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Acquisition Experience and the Winner's Curse in Corporate Acquisitions

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Acquisition Experience and the Winner's Curse in Corporate Acquisitions

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ABSTRACT

The winner's curse describes the behavioral phenomenon that the winner of a bidding contest pays a price which is too high. This paper shows that experiential learning cannot prevent a winner's curse on the market of corporate control as acquiring firms with acquisition experience still pay a higher price for the target in a bidding contest. Acquisition experience, however, is related to a superior post-acquisition performance of the winning firm after acquisitions associated with a bidding contest.

Keywords: Firm acquisitions; winner's curse; bidding contest; acquisition experience; experiential learning

JEL codes: G34; D38

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INTRODUCTION

The winner's curse describes the behavioral phenomenon that the winner of a bidding contest pays a price which is too high for the object at stake (Thaler, 1988). Following the seminal article on the winner's curse at the market for corporate control (Varaiya and Ferris, 1987), corporate acquisitions became a text book example for a winner's curse where an acquiring firm overpays for the target firm (Roll, 1986; Thaler, 1988; Barberis and Thaler, 2003; Hietala et al., 2003; Baker et al., 2007; Malmendier et al., 2018; De Bondt el al., 2018). In the presence of competition for the target firm, acquiring firms tend to fail to adapt their bidding strategy (Roll, 1986; Varaiya, 1988; Boone and Mulherin, 2008; Brander and Egan, 2017), the management becomes overconfident in their own ability to create value from the acquisition (Thaler, 1988; Roll, 1986; Hietala et al., 2003; Malmendier and Tate, 2008) and more aggressive bidding occurs because each firm wants to maintain the chance of winning (Kagel and Levin, 1986; Hong and Shum, 2002). The result is a winning bid which is higher due to the mere presence of competition and overestimates the value of the target firm (Thaler, 1988; Varaiya and Ferris, 1987; Varaiya, 1988; Malmendier et al., 2018; De Bondt el al., 2018).

A question which remains is whether experiential learning can help avoiding a winner's curse in the market for corporate control. It is not obvious that learning from past acquisition occurs (Barkema and Schijven, 2008a). Firm acquisitions are complex, multi-stage processes which include various different tasks from the selection and evaluation of the target firm, to the due diligence process, the negotiation of the deal, and the potential integration of two firms. The complexity of a firm acquisition obscures the causal link between an action and its outcome so that learning becomes difficult (Zollo and Winter, 2002; Heimeriks et al., 2012; Castellaneta and Conti, 2017).

Prior literature focuses largely on the relationship between acquisition experience and post-acquisition performance and finds mixed results (see Barkema and Schijven, 2008a, for a survey) with some studies documenting a positive learning effect (e.g. Fowler and Schmidt, 1989; Bruton et al., 1994; Barkema et al., 1996; Nadolska and Barkema, 2014; Cuypers et al., 2016; Schweizer et al., 2022). This evidence suggests that experiential learning may help avoiding a winner's curse. In this paper, we argue that a winner's curse is mitigated by acquisition experience *only if,* in the presence of acquisition experience, (1) the acquisition price paid for a contested acquisition is lower and (2) the post-acquisition performance decline is smaller. Both conditions are important because a higher acquisition price alone can be rational when it reflects higher expected synergy effects (Adegbesan, 2009; Laamanen, 2007) and experience may help identifying a target that is worth a high acquisition price (Castellaneta and Conti, 2017). In a similar vein, post-acquisition performance below expectations may have explanations unrelated to a winner's curse, such as an insufficiently planned and poorly executed post-acquisition integration (Chatterjee, Lutbatkin, Schweiger and Weber, 1992; Datta, 1991; Haspeslagh and Jemison, 1991; Larsson and Finkelstein, 1999; Arroyabe et al., 2020).

To assess whether the winner of a contest pays too much and whether acquisition experience can lead to a lower price, we compare contested firm acquisitions to those that had only one interested buyer. For the investigation of the post-acquisition performance and potential learning effects from prior acquisitions, we employ a novel identification strategy proposed by Malmendier et al. (2018) where the winners of contested acquisitions are compared to the losers of those contests. Our empirical analysis is based on a large sample including all contested U.S. acquisitions of publicly listed firms in the period 1980-2020 as identified by SDC Platinum (Refinitiv).

Our results suggest that corporate acquisitions involving competition for the target firm are associated with a higher takeover price (e.g. Hietala et al., 2003; Malmendier et al., 2018; De Bondt

el al., 2018). We further find that no evidence for experiential learning mitigating the winner's curse: acquiring firms with acquisition experience still pay a higher price for the acquisition target than they would pay for a comparable target that is not associated with a bidding contest.

Using different measure for the post-acquisition performance, we do not find robust evidence for the post-acquisition performance of the winners of a bidding contest to be lower than that of the losers. We, however, find robust evidence for a superior post-acquisition performance of firms with acquisition experience. In summary, we find partial evidence for experiential learning to mitigate a winner's curse in the market for corporate control because experienced winners of bidding contests at the market for corporate control outperform winners without prior acquisition experience and losers of the competition.

