

Do financial bidders exploit underpricing as a motive in acquisitions?

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Abstract

This paper examines if financial bidders exploit underpricing as a motive in acquisitions. To this end, we study acquisition bids that fail to complete. Any revaluation remaining after failure should be unrelated to the value creation envisioned by the acquisition attempt and could be driven by underpricing. We compute the market reaction from bid offer to bid failure, and we find a 30-percent cumulative abnormal return to firms that are targeted by financial bidders and subject to severe information asymmetry. This revaluation effect does not revert to prior-bid price level. After a battery of tests, we interpret this finding as suggesting that mispricing is a relevant acquisition motive for financial bidders and, in some cases, the ripped benefits can be substantial. We compare these results to revaluation effects around failed bids issued by strategic bidders. We find that strategic bidders have other motives behind acquisitions and fall short to reap underpricing as a driver in choosing target firms. Overall, our results indicate that financial bidders seem to specialize or are more skilled in identifying and exploiting mispricing opportunities. This paper successfully tackles a long-standing empirical challenge to separate value-selection versus value-creation motives for acquisitions and provides evidence that one of the motives for financial investors to acquire firms is to benefit from mispricing.

JEL classification: G14, G32, G34

Keywords: Undervaluation, Mispricing, Acquisitions, Financial acquirers, Revaluation

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1. Introduction

Financial bidders pay an average premium of about 35 percent in acquisitions even though they do not benefit from operational synergies with target firms.¹ How do they justify such premiums? Their ability to unlock significant value is typically attributed to two main factors. First, to the operational improvements that financial acquirers can implement after the acquisition. Existing studies show that financial bidders are especially good at acquiring mismanaged firms and improving their operations and governance (Gorbenko and Malenko, 2014; Hege, Lovo, Solvin, and Sushka, 2013). And second, to the benefit they obtain from the heavy use of debt financing at favorable terms (Axelson, Jenkinson, Stömberg, and Weisbach, 2013; Guo, Hotchkiss, and Song, 2011; Martos-Vila, Rhodes-Kropf, and Harford, 2013). An alternative plausible hypothesis is that financial bidders are skilled at identifying mispriced targets whose prospects are not clearly understood by the market. Under this hypothesis, mispricing creates a profit opportunity and financial acquirers can benefit² by acquiring firms whose market value is below its fundamental value.³ Although theoretically appealing, in practice, it is not clear whether such opportunities exist, whether they can be successfully exploited and if so, whether financial acquirers are the smart investors. In this paper, we aim to explore these questions.

Profit opportunities may exist to the extent that market values deviate from intrinsic values. Market values should reflect intrinsic values; however, there can be moments where the two are misaligned and watchful investors can benefit from that. In this respect, Edman, Goldstein, and Jiang (2012) use mutual fund redemptions as a non-fundamental shock to stock prices and shows that the resulting price falls have a positive impact on takeover activity thus providing evidence that attentive investors seem to exploit price deviations from intrinsic values.⁴ Even if non-fundamental shocks may affect the stock price of any firm, deviations from intrinsic values may be more prevalent in less efficient markets or when information asymmetries are particularly important. Thus, if acquirers can successfully benefit from mispricing, we would expect that they do so especially in acquisitions where the target is subject to larger information asymmetries or when acquiring private firms.

¹ For instance, both Barger, Schlingemann, Stulz, and Zutter (2008) and Gorbenko and Malenko (2014) document a premium of 35 percent offered by financial bidders.

² In this paper acquirer refers indistinctively to bidder who fails or succeeds in completing a takeover bid. And undervaluation refers indistinctively to mismanagement and/or mispricing.

³ Gaughan (2014) "Private equity market" of Chapter 8; Damodaran (2001), "Motives for acquisitions" of Chapter 25,

⁴ In a robustness check, they show that takeover probabilities increase more for financially driven acquisitions.

To the extent that profits opportunities can be successfully exploited, we posit that the identity of the acquirer may matter. In the absence of synergistic gains, financial bidders may specialize or may be more skilled at exploiting mispricing. Dittmar, Li, and Nain (2012) suggest that financial bidders are particularly skilled at identifying undervalued targets. That financial acquirers are good at identifying undervalued targets is also prevalent in professional circles.⁵ Alternatively, financial bidders may enjoy an information advantage that makes them be better placed to benefit from price deviations. In contrast, strategic acquirers focusing on synergistic gains may neglect other sources of gains or simply may not be so skilled at detecting mispricing. In this sense, Dessaint, Foucault, and Frésard (2016) gives support to the later as they show that managers are not always able to filter out noise in prices and to distinguish fundamental from no fundamental changes in stock prices. Both under the view that each type of bidder specializes in different sources of gains (Gorbenko and Malenko, 2014) or that it has differential skills (Dittmar et al., 2012), financial bidders are more likely to exploit mispricing.

Testing our hypothesis is challenging because measuring mispricing is not straightforward. To date, existing studies relate valuation ratios such as the market-to-book ratio to takeover premiums or the likelihood of being acquired to evaluate whether undervaluation motivates acquisition activity. Renneboog, Simons, and Wright (2007) show financial acquirers offer higher premiums for firms with low market-to-book ratios. Edmans et al. (2012) show that firms with low valuation ratios have a higher probability of being acquired. With these findings, existing studies conclude that undervaluation is one of the motives behind acquisitions and a source of gains for financial acquirers. However, their main limitation is the use of valuation ratios that are both correlated to poor management and mispricing and therefore make a vague use of the term undervaluation to refer indistinctively to mispricing and mismanagement. With that approach, it is difficult to identify whether mispricing plays a role at all in motivating acquisitions and driving financial acquirer's acquisition gains.

To circumvent this challenge we study acquisition bids that fail to complete. We estimate the market reaction from the announcement of the offer to the failure of the bid to evaluate whether the target price upon failure fully reverts to the pre-announcement price level or whether a revaluation effect remains. By construction, a potential revaluation should be unrelated to value-creation hypothesis because any value to be added by the en-

⁵ For example, *The Strategic Secret of Private Equity*, Harvard Business Review, September 2007.

visioned takeover becomes invalid once the takeover attempt fails. Therefore, any potential revaluation can be interpreted as mispricing.⁶ To further evaluate whether a potential revaluation is related to the identity of the acquirer, we compare the revaluation effect around failed bids by financial bidders to that of strategic bidders. In this set up, according to our hypothesis, we would expect a larger revaluation effect for financial bidders.⁷

Our dataset includes a panel of 789 acquisition bids that failed over the period 1980-2015, of which, 258 bids are initiated by financial acquirers and 531 by strategic acquirers. To start with we conduct an event study on target firm stock returns from the announcement of the bid to the announcement of the failure and evaluate whether there is any revaluation effect. Consistent with previous studies, we find that the target price upon failure does not fully revert to the pre-announcement price level and a positive revaluation remains.⁸ This revaluation is mostly associated to the identity of the bidder and it is significantly larger for failed bids initiated by financial bidders and when target firms are small. We interpret this finding as evidence that financial bidders seem to exploit mispricing opportunities to a larger extent than strategic bidders. Though, this profit opportunity seems to be a driver of acquisitions only when information asymmetries are significant.

Although our approach brings additional insights, it is still subject to some challenges as the revaluation effect could be the product of other forces and not just a reflection of mispricing. First, we should be concerned with the possibility that selection into bid failure is different for deals involving financial bidders and targets with large information asymmetries from other failed deals. If an unobservable variable correlated with the type of bidder leads to failure, and simultaneously impacts the stock price, our findings may be biased. To address this concern, we collect and identify failure reasons and classify bids in two subgroups. Subgroup one includes bids whose failure reason may be correlated to target stock prices and the second subgroup includes bids that failed due to exogenous reasons and bid failures for which no relevant information was disclosed over the event window. In instances where new information is not conveyed to the market from the announcement of the offer to the announcement of the failure, we presume that failure itself is unlikely to be correlated to an abnormal price run up. We then re-do our analysis for the second subgroup and find a significantly larger revaluation effect for failed bids initiated

⁶ We may not observe any revaluation effect even if mispricing is a driving source of acquisition gains when the announcement of the acquisition does not convey information to the market about the sources of gains.

⁷ Thus we would expect that the identity of the acquirer conveys information to the market upon the announcement of an acquisition. This contrasts with Malmendier et al. (2016) where it is the medium of payment that conveys information upon the announcement of the acquisition.

⁸ In particular, Bradley, Desai, and Kim (1983), Safieddine and Titman (1999), Savor and Lu (2009), and Malmendier et al. (2016).

by financial bidders and targeting small firms event when bids failed for exogenous reasons or in circumstances where no information was disclosed to the market. Furthermore, we also evaluate the distribution of failure reasons for bids launched by financial bidders for small firms and compare it to that of bids launched by strategic bidders. We do not find significant differences or that certain reasons appear more frequently for bids involving a given type of acquirer. We conclude that our findings are not driven by the possibility that selection into bid failure depends on the type of acquirer.

Second, the revaluation effect could be the outcome of anticipation effects. Bradley, Desai, and Kim (1983) show that the revaluation effect could reflect the anticipation of future takeovers and thus target firms subject to failed bids may have a higher probability of being acquired in the future. In our set up, this would imply that the revaluation effect around unsuccessful bids by financial bidders for small target simply reflects that those targets are more likely to be acquired in the future, or be acquired at a higher speed or at a higher premium than other targets subject to unsuccessful bids. We perform a survival analysis and we also evaluate if a higher revaluation predicts a higher offer price and we do not find evidence supporting this conjecture.

Alternatively, the revaluation effect could simply reflect the anticipation of future operational improvements by current management (Hirshleifer and Titman, 1990; Safieddine and Titman, 1999). To deal with this concern, we drop from the sample failed bids where targets are presumably more likely to have a margin for operational improvements such as hostile bids and bids that failed due to a rejection by the board of directors of the target firm. Our results remain unchanged. All in all, we do not find evidence that calls for alternative interpretation of our findings.

Our analysis contributes to several strands of the literature. First, we add to the literature that explores the motives driving acquisitions and the sources of acquisition gains and, in particular, to the literature that studies how financial acquirers justify their acquisition premiums. Previous studies document acquisition gains that emanate from improvements in sales and operating margin (Acharya, Gottschalg, Hahn, and Kehoe, 2013), from favorable debt financing terms (Axelson et al., 2013; Martos-Vila et al., 2013), or from realized tax benefits and sector returns (Guo et al., 2011). This paper shows that mispricing also motivates acquisitions specially when bidders are financial acquirers that target small firms.

