# WHY BIDDING FIRMS DO NOT HIRE FINANCIAL ADVISORS IN MERGERS AND ACQUISITIONS

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## Abstract

In this paper, we examine why some bidders decide not to hire investment bank advisors in M&A transactions. We build a sample of 181 M&A transactions in which the acquiring firms do not hire investment bank advisors, and compare them with a control sample of 181 M&A transactions in which the acquiring firms hire investment bank advisors. We find that the transaction costs are the primary reason that investment banks are hired as advisors for bidders in M&A transactions. In addition, the information asymmetry and contracting costs are the other two reasons that bidders hire investment banks in M&A transactions.

**Keywords:** mergers, acquisitions, investment banks

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## 1. Introduction

The role of investment banks in mergers and acquisitions has been examined in prior research. Most mergers and acquisitions, M&A, are completed with advisory service from investment banks. In return, companies that hire investment banks must pay hefty fees for these services, so merging companies that use investment banks must perceive the benefits outweigh the costs.

Some firms in M&A transactions choose not to use investment banks. Brewis (2003) indicates that a higher percentage of M&A deals are being conducted without financial advisors than in the past. For example, in 2003, the percentage of target firms using no advisors is 25.78% weighted by deal value, compared with 19% in 2001. In 2003, 34.5% of acquirors did not use an investment bank (Brewis, 2003). For our purposes, we define M&A without advisors to be in-house M&A transactions, and those using an advisor to be investment bank M&A transactions.

We focus on one main issue in this paper. What are the specific factors that determine whether an acquiror uses an investment bank or not in M&A transactions? There is limited research on in-house M&A transactions. Servaes and Zenner (1996) is a notable exception. They find that transaction costs are the main determinant in decision to hire investment banks, followed by information asymmetry and contracting costs. We extend their research by using a larger sample of in-house M&A transactions and consider several additional factors

that could affect the decision about whether to use[100] advisory services of an investment bank in M&A transactions. These additional factors include whether the acquiring firm is a financial firm, the relative size of the target firm to the acquiror, the previous M&A experiences of the target firm, and whether the target firm hires an investment bank.

We structure the reminder of this paper as follows. In Section 2, we develop our hypotheses. In Section 3, we explain the data collection. We present our findings and analyses in Sections 4 to 5, and conclude this paper in section 6.

## 2. Literature review and hypotheses development

Servaes & Zenner (1996) argue that investment banks assist acquirors in M&A transactions in three ways. First, investment banks help the acquiror by facilitating the negotiation process between the two parties, thereby reducing transaction costs. Second, investment banks reduce information asymmetry between the acquiror and target firms. Third, investment banks help to mitigate contracting costs. Empirical research has generally supported these reasons (e.g. Kosnik and Shapiro, 1997; McLaughlin, 1996; Bowers and Miller, 1990). We discuss these reasons below, and we show how they may impact an acquiror's decision about whether to hire an investment bank in an M&A transaction.

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[100] Our sample includes 181 transactions over 1981-2001, versus Servaes & Zenner (1996)'s sample including 99 transactions over 1981-1992.

## 2.1 Transaction costs

Benston and Smith (1976) argue that transaction costs are the primary reason for the existence of financial intermediaries. Their argument can be extrapolated to explain the role of investment banks in M&A transactions. To bidding firms, investment banks may help identify proper takeover targets when they have more than one choice, help evaluate them, and help develop a bid at an appropriate price. Since it would be costly for an acquiror to perform these services on its own, hiring an investment banker would lower transaction costs.

Servaes and Zenner (1996) argue that more complicated M&A transactions are associated with higher transaction costs. The complexity of the M&A transactions can be reflected by several proxies: the form of payment, prior M&A experience of the acquiror, whether the transaction is hostile, whether the acquiror is the first bidder, and the transaction price. In addition, we believe that additional traits such as whether the acquiror is a financial firm, the target's prior M&A experience, the relative size of target to acquiror, and whether the target firm does not use an investment bank should also affect the complexity of M&A transactions. We discuss these factors below.