This study contributes to the scarce empirical literature on the winner's curse on the market for corporate control (Roll, 1986; Varaiya and Ferris, 1987; Varaiya, 1988; Schwert, 1996, Sirower, 1997; Hietala et al., 2003; Boone and Mulherin, 2008; Brander and Egan, 2017; Malmendier et al., 2018; De Bondt el al., 2018). While prior studies on experiential learning focus mainly on post-acquisition performance (Barkema and Schijven, 2008a; King, Wang, Samimi and Cortes, 2021; King, Dalton, Daily and Covin, 2004; Datta, Pinches and Narayanan, 1992; Trichterborn et al., 2016; Schweizer et al., 2022), we focus on the effect of experiential learning on the acquisition price *and* post-acquisition performance. This approach provides more complete evidence on the likely existence of a winner's curse at the market for corporate control.

We also contribute to the empirical M&A literature by employing a novel approach to investigate the post-acquisition performance which compares the winners of a bidding contest to the losers of the same acquisition contest (Malmendier et al., 2018). Lastly, our analysis is based on a large sample of contested firm acquisitions (Malmendier et al., 2018).

THEORY & HYPOTHESES

The winner's curse

A winner's curse at the market for corporate control is a likely phenomenon in the presence of competition for a target firm. Acquiring firms tend to fail to adapt their bidding strategy to the presence of competing bidders (Roll, 1986; Varaiya and Ferris, 1987; Varaiya, 1988; Boone and Mulherin, 2008; Brander and Egan, 2017; Malmendier et al., 2018; De Bondt el al., 2018), the management becomes overconfident in their own ability to create value from the acquisition (Thaler, 1988; Roll, 1986; Sirower, 1997; Hietala et al., 2003; Malmendier and Tate, 2008) and their bidding behavior becomes more aggressive so that they maintain the chance of winning the bidding contest (Kagel and Levin, 1986; Hong and Shum, 2002). The result is a winning bid which overestimates the value of the target firm. The value of the winning bid is expected to increase with the number of bidders (Varaiya and Ferris, 1987; Varaiya, 1988).

At the market for corporate control, assessing the value of the object at stake is difficult because a firm is composed of a bundle of resources and assets from which value can potentially be created (Burton et al., 1994; Cording et al., 2008; Castellaneta and Conti, 2017). In addition, expected synergies between the assets and capabilities of acquiring and target firm enter the value assessment. Superior expected synergies can, in fact, justify a rationally chosen higher price by the acquiring firm (Adegbesan, 2009; Conner, 1991; Lippman and Rumelt, 2003; Laamanen, 2007) because the winning firm may expect to create a higher value from the acquisition than its competitors. This is why, next to a too high acquisition price, a second condition for a winner's curse is required which states that the post-acquisition performance of the acquiring firm after a bidding contest is lower. This condition makes sure that the higher price is not justified because of higher synergies to be realized.

Acquisition experience

In the context of corporate acquisitions, experiential learning is described as the ability to employ acquisition experience for value creation through a new firm acquisition (Barkema and Schijven, 2008a). Firms learn from past firm acquisitions and become familiar with the several parts of the multi-process of an acquisition including the selection, evaluation of the target, but also the due diligence process, the negotiation of the deal, and the integration of two combined firms to achieve potential synergy. Some studies have indicated that experienced acquirers that develop acquisition capabilities are more successful in their post-acquisition performance (Fowler and Schmidt, 1989; Nadolska and Barkema, 2014; Cuypers et al., 2016; Schweizer et al., 2022). Learning from past acquisitions cannot be taken for granted though. The complexity and multi-staged nature of the acquisition process obscures the causal link between an action and its outcome which renders learning difficult (Zollo and Winter, 2002; Heimeriks et al., 2012; Castellaneta and Conti, 2017; Barkema and Schijven, 2008a).

Nevertheless, learning from past acquisitions can occur when cumulative acquisition experience is transferred into routines which help managing subsequent acquisitions (Chao, 2018; Haleblian and Finkelstein, 1999; Kim and Finkelstein, 2009). Routines are standard operating procedures that develop as a result of learning from repetition and that facilitate the implementation of reoccurring tasks (Cyert and March, 1963). Routines serve as organizational memory (Nelson and Winter, 1982) and establish the building blocks of organizational capabilities (Dosi et al., 2000; Winter 2003) and dynamic capabilities (Eisenhardt and Martin, 2000). As such, routines are a source of superior organizational performance. In the context of firm acquisitions, cumulative acquisition experience has been shown to be an important source of organizational learning with the potential to support the different stages of an acquisition process (Barkema and Schijven, 2008a; Levitt and March 1988; Chao, 2018; Welch et al., 2020).

Prior literature that focuses on experiential learning distinguishes broadly between two stages of the acquisition process (Barkema and Schijven, 2008b; Puranam et al., 2006; Castellaneta and Conti, 2017). The first stage is the selection stage which includes the various steps from target selection up until the value assessment of the target (Puranam et al., 2006; Castellaneta and Conti, 2017; Wu and Reuer, 2021). The second stage is the restructuring stage, where the acquiring firm seeks to generate value from the acquisition (Barkema and Schijven, 2008b; Heimeriks et al., 2012; Castellaneta and Conti, 2017).

