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Board Connections and M&A Transactions*

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ABSTRACT

We examine M&A transactions between firms with current board connections and find that acquirers obtain higher announcement returns in transactions with a first-degree connection where the acquirer and the target share a common director. Acquirer returns are also higher in transactions with a second-degree connection where one acquirer director and one target director serve on the same third board. Our results suggest that first-degree connections benefit acquirers with lower takeover premiums while second-degree connections benefit acquirers with greater value creation. Overall, we provide new evidence that board connectedness plays important roles in corporate investments and leads to greater value creation.

Keywords: Mergers and acquisitions, acquirer returns, board connections

JEL Classifications: G34

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1. Introduction

This paper examines M&A transactions with a current board connection between acquirer and target firms and presents evidence that acquirers obtain significantly higher announcement returns in such transactions. We study two types of board connections between acquirer and target firms. The first type is where the two firms share a common director before the deal announcement and we refer to this type of connection as a "first-degree connection." The second type is where one director from the acquirer and one director from the target have been serving on the board of a third firm before the deal announcement. We refer to this type of connection as a "second-degree connection." We focus only on current board connections in that the acquirer and the target must have a board connection through their directors at the time of the deal announcement.

Having a board connection between two firms may improve information flow and communication between the firms, and increase each firm's knowledge and understanding of the other firm's operations and corporate culture. This enhanced knowledge and information advantage, in turn, may lead to a better M&A transaction between the two firms. The information advantage may also affect the takeover premium and hence the transaction price of the deal. This is because acquirers with a board connection to the target may enjoy a bargaining advantage in deal negotiations due to their private information about the target firm, relative to outside bidders with no connection to the target. In addition, particularly in first-degree connections, the presence of an acquirer's director on the target firm's board may limit competition from outside less-informed bidders, and reduce the acquirer's incentive to offer a higher premium in order to deter a competing bidder. Finally, greater information flow and communication between connected firms may affect the transaction costs of the deal by mitigating the need for advisory services of investment banks in initiating the transaction and identifying the synergy sources. Similarly, there could be a lower need for fairness opinions in connected transactions given the more informed position of the connected directors. The lower need for advisory services and fairness opinions, in turn, may manifest itself in a lower amount of transaction costs paid to investment banks. To examine these possible effects of board connections on M&A transactions, we study announcement returns, takeover

premiums, long-run operating performance of the newly merged firm, as well as investment banking fees paid in a transaction.

In our sample of 1,664 US acquisitions between 1996 and 2008, we observe a board connection between the acquirer and the target in 9.4% of the transactions. In terms of dollar deal values, connected transactions represent 19.8% of the overall transaction volume. We find that the average acquirer abnormal return from two days before to two days after the acquisition announcement is 0.12% in first-degree connected transactions, and -2.33% in non-connected transactions. The difference is 2.45%, and significantly different from zero at the 5% level. In addition, we find lower takeover premiums in the presence of a first-degree connection. Interestingly, takeover premiums become even lower when the connected director is an executive at the acquirer. To the extent that executive directors possess greater information advantage and greater incentives to undertake the deal at a lower price compared to outside directors, this result supports the view that first-degree connections provide the acquirer with an information advantage and allow the firm to acquire the target at a more attractive price. We also find that the number of bidders in transactions with a first-degree connection is lower, compared to non-connected transactions. A board connection between the acquirer and the target may deter competition from outside bidders who fear the winner's curse more due to the presence of an informed bidder, consistent with the main prediction of winner's curse theories that the incidence and magnitude of the winner's curse is positively related to the number of bidders (Kagel and Levin, 1986). Furthermore, we show that the takeover premium in first-degree connections is lower when the number of competing bidders is smaller. These results favor the interpretation that a first-degree board connection leads the acquirer to have a greater bargaining power in merger negotiations by providing him with a more informed position about the target and by limiting the degree of competition from less-informed outside bidders. Finally, we find that investment banking fees paid as a percentage of deal size are lower in first-degree connected transactions, compared to non-connected transactions.