We also contribute to the literature that evaluates the rational of the revaluation effect around unsuccessful takeovers. This paper complements the findings in Malmendier,Opp,

and Saidi (2016) who show that revaluations are partly related to the information embedded in the medium of exchange. We show that revaluations are also and importantly related to the type of acquirer and size of the target. Thus, the revaluation effect seems to be partly due to purely informational effects related to the identity of the acquirer and the medium of exchange. However, the informational effects conveyed by the identity of the acquirer seem to be more relevant than those conveyed by the medium of exchange when information asymmetries are significant.⁹

Last, our results add some insights to studies that examine the differences between financial and strategic bidders. Gorbenko and Malenko (2014) show that the two types of acquirers target different firms in auctions, suggesting that they are driven by different motives in acquisitions. This paper reveals that underpricing seems to motivate financial bidders to engage in acquisitions and in the business of fishing underpriced firms. That is not the case for strategic bidders that are moved by other drivers when acquiring target firms.

The rest of the paper is organized as follows. In section I, we explain how we construct our sample, the variables that we used in the tests and provide descriptive statistics. In section II, we describe the empirical method that we implement to test our main hypothesis and we present the main empirical results. In section III, we discuss some empirical challenges that could question our interpretation and provide additional analysis that confirm our main findings. We conclude in Section IV.

2. Data

2.1. Sample construction

Our sample of failed acquisition bids comes from SDC Mergers and Acquisition database for the period 1980 to 2015. We collect bids with deal status “withdrawn”, “intention withdrawn”, “discontinued rumored” and “seek buyer withdrawn” and thus, we discard bids with deal status “completed” or “pending”.¹⁰ To start with, we include all bids regardless of the country of incorporation of the bidder and the target. We then retain bids that comply with the following restrictions. First, the target is a public firm for which we

⁹ Our results also strengthen the role of informational effects as opposed to Bradley et al. (1983). Contrary to the results of their study, the informational effects seem to be larger than the synergy effects. If synergies would be the main driver of the revaluation effects then we should have observed stronger revaluation for strategic acquirers.

¹⁰ At this stage, these bids include “Withdrawn”, “Discontinued Rumored”, “Seek Buyer Withdrawn”, and “Intention Withdrawn”. But 99 percent of our cleaned sample for estimation consist with “Withdrawn” and 1 percent with “Intention Withdrawn”.

can obtain market prices and identify announcement and withdrawal dates. Then the deal involves a bid that seeks a stake size larger than 50 percent and up to 100 percent of the target. This is to ensure a real change of ownership if the deal was completed.¹¹ Furthermore, to filter noise posed by target insiders, we exclude bids by the target management or employees. And finally, we also exclude bids subject to a third party offer for the target while the original bid under analysis is pending. This choice allows us to reduce noise brought by any valuation effect related to a third party outbid.

To identify the bidder type, financial or strategic, we look at bidders' 4-digit SIC code. Financial bidders have SIC codes between 6000 and 6900. Strategic bidders have SIC codes either below 6000 or over 6999. Once we have identified the type of bidder, we exclude financial services' targets with SIC codes between 6000 and 6999. This choice allows us to rule out bids by financial bidders that could be motivated by operational synergies and allows us to focus on non-synergistic motives driving acquisition decisions.¹² After that step, our sample includes 3'815 failed deals; that is, 1'277 involving financial bidders and 2'538 involving strategic bidders.

Next, for every target firm involved in a deal, we obtain stock prices and financial data from Datastream and Worldscope databases for non-US firms and from CRSP and Compustat for US firms. To add price and financial data to our sample of failed deals we use as matching variables the Datastream code, the firm name, and the country of primary listing for non-US firms.¹³ Then, we use the 6-digit CUSIP and the firm name for US firms since the Datastream code for these firms is largely missing in the SDC database. Adding available price and financial data reduces our sample to 2'945 failed deals; that is 1'019 (1'926) involving financial (strategic) bidders. We then drop deals for which target stock price data is not available 275 days prior to the bid announcement date¹⁴ and deals where the offer price is lower than the market price. With this step, our sample shrinks to a total of 2'204 failed deals involving 877 (1'327) failed deals by financial (strategic) bidders.

¹¹ Tough undervaluation hypothesis may also apply to minority interest bid, we use takeover bids for two reasons. First, a takeover bid catches much more market attention than a minority purchase and enable us to see more clearly corrections and reversion in price from bid news to withdrawal news. Second, the sample size of minority bid failures is too small to provide statistical significance once we require disclosed premium and listed targets.

¹² In un-reported tests, we re-do all estimations including bids where targets are from the financial service sector and acquirers are strategic. Our results do not change.

¹³ Datastream assigns different DS codes to cross-listed firms by stock exchange. Matching by DS code assigned to primary stock exchange, we neglect trades on other stock exchanges. But this does not impose major distortion in measuring cumulative abnormal returns for a multiple-week event window because price parity deviation incurs in multi-market intraday trading (Gagnon and Karolyi, 2010). Datastream also assign different DS codes for a single firm from countries in which different classes of shares are issued to citizens and foreigners, such as China. Accounting for only 1 percent of our sample, this again should not cause any big problem.

¹⁴ With this step, our sample shrinks to 948 (1'458) failed deals by financial (strategic) bidders.

To finalize our sample, we impose one last but relevant restriction and keep deals with non-missing observations for key variables that can impact target revaluation as identified by previous literature. These are the medium of payment, the offer price, an indicator for hostile attitude, an indicator for tender offer and the target market capitalization.¹⁵ We use these variables as control variables in the empirical analysis.

The medium of payment captures how an acquirer pays for the acquisition. Shleifer and Vishny (2003) predict that deals with an underpriced target are more likely to be paid in cash. Empirically, Malmendier et al. (2016) show that target revaluation upon deal failure is mostly driven by deals involving cash payments. To measure medium of payment we define 3 variables. *Cash* is the percentage of deal value to be paid in cash. *Stock* refers to the percentage of deal value to be paid in stock and *Other* refers to the percentage of deal value to be paid by other means.

The offer price, once announced, immediately sets a reference for other investors of the target value in the eyes of its bidder. Thus, it should also serve as a benchmark for price correction on prior-bid mispricing. We use the offer price over the target stock price four weeks before the bid announcement to compute the *Premium* that we then use in our tests. Karolyi and Liao (2016) and Malmendier et al. (2016) document a positive association between the premium and the short-run stock price reaction to the acquisition announcement and similarly, we expect a positive relation to the revaluation effect.

We also construct an indicator for hostile attitude. *Hostile* is a dummy that equals one when the acquisition attempt is hostile. An hostile takeover bid, even if unsuccessful, can trigger market anticipation that target management would improve future operational performance after resisting the bid (Hirshleifer and Titman, 1990). In a similar vein, *TenderOffer* is a dummy that equals one when the bid is instrumented as a tender offer. A tender offer can build up market expectation that the target may end up receiving a premium from a subsequent offer (Jensen and Ruback, 1983).

Finally, target market capitalization is the last key variable that we require to be non-missing. Target market capitalization proxies for target firm size and aims to control for slowly varying firm-level factors that are associated to unobservable acquisition motives

¹⁵ We do not include deal value because it is highly correlated with target firm market capitalization, the key firm-level control variable in our regression. Previous studies (e.g. Malmendier et al., 2016) include deal value to gauge acquisition cost relative to bidders' business scale by scaling deal value by bidder's market capitalization. This is infeasible in our setting because most financial bidders are private.

as well as the impact of these factors on target price. Our final sample of failed deals consists of a total of 789 deals, including 258 failed deals by financial bidders and 531 by strategic bidders.

We do not consider target valuation measures as a control, such as Market-to-Book, because measures of this kind are commonly used to decompose an intrinsic the mispricing element and then to rank target undervaluation prior to bid.¹⁶ In this sense, our strategy to sue failed bids is an alternative way to gauge prior-bid target underpricing.

As discussed in the Introduction, we consider failed deals as a counterfactual to completed deals. That requires us to assess the comparability between failed and completed deals. To construct a comparable sample of completed deals, we collect deals with deal status “completed” in SDC database and we follow the same procedures just described above. The final sample of completed deals consists of a total of 6583 deals, including 1283 completed deals by financial bidders and 5300 by strategic bidders.

2.2. Summary statistics

Table 1, Panel A reports summary statistics for bids made by financial bidders and Panel B for bids made by strategic bidders. In both panels, we precisely report summary statistics for various deal-level characteristics. Panel A shows that, both completed and failed bids issued by financial bidders, are similar regarding the medium of payment (*Cash, Stock, Other*), days between the announcement and the completion/withdrawal date (*Days*), market-to-book value (*MB*), premium (*Premium*) and the size of the stake sought by the bidder (*StakeSought*). Panel B shows that, both completed and failed bids issued by strategic bidders, are similar in terms of market-to-book value (*MB*), premium (*Premium*) and the size of the stake sought by the bidder (*StakeSought*). However, completed and failed bids issued by strategic bidders are marginally different with respect to the medium of payment (*Cash, Stock*), and days between the announcement and the completion/withdrawal date (*Days*). Unsuccessful deal attempts by strategic bidders tend to be resolved (withdrawn) faster than completed deals and there is a higher proportion of attempted deals to be paid with stocks that fail.

¹⁶ See for example Rhodes-Kropf, Robinson, Viswanathan (2005), Dong et al., (2006), Edmans et al., (2012), and Fu, Lin, Officer (2013).

Panel A and B also outline differences between completed and failed bids that are common to financial and strategic bidders. Failed bids tend to involve targets of bigger size (*DealValue* and *TargetSize*) when financial bidders are involved and of smaller size when strategic bidders are involved. For both financial and strategic bidders, failed bids are more likely to be hostile (*Hostile*), and less likely to be tender offers (*TenderOffer*), involve target fees in case of termination (*TTerm*), or hold a smaller block size prior to bid (*Toehold*) than completed bids. These findings are largely consistent with previous studies¹⁷ and highly correlated with failure.¹⁸ Failure predictors may also affect stock price. For example, Hirshleifer and Titman (1990) argue that, while resisting a hostile bid, the target firm may also learn about and take actions to implement policies planned by the bidder and which in turn increases the target stock price. Thus, it is important to account for such effects in our tests. Therefore we will include these variables as controls in the regression setting described in Section 3.3.

Table 1, Panel C evaluates whether there is any significant difference between bids issued by financial and strategic bidders both for completed and failed samples.

The most relevant difference relates to the premium offered and to the medium of payment, regardless if a bid is completed or not. Financial bidders offer on average premiums that are 7.8 percent lower than those offered by strategic bidders.¹⁹ The lower premium can be explained by the absence of operational synergies²⁰. Moreover, financial bidders tend to pay all bids with cash while it is not the same for strategic bidders that often also use stock or a combination of stock and cash. Malmendier et al. (2016) shows that cash payments explain the revaluation effect at deal failure and therefore reveal prior-bid underpricing of the target firm. Thus, it is crucial for us to make sure that the identity of the bidders is not simply capturing the medium of payment she uses for acquisitions. More precisely, in our tests, we are careful that our indicator of financial bidder is not actually a proxy for cash payments. To account for that, we run our tests controlling for *Cash* and verify that all our results hold for a subsample composed only of cash deals.