Regarding the post-acquisition stage, it has been shown that firms can simply "learn by doing" (Lubatkin, 1987; Bruton et al., 1994; Halebian and Finkelstein, 1999; Hayward, 2002). Tacit routines evolve by repeating similar tasks without explicit knowledge articulation or codification. Learning from past experience is further improved when tacit routines are codified after the causal links for post-acquisition integration success are understood (Zollo and Singh, 2004; Heimeriks et al., 2012). For a following acquisition, the results of such an analysis can provide guidance for action through a well-managed organizational memory. While the mechanisms of "learning by doing" and "learning through codification of tacit routines" are the same at the selection stage, some authors argue that the codification of tacit knowledge is easier in this first stage because the tasks are less complex and more similar for different acquisitions than those of the post-acquisition integration stage and because the time distance between action and outcome is shorter (Castellaneta and Conti, 2017).[1]

Empirical evidence that distinguishes the selection and integration stage supports experiential learning at both stages (Puranam et al., 2006; Barkema and Schijven, 2008b; Heimeriks et al., 2012; Castellaneta and Conti, 2017). These arguments and evidence leads us to argue that experiential

[1] Learning can also be achieved by engagement in alliances prior to the acquisition (Zollo and Winter, 2002; Chang and Tsai, 2012).

learning can help mitigating a winner's curse as tacit and codified routines developed through past acquisition experience can facilitate the value assessment of the target firm in the selection stage and also foster value creation in the post-acquisition phase.

Hypothesis 1: The price increase due to competition for the target firm is smaller when the acquiring firm has acquisition experience.

Hypothesis 2: Following a firm acquisition associated with a bidding contest, the post-acquisition performance of an acquiring firm is greater due to acquisition experience.

DATA, VARIABLES AND DESCRIPTIVE STATISTICS

Data

Our data is retrieved from SDC Platinum (Refinitiv) and includes all contested and non-contested U.S. acquisitions of publicly listed firms in the time period 1980-2020. After having used several filters,[2] our final dataset includes a total of 4,646 acquisitions, 303 contested deals and a total of 4,343 non-contested deals. We retrieve firm characteristics for all firms involved in the acquisitions and acquisition contests from Compustat.

Two samples are created. The first one is a cross-sectional sample consisting of 4,646 observations which allows to relate the price paid for the target firm to the target and acquiring firms' characteristics and the presence of a bidding contest. This sample allows to test H1. The second sample, used to test H2, is a firm level panel dataset for the 336 firms (both winners and losers) involved in contested deals following Malmendier et al. (2018). This sample contains financial information of the firms for a maximum of nine years before and after the acquisition.

[2] Our dataset excludes deals that are not completed or withdrawn. We also exclude firms that are not publicly listed U.S. firms. We also exclude firms that enter as white knights (Malmendier et al., 2018).

The panel is unbalanced because information is not available for all firm-years and consist of 5,149 observations.

Variables

Table 1 shows a summary of the dependent and independent variables used in our analyses. Two different dependent variables are used. To test H1, the price paid for the acquisition target is used as dependent variable (Grimpe and Hussinger, 2014). The post-acquisition performance of the acquiring firm (H2) is measured as Tobin's Q normalized by year and Standard Industry Classification (SIC3) industry, i.e. the market value of the acquiror over its book value (Laamanen, 2007). We chose Tobin's Q as the main measure for firm performance because it is a forward-looking measure which incorporates the expectations about future profits. To show the robustness of our results for the post-acquisition performance analysis, we further employ the sales to assets ratio and the return on assets (ROA) as dependent variables. Both variables are normalized by year and SIC3 industry.

For testing H1, the main independent variables are is a binary variable that captures whether the acquisition was associated with a bidding contest, a binary variable that indicates whether the acquiror was involved in an acquisition prior to the focal acquisition for contested acquisitions, and a binary variable that indicates whether the acquirer has experience for the non-contested acquisition subsample. We also employ the number of competing bidders to show robustness for the results of H1 (Varaiya and Ferris, 1987).

For testing H2, our main variables of interest are a set of binary variables that indicate the post-acquisition period, whether the focal firm was the winner of the deal, and whether the firm was involved in an acquisition prior to the focal deal. To test H2, we include the interaction of the post-acquisition period, winner and prior experience binary variables.

The control variables used to test the hypotheses related to the price paid for the target (H1) and the acquirer post-acquisition performance (H2) are largely the same. For both, target and acquiror, total assets are used to measure firm size. The natural logarithm is employed to account for the skewness of the variable. Debt and cash are used to measure the financial fitness of both firms (Slusky and Caves, 1991). Those variables are divided by total assets to avoid a high correlation with firm size. R&D investment (divided by total assets) of target and acquiror is employed (Chan et al., 2001). For those firms for which the R&D investment is missing, we replace the value by zero, and create a dummy variable which we also include in the regression. Access to a target firm's innovative assets can be a motivation to acquire the firm and their value is reflected in the deal value (Grimpe and Hussinger, 2014). Further, for testing H1, two binary variables are used to capture the market and technological relatedness between target and acquiring firm (Cassiman et al., 2005). The first one captures whether they both firms belong to the same Standard Industry Classification (SIC2) industry sector. The second variable captures potential technology synergies by capturing whether both firms invest in R&D. Lastly, year and industry dummies are used to control for a possible general time trend and industry conditions.

Table 1 about here

Descriptive Statistics

Table 2 shows the descriptive statistics for the deal price sample (H1) for the full sample as well as for acquisitions with and without a bidding contest separately. It appears that, as expected, acquisitions associated with a bidding contest show a higher acquisition price. Target firms involved in bidding contests are larger and less involved in R&D than others. They are more likely to be affiliated with the same industry sector than their acquirers than others. Acquiring firms

involved in bidding contests have both, a higher debt to assets and a higher cash to asset ratio. These differences may be related to the acquisition that takes place in the same year for which the mean values are reported. In terms of firm size and R&D they are comparable.