Similar to transactions with a first-degree connection, acquirer shareholders obtain higher announcement returns in transactions with a second-degree connection as well. In second-degree

connected transactions, the mean acquirer announcement return is -0.65%, while in non-connected deals the mean acquirer return is -2.33%. The difference is 1.67% and significantly different from zero at the 5% level. Likewise, the average combined announcement return in second-degree connected transactions is 2.81%, while it is 0.97% in non-connected sample. The difference is 1.84%, and significantly different from zero at the 5% level. In addition, the post-deal operating performance of the combined firm is better in transactions with a second-degree connection compared to transactions with no connection, suggesting that such deals are associated with better performance in the long run as well.

Although we find that both types of board connections are related to greater acquirer announcement returns, our results suggest that the economic mechanism driving these superior returns is different between first- and second-degree connections. Communication and information advantage of first-degree connections appear to help the acquirer buy the target at a lower premium. In addition, limited competition from outside bidders in first-degree connections enhances the acquirer's ability to pay a lower premium for the target, and reduces the target's ability to ask for a higher premium. Communication and information advantage present in second-degree connections, on the other hand, appear to be associated with deals with greater overall value creation, as evidenced by higher combined announcement returns and better post-deal operating performance of the combined firm in such deals. An important difference between first- and second-degree connections is that the connected director in first-degree connections represents both acquirer and target shareholders, while in second-degree connections, the connected director at the acquirer represents acquirer shareholders and the connected director at the target represents target shareholders. Hence, connected directors in second-degree connections are more likely to undertake deals if they lead to superior combined announced returns. This might explain why we find second-degree connections are associated with greater overall value creation from the deal relative to first-degree connections.

An important concern for our analysis is that board connections do not arise randomly and they may be related to certain omitted firm characteristics which could independently affect M&A outcomes. To address such endogeneity concerns, in our regression framework we control for all important factors

shown to affect M&A outcomes significantly such as acquirer size, deal size relative to acquirer size, financing of the transaction, and whether the deal is diversifying, among others. In addition, we conduct a number of additional robustness tests to alleviate the concern that our results might still be driven by factors omitted in our multivariate analysis. One possibility is that firms with talented and high quality directors are more likely to have board connections given that there may be a great demand for their directors. Such firms could also be more likely to engage in high quality M&A deals. It is also possible that firms with greater similarity, firms with previous business relations, and firms located at a closer distance to each other are more likely to have common directors and to generate better M&A outcomes when they merge. Another possibility is that it is the acquisition experience of the acquirer which explains our results. Firms with greater acquisition experience may be more likely to gain connected directors as a result of past acquisitions, and their past acquisition experience may help them undertake better deals. To address these possibilities, we control for managerial quality and corporate governance of the acquirer, similarity between the acquirer and the target, the existence of a previous business relation between the acquirer and the target, geographical proximity between the acquirer and the target, and the acquisition history of the acquirer. We verify that the positive effect of board connections on acquirer announcement returns remains robust after including all these additional control variables.

To rule out any remaining time-invariant unobservable characteristics of connected acquirers which may lead to better M&A outcomes, we perform an analysis with firm fixed effects where we compare the deals in which the acquirer has a board connection to the target with those deals by the same acquirer in which the acquirer has no board connection to the target. If board connection is a simple proxy for firm quality, such acquirers should generate better M&A performance independent of whether they acquire connected or non-connected targets. Our results, however, show that these acquirers obtain higher announcement returns from their acquisitions of connected targets.

The organization of the paper is as follows. In Section 2 we describe the first- and second-degree connections in greater detail, and discuss the potential economic mechanisms through which they may affect the terms and outcomes of M&A transactions. Section 2 also reviews the recent literature on board

connections and discusses our paper in the context of existing work. Section 3 introduces our sample and reports summary statistics. Section 4 analyzes the relation between board connections and announcement returns. Section 5 studies takeover premium, deal profitability, and transaction costs in terms of investment banking fees in order to understand the economic channels through which board connections lead to superior acquirer performance. A final section concludes.