¹⁷ See for example Bates and Lemmon (2003).

¹⁸ In unreported table, we double confirmed that they are determinants for failure in a logistic regression setting.

¹⁹ Focusing on U.S. domestic completed bids after which acquirers own 100 percent stake, Barger et al. (2008) find the premium from financial bidders is around 12 percent lower than that from strategic bidders

²⁰ See Barger et al. (2008) for alternative explanations.

3. Empirical analysis

By looking at failed deals, we aim to evaluate whether there is any revaluation effect. Market revaluation refers to the market reaction from the announcement to the failure of the bid. After the announcement, the prices incorporate deal specific information as the bid advances towards completion or failure. In the case of failure, prices should go back to initial levels unless there is revaluation. Revaluation is most likely due to undervaluation prior to bid but it could also be the result of anticipation of future takeover or operational improvement.

First, we aim to estimate whether there is any revaluation effect and then identify its likely driver.

3.1. *Measuring market revaluation for target firms*

To estimate market revaluation, we conduct an event study on target firm stock returns around the announcement of the bid and of the withdrawal. The estimation window corresponds to the interval (-275, -25) with respect to the bid announcement. Following standard event study methodology as in Brown and Warner (1985), we compute daily abnormal returns as prediction errors from a market model using local market indices.²¹ Stock and local index returns are expressed in home market currency. To account for illiquid stocks, we adjust abnormal returns following the "trade-to-trade" approach of Maynes and Rumsey (1993)²² and exclude bids where target firms are not traded for more than 225 out of 250 trading days (90 percent of the estimation window).

Then we compute the cumulative abnormal returns (CARs (B-25,F+25)) from 25 days before the announcement of the bid to 25 days after the announcement of the withdrawal following Malmendier et al. (2016). The choice of 25 days before the bid announcement allows us to capture price run-ups caused by rumors Schwert (1996). The choice of 25 days after bid failure allows us to incorporate the possibility that stock markets react slowly to bad (withdraw) news (Chan, 2003).

3.2. *Univariate test*

²¹ In robustness check, we replace local market indices with Datastream value-weighted global market index in U.S. dollar and local market currency exchange rates to U.S. dollar. In addition, we also re-estimate CARs with constant mean model. Our findings are consistent.

²² We also compute normal return without adjustment to illiquid stocks. Our results do not change.

Figure 1 provides graphical results for revaluation effect of financial and strategic failed bids. It plots the evolution of target firm CARs (B-25,F+25).²³ The solid line represents the CARs for financial failed bids. The dashed line represents CARs for strategic failed bids. The part of curves from $B-25$ to B illustrate the average announcement return to the bid and the probability to fail. The market reaction is around 15 percent, only a third to premium documented by previous studies that focus on completed acquisitions. This is in fact consistent with Bhagat, Dong, Hirshleifer, and Noah (2005) that investors incorporate their view on the probabilities of deal consummation into valuation at bid announcement. Thus, we observe a lower magnitude for failed bids. The part on the right, from F to $F+25$, presents the stock market reaction towards announcements of bid failures. The phase from B to F depicts how the stock market incorporates deal-specific information as the bid advances towards completion or failure. For different bids, this process can last longer or shorter. Therefore, we standardize the window between B and F following the same approach as in Malmendier et al. (2016). In the absence of a revaluation effect, we would observe CARs falling back to zero. This is the case for firms targeted by strategic bidders. However, we observe that the line of financial bidders stay approximately at the 10 percent level when they hit the failure date “F” in the x-axis. This finding is consistent with a revaluation effect. And therefore undervaluation seems to be a source of value in acquisitions. More importantly, the gap between the two lines is wide and seems to indicate that only financial bidders actually benefit from undervaluation.

Table 2 provides univariate tests. Panel A as well as the first row of Panel B confirm our previous observations. We conduct different tests to address potential non-normality in returns. In Panel B, asterisks next to means and medians indicate the statistical significance using skewness-adjusted t-test and Wilcoxon sign-rank test respectively. The columns labeled "*Strategic-Financial*" present test statistics on difference between strategic and financial using skewness-adjusted t-test and rank-sum test. With regard to our main sample, labeled "*Main sample*", around 11 percent (median of 5.9 percent) revaluation effect remains for target firms of financial bidders, whereas targets of strategic bidders retain little wealth change in the end. The difference between the two groups is statistically significant at 10 percent. Up to here, financial acquirers seem to be able to gain from revaluation.

²³ To normalize the length between bid and failure, we follow the same approximation procedure as described in Malmendier et al. (2016).

However, around 50 percent of strategic bids involve payment in stock, while almost all financial bids are to be paid in cash. If the choice to pay stock is driven by motives other than target underpriced to its intrinsic value (Shleifer and Vishny, 2003), strategic bids' under-presence in cash bids relative to financial bids may cover an otherwise significant revaluation effect. For this reason, we narrow down our comparison to cash-only deals (*PureCash*),²⁴ firms targeted by strategic bidders actually continue to possess a 7.7 percent (median of 9.7 percent) upward adjustment on stock price. Difference between the two groups is insignificant. This observation is consistent with Malmendier et al. (2016) that the medium of payment plays a role in revealing prior mispricing. And we show that this channel applies to both financial and strategic bidders.

Though the revaluation difference between the two types of bidders disappears, it could well be that financial bidders only have advantage in less efficient markets or where information asymmetries are more relevant. There they are able to exploit and reap a profit from undervalued firms. To proxy information asymmetry, we use small firms because smaller firms are shown to have poorer information environment (Atiase, 1987). So we rank targets by market capitalization and label *Small(Q1)*, *Q2*, *Q3*, and *Big(Q4)* respectively to targets in the lower quartile, between 25 percent to 50 percent, between 50 percent to 75 percent, and in the upper quartile. As expected, small firms targeted by financial bidders gain a 36.6 percent (median of 24.8 percent) CARs, whereas no revaluation effect remains for small targets of strategic bidders. That confirms our prediction that only financial bidders grasp opportunities where mispricing is most likely to occur. Though strategic bidders demonstrate positive revaluation effect for firm size above median, the difference from financial bidders is statistically insignificant. We are going to examine the robustness of these results in a regression setting that controls for other deal-level characteristics

Skills to spot undervalued firms may stem from 1) better private information or 2) better tools or information processing skills. As a proxy for having better information we use domestic (Cooper, 2013). In fact, geographical proximity is shown to be positively associated with information advantage. Investors prefer to capitalize this competitive advantage even if it is tiny. As expected, the row *Domestic* reports significant and higher than *Pure-*

²⁴ As discussed in Fu et al. (2013), to focus on pure cash or stock bids captures more clearly acquisition motives, while interpretation on hybrid payments might be arbitrary.

cash revaluation for both financial strategic bids, whereas *Crossborder* does not have any revaluation effect left after bid withdraw. These results on geographic distance demonstrate that both financial and strategic bidders have access to information advantage. Furthermore, financial bids do harvest a significant revaluation in small domestic firms, while strategic bids no longer show any revaluation. Put together, the univariate tests results support our conjecture that financial bidders are more skilled than strategic bidders in finding undervalued firms when information asymmetry is severe.

3.3. Multivariate test

To further evaluate our hypothesis and account for deal- and firm-level characteristics we continue with cross-sectional regression. Our base model is specified as below.

$$CAR_i = \alpha + \beta Financial_i + \gamma Deal_i + \delta Log(TargetSize)_i + \varphi Yearummies + \theta Industryummies + \varepsilon_i$$

where i indicates the i th bid. CAR_i is the cumulative abnormal return for target firms from 25 days before bid announcement to 25 days after bid withdrawal. $Financial_i$ is the independent variable of interest that represents the type of bidder. It is a dummy variable equal to one (zero) if the i th bid is initiated by financial (strategic) bidders. Its coefficient, β , captures any target revaluation effect associated with the bidder type “Financials”. We follow previous studies and control for other factors that may impact CAR_i beyond the type of bidder. $Deal_i$ is a vector of deal-level control variables, including *Cash*, *Premium*, *Hostile*, and *TenderOffer*. *Cash* stands for the medium of payment in cash. We define *Cash* as a dummy variable that equals to 1 if no less than 50 percent is to be paid in cash and zero otherwise.²⁵ *Premium* is bid premium expresses as offer price over target stock price four weeks prior bid announcement. *Hostile (TenderOffer)* stands for a dummy is equal to one for takeover bids that are hostile (in the form of tender offer) and zero otherwise. $Log(TargetSize)$ is the natural logarithm of 2014 CPI-adjusted target market capitalization. *Yearummies* and *Industryummies* are dummies for bid announcement year and 1-digit SIC industries that control for macroeconomic condition and regulation changes common to all buyers, target firms or certain industries.

Table 3 presents baseline regression results. Column 1 reports the average estimation for *Financial* without any other control. Deals associated with financial bidders show a positive and significant revaluation effect with a CARs of 9.5 percent (t-statistic of 2.59).

²⁵ In unreported robustness check, we use the percentage of payment in cash. Our results do not change.

The significance remains once we introduce year and industry fixed effects, as depicted in Column 2. In Column 3, we add control variables. While the signs of coefficients on control variables are largely consistent with previous studies²⁶, we observe that the revaluation effect on *Financial* vanishes. This results shows that the identity of the bidder does not impact the revaluation effect. Thus financial bidders do not seem to signal underpricing.

Up to here, we control for the revaluation effect of payment medium by adding a dummy variable of cash payment. As an alternative way of control, we follow Barger et al. (2008) and Gorbenko and Malenko (2014) and narrow our sample to cash-only bids. In this way, we account for potential collinearity between the dummy variable of cash payment and that of financial bidders, which may overshadow the explanatory power of the bidder types. The results are the same as before, according to Column 4-6. After controlling for cash payment, there is not a larger revaluation effect associated to financial bidders (*Financial*). Thus, the type of bidder does not seem to have any target revaluation effect incremental to the medium of payment, offer premium, hostile attitude, and tender offer.

3.4. Information asymmetry

Till now, our baseline results show that the type of bidder does not impact the revaluation effect. This result may reflect that the average deal in our sample evolves in a highly efficient market where deviations between value and price can be quickly learnt by both types of bidders.²⁷ In this set up, financial bidders may only show an advantage where information asymmetries are high. In the presence of significant information asymmetries, financial bidders may be able to utilize their skills in processing information and benefit from identifying underpriced firms. To examine this claim and as information asymmetries are more likely to be present in small firms, we take firm size as a proxy and create the variable *Small*. *Small* equals 1 if the target market capitalization is in the lower quartile and zero otherwise.

Table 4 presents cross-sectional regressions where *Small* is interacted with *Financial*. $Financial \times Small$ captures the revaluation effect associated with bids involving finan-

²⁶ Our estimation of the coefficient on *Cash* is 10 percent, similar to the estimation of Malmendier (2016) when both public and private acquirers are included.