Table 2 about here

Table 3 shows the descriptive statistics for the firm panel used to investigate H2. When distinguishing winners and losers of acquisition contests we see that they are very comparable in terms of the mean values for the variables presented. Some of the small differences are significant.

Table 3 about here

EMPIRICAL RESULTS

Results for H1

Table 4 shows the results for the deal price regressions which test H1. The first specification only includes the binary variables which indicate that the firm acquisition was associated which a bidding contest. The second specification adds target firm characteristics and specification (3) the characteristics of the acquiring firm. The last specification adds the binary variables indicating whether the acquiring firm has acquisition experience in a contested or non-contested deal.

The results show that the price paid for an acquisition target is higher when there is competition for the target firm. The presence of a bidding contest increases the price paid for the target firm by a minimum of 69% (exp(0.523) = 169) (specification (4)).

The results presented in Table 4 do not provide support for H1 which states that the price paid in a bidding competition is smaller when the acquiror has acquisition experience. Interestingly, experience matters in non-contested deals. Here, the price paid for the acquisition target is significantly lower if the acquiring firm has acquisition experience.

Table 4 about here

Table 5 shows robustness of the results when the number of competing bidders is used instead of the binary variable indicating a bidding contest. Results are similar to the main results presented in Table 4. This suggests that the presence of competing bids matter, rather than the number of competing bidders.

Table 5 about here

Results for H2

Table 6 shows the results from fixed effects regressions that control for firm specific effects for the acquiring firm's post-acquisition performance, testing H2. The first specification shows a lean specification which only includes a dummy indicating the post-acquisition period and the variable that takes the value one for the post-acquisition period when the focal firm won a bidding contest. The second specification adds an interaction term between the post-acquisition, winner and experience variables. This interaction term (*Winner*Post Acquisition*Experience*) takes the value one in the post-acquisition period when the focal firm has experience and is the winner of the contested deal. Note that the variables *Winner* and *Post-Acquisition* are not included in the

fixed effects regressions because they are time-invariant. Specifications (3) and (4) adds the acquiring firm control variables.

The results support H2 by consistently showing that the post-acquisition performance decline of the acquirer is smaller when the acquiring firm of a bidding contest has acquisition experience. The post-acquisition performance decline, as measured with the Tobin's Q, is about 21% lower when the acquiring firm is a winner and has previous acquisition experience (specification (4)).

Table 6 about here

Our results are graphically displayed in Figures 1, 2 and 3, where we show event study graphs of relative performance of winners and losers. Figure 1 shows that winners outperform losers of a bidding contest in the period immediately after the acquisition. When distinguishing between winners with an without acquisition experience, it appears that it is the experienced winners that outperform the losers of a bidding contest (Figures 2 and 3).

Figures 1, 2 and 3 about here

We check for the robustness of our results by employing alternative dependent variables. The interaction term *Winner*Post Acquisition*Experience* is positive and significant as well when performance in measured with the ratio of sales to assets normalized by the industry average (Table 7) and ROA normalized by the industry average (Table 8).

Table 7 about here

Table 8 about here

DISCUSSION

This paper shows that experiential learning cannot avoid increased prices paid for a target in a bidding contest. Acquisition experience is, however, associated with a superior post-acquisition performance as compared to winners of bidding contests without acquisition experience and as compared to losers of bidding competitions.

The fact that even experienced firms pay acquisition prices which are too high in the presence of competition is in line with lab experiments (Thaler, 1988). Lab experiments show that learning through experience happens rarely and slowly in the market for corporate control (Thaler, 1988). Empirical studies argue that the complexity and multi-staged nature of the acquisition process render learning difficult because the causal link between an action and its outcome is obscured (Zollo and Winter, 2002; Heimeriks et al., 2012; Castellaneta and Conti, 2017; Barkema and Schijven, 2008a). Acquisition experience further has been shown to lead to less sensitivity towards negative information during the due diligence process which may reflect a higher confidence in the original valuation (Puranam et al., 2006). Such a mechanism may explain that winner's of a bidding contest do not adjust their bid when there is competition for the target firm.

This study makes several contributions to the literature. First, the study contributes to the scarce empirical evidence on a winner's curse at the market for corporate control (Varaiya and Ferris, 1987; Roll, 1986; Varaiya, 1988; Sirower, 1997; Hietala et al., 2003; Boone and Mulherin, 2008; Brander and Egan, 2017; Malmendier et al., 2018; De Bondt el al., 2018). As it is not straightforward to empirically identify a winner's curse because the true value of the acquisition

target is unknown, this paper suggests to investigate the likelihood of the presence of a winner's curse along two dimensions: the acquisition price and the post-acquisition performance of the acquiring firm. Both dimensions should be considered because a higher acquisition price alone can speak for higher expected and potentially also realized synergy effects between the acquiring and the target firm (Adegbesan, 2009; Laamanen, 2007) and because the post-acquisition performance may be affected by an insufficiently planned and poorly executed post-acquisition integration (Chatterjee, Lutbatkin, Schweiger and Weber, 1992; Datta, 1991; Haspeslagh and Jemison, 1991; Larsson and Finkelstein, 1999; Arroyabe et al., 2020).