The methods of payment may influence the complexity of the acquisition. The method of payment may be cash, securities, or some combinations of the two, and this choice can influence returns to shareholders (Davidson and Cheng, 1997; Travlos, 1987). Servaes and Zenner (1996) argue that M&A using payment method including securities are more complicated than cash only acquisitions. Acquirors may need the services of an investment banker when they plan to use securities to acquire a target firm.

Prior acquisition experience is another factor that may affect the complexity of the transaction. A bidder that has prior acquisition experience may be able to complete the new M&A transaction at a lower cost. When a bidder does not have prior M&A experience, the transaction costs of completing the acquisition without an advisor will likely be large (Servaes & Zenner, 1996). In contrast, when target firms have more M&A experience, they should have accumulated the negotiating skills that could make the negotiation process more difficult for the bidder, therefore, the bidder more likely need advisory service from an investment bank.

In a hostile takeover, there may be resistance from the target firm, and the target may employ takeover defenses to either thwart the attempt or to raise the bidder's price (Stulz, 1988; Mitchell & Netter, 1989). Takeover defenses increase the importance of negotiation and significantly increase their complexity as well (Johannesson, 2000). Thus, takeover defenses increase the complexity of M&A transactions and should increase the bidder's need for an investment bank's help.

If the acquiror is not the first bidder, it needs to react quickly and offer a suitable bidding price to convince the target firm of its superiority over other bidding firm (Servaes & Zenner, 1996). Therefore, a bidding contest may increase the need for investment bank's advice to the bidding firm.

The size of the transaction may be another proxy for the complexity of the M&A transaction (Schwert, 2000; Jarrell & Poulsen, 1989). Large transactions are often more complicated than small transactions, increasing the complexity of the negotiation process.

If an acquiror operates in the financial sector, it can utilize its own finance expertise to complete the transaction. This will reduce the transaction costs to the acquiror, and the acquiror does not need to hire an investment bank for advisory service in this case.

Finally, if the target firm does not use an investment bank, this is a strong sign that the target firm is confident that this transaction will be a desirable deal to both the acquiror and target firm. This situation would make the negotiation and acquisition process smoother for both parties, therefore the bidder is less likely to hire an investment bank for assistance.

We therefore, propose:

$H_1$: Bidding firms are more likely to use an investment bank in M&A transactions that are more complex and have larger transaction costs.

## 2.2 Asymmetric information problems

Information asymmetry between bidders and target firms may exist when bidders and targets have limited knowledge about each other before the M&A transaction (Servaes and Zenner, 1996). Because of their expertise, investment banks can help solve the information asymmetry problem between the two parties in M&A transactions.

Information asymmetry will likely be greater when the two firms are not in the same industry, when the target operates in multiple industries, and will be less when the bidder is a financial firm. In addition, information asymmetry will be affected by the type of M&A transaction (i.e., whether the acquisition is a whole-firm takeover or an acquisition of assets or units) and by whether the bidder is the first bidder. We include the relative size of target to acquiror as another proxy for information asymmetry. We discuss these factors below.

When a bidding firm wants to acquire a firm in the same or related industry, it can rely on its knowledge of the industry to value the target firm. If the target firm operates in an unrelated industry, the bidding firm may not have as much knowledge about the target firm and may find it more difficult to value the target. Thus a bid for a target in an unrelated sector may require the help of an investment bank to reduce the information asymmetry.

Similarly, asymmetric information problems are likely more severe when a target firm operates in

several business sectors, because it is less likely that the bidding firm has detailed knowledge of the operations in all industry sectors. This may increase the need for investment bank advice to bidding firms.

If the acquiror is a financial firm, it may not need to hire an investment bank to compile and analyze the information about the target firm. The financial firm may have the expertise to collect and evaluate the information regarding the target firm. As a result, we expect that investment banks are less likely needed in this case.

When the target is a publicly traded firm, detailed financial information is readily available, but this is not necessarily the case for specific assets or units (Servaes and Zenner, 1996). An investment bank's valuation expertise may be more valuable when acquiring firms bid for assets or units rather than the whole firm. We, therefore, expect bidding firms are more likely hire an investment bank when they acquire specific assets or units of target firms.