²⁷ For example, Edmans et al. (2012) shows that a non-fundamental discount on stock price attracts both strategic and financial acquirers.

cial bidders and targets subject to larger information asymmetries. In Column 1, we use the main sample and observe a 28.9 percent (t-test 3.20) reevaluation effect of the interaction item. Then in Column 2 we add *Strategic* \times *Small* to account for deals involving strategic bidders and targets subject to large information asymmetries. This set up allows us to directly compare the two types of bidders when both of them are faced with target firms subject to large information asymmetries. The *F-test* on the two coefficients ($a=b$) shows that, indeed, only bids involving financial bidders experience a larger target revaluation. To be consistent with baseline regression, we re-run our test in Column 3 and 4 with bids to be paid fully in cash as an alternative way to control for revaluation effect of cash payment. Once again, the greater revaluation effect of financial bidders persists when both types of bidders are ready to pay their offer fully in cash.²⁸

If to act on undervaluation opportunities is a non-trivial goal for bidders, they will choose where private information is most exploitable and they have greatest advantages in execution. That would imply revaluation effect is more prominent in domestic bids than cross-border ones (Cooper, 2013). Therefore, to reinforce our findings that financial bidders benefit more from target mispricing than strategic bidders when information asymmetry is severe, we examine whether the subgroup *Financial* \times *Small* still stands out from other domestic bids where bidders enjoy similar access to private information. Table 5 displays analysis results. First, as expected, the coefficient of dummy variable, *Domestic*, is consistently significant throughout different specifications. The interaction item, *Domestic* \times *Financial* \times *Small*, maintains a significant coefficient of 25 percent for main sample and 30 percent for pure-cash bids. In the case of cash-only bids, this incremental revaluation effect is statistically significant, according to F-test statistics ($a=b$). When we narrow down to compare *Domestic* \times *Financial* \times *Small* and *Domestic* \times *Strategic* \times *Small*, as shown in Column 7, we see that the type of financial bidders leads to a higher revaluation than strategic bidders, given similar information environment.

Summing up, our results show that financial bidders do have an advantage where information asymmetries are high. They benefit from underpricing in small firms and bring in a larger revaluation than strategic bidders. The magnitude of revaluation unlocked by

²⁸ In Section 3.3, univariate tests suggest thin evidence that strategic bidders have slightly higher revaluation for targets of medium size. Thus, we replace the *Small* with *Medium* in the two interaction items and do not observe any significance, which indicates valuation effect is driven by other control variables. For reporting brevity, we do not tabulate a column for these two pairs.

the bidder identity is 10-15 percent higher than medium of payment as documented in Malmendier et al. (2016).

3.5. Is underpricing really driving our findings?

Our tests so far are subject to some challenges and require further examination. In our setup, we should be concerned with selection into bid failure, i.e. the cause of deal termination is related to the valuation of a target. For example, as a defense tactic, firms can release positive news to hype up stock price, squeeze the profit margin for bids, and drive away bidders.²⁹ In this case, we equally observe a revaluation at bid failure but cannot conclude it is stand-alone firm value that is previously mispriced and then revealed by financial bidders. Therefore, the key to address selection into failure is to set apart bids by whether their failure reasons affect stock price. Specifically, we follow Savor and Lu (2009) and Malmendier et al. (2016) to collect detailed information on failure reasons and group them into exogenous ones, i.e. unrelated to firm stock price, and those endogenously related to firm stock price.³⁰

Our objective to use this exogenous-endogenous classification is two-fold. On the one hand, we want to verify whether the differential results between small targets of financial bidders and the rest bids still hold for the exogenous group. On the other hand, we want to ensure that, even if selection into failure exists, its presence has similar distribution for small targets of financial bidders and the remaining bids. If the cause of failure makes the market to react, such stock price reaction should be larger the larger are information asymmetries, leading to an overproportion of small firm bids failing for a reason involving high revaluation. Furthermore, deals by financial bidder are more likely to fail than strategic ones because financial bidders do not enjoy synergies and their negotiation margins are thinner and more easily drop the bid, leading to an overproportion of financial bidder deals failing for a reason involving high revaluation. The two, putting together, imply that the greater revaluation of small firms targeted by financial bidders may simply be driven by over-presence of selection into failure for small firms and financial bidders. Alternatively, there could be an overproportion of deals involving strategic bidders failing due to negative news about the target and adversely affects target stock price, such as bidders withdrawing during due diligence.

²⁹ Literature has long established evidence that firms consciously release news to influence stock price. See (Ahern and Sosyura, 2014) for recent evidences.

³⁰ We use three information sources, SDC deal synopsis, SDC event history and news from Nexis-Lexis.

Table 6 summarize analysis results by failure categories. The very left column of Table 6 lists main failure categories. Categories from row (1) to (4) constitute our exogenous sample because they contain little additional information to the market that affects stock price. The first row is labeled (1) *No more information* because in those bids nothing but the date of bid withdrawal is found in public news resources. The next row, (2) *Term mutually disagree*, contains bids with withdrawal news stating terms are modified but eventually both bidder and target agree to terminate negotiation. No further information is available on what term is modified or what drives both parties agree to drop. In those two categories, there is no more public information than the sheer fact that any value creation of bidder becoming a controlling shareholder is no longer there. In this sense, these two failure categories are the most exogenous to revaluation effect. We also consider two other categories as exogenous. One is (3) *Bidder no financing*, in which news explicitly states that bids are withdrawn because bidders have difficulties to finance the deal. The other is (4) *Regulator reject*, in which bids failed to obtain approval from target country regulatory authorities such as Australian Competition and Consumer Commission, Federal Trade Commission in U.S., European Union, Office of Fair Trading or Competition and Markets Authority in U.K., etc. Those two causes of failure are unlikely to carry underlying information that affects investors' view about a target firm's governance, operation or growth prospect, apart from reversing anticipated value effect of a bid being completed. Putting together, the four failure categories are labeled as *Strict sample* in the last but one row.

The next six categories, from (5) to (10), are considered endogenous because the cause of failure is likely to stimulate stock market reaction. (5) *Bidder withdraw*, refers to bids that are terminated by bidders either during due diligence or at any other phase of the bid negotiation. A bid terminated in this way might signal that the bidder discovers the true but worse than expected situation of its target firm. Convinced by this signal, investors may reverse more than what to be added by the bid. In (6) *Target released news*, other news about the target is released around bid withdrawal, for instance earnings announcement or other accounting information, plans for new project, updates on court ruling, and so on. This category also includes bids in which bidders say they terminate because of recent released news about its target firm. Good or bad, these confounding news make it hard to distinguish price effect of bid failure. (7) *Price too low* covers bids where target board of directors decline the offer by arguing the offer price is inadequate. It also includes bids where bidders openly reject to sweeten their offer. (8) *Tender failed* contain

bids where bidders fail to tender sufficient shares before offer expires. These two categories literally tell the market that shareholders and management of target firms believe the firm fair value should be higher than offer price. In this sense, it actually supports our underlying hypothesis. However, one might argue that the so-called fair price in the mind of target management and shareholders can only be attained if they could learn about and implement policies planned by the bidder. If outside investors are convinced that performance-improving policies are to be executed by target management in place of bidders, they would not reverse initial revaluation at bid announcement. This undermines our conclusion because the observed positive revaluation is in fact anticipation of future operational improvement. We are going to address this anticipation effect in Section 3.7. For now, we simply regard the two categories as endogenous to target price effect. The last two categories, (9) *Board reject* and (10) *Shareholder reject*, stand for bids that are vetoed by target board or shareholders without explicitly stating it is due to inadequate offer price. These two failure causes may disperse market perception on firm value. While some can follow a similar line of thinking to the categories of *Price too low* or *Tender failed*, others might regard it as an indicator for stagnated board or dominant block holder whose interest conflicts with other shareholders.³¹ Despite diverse directions of price implications, the aforementioned six failure categories, from *Bidder withdraw* to *Shareholder reject*, all hinder us from cleanly draw conclusion on undervaluation hypothesis. Therefore, we classify them as endogenous failure sample.

Having classified our sample by failure reasons, we further divide the sample into *Financial × Small*, *Other Financial*, and *Strategic*. They refer to, respectively, small firms targeted by financial bidders, non-small firms targeted by financial bidders, all firms targeted by strategic bidders. Furthermore, we keep cash-only bids. $N(\% \text{ of } N)$ indicates the number(fraction) of total observations for each of the three subgroups falling into each of the ten failure categories. In total, the main sample is divided into thirty subgroups. Then we regress CARs on each of these thirty subgroups by fully controlling for $\text{Log}(\text{TargetSize})$, *Premium*, *Hostile* and *TenderOffer*.³² *Coefficient* captures any revaluation effect loaded on each subgroup. It is left empty if there is insufficient observations to run regression.

³¹ Of course, *Price too low* or *Tender Failed* are not free from governance problems. For example, the former can be viewed as an excuse used by entrenched management. The latter can occur if a majority block holder refuses to tender and hurt minority shareholder interest.

³² We also estimate the coefficient without any control, or dropping collinear control variable such as *TenderOffer* for the failure category *Tender failed*. Estimated results remain the same.

As results suggest, our two-fold objective is satisfied and our concern of selection into failure is alleviated. First, the distribution patterns of failed bids into each categories are similar across the three subgroups, $l \times Small$, *Other Financial*, and *Strategic*. Particularly, in the failure categories prone to endogeneity, i.e. (5)-(10), none of the three subgroups has significantly greater or lower presence. This mitigates our concern that a cluster into either good or bad compounding news drives our results. Second, all three subgroups have around 40 percent of their observations present in the *Strict sample*, the failure categories least contaminated by price-sensitive information. In this exogenous sample, the greater revaluation effect of *Financial* \times *Small* persists. In a word, our findings is unlikely to be driven by confounding factors related to both failure and target stock price.

3.6. Is target revaluation driven by future takeover activities?

The differential effect observed so far may be alternatively explained by future takeover activities Bradley et al. (1983). That is, the market believe small target firms of financial bidders have a greater probability to be acquired and hence a higher expected value. And this higher likelihood is further decomposed into two dimensions, shorter acquiring time or higher offer premium. For instance, a future bid to be realized within two years is to be valued more than one completed ten years later. Likewise, a 30 percent premium is preferred to a 10 percent premium. We approach the two dimensions separately.

To analyze the time until a successful acquisition, we conduct a survivor analysis.³³ This method is originally used in biology to examine, for instance, whether certain factors accelerate death. As an analogue to it, we test whether a combination of three factors, bidder types as financial acquirers, small firm size and higher market revaluation predicts a shorter survival time to future acquisition. Since our primary interest is the differential effect in revaluation, we focus on the marginal difference in time to acquisition between *Financial* \times *Small* and the rest failed bids, instead of comparing to all un-acquired firms in the history.³⁴

To begin with, we plot Kaplan-Meier survival curve to visualize the survival paths of *Financial* \times *Small*, and the rest. For each target firm in our sample, the observation pe-

³³ It suits better our setup than a logistic regression because the former accommodates both occurrence and timing, whereas the latter only examines the overall presence and absence of an event. See Allison (2010) for a more detailed discussion on survival analysis techniques.