Second, this study contributes to the literature on experiential learning in the market for corporate control (Barkema and Schijven, 2008a; Trichterborn et al., 2016; Schweizer et al., 2022). While lab experiments mimicking firm's price decisions in auctions for corporate acquisitions show that learning based on experience happens rarely and slowly (Thaler, 1988), empirical evidence is somewhat more optimistic about learning effects for value creation through corporate acquisitions (Barkema and Schijven, 2008a). Nevertheless, only a few studies report positive experiential learning effects for post-acquisition performance (e.g. Fowler and Schmidt, 1989; Bruton et al., 1994; Barkema et al., 1996; Nadolska and Barkema, 2014; Cuypers et al., 2016; Schweizer et al., 2022), while most studies suggest the absence of learning through experience (e.g. Lubatkin, 1982; Zollo and Leshchinskii, 2004). Conflicting empirical results from acquisition experience on different measures of acquisition performance are confirmed in meta-analyses (King et al., 2021).

Lastly, while early studies use small sample of contested acquisitions due to a lack of available data (e.g. Varaiya, 1988; Boone and Mulherin, 2008; Hayward, 2002), we contribute to recent empirical evidence that exploits the availability of larger datasets of contested M&As (e.g. Betton

et al., 2008; Malmendier et al., 2018) and exploit a novel identification strategy which compares the winners and the losers of acquisition contests (Malmendier et al., 2018).

A caveat of our analysis is that our sample is based on publicly listed firms and U.S. acquisitions only, while we know that acquisition premia are higher in more efficient markets (Tampakoudis et al., 2011). This suggests a need for research investigating whether the observed effects hold for private firms and also for other markets. For example, Europe has fewer hostile acquisitions that may invite competitive bids, and researchers have questioned whether U.S. acquisition research findings hold in Europe (Moschieri et al., 2009).

IMPLICATIONS

Our results suggest that experiential learning does not help against a too high acquisition price paid by a winning firm. This raises the question whether experience, rather than creating an experiential advantage for the acquiring firm, may lead to overconfidence when it comes to the bidding competition. Drawing from past experience, a manager may be convinced to be able to outsmart the competition (Puranam et al., 2006). Following this line of thought, our results can be seen as a warning for managers emphasizing that experience does not protect against overconfidence in bidding contests at the market for corporate control.

Regarding the post-acquisition performance, our results suggest that when it comes to the potentially more complex and more specific tasks of post-acquisition integration (Castellaneta and Conti, 2017), the management of the acquiring firm seems to act more carefully so that gains from experiential learning can be realized. These results support prior research that advocates purposeful codification of the post-acquisition processes to realize the maximum gains from prior acquisitions through experiential learning (Zollo and Singh, 2004; Heimeriks et al., 2012).

CONCLUSION

This paper shows that acquisition experience does not help avoiding to overpay for firm acquisitions. The post-acquisition performance of experienced winners of bidding contests at the market for corporate control is superior though. Taken together, these results provide partial evidence for experiential learning to help avoiding a winner's curse at the market for corporate control.

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TABLES

Table 1. Description of variables

Variable label	Variable definition	Variable type	Source
Dependent Variables			
Acquisition Price	Logarithm of the value of the deal in millions of USD	Continuous	SDC Platinum
Tobin's Q	Acquiring firms' Tobin's Q in year *t* over the SIC-3 industry Tobin's Q in year *t*. The Tobin's Q the market value of the acquiror over its book value (in millions of USD).	Continuous	Compustat
Sales/Assets	Acquiring firms' sales to assets ratio in year *t* over the SIC-3 industry Sales to Assets ratio in year *t*. Sales and assets are in millions of USD.	Continuous	Compustat
ROA	Acquiring firms' return on assets (ROA) in year *t* over the SIC-3 industry ROA in year *t*. ROA is the net income over book value of total assets.	Continuous	Compustat
Independent Variables			
Bidding contest	Equal to one if the acquisition is flagged as a contested deal	Binary	SDC Platinum
Number of competing bidders	Number of firms (regardless of the public status) involved in a contested deal bid	Continuous	SDC Platinum
Acquisition experience (contested M&As)	Equal to one if firm has previous experience in M&As and belongs to the contested M&As subsample	Binary	SDC Platinum
Acquisition experience (contested M&As)	Equal to one if firm has previous experience in M&As and belongs to the contested non-M&As subsample	Binary	SDC Platinum
Log(Target Assets)	Logarithm of the target's assets (in millions of USD)	Continuous	Compustat
Target Debt/Assets	Target's debt (in millions of USD) over target's assets (in millions of USD)	Continuous	Compustat
Target Cash/Assets	Target's cash (in millions of USD) over target's assets (in millions of USD)	Continuous	Compustat
Target R&D/Assets	Target's R&D expenditures (in millions of USD) over target's assets (in millions of USD). Note that for those observations for which the value was missing, this has been replaced by zero.	Continuous	Compustat
Target missing R&D	Equal to one if target's R&D expenditure information was missing	Binary	Compustat
Target & acq. conduct R&D	Equal to one if both target and acquiring firm have a positive value for the R&D	Binary	Compustat

	expenditures		
Same industry	Equal to one if both target and acquiring firm belong to the same SIC-2 industry group	Binary	Compustat
Log(Acq. Assets)	Logarithm of the acquiror's assets (in millions of USD)	Continuous	Compustat
Acq. Debt/Assets	Acquiror's debt (in millions of USD) over acquiror's assets (in millions of USD)	Continuous	Compustat
Acq. Cash/Assets	Acquiror's cash (in millions of USD) over acquiror's assets (in millions of USD)	Continuous	Compustat
Acq. R&D/Assets	Acquiror's R&D expenditures (in millions of USD) over acquiror's assets (in millions of USD). Note that for those observations for which the value was missing, this has been replaced by zero.	Continuous	Compustat
Acq. missing R&D	Equal to one if acquiror's R&D expenditure information was missing	Binary	Compustat
Post Acq	Equal to one after the acquisition year	Binary	SDC Platinum
Winner	Equal to one if the firm won the bidding contest	Binary	SDC Platinum
Exp.	Equal to one if firm has previous M&A experience	Binary	SDC Platinum
Winner*Post Acq*Exp.	The interaction term of the variables Post Acq, Winner and Post Acq.	Binary	SDC Platinum

