity and bidder clustering. N denotes the number of observations.

	(1)	**(2)**
Constant	71.7145	2.6975
	(0.74)	(1.54)
Investment Grade	38.4481***	0.5228***
	(4.25)	(3.74)
Ln (Size)	-14.7726***	-0.2404***
	(-5.07)	(-5.91)
Leverage	7.0224	0.1616
	(0.39)	(0.59)
Collateral	-6.2500	-0.0216
	(-0.84)	(-0.18)
Interest Rate Spread	24.8690	-0.1398
	(0.86)	(-0.26)
Book-to-Market	-16.4602*	-0.2102*
	(-1.77)	(-1.65)
Run-Up	-17.4667***	-0.0980
	(-2.90)	(-1.30)
Blockholder Ownership	-0.0571	-0.0052*
	(-0.30)	(-1.94)
Cash Flows to Equity	65.7229*	0.9315**
	(1.89)	(2.19)
Relative Size	-24.1692***	-0.0161
	(-2.76)	(-0.16)
Diversifying Deals	12.8268*	0.0331
	(1.92)	(0.32)
Hostile Deals	39.3941*	0.3170
	(1.76)	(0.94)
Tender Offers	111.9070***	1.8190***
	(9.27)	(6.99)
Private	55.4549***	0.6864***
	(6.60)	(5.64)
Number of Bidders	4.9135	0.1971
	(0.50)	(1.21)
N	1,236	1,236
Pseudo R^2	0.093	0.324

Table IX

Endogeneity Control for Credit Rating Existence

The table presents the results of the instrumental variables regression procedure to control for potential endogeneity of credit rating existence for a sample of US public acquisitions over the period 1998-2009. Specification (1) is the reduced regression. Specification (2) is the structural regression for the Tobit regression. Specification (3) is the structural regression for the Probit regression. See Appendix A for definitions of the variables. All regressions control for year fixed effects whose coefficients are suppressed. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The z-statistics reported in parentheses are adjusted for heteroskedasticity and bidder clustering. N denotes the number of observations. The lower part of the table shows the *F*-test of the DWH augmented regression test for endogeneity with the corresponding p-values in parenthesis.

		Tobit	**Probit**
	Reduced	**Structural**	**Structural**
	(1)	**(2)**	**(3)**
Constant	-6.0687***	154.1178***	2.7536***
	(-7.29)	(3.07)	(3.23)
Rating Existence		29.8695***	0.3830***
		(6.69)	(5.42)
Age	0.0991		
	(0.99)		
Firm Trades on NYSE	0.4063***		
	(3.75)		
IndFrac	1.6527***		
	(5.62)		
Profitability	1.5321***		
	(2.82)		
Altman-Z	-0.0302***		
	(-4.02)		
Ln (Size)	0.6423***	-17.3382***	-0.2656***
	(16.33)	(-5.08)	(-4.98)
Leverage	3.6172***	-95.9854***	-1.3778***
	(11.40)	(-4.41)	(-4.07)
Collateral	-0.0966	-4.8623	-0.0195
	(-0.84)	(-0.93)	(-0.24)
Interest Rate Spread	-0.2563	12.8700	0.0417
	(-1.08)	(1.05)	(0.19)
Book-to-Market	0.5381***	0.2040	-0.0576
	(4.10)	(0.04)	(-0.67)
Run-Up	-0.2302***	-1.1367	0.0283
	(-5.09)	(-0.40)	(0.73)
Blockholder Ownership	0.0014	0.1325	0.0004
	(0.66)	(1.44)	(0.27)
Cash Flows to Equity	0.1052	21.8675**	0.2587**
	(0.44)	(2.04)	(2.15)
Relative Size	-0.0671	-11.0181**	-0.0646*
	(-1.09)	(-2.11)	(-1.66)
Diversifying Deals	0.1642**	-0.3869	-0.0051
	(2.34)	(-0.11)	(-0.09)
Hostile Deals	-0.3671	60.4964***	0.7550***
	(-1.59)	(3.75)	(3.12)
Tender Offers	0.2972**	105.6074***	1.4434***
	(2.35)	(11.94)	(8.85)
Private	-0.2016**	64.2738***	0.9128***
	(-2.52)	(12.84)	(13.81)
Number of Bidders	-0.0163	2.6709	0.0986
	(-0.14)	(0.35)	(0.91)
N	3,914	3,914	3,914
Pseudo R^2	0.559	0.061	0.247
***F*-test**		11.80	8.52
DWH test for endogeneity		(0.000)	(0.004)

Table X

Endogeneity Control for Credit Rating Level

The table presents the results of the instrumental variables regression procedure to control for potential endogeneity of credit rating levels for a sample of US public acquisitions over the period 1998-2009. Specification (1) is the reduced regression. Specification (2) is the structural regression for the Tobit regression. Specification (3) is the structural regression for the Probit regression. See Appendix A for definitions of the variables. All regressions control for year fixed effects whose coefficients are suppressed. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The t-statistics in the reduced regression and z-statistics in the structural regressions reported in parentheses are adjusted for heteroskedasticity and bidder clustering. N denotes the number of observations. The lower part of the table shows the *F*-test of the DWH augmented regression test for endogeneity with the corresponding p-values in parenthesis.

		Tobit	Probit
	Reduced	**Structural**	**Structural**
	(1)	**(2)**	**(3)**
Constant	0.3204	25.5058	2.7870
	(0.19)	(0.23)	(1.45)
Rating Level		14.5341***	0.1943***
		(3.93)	(3.80)
Age	1.1610***		
	(5.92)		
Firm Trades on NYSE	0.9581***		
	(5.66)		
IndFrac	1.9216***		
	(4.38)		
Profitability	11.0334***		
	(8.24)		
Altman-Z	-0.0873***		
	(-2.80)		
Ln (Size)	1.1260***	-26.7955***	-0.4054***
	(15.34)	(-4.71)	(-5.35)
Leverage	-3.7583***	36.5740	0.4254
	(-6.33)	(1.46)	(1.12)
Collateral	0.0311	-18.4458**	-0.1113
	(0.14)	(-2.06)	(-0.82)
Interest Rate Spread	0.3315	15.3569	-0.4231
	(0.72)	(0.47)	(-0.74)
Book-to-Market	0.5464**	-16.6396	-0.2767**
	(2.02)	(-1.58)	(-2.01)
Run-Up	-0.5811***	-5.9058	0.0687
	(-5.55)	(-0.77)	(0.70)
Blockholder Ownership	-0.0077**	0.0891	-0.0035
	(-2.04)	(0.42)	(-1.27)
Cash Flows to Equity	-0.1647	37.3388	0.4241
	(-0.78)	(1.05)	(1.26)
Relative Size	-0.1593	-22.0758**	0.0332
	(-1.01)	(-2.21)	(0.31)
Diversifying Deals	0.2493*	12.2691	-0.0282
	(1.80)	(1.62)	(-0.25)
Hostile Deals	-0.1754	41.4576	0.3405
	(-0.58)	(1.60)	(0.99)
Tender Offers	0.1452	115.7211***	1.7460***
	(0.66)	(8.33)	(6.72)
Private	-0.2490	65.7365***	0.7715***
	(-1.62)	(7.08)	(6.06)
Number of Bidders	0.1202	8.0779	0.1885
	(0.59)	(0.72)	(1.10)
N	1,095	1,095	1,095
Adj-R^2 (Pseudo R^2)	0.710	(0.096)	(0.335)
***F*-test**		0.31	1.31
DWH test for endogeneity		(0.581)	(0.252)