³⁴ Besides its thin relevance to our setting, to include all un-acquired firms in the history may induce a negative bias on the survivor ratio of our sample. As demonstrated by (Malmendier et al., 2016), the survival ratio of recipients of a unconsummated bid is persistently much lower than firms that share similar firm and industry characteristics but never receive an offer for a five-year period before bid announcement. This gap suggests the comparison of future survival in our setting should be conditioned on the set of takeover risks following the very recent bid event.

riod is measured as the time interval between the withdrawal date and the censoring date. The censoring date is the effective date on which a target firm is successfully acquired. In case no bid is completed, it is the date of officially delisted date. We take June 30 2016, the last trading date of our sample period, as the censoring date for companies stay listed and independent. For each year, survival probability is calculated as the number of firms surviving divided by the number of firms at takeover risk. Firms that are delisted for other reasons are not included in the denominator.

Figure 2 plot the cumulative survival ratios at each year end, calculated as the product of preceding probabilities of surviving a takeover risk in previous years. At first glance, the survivor ratio of small firms targeted by financial bidders drop faster than that of the other firms. For example, after two years following the initial bid failure, the subgroup *Financial* \times *Small* is taken over 1.4 times (35 percent vs. 25 percent) faster than the other three groups. Yet such seemingly lower survival ratio turns out to be statistically insignificant, suggested by the large p-value (0.403) of log-rank test on the four categories.

So far we show firms grouped by their size and the type of bidders share similar time to acquisitions. But what we are ultimately interested is whether the higher revaluation associated to *Financial* \times *Small* reflects a higher completion speed. Thus, we switch to Cox proportional-hazard regression to accommodate continuous variables, such as revaluation (CARs), and multiple covariates. In fact, all control variables included to estimate revaluation effect would be subject to the same query as the indicator for subgroup of financial small, if the latter is doubted to be driven by the rate of future takeover activities. Using Cox regression to adjust for other covariates, we can set apart the marginal effect of higher revaluation on the rate of future takeover.

Table 7 summarizes regression results. The dependent variable is the rate of subsequent takeovers following a bid failure. The explanatory variable of our primary interest is *Financial* \times *Small* \times *Cars*, the revaluation associated to small firms targeted by financial bidders around bid failure. Its coefficient represents a relative increase in the rate of future takeover for one unit increase in revaluation. If the positive revaluation documented in Table 4 reflects faster successful takeover in the future, we would observe a positive and statistically significant coefficient. However, as shown in Column 1, the coefficient is insignificant from zero. That means revaluation possessed by small targets of financial bidders reveals prior mispriced intrinsic value of a firm. Next, in Column 2 of Table 7, we

add the same array of control variables as used for estimating revaluation effect in order to set apart the marginal effect of Financial Small Car. We see clearly that it remains insignificant. The cash coefficients, contrary to Malmendier et al. (2016), is significantly positive. But once we follow their sample filtering and restrict to domestic bids in U.S., the coefficient becomes insignificant from zero. This is consistent to Faccio and Masulis (2005) that an alternative role of cash as payment is to secure a bid, which reveals the true market for a targets' shares and in turn reflect future takeover activities. Then in Column 3, we introduce a variable for average *CARs* and an indicator for financial bidder to further understand the role of revaluation and types of bidder respectively. Neither *Financial* nor *Financial* \times *Small* \times *Cars* possesses a significant coefficient. However, *CARs* becomes highly influential. For every one percent increase in revaluation, there is a 37.2 percent increase in takeover rate ($HR=e^{.316}=1.372$). Once we decompose *CARs* by the type of bidders, i.e. the revaluation allotted respectively to financial and strategic bidders, we see in Column 4 that the significant effect is solely driven by strategic bidders. The strong link between revaluation of firms targeted by strategic bidders and faster future takeover extends (Bradley et al., 1983) that revaluation at bid failure reflects not only synergies brought in by a subsequent successful acquisition but also a shorter waiting time before it eventually happens. In contrast, absent of synergy, the higher revaluation of *Financial* \times *Small* is not related to a higher speed of future takeover activities.

Next, we estimate whether this subgroup is related to a higher wealth created by future takeover. We proxy future wealth with the premium of the ultimately completed bid, measured by inflation-adjusted deal value divided by target market capitalization. As a start, in Column 1 of Table 8, we regress this future wealth on *Financial* \times *Small* \times *Cars* without any control. Then in Column 2-4, we account for the medium of payment, premium, bid attitude, and tender offer. The advantage to use the target market capitalization before bid failure to normalize future premium is to be aligned with other control variables in terms of time. Yet it leads us to imprecise measure for long-term stock return. Thus, we include the time it takes to be eventually acquired (*Years*) to partly control for the long period of estimation. As shown in Column 2-4, *Financial* \times *Small* \times *Cars* does not carry any significant effect. This insignificance lasts when we narrow down the sample to initial cash-only bids. All these evidences demonstrate that future higher offer value is unlikely to drive the higher revaluation of small firms targeted by financial bidders.

To sum up, neither the speed nor the offer price of future takeovers differs significantly between small firms targeted by financial bidders and the rest of firms. The greater revaluation of the former should derive from market correction for a prior underpriced intrinsic firm value. And financial bidders are capable of profiting from it.

3.7. Is financial bidders' revaluation effects on small firms driven by anticipation of future operation improvement?

Another type of anticipation effect, i.e. expectation of future operation improvement, might drive financial bidders' higher evaluation on small firms and invalidate our conclusion. Hirshleifer and Titman (1990) point out the possibility for hostile bids that, after targets firms resist a bid, they could learn about and implement policies planned by the bidder. Predicting this change, stock market can increase their expectation of the firm's prospect. In our setting, one might conjecture that financial bidders could have better policy in mind than strategic bidders. So only those firms targeted by financial bidders preempt policies planned by bidder. If it is financial bidders' superior management skills than strategic bidders that drive differential stock price reaction, we should see positive revaluation effect for all firms targeted by financial bidders. In reality, revaluation on larger firms dissipates at the news of bid withdrawal.

One might also argue that target management, considering financial bidders as corporate raider, successfully resist takeover threat and become more disciplined to improve operation performance Safieddine and Titman (1999). This does not relate to financial bidders' better know-how on corporate governance but can still affect investors' expectation. If it is unwanted bids that wake up target management and make them more engaged, this channel should be most prominent in bids that are hostile or rejected by target board of directors. In fact, financial bids on small firms rejected by directors are less than 10 percent and not associated with any significant positive revaluation, according to our investigation results on failure reasons reported in Table 6. Furthermore, when estimating financial bidders' revaluation effect on small firms in Table 4, we have already controlled for hostile deal attitude. The positive revaluation effect persist in all specifications. As a matter of fact, less than 15 percent of small firms targeted by financial bidders are hostile. In unreported column of Table 4, we drop those observations and check whether small firms targeted by financial bidders still obtain revaluation in friendly cash-only bids. Results show it is indeed the case.

To sum up, the cases pertaining to future operation improvement are shown to be thinly present in our sample. Evidence overall does not support this anticipation effect.

3.8. Can target undervaluation motive be generalized to completed bids?

Up to this point, we show our findings support undervaluation hypothesis and are not driven by unobservable factors associated simultaneously to failure and target price, or anticipation of future successful takeovers and operation improvement. Yet there is still another potential issue worth discussing. That is, using failed bids as main empirical specification would in fact hinder us from generalize our findings to completed deals, if bids driven by target undervaluation are only found in failed bids. In light of previous empirical evidences, this should not be a major concern. For example, Dong et al. (2006) show bids involving undervalued targets have a completion rate of 73.9 percent, only 8.7 percent lower than the other targets. More recently, Edmans et al. (2012) provide evidence that target undervaluation not only attracts both financial and strategic bidders, but also remains a significant driver when they only keep completed bids in their analysis.³⁵ In this regard, target undervaluation is neither restricted to a particular type of bidder nor exclusive to failed bids.

4. Conclusion

Acquisitions are attempts by bidding firms to exploit not only synergies but other sources of potential gains. Specifically, we show that financial acquirers are able to exploit, among others, information advantages they may have regarding the true value of the target firm. When information is severely asymmetric, financial acquirers show an advantage over strategic acquirers and pocket a higher gain from mispriced targets.

As the next step, we are going to distinguish whether this differential revaluation effect between bidder types is due to financial bidders' better analytical skills or market segmentation, i.e. they are more specialized in the business of exploiting undervaluation opportunities than strategic bidders.

A caveat of our empirical strategy is that we rely on stock price information. That means we are unable to accommodate private target firms, which are probably subject to severe information asymmetry.

³⁵ See (Edmans et al., 2012) Internet Appendix Table IA6.

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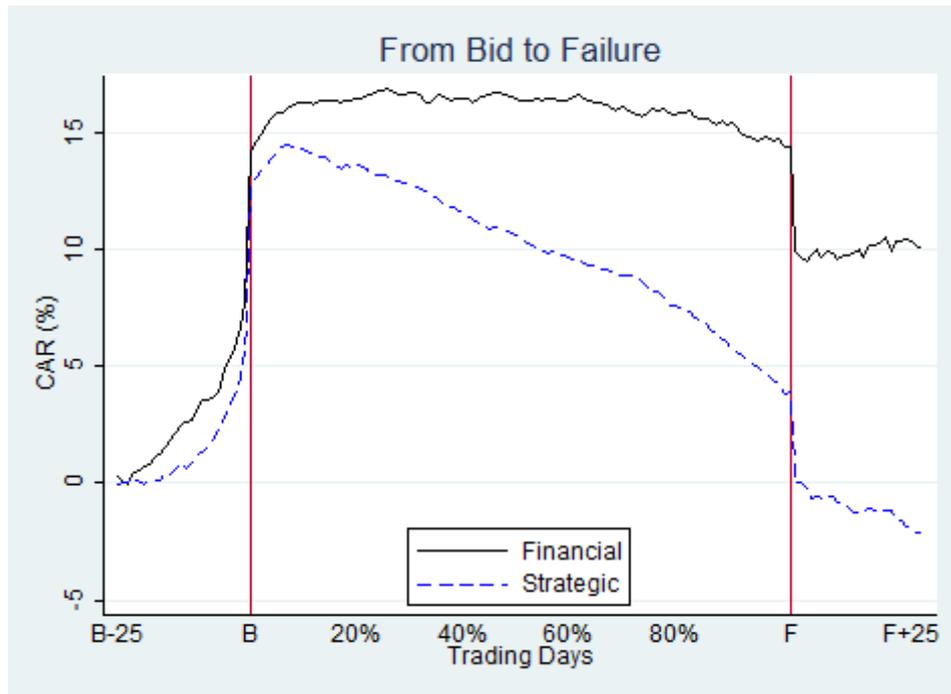


Figure 1. Revaluation effect on target firms This figure depicts cumulative abnormal returns(CARs) from 25 trading days before bid announcement(B) to 25 trading days after failure announcement(F) of our main sample (258 financial failed bids and 531 strategic failed bids).