Table 2. Descriptive Statistics: Acquisition Price Data Set

	Total sample		*Bidding contest*		*No bidding contest*		
Variable	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*	*t-test*
Acquisition Price	1550.688	6161.299	3381.141	10188.890	1422.982	5756.737	***
Log(acquisition price)	5.206	2.174	6.293	1.934	5.130	2.169	***
Bidding contest	0.065	0.247					
Number of competing bidders	0.109	0.446					
Target Assets	2461.103	15872.500	5687.286	45600.010	2236.020	11140.640	***
Log(Target Assets)	5.668	1.988	6.279	2.011	5.626	1.980	***
Target Debt/Assets	0.175	0.214	0.199	0.189	0.173	0.215	*
Target Cash/Assets	0.267	4.914	0.088	0.210	0.280	5.082	
Target R&D/Assets	0.056	0.145	0.037	0.085	0.057	0.149	**
Target missing R&D	0.532	0.499	0.502	0.501	0.534	0.499	
Target & acq. conduct R&D	0.387	0.487	0.439	0.497	0.383	0.486	*
Same industry	0.665	0.472	0.736	0.442	0.660	0.474	***
Acq. assets	18782.730	67687.560	23283.740	107669.800	18468.710	63980.460	
Log(Acq. Assets)	7.941	2.095	7.815	2.094	7.950	2.095	
Acq. Debt/Assets	0.206	0.191	0.266	0.231	0.202	0.187	***
Acq. Cash/Assets	0.094	0.770	0.204	2.043	0.087	0.586	**
Acq. R&D/Assets	0.031	0.081	0.026	0.085	0.031	0.081	
Acq. missing R&D	0.526	0.499	0.472	0.500	0.530	0.499	*
Acq. experience (contested M&As)	0.327	0.178					
Acq. experience (non-contested M&As)	0.495	0.500					

Table 3. Descriptive Statistics: Post-Acquisition Performance Data Set

	Total sample		*Winner sample*		*Loser sample*		
Variable	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*	*t-test*
Tobin's Q	0.733	0.528	0.719	0.553	0.771	0.446	***
Sales/Assets	0.913	0.531	0.908	0.551	0.956	0.502	***
ROA	0.301	1.905	0.715	13.364	-0.819	43.144	*
Winner*Post Acq	0.388	0.487	0.388	0.487			
Winner*Post Acq*Exp.	0.227	0.419	0.227	0.419			
Log(Acq. Assets)	7.797	2.231	7.848	2.238	7.654	2.208	***
Acq. Debt/Assets	0.226	0.202	0.236	0.200	0.198	0.204	***
Acq. Cash/Assets	0.133	1.606	0.114	1.010	0.185	2.640	
Acq. R&D/Assets	0.027	0.067	0.028	0.071	0.026	0.054	
Acq. missing R&D	0.453	0.498	0.424	0.494	0.534	0.499	***

Table 4. Acquisition Price Regressions I

	(1)	(2)	(3)	(4)
Bidding contest	1.163***	0.588***	0.615***	0.523***
	(0.128)	(0.078)	(0.077)	(0.107)
Acq. experience (contested M&As)				-0.142
				(0.144)
Acq. experience (non-contested M&As)				-0.312***
				(0.044)
Log(Target Assets)		0.860***	0.754***	0.751***
		(0.012)	(0.014)	(0.014)
Target Debt/Assets		-0.517***	-0.407***	-0.416***
		(0.101)	(0.100)	(0.100)
Target Cash/Assets		0.018***	0.016***	0.016***
		(0.004)	(0.004)	(0.004)
Target R&D/Assets		0.144	-0.189	-0.181
		(0.157)	(0.158)	(0.157)
Target missing R&D		-0.168***	0.001	0.016
		(0.055)	(0.075)	(0.079)
Target & acq. conduct R&D			0.201**	0.281***
			(0.080)	(0.105)
Same industry			0.366***	0.349***
			(0.044)	(0.044)
Log(Acq. Assets)			0.165***	0.205***
			(0.012)	(0.013)
Acq. Debt/Assets			-0.180	-0.182
			(0.121)	(0.121)
Acq. Cash/Assets			-0.010	-0.000
			(0.025)	(0.025)
Acq. R&D/Assets			0.822***	0.818***
			(0.276)	(0.275)
Constant	5.130***	-0.293	-1.096*	-1.487**
	(0.033)	(0.616)	(0.604)	(0.607)
Observations	4646	4646	4646	4646
Log likelihood	-10157.914	-7636.188	-7509.357	-7482.738
Prob>chi2	0.000	0.000	0.000	0.000

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

All regressions contain year and industry dummies. If R&D over assets is included, the regressions also include a dummy variable that equals one if information for R&D was missing.