Part of the task of an investment bank is identifying potential bidding targets. If a target is already in play, the acquiror does not need this information. So, we expect that investment banks are less likely needed when the acquiror is not the first bidder. Note that the effect from the presence of other bidders is somewhat ambiguous. Earlier, we noted that it may make the transaction more complex and would, therefore, likely increase transaction costs. Here, we note that it may lessen information asymmetry. Its actual effect is an empirical question.

If the relative size of the target to acquiror is large, this implies the target firm is relatively large to the acquiror. If the target is relatively large, then the information about target firm is more available to the public. Then it is less necessary to hire an investment bank by the bidding firm for advisory service.

Therefore, we propose:

$H_2$: When there is more information asymmetry, bidders will be more likely to employ investment banks.

## 2.3 Contracting costs

Contracting costs are related to but subtly different from transaction costs. Jensen and Meckling (1976) state that contracting costs include things like monitoring costs, bonding costs, and residual losses. For our purposes, we define contracting costs as the costs caused by adverse selection, moral hazard, imperfect risk-sharing, and imperfect commitment. Contracting costs will be affected by the transaction price, the type of transaction (either whole-firm takeover, or acquisition of assets/units), and whether the acquiror is a financial firm. We discuss these three factors below.

Servaes and Zenner (1996) argue that the size of the transaction will increase contracting costs. Large transactions entail greater monitoring costs than small transactions because more related factors and details

will have to be considered (Jarrell and Poulsen, 1989; Servaes and Zenner, 1996). Large transactions are more likely to involve more industry sectors, more affiliated companies, and more employees. All these factors could cause high monitoring costs that require more resources. Therefore, larger M&A transactions are more likely to use an investment bank.

The type of acquisition can affect contracting costs. Johannesson (2000) document when acquirors engage in a complete takeover of another firm, monitoring costs are higher than when only acquiring specific assets or units of the target firm. This is because bidders may be likely to make a bid that is larger than the fair market price of target firms in complete takeovers. This is less likely to occur when acquiring assets or units (Servaes and Zenner, 1996). To avoid over-bidding, bidders may be more likely to hire an investment bank when they acquire the entire firm rather than some of its assets or units. The effect of transaction type on the decision to use an investment bank is ambiguous since the acquisition of assets or units versus the entire firm increases asymmetric information but can reduce contracting costs. Its effect is, therefore, an empirical question.

An acquiror that operates in the financial sector may face smaller contracting costs. The familiarity with financial analyses and valuation process finance businesses furnishes them with the skills needed to evaluate the transaction, lowering the monitoring and evaluation costs. Thus, financial expertise may make it less likely for the acquiror to rely on an investment bank advisor.

Therefore, we propose:

$H_3$: Firms are more likely to use an investment bank in M&A transactions that engender larger contracting costs.

## 3. Sample and Data
## 3.1. Sample Selection

We obtain our sample from Mergers & Acquisitions and Mergerstat over the period from 1981 to 2001. We found 117 in-house M&A transactions from Mergers & Acquisitions from their annual list of the 100 largest M&A transactions. From Mergerstat's list of transactions with a transaction price larger than $500 million, we identified additional 108 in-house M&A transactions. From these 225 in-house M&A transactions, we then dropped 44 in-house transactions because of insufficient data needed to conduct this study. Thus, our final in-house transaction sample includes 181 M&A transactions.

## 3.2. Control Sample

For comparison purposes, we identified from Mergerstat a control sample of M&A transactions in which the acquirors hire an investment bank. The control sample is also called the investment bank sample in this paper, and include 181 M&A

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transactions as well. We impose three requirements for collecting this control sample. First, for each in-house transaction, we identify an investment bank transaction in the same year. Second, the bidding firms' primary industry category must be the same as that of bidding firms in the in-house sample. We match the control firm by the 3-digit SIC code (4 digits when possible). Information about the industry classification (SIC codes) of bidding firms comes from the Mergerstat Review and COMPUSTAT. Third, after meeting the first two requirements, if we have more than one control M&A transaction, we then pick the control transaction whose transaction size is the closest to the transaction size of the matching in-house M&A transaction.

### 3.3. Data Sources

We obtain information about whether an acquisition is hostile from the Wall Street Journal Index (WSJI). Acquisitions are classified as hostile if the WSJI reports that target firm's board do not approve the bid. The information about the prior completed acquisitions (within the last five years before the acquisition) of the acquirors comes from the Moody's Industrial Manuals.