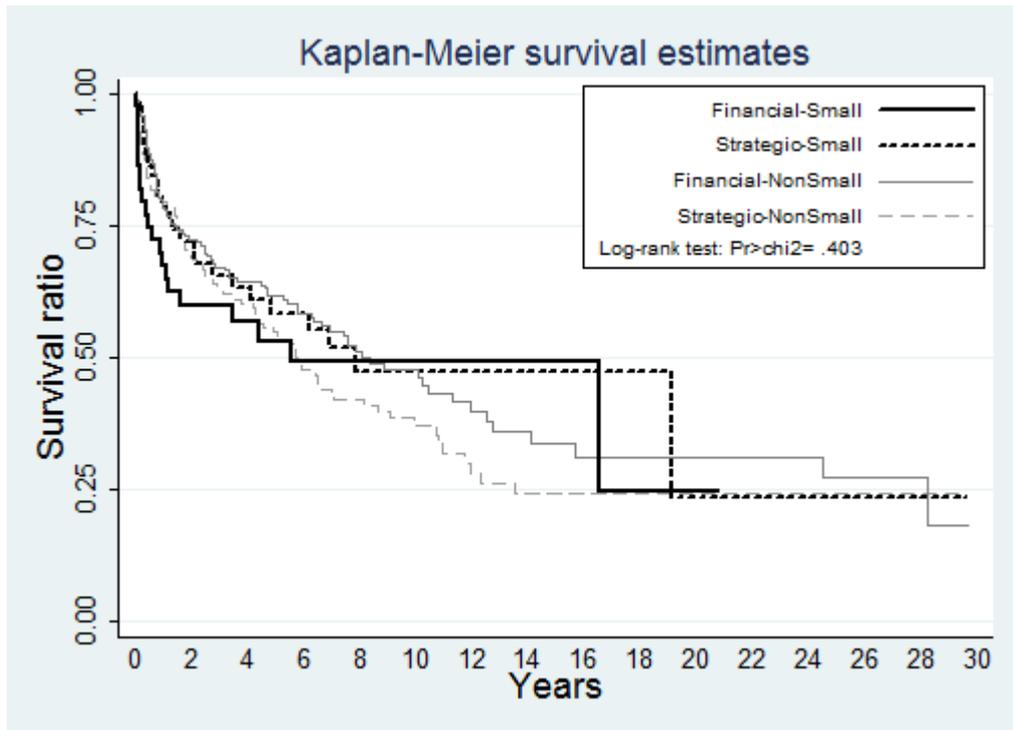


Figure 2. Kaplan-Meier survival estimates. This figure plots the conditional probability of firms surviving takeover threat over time. The pool of observations starting at Years=0 is out cash-only sample (218 financial failed bids and 237 strategic failed bids). The estimates adjust for right censoring such as firms remaining listed and independent at the end of observation period and firms delisted for reasons other than takeover, e.g, bankruptcy or regulator enforcement.

Table 1
Summary statistics

This table reports key deal-level characteristics for the main sample as described in Section 3. Panel A displays bids by financial acquirers. Panel B displays those by strategic acquirers. Panel C compares, in groups divided by completed and failed, the difference of deal characteristics between financial and strategic acquirers. *Cash(Stock/Other)* is the percent of deal value to be paid in cash(stock/total value minus value paid in cash and stock). *Days* is the number of trading days between announcement date and effective/withdraw date. *DealValue (TargetSize)* is the transaction value (target market capitalization four calendar weeks prior to bid announcement) in billions of 2014 dollar using Consumer Price Index Conversion Factors. *MB* is the market-to-book value of target's equity four calendar weeks prior to bid announcement. *Premium* is bidder's offer price divided by target's stock price four calendar weeks prior to bid announcement. It is truncated between zero and two. *Hostile*, *TenderOffer*, *TTerm* and *InvGroup* are dummy variables indicating a bid in which the bidder's attitude is hostile, tender offer is involved, the target is liable to pay a termination fee to the acquirer if a bid is withdrawn, and the acquirer is a group of multiple investors, respectively. *StakeSought* is the percentage of common, or common equivalent, shares outstanding sought by the acquirer in this transaction. *Toehold* is the percent of common, or common equivalent, shares outstanding held by the acquirer as of the announcement date.

Panel A: Financial bidders

	Completed						Failed						p-value
	N	Mean	Median	Std.dev.	Min	Max	N	Mean	Median	Std.dev.	Min	Max	
<i>Cash</i>	1,283	91.82	100.00	24.27	0.00	100.00	258	92.79	100.00	21.08	0.00	100.00	0.55
<i>Stock</i>	1,283	4.38	0.00	19.29	0.00	100.00	258	3.76	0.00	16.85	0.00	100.00	0.63
<i>Other</i>	1,283	3.80	0.00	15.16	0.00	100.00	258	3.45	0.00	12.69	0.00	80.70	0.73
<i>Days</i>	1,283	95	79	63	0	357	258	100	80	80	0	365	0.26
<i>DealValue</i>	1,230	0.22	0.10	0.28	0.00	1.63	247	0.27	0.14	0.34	0.00	2.13	0.01
<i>TargetSize</i>	1,283	0.21	0.09	0.27	0.00	1.74	258	0.25	0.12	0.32	0.00	1.85	0.04
<i>MB</i>	721	2.38	1.47	4.38	0.03	47.76	173	2.36	1.32	5.20	0.03	47.76	0.96
<i>Premium</i>	1,283	40.02	31.71	33.29	0.00	200.00	258	39.54	30.77	33.75	0.00	200.00	0.83
<i>PremiumId</i>	1,277	32.43	25.00	34.27	-37.50	381.93	257	31.43	24.90	31.98	-50.33	248.84	0.67
<i>Hostile</i>	1,283	0.02	0.00	0.13	0	1	258	0.13	0.00	0.34	0	1	0.00
<i>TenderOffer</i>	1,283	0.55	1.00	0.50	0	1	258	0.48	0.00	0.50	0	1	0.03
<i>StakeSought</i>	1,282	86.62	100.00	21.66	1.50	100.00	255	88.84	100.00	18.38	2.60	100.00	0.13
<i>Toehold</i>	361	27.54	28.70	14.18	0.00	80.20	107	18.03	14.70	13.63	0.30	63.50	0.00
<i>TTerm</i>	1,283	0.33	0.00	0.47	0	1	258	0.10	0.00	0.30	0	1	0.00
<i>InvGroup</i>	1,283	0.19	0.00	0.39	0	1	258	0.25	0.00	0.43	0	1	0.03

Table 1 (Cont'd)
Summary statistics

This table reports key deal-level characteristics for the main sample as described in Section 3. Panel A displays bids by financial acquirers. Panel B displays those by strategic acquirers. Panel C compares, in groups divided by completed and failed, the difference of deal characteristics between financial and strategic acquirers. *Cash(Stock/Other)* is the percent of deal value to be paid in cash(stock/total value minus value paid in cash and stock). *Days* is the number of trading days between announcement date and effective/withdraw date. *DealValue (TargetSize)* is the transaction value (target market capitalization four calendar weeks prior to bid announcement) in billions of 2014 dollar using Consumer Price Index Conversion Factors. *MB* is the market-to-book value of target's equity four calendar weeks prior to bid announcement. *Premium* is bidder's offer price divided by target's stock price four calendar weeks prior to bid announcement. It is truncated between zero and two. *Hostile*, *TenderOffer*, *TTerm* and *InvGroup* are dummy variables indicating a bid in which the bidder's attitude is hostile, tender offer is involved, the target is liable to pay a termination fee to the acquirer if a bid is withdrawn, and the acquirer is a group of multiple investors, respectively. *StakeSought* is the percentage of common, or common equivalent, shares outstanding sought by the acquirer in this transaction. *Toehold* is the percent of common, or common equivalent, shares outstanding held by the acquirer as of the announcement date.

Panel B: Strategic bidders

	Completed						Failed						p-value
	N	Mean	Median	Std.dev.	Min	Max	N	Mean	Median	Std.dev.	Min	Max	
<i>Cash</i>	5,300	60.01	100.00	46.22	0.00	100.00	531	51.25	54.99	47.24	0.00	100.00	0.00
<i>Stock</i>	5,300	36.29	0.00	45.76	0.00	100.00	531	44.91	0.00	47.39	0.00	100.00	0.00
<i>Other</i>	5,300	3.70	0.00	12.42	0.00	100.00	531	3.85	0.00	14.57	0.00	100.00	0.81
<i>Days</i>	5,300	96	82	59	0	365	531	87	70	70	0	363	0.00
<i>DealValue</i>	5,002	0.26	0.13	0.31	0.00	1.91	509	0.21	0.11	0.27	0.00	2.09	0.00
<i>TargetSize</i>	5,300	0.23	0.10	0.29	0.00	1.97	531	0.19	0.08	0.27	0.00	2.15	0.01
<i>MB</i>	3,707	2.90	1.76	4.61	0.03	47.76	378	3.07	1.49	6.43	0.03	47.76	0.50
<i>Premium</i>	5,300	47.83	39.34	36.06	0.00	200.00	531	47.30	39.02	37.98	0.00	200.00	0.75
<i>PremiumId</i>	5,270	36.53	29.73	34.07	-86.67	542.86	524	38.40	31.07	36.25	-89.34	300.00	0.23
<i>Hostile</i>	5,300	0.02	0.00	0.13	0	1	531	0.15	0.00	0.36	0	1	0.00
<i>TenderOffer</i>	5,300	0.46	0.00	0.50	0	1	531	0.37	0.00	0.48	0	1	0.00
<i>StakeSought</i>	5,299	93.21	100.00	17.04	1.90	100.00	529	95.53	100.00	12.78	4.10	100.00	0.00
<i>Toehold</i>	915	24.36	24.40	15.59	0.00	87.90	84	16.36	13.65	12.29	0.90	52.40	0.00
<i>TTerm</i>	5,300	0.44	0.00	0.50	0	1	531	0.14	0.00	0.35	0	1	0.00
<i>InvGroup</i>	5,300	0.00	0.00	0.05	0	1	531	0.00	0.00	0.00	0	0	0.22

Table 1 (Cont'd)
Summary statistics

This table reports key deal-level characteristics for the main sample as described in Section 2. Panel A displays bids by financial acquirers. Panel B displays those by strategic acquirers. Panel C compares, in groups divided by completed and failed, the difference of deal characteristics between financial and strategic acquirers. *Cash(Stock/Other)* is the percent of deal value to be paid in cash(stock/total value minus value paid in cash and stock). *Days* is the number of trading days between announcement date and effective/withdraw date. *DealValue (TargetSize)* is the transaction value (target market capitalization four calendar weeks prior to bid announcement) in billions of 2014 dollar using Consumer Price Index Conversion Factors. *MB* is the market-to-book value of target's equity four calendar weeks prior to bid announcement. *Premium* is bidder's offer price divided by target's stock price four calendar weeks prior to bid announcement. It is truncated between zero and two. *Hostile*, *TenderOffer*, *TTerm* and *InvGroup* are dummy variables indicating a bid in which the bidder's attitude is hostile, tender offer is involved, the target is liable to pay a termination fee to the acquirer if a bid is withdrawn, and the acquirer is a group of multiple investors, respectively. *StakeSought* is the percentage of common, or common equivalent, shares outstanding sought by the acquirer in this transaction. *Toehold* is the percent of common, or common equivalent, shares outstanding held by the acquirer as of the announcement date.