2. Possible effects of board connections on M&A outcomes and related literature

2.1. First- and second-degree board connections and M&A outcomes

In this section we review some important differences between first- and second-degree board connections, and discuss potential economic mechanisms through which they may affect M&A transactions.

Although both first- and second-degree board connections can be seen as a bridge facilitating communication and information flow between the acquirer and the target, first-degree connections involve only one director connecting the two firms while second-degree connections involve one director from the acquirer and one director from the target connecting the two firms through their board representation on another firm. Since first-degree connections represent a more direct connection between the acquirer and the target, it may be natural to expect that information flow and communication between the two firms are greater in first-degree connections than in second-degree connections. While this view is plausible, the expected effects of first- and second-degree connections on M&A outcomes are not completely obvious. One possibility is that the more direct nature of first-degree connections may result in better deals with greater profitability, compared to second-degree connections. An alternative view, however, may suggest the opposite. In second-degree connections, two separate directors, one from the acquirer and one from the target, have the ability to communicate and assess whether a deal between their respective firms makes sense. It is possible that two directors, each with access to private and inside information about his own firm, may have greater combined ability and capacity to implement profitable deals, compared to the single director connecting the two firms in first-degree connections. Hence, it is

not completely clear a priori whether the more direct nature of first-degree connections consisting of one director dominates the presence and ability of two directors in second-degree connections in implementing profitable deals.

It is also possible that the incentives of the connected directors may be different between first- and second-degree connections. In first-degree connections, the connected director represents both acquirer and target firm shareholders during deal negotiations. If this director is an executive (inside director) at the acquirer, he may have greater incentives to implement deals at a price more favorable to the acquirer and to avoid overpaying for the target—one of the most commonly cited reasons for poor acquirer performance in M&A deals. Similarly, such a director may be more interested in undertaking deals which benefit acquirer firm shareholders, without necessarily resulting in overall value creation from the combined perspective of acquirer and target firm shareholders. Naturally, one may wonder why target firm shareholders would agree to a deal which primarily benefits acquirer shareholders. First, their ability to demand a higher premium could be limited if they are in a weak bargaining position in terms of the recent performance of their firm. Second, the presence of an executive director from the acquirer on the target board may deter competition from less-informed outside bidders. This would, in turn, reduce the acquirer's incentives to offer a higher premium as well as the target's ability to ask for a higher premium. This argument is consistent with the main prediction of winner's curse theories that the incidence and magnitude of winner's curse (overpayment for the target) increases in the number of bidders competing for the target (Kagel and Levin, 1986). Second-degree connections may not have the same effect on takeover premiums as first-degree connections since they involve one director from the acquirer and one from the target where each director is expected to act in the interest of his own firm's shareholders. This implies that second-degree connections would be associated with deals with greater value creation experienced by acquirer and target shareholders at deal announcement and after deal completion. It is worth noting that the connected director representing the acquirer firm in second-degree connections may have similar incentives to implement the deal at an attractive price from acquirer firm shareholders' perspective as in the case of first-degree connections. However, his ability to do so will be

limited given that he does not serve on the target board directly and there is a separate director representing only target firm shareholders in deal negotiations.

Ultimately, the effects of first- and second-degree connections on the profitability and the terms of M&A transactions remain as an interesting empirical question to address. Hence, in the rest of the paper we study various aspects of deals with first- and second-degree connections, and try to obtain a deeper understanding of how each type of board connection affects M&A outcomes.