Several sources are utilized to gather information about these key characteristics of M&A transactions. We use the Wall Street Journal Index and Lexis-Nexis to determine the transaction type (whole firm takeover or otherwise), whether the bidder is the first bidder, the number of prior acquisitions, and whether the acquisition is hostile. We determine payment method from Mergerstat and the Wall Street Journal. Finally, we determine industry and firm size from COMPUSTAT and Moody's.

For firm size, we use total assets measured as of the year-end immediately before the acquisition. In addition, Moody's provides information about whether the bidding firms operate in the financial sector. For any necessary information not found in Moody's, we use Finance.yahoo.com, www.sec.gov, Research Insight, and Lexis-Nexis..

### 4. Descriptive statistics & univariate comparisons

To examine whether in-house acquisitions differ systematically from investment bank acquisitions, we use t-tests to compare means and use rank sum tests to compare medians of continuous variables, and $\chi^2$-tests to compare the compositions of categorical variables. We compare the firm characteristics and transaction characteristics of in-house acquisitions and investment bank acquisitions.

Table 1 displays the comparison results between the in-house and investment bank samples. In Panel A, the results show significant differences in terms of four variables. More acquirors are first bidders in the in-house sample than in the control sample, 96%

versus 83%, and the difference is significant ($\chi^2$ is 14.23). This result is consistent with $H_1$ and inconsistent with $H_2$. Takeovers constitute 68.51% of the in-house transactions, but they constitute 77.35% of the acquisitions in the control sample. This difference is not statistically significant, and therefore does not support $H_2$ and $H_3$. Also, the investment bank sample contains less cash-only transactions compared to the in-house sample (44% versus 65%) and this result supports $H_1$. The $\chi^2$ test results also show that there are more financial firms among acquirors in the in-house sample than in the control sample ($\chi^2 = 10.55$), supporting $H_1$, $H_2$, and $H_3$. Regarding the dummy variable "T-inhouse", $\chi^2$ test result indicates that target firms in the in-house sample are more likely to use the in-house method than their counterparts in the control sample, and this result is inconsistent with $H_1$. There are no significant differences found in terms of the "hostile or not", and "related 3-digit" variables between the two samples.

### ---Please insert Table 1 about here---

In Panel B, the results show that both acquirors and target firms in the in-house sample have more prior acquisitions than their counterparts in the control sample (12.96 versus 5.77 for acquirors, and 3.22 versus 2.09 for target firms). This result partly supports $H_1$ because only the acquiror result is consistent with $H_1$. The average transaction size of an in-house transaction is larger than the average transaction size of an investment bank transaction, but only the rank sum test result is significant (z-statistic is 4.53). The average size of an acquiror and a target firm in the in-house sample are both significantly larger than their counterparts in the investment bank sample, however the difference in the target firm's size is only significant in the rank sum test (Z = 6.17). In addition, no significant difference is found in terms of the average number of SICs of a target firm or the relative size of target to acquiring firm.

Overall, these results partly support $H_1$, and only weakly support $H_2$ and $H_3$. These results indicate that investment banks are more likely hired by the bidding firm when the acquiror is not the first bidder, when the payment method is not only cash, when both the acquiror and the target firm have little acquisition experience, when a bidding firm does not operate in the financial industry, and when the target firm use an investment bank.

### 5. Multivariate Analysis

As used in Servaes and Zenner (1996), the following logistic regression model is used for testing hypotheses $H_1$, $H_2$, and $H_3$:
Prob (acquiror uses in-house method)
= f (transaction costs, information asymmetry, contracting costs)

We estimate four models, the first tests $H_1$ (transaction costs), the second tests $H_2$ (information

asymmetry), and the third tests $H_3$ (contracting costs), and finally, we estimate a full model including all transaction characteristics and firm characteristics as defined in the previous section.