Panel C: Financial v.s. Strategic bidders

	Completed		Failed	
	Financial-Strategic	p-value	Financial-Strategic	p-value
<i>Cash</i>	31.81	0.00	41.54	0.00
<i>Stock</i>	-31.91	0.00	-41.15	0.00
<i>Other</i>	0.10	0.81	-0.39	0.71
<i>Days</i>	-1.73	0.35	12.64	0.02
<i>DealValue</i>	-0.03	0.00	0.07	0.00
<i>TargetSize</i>	-0.02	0.05	0.06	0.01
<i>MB</i>	-0.52	0.01	-0.71	0.20
<i>Premium</i>	-7.81	0.00	-7.76	0.01
<i>PremiumId</i>	-4.10	0.00	-6.97	0.01
<i>Hostile</i>	-0.00	0.67	-0.02	0.48
<i>TenderOffer</i>	0.09	0.00	0.11	0.00
<i>StakeSought</i>	-6.58	0.00	-6.69	0.00
<i>Toehold</i>	3.17	0.00	1.67	0.38
<i>TTerm</i>	-0.11	0.00	-0.04	0.13
<i>InvGroup</i>	0.19	0.00	0.25	0.00

Table 2
Univariate tests

This table reports univariate tests on absolute cumulative abnormal returns (CARs) from 25 trading days before bid announcement to 25 trading days after failure announcement. Daily abnormal returns are computed using a market model with parameters estimated over 250 trading days ending 25 trading days prior to the bid announcement. *Financial(Strategic)* is a dummy equals one if a bid is initiated by a financial(strategic) bidder and zero otherwise. *Paid in stock* is a dummy equal to one if a bid is to be paid, either partly or fully, in stock shares and zero otherwise. *PureCash* is a dummy equal to one if a bid is to be paid fully in cash and zero otherwise. *Small(Q1)*, *Q2*, *Q3*, and *Big(Q4)* are dummies equal to one for bids where the target market capitalization is ranked, respectively, in the lower quartile, between 25 percent to 50 percent, between 50 percent to 75 percent, and in the upper quartile, and zero otherwise. *Domestic(Crossborder)* is a dummy equal to one if both acquirer and target are(not) domiciled in the same country and zero otherwise. *Domestic* \times *Small* stands for small firms that are targeted by a domestic bidder. To test whether the cumulative absolute abnormal returns are significantly different from zero as well as between financial and strategic acquirers, we compute skewness-adjusted t-statistic (*Skw.-adj.t*) and z-statistic of Wilcoxon-Mann-Whitney rank-sum test (*Wilcoxon z*). ***, **, and * indicate 1 percent, 5 percent, and 10 percent significance respectively.

Panel A: CARs (B-25d, F+25d)

	N	Mean	Median	Std.dev.	Min	Max
<i>Main sample</i>	789	0.0469	0.0364	0.5081	-1.6121	1.4554
<i>Financial</i>	258	0.1110	0.0590	0.4637	-1.6121	1.4554
<i>Strategic</i>	531	0.0158	0.0314	0.5259	-1.6121	1.4554

Panel B: Financial v.s. Strategic

	Financial			Strategic			Financial - Strategic	
	N	Mean	Median	N	Mean	Median	Skw.-adj. t	Wilcoxon z
<i>Main sample</i>	258	0.111***	0.059***	531	0.016	0.031	-2.59	-1.76*
<i>PureCash</i>	218	0.118***	0.050***	237	0.077**	0.097***	-0.95	-0.09
<i>Paid in stock</i>	8	-0.069	0.069	240	-0.057	-0.037	0.05	-0.74
Within PureCash								
<i>Small(Q1)</i>	44	0.366***	0.248***	53	0.020	-0.036	-2.97	-2.93***
<i>Q2</i>	54	0.039	-0.059	77	0.055	0.118	0.19	0.85
<i>Q3</i>	58	0.033	-0.001	65	0.128**	0.103***	1.26	1.53
<i>Big(Q4)</i>	62	0.091*	0.016*	42	0.109	0.107**	0.22	0.57
<i>Domestic</i>	164	0.134***	0.065***	157	0.112***	0.118***	-0.43	0.50
<i>Domestic</i> \times <i>Small</i>	38	0.362***	0.238***	40	0.007	-0.042	-2.83	-2.75***
<i>Crossborder</i>	54	0.069	0.007	80	0.007	0.015	-0.76	-0.64

Table 3
Revaluation: baseline regression

This table reports OLS regression on absolute cumulative abnormal returns (*CARs*) from 25 days before bid announcement to 25 days after failure announcement. *Financial* is a dummy variable equal to one for bids by financial acquirers and zero otherwise. *Log(TargetSize)* is the target market capitalization in billions of 2014 dollar four calendar weeks prior to bid announcement. *Cash* is a dummy equal to one for bids that more than half of deal value is paid in cash. *Premium* is bidder's offer divided by target's market value of equity four calendar weeks prior to bid announcement and truncated between zero and two. *Hostile* and *TenderOffer* are dummy variables indicating a bid in which the bidder's attitude is hostile and tender offer is involved, respectively. Year fixed effect is based on the announcement year. Industry fixed effect is based on 1-digit SIC codes. Column(1)-(3) contain the main sample. Column (4)-(6) examine the subgroup of bids to be paid fully in cash. Heteroskedasticity-robust t statistics are in brackets. ***, **, and * indicate 1 percent, 5 percent, and 10 percent significance respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Financial</i>	0.095*** [2.59]	0.077** [2.09]	0.050 [1.29]	0.042 [0.95]	0.027 [0.60]	0.045 [1.01]
<i>Log(TargetSize)</i>			0.010 [0.62]			0.004 [0.17]
<i>Cash</i>			0.100** [2.33]			
<i>Premium</i>			0.002*** [3.26]			0.002** [2.29]
<i>Hostile</i>			0.134*** [3.04]			0.116** [1.98]
<i>TenderOffer</i>			0.126*** [3.21]			0.113** [2.43]
<i>Constant</i>	0.016 [0.69]	0.039 [0.35]	-0.098 [-0.97]	0.077** [2.50]	-0.031 [-0.20]	-0.255 [-1.59]
<i>Observations</i>	789	789	789	455	455	455
<i>Adjusted R-squared</i>	0.006	0.042	0.094	-0.000	0.042	0.080
<i>Year FE</i>	N	Y	Y	N	Y	Y
<i>Industry FE</i>	N	Y	Y	N	Y	Y

Table 4
Revaluation: information asymmetry by target firm size

This table reports OLS regression on absolute cumulative abnormal returns (*CARs*) from 25 days before bid announcement to 25 days after failure announcement. *Financial*(*Strategic*) is a dummy variable equal to one for bids by financial(*strategic*) acquirers and zero otherwise. *Small* indicates the group of bids in which the target market capitalization is ranked in the lower quartile. *Log(TargetSize)* is the target market capitalization in billions of 2014 dollar four calendar weeks prior to bid announcement. *Cash* is a dummy equal to one for bids that more than half of deal value is paid in cash. *Premium* is bidder's offer divided by target's market value of equity four calendar weeks prior to bid announcement and truncated between zero and two. *Hostile* and *TenderOffer* are dummy variables indicating a bid in which the bidder's attitude is hostile and tender offer is involved, respectively. Year fixed effect is based on the announcement year. Industry fixed effect is based on 1-digit SIC codes. Column(1)-(2) contain the main sample. Column (3)-(4) examine the subgroup of bids to be paid fully in cash. Heteroskedasticity-robust t statistics are in brackets. ***, **, and * indicate 1 percent, 5 percent, and 10 percent significance respectively.

	(1)	(2)	(3)	(4)
<i>Financial</i> × <i>Small</i> (a)	0.289*** [3.20]	0.322*** [3.24]	0.352*** [3.52]	0.336*** [2.91]
<i>Strategic</i> × <i>Small</i> (b)		0.094 [1.25]		0.004 [0.04]
<i>Log(TargetSize)</i>	0.026 [1.60]	0.042* [1.88]	0.040* [1.77]	0.045 [1.39]
<i>Cash</i>	0.080* [1.93]	0.058 [1.35]		
<i>Premium</i>	0.002*** [3.61]	0.002*** [3.64]	0.002** [2.38]	0.002** [2.31]
<i>Hostile</i>	0.128*** [2.99]	0.117*** [2.62]	0.102* [1.87]	0.108* [1.86]
<i>TenderOffer</i>	0.130*** [3.33]	0.151*** [3.65]	0.109** [2.39]	0.118** [2.37]
<i>Constant</i>	-0.142 [-1.30]	-0.629*** [-4.52]	-0.169 [-1.12]	-0.465*** [-2.59]
<i>Observations</i>	789	789	455	455
<i>Adjusted R-squared</i>	0.112	0.104	0.118	0.127
<i>Year FE</i>	Y	Y	Y	Y
<i>Industry FE</i>	Y	Y	Y	Y
(a)=(b)(p-value)		0.021		0.002