Table 5. Acquisition Price Regressions II

	(1)	(2)	(3)	(4)
Number of competing bidders	0.629***	0.300***	0.309***	0.230***
	(0.071)	(0.043)	(0.042)	(0.056)
Acq. experience (contested M&As)				-0.032
				(0.139)
Acq. experience (non-contested M&As)				-0.322***
				(0.044)
Log(Target Assets)		0.860***	0.755***	0.752***
		(0.012)	(0.014)	(0.014)
Target Debt/Assets		-0.519***	-0.412***	-0.420***
		(0.101)	(0.100)	(0.100)
Target Cash/Assets		0.018***	0.016***	0.016***
		(0.004)	(0.004)	(0.004)
Target R&D/Assets		0.132	-0.200	-0.189
		(0.157)	(0.158)	(0.158)
Target missing R&D		-0.168***	0.003	0.017
		(0.055)	(0.075)	(0.079)
Target & acq. conduct R&D			0.205**	0.283***
			(0.080)	(0.105)
Same industry			0.367***	0.350***
			(0.044)	(0.044)
Log(Acq. Assets)			0.164***	0.205***
			(0.012)	(0.013)
Acq. Debt/Assets			-0.169	-0.172
			(0.121)	(0.121)
Acq. Cash/Assets			-0.006	0.002
			(0.025)	(0.025)
Acq. R&D/Assets			0.814***	0.810***
			(0.276)	(0.275)
Constant	5.137***	-0.301	-1.107*	-1.497**
	(0.033)	(0.616)	(0.605)	(0.608)
Observations	4646	4646	4646	4646
Log likelihood	-10159.740	-7640.342	-7514.903	-7486.522
Prob>chi2	0.000	0.000	0.000	0.000

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

All regressions contain year and industry dummies. If R&D over assets is included, the regressions also include a dummy variable that equals one if information for R&D was missing.

Table 6. Fixed Effects Regressions for Post-Acquisition Performance (Tobin's Q)

	(1)	(2)	(3)	(4)
Post Acq	-0.069**	-0.067**	-0.052*	-0.051*
	(0.029)	(0.029)	(0.028)	(0.028)
Winner*Post Acq	-0.035	-0.094***	0.018	-0.018
	(0.027)	(0.032)	(0.026)	(0.031)
Winner*Post Acq*Exp.		0.095***		0.058**
		(0.028)		(0.027)
Log(Acq. Assets)			-0.146***	-0.145***
			(0.010)	(0.010)
Acq. Debt/Assets			0.045	0.050
			(0.041)	(0.041)
Acq. Cash/Assets			0.054***	0.053***
			(0.005)	(0.005)
Acq. R&D/Assets			1.021***	1.025***
			(0.152)	(0.152)
Constant	0.841***	0.840***	1.429***	1.422***
	(0.148)	(0.148)	(0.152)	(0.152)
Observations	5149	5149	5149	5149
Log likelihood	-2382.145	-2376.029	-2130.280	-2127.817
Prob>chi2	0.000	0.000	0.000	0.000

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

All regressions contain year dummies. If R&D over assets is included, the regressions also include a dummy variable that equals one if information for R&D was missing.

Table 7. Fixed Effects Regressions for Post-Acquisition Performance (Sales/Assets)

	(1)	(2)	(3)	(4)
Post Acq	-0.159***	-0.157***	-0.119***	-0.118***
	(0.026)	(0.026)	(0.025)	(0.025)
Winner*Post Acq	0.055**	-0.023	0.098***	0.039
	(0.024)	(0.028)	(0.023)	(0.027)
Winner*Post Acq*Exp.		0.129***		0.096***
		(0.025)		(0.024)
Log(Acq. Assets)			-0.138***	-0.136***
			(0.009)	(0.009)
Acq. Debt/Assets			-0.248***	-0.238***
			(0.043)	(0.043)
Acq. Cash/Assets			-0.022***	-0.023***
			(0.008)	(0.008)
Acq. R&D/Assets			0.976***	0.988***
			(0.124)	(0.124)
Constant	1.064***	1.061***	1.694***	1.682***
	(0.130)	(0.130)	(0.133)	(0.133)
Observations	5059	5059	5059	5059
Log likelihood	-1666.740	-1652.021	-1441.129	-1432.439
Prob>chi2	0.000	0.000	0.000	0.000

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

All regressions contain year dummies. If R&D over assets is included, the regressions also include a dummy variable that equals one if information for R&D was missing.

Table 8. Fixed Effects Regressions for Post-Acquisition Performance (ROA)

	(1)	(2)	(3)	(4)
Post Acq	-0.000	0.004	0.003	0.006
	(0.134)	(0.134)	(0.134)	(0.134)
Winner*Post Acq	0.061	-0.082	0.072	-0.076
	(0.121)	(0.144)	(0.122)	(0.145)
Winner*Post Acq*Exp.		0.237*		0.240*
		(0.128)		(0.128)
Log(Acq. Assets)			-0.025	-0.020
			(0.046)	(0.046)
Acq. Debt/Assets			0.058	0.083
			(0.233)	(0.233)
Acq. Cash/Assets			-0.022	-0.025
			(0.043)	(0.043)
Acq. R&D/Assets			1.056	1.086
			(0.665)	(0.665)
Constant	-0.112	-0.117	-0.147	-0.177
	(0.668)	(0.668)	(0.715)	(0.715)
Observations	5059	5059	5059	5059
Log likelihood	-9942.079	-9940.208	-9939.675	-9937.781
Prob>chi2	0.000	0.000	0.000	0.000

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

All regressions contain year dummies. If R&D over assets is included, the regressions also include a dummy variable that equals one if information for R&D was missing.