## 5.1 Logistic regression analysis on why acquirors use the in-house method in a M&A transaction

The results of the logistic regressions are displayed in Table 2. Model one contains the proxies for the transaction costs. The "cash payment" variable has the significant coefficient (p-value = 0.001) with the predicted positive sign. The result supports $H_1$. The "hostile or not" variable is significantly and negatively related to the dependent variable (with a p-value of 0.035) consistent with $H_1$. The coefficient of "acquiror first bidder" is significant and negative (with a p-value of 0.001), indicating that acquirors are less likely to use the in-house method when they are the initial bidders. This result supports $H_1$. The in-house method is more likely to be used in large M&A transactions (p-value = 0.001); this result is inconsistent with $H_1$. The coefficient of "acquiror prior M&A" shows that acquirors are more likely to use the in-house method if they have more previous M&A experiences (p-value = 0.001), and this result supports $H_1$. The regression results also show that if acquirors are financial firms, they less likely hire investment banks in acquisitions (p-value is 0.025), supporting $H_1$. T-inhouse dummy variable has a significant and positive coefficient (p-value is 0.001), and this is consistent with $H_1$. The regression results in model one give solid support to $H_1$.

------Please insert Table 2 about here------

We estimate model two to test the information asymmetry hypothesis. The estimated coefficient of the "acquiror first bidder" variable is negative and significant (p-value = 0.002). This means if the acquiror is the first bidder, the in-house method is less likely to be used, and this is inconsistent with $H_2$. The "# of SICs of target" measure is negatively and significantly related to the dependent variable (p-value is 0.087), indicating that the greater the number of SICs of the target firm, the more likely an investment bank will be hired, and this is consistent with $H_2$. The variable "takeover" has a positive and significant coefficient (p-value is 0.053), and this result supports $H_2$, indicating that if the transaction involves the acquisition of an entire firm, the acquiror is more likely to hires an investment bank. The "acquiror financial firm" variable is positively and significantly related to the dependent variable (p-value is 0.001), consistent with $H_2$. We do not find significant coefficients for the other two variables "relative size" and "related 3-digit". Therefore, $H_2$ is partly supported. The comparison results in model two show that the in-house method is more likely used when the acquiror is not the first bidder, when the target firm has fewer industry categories, when the

transaction is a whole firm takeover, and when the acquiror is a financial firm.

We test the contracting costs hypothesis in model three. The variable "transaction size" has a significant positive coefficient 0.52 (p-value is 0.001), implying that the in-house method is more likely to be used in large M&A transactions; this is inconsistent with $H_3$. As in the first two models, the coefficient of "acquiror financial firm" is positive and significant (p-value is 0.005), supporting $H_3$. The "takeover" measure still has a positive and significant coefficient (p-value is 0.011), indicating that a whole-firm takeover is more likely to use the in-house method. This result is inconsistent with $H_3$. These results only give weak support to $H_3$. The results in model three show that the in-house method is more likely to be used when the transaction is large, when the transaction is a whole-firm takeover, and when the acquiror is a financial firm.

Model four is the full model, including all variables. The results are consistent with those reported in model one to model three, except that variables "# of SICs of target" and "takeover" are not significantly related to the dependent variable any longer.

In sum, these results above show that $H_1$ is fairly strongly supported, $H_2$ is partly supported, and $H_3$ is only weakly supported. In comparison, transaction costs hypothesis ($H_1$) get more support than information asymmetry hypothesis ($H_2$) and contracting costs hypothesis ($H_3$).

## 5.2 Analysis of the differences of logistic regression results between this paper and Servaes and Zenner (1996)

There are four major differences between our regression results and those of Servaes and Zenner (1996). First, our findings indicate that when acquirors are financial firms themselves, they are less likely to hire investment banks as advisors in M&A transactions. Since financial firms more likely have the expertise to provide the financial advisory service for M&A transactions, these financial firms apparently have no reason to hire other investment banks. For example, when Morgan Stanley Co. and Dean Witter Co. merged in 1997, neither of them used a financial advisor because they were both big investment banks. Servaes and Zenner (1996) do not consider this critical factor in their study.

Second, our study shows that if the acquiror is the first bidder for the target firm, they will be more likely use an investment bank as an advisor. Conversely, Servaes and Zenner (1996) find that this factor is unrelated to the decision of whether to hire investment banks in M&A transactions.

Third, we find that when target firms use the in-house method in M&A transactions, the acquirors are more likely to use the in-house method as well. This finding is consistent with our expectation. Servaes

and Zenner (1996) do not consider this factor in their study.