2.2. Related literature

There has been a recent and growing literature examining the role of board connections and networks in corporate financial policy.[1] In a closely related paper to ours, Stuart and Yim (2010) examine the role of board networks in change-of-control transactions in the private equity industry. They show that public firms with directors who have gained private equity deal experience at another company are more likely to become targets in private equity transactions. Our paper complements Stuart and Yim (2010) by showing that board connections also play an important role in M&A transactions where the acquirer is a strategic buyer. Our paper is also related to Ishii and Xuan (2010) who examine the effect of social ties between acquirer and target firms on merger performance. As opposed to our finding that professional connections present at the time of the acquisition announcement have a positive effect on acquirer announcement returns, Ishii and Xuan (2010) find that social ties between acquirer and target firms have a negative effect on acquirer announcement returns. The two papers are different in terms of the type and the timing of board connections they study. Our paper focuses on professional rather than social board connections in that the acquirer and the target must have a board connection at the time of the acquisition announcement. In Ishii and Xuan (2010), on the other hand, firms are classified as socially connected if

[1] See, among others, Hallock (1997), Fich and White (2003), Hwang and Kim (2009), and Engelberg, Gao, and Parsons (2010) on the effect of director networks on chief executive officer (CEO) pay, Sorenson and Stuart (2001) and Hochberg, Ljungqvist, and Lu (2007) on the effect of networks in the venture capital industry, Robinson and Stuart (2007) and Lindsey (2008) in strategic alliances, Garmaise and Moskowitz (2003) in lending markets, Cohen, Frazzini, and Malloy (2008) and Kuhnen (2009) on the effect of social ties in the mutual fund industry, Bizjak, Lemmon, and Whitby (2009) on how board links play a role in spreading the option backdating process from one firm to another, and Chidambaran, Kedia, and Prabhala (2010) on the effect of CEO-director connections on the likelihood of fraud.

they have executives who went to the same school or worked at the same firm in the past. Professional connections present at the time of an M&A deal are more likely to facilitate communication about the prospects of a current deal between the two firms connected through their boards than social connections formed in the past. Two executives who know each other through school or past work would not necessarily be informed about the prospects of a deal between their current firms given that they are not professionally involved with each other. Hence, perhaps it is not too surprising that professional connections present at the time of the deal are positively related to acquirer performance while social connections formed in the past are negatively related to acquirer announcement returns.

There is a possibility that current and professional board connections we analyze in our paper are a subset of broader social and school ties among executives. This is not a concern for our first-degree board connections since such connections involve only one director connecting the two firms. For our second-degree connections, we manually collect data on the educational backgrounds of connected directors and find that only two directors in our sample exhibit the type of school connections defined in Ishii and Xuan (2010). This finding suggests that the set of professional board connections at the time of the acquisition announcement does not overlap with the set of social connections formed in the past, and provides another explanation for why our paper identifies a positive effect of board connections on M&A outcomes while Ishii and Xuan (2010) identify a negative effect.[2] Together, these studies illuminate the mechanisms by which social and professional ties affect M&A outcomes, and suggest that differentiating professional ties from social ties is critical in understanding how different types of board connections impact corporate financial outcomes.

In other related work, Schonlau and Singh (2009) find that firms with more connected boards to other firms are more likely to undertake acquisitions as well as to be acquired. Such firms also exhibit

[2] Our sample of board connections includes connections which started in the past and continue through the time of the M&A deal. It is possible that in some M&A deals in our sample, directors had a board connection in the past which had ended before the announcement of the current deal. Such transactions will be classified as non-connected transactions in our paper. If past connections play a similar role as current connections in terms of facilitating communication between the firms, this would work against us in finding any significant difference between connected and non-connected deals.

better performance in the years after the acquisition. Their paper analyzes the acquisition activity of a firm as a function of how connected its board is to other firms, but does not look at direct board connections between acquirer and target firms—the primary focus of our paper. In other work, Fracassi (2008) constructs a measure of social ties between two firms and shows that firms with a greater level of social ties exhibit similar investment patterns. Rather than focusing on inter-firm connections, Schmidt (2008) investigates the costs and benefits of internal ties between the CEO and the board members of a given firm, and finds that more friendly boards are associated with higher announcement returns for acquirers with greater advisory needs. Fracassi and Tate (2010) also focus on intra-firm ties between the CEO and the directors, and present evidence that greater levels of connections between the CEO and the directors within a firm are related to weaker board monitoring and lower market valuation.