FIGURES

Figure 1. Post-Acquisition Performance (Tobin's Q): Winners versus losers

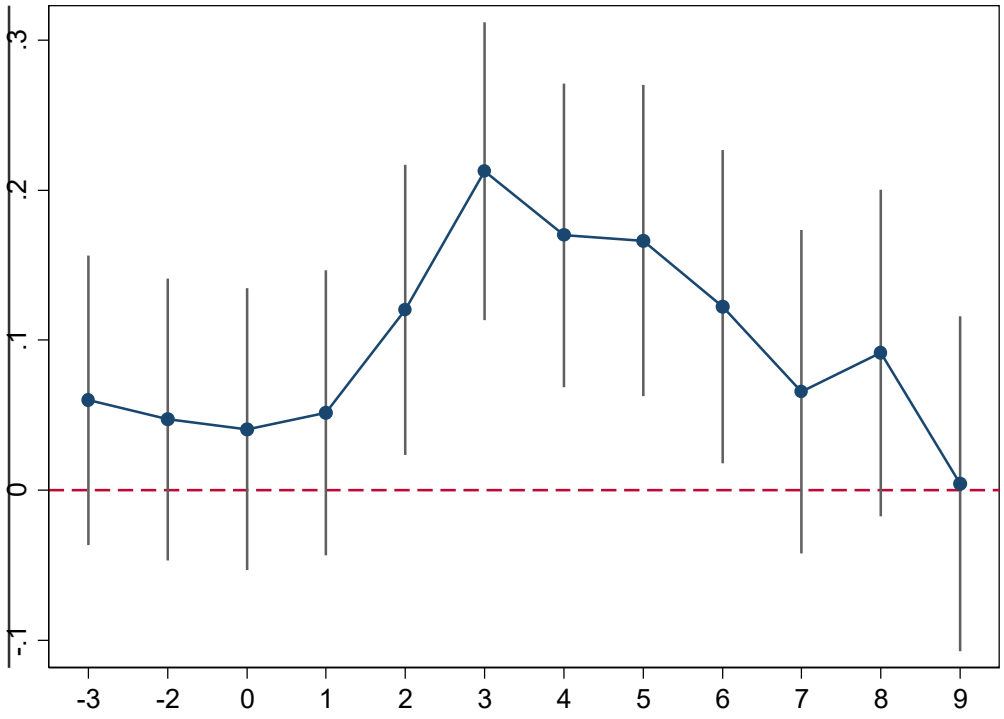

Figure 2. Post-Acquisition Performance (Tobin's Q): Winners with experience versus losers

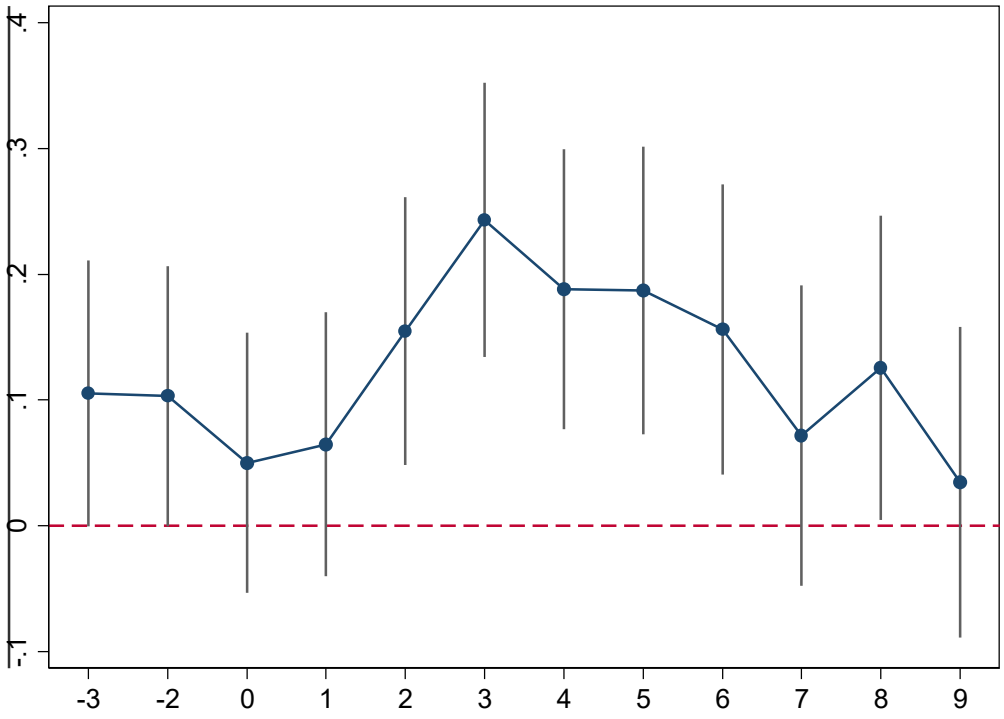

Figure 3. Post-Acquisition Performance (Tobin's Q): Winners without experience versus losers