Fourth, our finding relating to transaction size is that investment banks are more likely to be hired in smaller transactions; this is opposite to Servaes and Zenner (1996)'s finding. Considering the average transaction size in our control sample is smaller than the average transaction size in our in-house sample, this result is not surprising. In Servaes and Zenner (1996), the average transaction size in their control sample is larger than the average transaction size in their in-house sample.

## 6. Conclusions

In an attempt to extend and complement the study by Servaes and Zenner (1996) regarding the role of investment banks in M&A transactions, we examine 181 M&A transactions completed over the period 1981-2001, in which the bidding firms do not hire investment bank advisors, and compare them to a control samples of M&A transactions in which the acquirors hire investment banks as their financial advisors. We find that bidding firms are more likely to use the in-house method when the payment method is cash only, when they have more prior M&A experience, when the target firm operates in fewer industries, when the M&A transaction is a whole-firm takeover, and when the transaction is not hostile; these findings are consistent with those in Servaes and Zenner (1996). Additionally, our new findings indicate that the acquiring firms are more likely to use the in-house method when the M&A transaction price is relatively large, when the acquiror is not the first bidder, when the bidding firm is an financial firm, and when the target firm also uses the in-house method. We have to point out that there is one limitation with our study. Because our research sample only includes large M&A transactions, if small M&A transactions are considered, the results could be different.

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## Appendices

**Table 1.** Univariate Comparison Results

This table reports the results of univariate comparisons of the in-house acquisitions in which acquirors do not hire investment banks with acquisitions in which investment banks are hired. "Type of acquisition" indicates whether the acquisition is a takeover (acquisitions of more than 50% total shares of the target firm), or otherwise. "Acquiror first bidder" indicates the acquiror is the first firm to make a bid for the target firm. "Hostile or not" indicates whether the M&A transaction is hostile or

not. "Payment method" indicates the method of payment including "cash only" and otherwise. "Related 3-digit" is a variable indicating whether the acquiror and target firm have at least one three-digit SIC code matches. "% of financial firms among acquirors" is the percentage of firms which have 6000s SIC codes among all bidding firms. "Target-inhouse" indicates whether the target firm uses the in-house method. "Acquiror prior M&A" means the number of M&A transactions done by the acquiror within the past five years; "Target prior M&A" has the similar definition. "Transaction size" is the price of the M&A transaction. "Acquiror size" is the total assets of the bidding firm by the last December before the acquisition; "Target size" has the similar definition. "Relative size" is the total assets of the target firm over the total assets of the acquiror. "# of SICs of target" is the number of SIC codes in which the target firm is active. In this table, *** indicates significance at the 0.01 level; ** indicates significance at the 0.05 level; * indicates significance at 0.1 level.

| Panel A | Categories | In-house Sample (N=181) | Control Sample (N=181) | Chi-square |
|---|---|---|---|---|
| Type of acquisition | takeover | 68.51% | 77.35% | |
| | otherwise | 31.49% | 22.65% | 3.59 |
| Acquiror first bidder | first bidder | 95.58% | 83.43% | |
| | not first bidder | 4.42% | 16.57% | 14.23*** |
| Hostile or not | hostile | 16.57% | 11.60% | |
| | non-hostile | 83.43% | 88.40% | 1.91 |
| Payment method | cash | 64.64% | 44.20% | |
| | otherwise | 35.36% | 55.80% | 15.28*** |
| Related 3-digit | related | 75.14% | 73.48% | |
| | not related | 24.86% | 26.52% | 0.17 |
| % of financial firms of acquirors | financial | 58.01% | 40.88% | |
| | not financial | 41.99% | 59.12% | 10.55*** |
| T-inhouse | inhouse | 27.62% | 8.84% | |
| | not inhouse | 72.38% | 91.16% | 22.48*** |