Table 5
Revaluation: information asymmetry by target-bidder geographic proximity

This table reports OLS regression on absolute cumulative abnormal returns (*CARs*) from 25 days before bid announcement to 25 days after failure announcement. *Domestic* is a dummy equal to one if both acquirer and target are domiciled in the same country and zero otherwise. *Financial*(*Strategic*) is a dummy variable equal to one for bids by financial(*strategic*) acquirers and zero otherwise. *Small* indicates the group of bids in which the target market capitalization is ranked in the lower quartile. *Log(TargetSize)* is the target market capitalization in billions of 2014 dollar four calendar weeks prior to bid announcement. *Cash* is a dummy equal to one for bids that more than half of deal value is paid in cash. *Premium* is bidder's offer divided by target's market value of equity four calendar weeks prior to bid announcement and truncated between zero and two. *Hostile* and *TenderOffer* are dummy variables indicating a bid in which the bidder's attitude is hostile and tender offer is involved, respectively. Year fixed effect is based on the announcement year. Industry fixed effect is based on 1-digit SIC codes. Column(1)-(2) contain the main sample. Column (3)-(4) examine the subgroup of bids to be paid fully in cash. Heteroskedasticity-robust t statistics are in brackets. ***, **, and * indicate 1 percent, 5 percent, and 10 percent significance respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Domestic</i> (a)	0.119*** [2.78]	0.125*** [2.81]	0.107** [2.39]	0.109** [2.24]	0.114** [2.26]	0.086* [1.72]	
<i>Domestic</i> × <i>Financial</i> × <i>Small</i> (b)			0.251*** [2.62]			0.305*** [2.99]	0.307*** [2.84]
<i>Domestic</i> × <i>Strategic</i> × <i>Small</i> (c)							-0.058 [-0.64]
<i>log</i> (<i>TargetSize</i>)	0.004 [0.29]	0.012 [0.79]	0.025 [1.56]	0.003 [0.16]	0.010 [0.43]	0.034 [1.46]	0.026 [0.96]
<i>Cash</i>	0.141*** [3.56]	0.119*** [2.88]	0.100** [2.41]				
<i>Premium</i>	0.002*** [3.75]	0.002*** [3.40]	0.002*** [3.63]	0.002*** [2.74]	0.002** [2.22]	0.002** [2.33]	0.002** [2.32]
<i>Hostile</i>	0.086** [2.14]	0.126*** [2.89]	0.125*** [2.93]	0.061 [1.23]	0.118** [2.06]	0.112** [2.06]	0.105* [1.94]
<i>TenderOffer</i>	0.172*** [4.46]	0.144*** [3.63]	0.143*** [3.62]	0.127*** [2.85]	0.124*** [2.65]	0.121*** [2.65]	0.114** [2.48]
<i>Constant</i>	-0.307*** [-5.13]	-0.281** [-2.51]	-0.231** [-2.04]	-0.145** [-2.27]	-0.280* [-1.79]	-0.224 [-1.46]	-0.182 [-1.21]
<i>Observations</i>	789	789	789	455	455	455	455
<i>Adjusted R-squared</i>	0.079	0.104	0.114	0.048	0.089	0.114	0.108
<i>Year FE</i>	N	Y	Y	N	Y	Y	Y
<i>Industry FE</i>	N	Y	Y	N	Y	Y	Y
<i>a=b</i> (p)-value)			0.192			0.064	
<i>b=c</i> (p)-value)							0.002

Table 6
Revaluation: failure categories

This table reports OLS regression on absolute cumulative abnormal returns (CARs) from 25 days before bid announcement to 25 days after failure announcement using the same specification as in the column of cash-only bids in Table 3 by failure categories for the subgroups of, *Financial* \times *Small*, *Other Financial*, and *Strategic* after controlling for premium, target size, hostile and tender offer. *N(% of N)* reports the number(fraction) of observations for the corresponding subgroup falling into each failure category. *Coefficient* is the revaluation effect loading on each subgroup and left blank if observations are too few. ***, **, and * indicate 1 percent, 5 percent, and 10 percent significance respectively.

	Financial \times Small			Other financial			Strategic		
	N	% of N	Coefficient	N	% of N	Coefficient	N	% of N	Coefficient
(1)No more information	17	38.64	0.38***	51	29.31	0.09	75	31.65	-0.19**
(2)Term mutually disagree	0	0.00		1	0.57		2	0.84	0.00
(3)Bidder no financing	0	0.00		3	1.72	0.00	0	0.00	
(4)Regulator reject	2	4.55	0.34	13	7.47	0.27	18	7.59	-0.27
(5)Bidder withdraw	1	2.27		8	4.60	-0.12	10	4.22	-0.02
(6)Target released news	0	0.00		0	0.00		1	0.42	
(7)Price too low	1	2.27		9	5.17	0.24*	14	5.91	-0.23*
(8)Tender failed	16	36.36	0.42***	61	35.06	-0.19**	53	22.36	0.01
(9)Board reject	4	9.09	0.11	22	12.64	-0.13	38	16.03	0.08
(10)Shareholder reject	3	6.82	0.59*	16	9.20	-0.25	18	7.59	0.06
Strict sample (1)-(4)	19	43.18	0.38***	67	38.51	0.10	95	40.08	-0.19***
Full sample (1)-(10)	44	100.00	0.36***	174	100.00	-0.04	237	100.00	-0.07

Table 7
Frequency of future takeovers

This table reports Cox proportional-hazard regression results. It estimates the marginal effect of variables on the rate of subsequent takeovers following a bid failure. *Financial*(*Strategic*) is a dummy variable equal to one for bids by financial(*strategic*) acquirers and zero otherwise. *Small* indicates the group of bids in which the target market capitalization is ranked in the lower quartile. *CARs* is the absolute cumulative abnormal returns from 25 days before bid announcement to 25 days after failure announcement. *Log(TargetSize)* is the target market capitalization in billions of 2014 dollar four calendar weeks prior to bid announcement. *Cash* is a dummy equal to one for bids that more than half of deal value is paid in cash. *Premium* is bidder's offer divided by target's market value of equity four calendar weeks prior to bid announcement and truncated between zero and two. *Hostile* and *TenderOffer* are dummy variables indicating a bid in which the bidder's attitude is hostile and tender offer is involved, respectively. Year fixed effect is based on the announcement year. Industry fixed effect is based on 1-digit SIC codes. Column(1)-(4) contain the main sample. Column (5)-(6) examine the subgroup of bids to be paid fully in cash. *z-statistics is in parentheses*. ***, **, and * indicate 1 percent, 5 percent, and 10 percent significance respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Financial</i> × <i>Small</i> × <i>Cars</i>	0.041 (0.16)	0.207 (0.66)	-0.026 (-0.07)	0.089 (0.19)	-0.116 (-0.29)	-0.633 (-1.34)	-0.276 (-0.51)
<i>Financial</i> × <i>Small</i>			-0.018 (-0.06)	-0.021 (-0.07)		0.115 (0.36)	0.130 (0.41)
<i>CARs</i>			0.316*** (2.59)			0.507*** (2.76)	
<i>Financial</i> × <i>CARs</i>				0.200 (0.74)			0.153 (0.49)
<i>Strategic</i> × <i>CARs</i>				0.341** (2.57)			0.661*** (3.14)
<i>Log(TargetSize)</i>		0.066* (1.72)	0.061 (1.50)	0.062 (1.53)	0.004 (0.07)	-0.015 (-0.24)	-0.008 (-0.14)
<i>Cash</i>		0.276** (2.38)	0.256** (2.18)	0.259** (2.21)			
<i>Premium</i>		0.002 (1.06)	0.001 (0.56)	0.001 (0.54)	0.003 (1.24)	0.002 (0.80)	0.002 (0.68)
<i>Hostile</i>		0.300** (1.99)	0.274* (1.81)	0.277* (1.83)	0.261 (1.34)	0.221 (1.12)	0.240 (1.21)
<i>TenderOffer</i>		-0.383*** (-3.16)	-0.433*** (-3.53)	-0.435*** (-3.55)	-0.188 (-1.20)	-0.260 (-1.63)	-0.271* (-1.70)
<i>Observations</i>	789	789	789	789	455	455	455
<i>Year FE</i>	N	Y	Y	Y	Y	Y	Y
<i>Industry FE</i>	N	Y	Y	Y	Y	Y	Y

Table 8
Value of future takeovers

This table reports OLS regression of the deal value (log in billions of 2014 U.S.dollar) that a target firm eventually receives from a successful takeover after initial failed bid. *Financial(Strategic)* is a dummy variable equal to one for bids by financial(strategic) acquirers and zero otherwise. *Small* indicates the group of bids in which the target market capitalization is ranked in the lower quartile. *CARs* is the absolute cumulative abnormal returns form 25 days before bid announcement to 25 days after failure announcement.. *Cash* is a dummy equal to one for bids that more than half of deal value is paid in cash. *Premium* is bidder's offer divided by target's market value of equity four calendar weeks prior to bid announcement and truncated between zero and two. *Hostile* and *TenderOffer* are dummy variables indicating a bid in which the bidder's attitude is hostile and tender offer is involved, respectively. Year fixed effect is based on the announcement year. Industry fixed effect is based on 1-digit SIC codes. Column(1)-(4) contain bids from main sample that are ultimately acquired. Column (5)-(6) examine bids from the subgroup of failed cash-only bids that are ultimately acquired. *z-statistics is in parentheses*. ***, **, and * indicate 1 percent, 5 percent, and 10 percent significance respectively. ***, **, and * indicate 1 percent, 5 percent, and 10 percent significance respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Financial</i> × <i>Small</i> × <i>Cars</i>	0.003 [0.00]	-0.673 [-0.57]	-0.929 [-0.81]	1.183 [0.59]	-1.342 [-0.81]	-3.22 [-1.46]	-1.354 [-0.75]
<i>Financial</i> × <i>Small</i>			-0.228 [-0.15]	-0.291 [-0.19]		0.501 [0.31]	0.583 [0.36]
<i>CARs</i>			0.583 [0.98]			1.842 [1.32]	
<i>Financial</i> × <i>CARs</i>				-1.485 [-1.07]			0.016 [0.01]
<i>Strategic</i> × <i>CARs</i>				1.145 [1.46]			2.86 [1.29]
<i>Cash</i>		-0.505 [-0.76]	-0.561 [-0.85]	-0.501 [-0.78]			
<i>Premium</i>		2.335*** [3.05]	2.184*** [2.88]	2.206*** [2.83]	2.694* [1.93]	2.284* [1.84]	2.256* [1.79]
<i>Hostile</i>		0.963 [0.74]	0.857 [0.70]	0.862 [0.70]	2.741 [1.18]	2.54 [1.17]	2.602 [1.18]
<i>TenderOffer</i>		0.252 [0.46]	0.214 [0.41]	0.169 [0.33]	0.741 [0.75]	0.605 [0.69]	0.557 [0.65]
<i>Years between</i>		0.379*** [2.75]	0.387*** [2.75]	0.383*** [2.78]	0.458** [2.18]	0.479** [2.16]	0.488** [2.15]
<i>Constant</i>	2.025*** [5.96]	-0.235 [-0.24]	-0.209 [-0.21]	-0.352 [-0.33]	-2.3 [-0.73]	-1.165 [-0.48]	-0.678 [-0.32]
<i>Observations</i>	311	311	311	311	189	189	189
<i>Adjusted R-squared</i>)	-0.003	0.114	0.109	0.114	0.177	0.178	0.181
<i>Year FE</i>	N	Y	Y	Y	Y	Y	Y
<i>Industry FE</i>	N	Y	Y	Y	Y	Y	Y