| Panel B | In-house Sample (N=181) | | Control Sample (N=181) | | | |
|---|---|---|---|---|---|---|
| | mean | median | mean | median | T-test | Rank sum test (Z) |
| Acquiror prior M&A | 12.96 | 9 | 5.77 | 4 | 8.61(0.001)*** | 7.87(0.001)*** |
| Target prior M&A | 3.22 | 2 | 2.09 | 1 | 2.91(0.004)*** | 2.83(0.005)*** |
| Transaction size (mil) | 1168.07 | 580.93 | 824.84 | 220 | 1.35(0.178) | 4.53(0.001)*** |
| Acquiror size (mil) | 39556.81 | 8221.53 | 21797.61 | 2020.59 | 2.32(0.022)** | 4.95(0.001)*** |
| Target size (mil) | 5576.07 | 1907.24 | 2928.59 | 390.5 | 1.57(0.117) | 6.17(0.001)*** |
| Relative size | 0.46 | 0.239 | 0.38 | 0.199 | 1.18(0.238) | 1.25(0.210) |
| # of SICs of target | 2.54 | 2 | 2.74 | 3 | 1.58(0.115) | 1.65(0.100) |

**Table 2.** Logistic Regression Analysis with In-house Sample and Control Sample

The combined sample includes 362 M&A transactions. The "Acquiror prior M&A", "Target prior M&A," "# of SICs of target," and "Relative size" are as defined in Table 1. "Ln(Transaction size)" is the logarithm of the transaction size as defined in Table 1. "T-inhouse" is equal to one if the target firm uses in-house method, zero otherwise. "Cash payment" is equal to one for cash only payment, zero otherwise. "Hostile or not" is equal to one for hostile acquisitions, zero otherwise. "Acquiror first bidder" is equal to one if the acquiror is the first bidder, zero otherwise. "Takeover" is equal to one if the transaction is a takeover, and zero otherwise. "Related 3-digit" is equal to one if the acquiror and the target firm is related as defined in Table 1, zero otherwise. "Acquiror financial firm" is equal to one if the acquiror operates in financial industry, equal to zero otherwise. Coefficients on all these variables are reported and P-values are in parentheses. In this table, *** indicates significance at the 0.01 level; ** indicates significance at the 0.05 level; * indicates significance at 0.1 level. We estimate the following logistic regression models:

P (acquiror use in-house method in acquisition) = f (transaction costs, information asymmetry, contracting costs)

| Independent variable | Model (1) | Model (2) | Model (3) | Model (4) |
|---|---|---|---|---|
| | Transaction costs | Information asymmetry | Contracting costs | Full model |
| Intercept | -0.5 | 0.67 | -2.92 | -0.455 |
| | (0.545) | (0.022)** | (0.001)*** | (0.615) |
| T-inhouse | 1.17 | ------ | ------ | 1.053 |
| | (0.001)*** | | | (0.005)*** |
| Cash payment | 1.56 | ------ | ------ | 1.51 |
| | (0.001)*** | | | (0.001)*** |
| Hostile or not | -0.88 | ------ | ------ | -0.834 |
| | (0.035)* | | | (0.052)* |
| Acquiror first bidder | -2.19 | -1.31 | ------ | -2.08 |
| | (0.001)*** | (0.002)*** | | (0.001)*** |
| Acquiror prior M&A | 0.11 | ------ | ------ | 0.11 |
| | (0.001)*** | | | (0.001)*** |
| Target prior M&A | 0.04 | ------ | ------ | 0.04 |
| | (0.292) | | | (0.287) |
| Ln(Transaction size) | 0.41 | ------ | 0.52 | 0.41 |
| | (0.001)*** | | (0.001)*** | (0.001)*** |
| Related 3-digit | ------ | -0.1 | ------ | 0.2 |
| | | (0.704) | | (0.517) |
| # of SICs of target | ------ | -0.15 | ------ | -0.16 |
| | | (0.087)* | | (0.145) |
| Takeover | ------ | 0.5 | 0.66 | 0.311 |
| | | (0.053)* | (0.011)** | (0.353) |
| Acquiror financial firm | 0.6 | 0.74 | 0.64 | 0.69 |
| | (0.025)** | (0.001)*** | (0.005)*** | (0.012)** |
| Relative size | ------ | 0.27 | ------ | 0.25 |
| | | (0.187) | | (0.368) |
| | | | | |
| Pseudo R-square | 0.469 | 0.115 | 0.188 | 0.479 |
| | | | | |
| Regression P-value | 0.001 | 0.001 | 0.001 | 0.001 |