3. Data and sample description

Our sample of M&A transactions comes from the Securities Data Company's (SDC) US Mergers and Acquisitions database. We select all mergers and acquisitions announced between 1996 and 2008 where both acquirer and target firms are listed as public firms and obtain 5,055 deals. We match this M&A sample with Compustat and the Center for Research in Security Prices (CRSP) data, and identify all deals in which both the acquirer and the target are listed on the NYSE, Amex, and Nasdaq when the deal is announced, and have daily stock return data from CRSP and annual financial statement information from Compustat for at least one year prior to the deal announcement. Applying the standard filters used in the literature, we exclude small transactions in which the deal value is less than $5 million or less than 1% of the acquirer's market capitalization, and restrict the sample to those deals in which the acquirer owns less than 50% of the target prior to the acquisition announcement and owns 100% after the completion. These filters yield 2,829 observations. We choose our time period from 1996 to 2008 because the Securities and Exchange Commission (SEC) mandated all registrants to file their documents online using the EDGAR system starting from 1996. The EDGAR database has over 600 different types of forms, and for the purpose of our study, we gather all available proxy statements (Form DEF 14-A).

Proxy statements provide detailed information for each director, such as their name, age, work experience, board affiliation, and education background. We also supplement our director data using the RiskMetrics Directors database. We require that both the acquirer and the target have proxy statements from EDGAR or have available director information from RiskMetrics in the year prior to the deal announcement, and this gives us a final sample consisting of 1,664 M&A transactions.[3]

For each M&A deal, we use a Web crawling algorithm to download the latest available proxy statements for the acquirer and the target before the acquisition announcement date. We write a PYTHON program to read the "election of directors" section in both the acquirer's and target's proxy statements. If the acquirer and the target share one common director, such deal is classified as a deal with a first-degree connection. For the rest of the M&A deals, we construct a set of all board affiliations held by each director at the acquirer and a set of all board affiliations held by each director at the target. We proceed to check, for a given deal, if there is any overlap between the sets of board affiliations held by acquirer directors and target directors. If we find at least one overlap, we classify the deal as one with a second-degree board connection. The rest of the deals are classified as non-connected transactions. Among the 1,664 M&A deals in our sample, there is a board connection between the acquirer and the target in 156 deals. In 65 out of 156 connected transactions we have a first-degree connection, and in the remaining 91 transactions we have a second-degree connection.

We find that in 12 of the 65 first-degree connections, the connected director is an independent director at both the acquirer and the target. In 42 observations, the connected director is an executive at the acquirer, and in 15 observations he is an executive at the target firm.[4] In the case of second-degree connections, the connected director at the acquirer firm is an independent director in 74 out of 91 transactions, and he is an executive at the acquirer in the remaining 17 transactions. Similarly, the

[3] We apply the filter common in the literature that the transaction must be completed, and as a result, drop 276 withdrawn deals from the initial data set. We also examine whether board connections are significantly related to the likelihood of an announced deal getting completed, but find no significant result.

[4] Some connected directors are executives at both the acquirer and the target firm, such as being the CEO of the acquirer and the non-executive chairman of the target firm. This explains why the sum of independent and executive directors in first-degree connections is greater than the number of first-degree connections.

connected director at the target firm is an independent director in 75 transactions, and an executive at the target in the remaining 16 transactions.[5] The difference in the proportion of independent directors between first- and second-degree connections is significant at the 1% level, implying that connected directors in first-degree connections are less likely to be independent directors than in second-degree connections. Finally, we observe that a typical first-degree board connection between the acquirer and the target originates 6.4 years before the announcement of the deal and a second-degree board connection originates 4.3 years before the announcement of the deal.

Panel A of Table 1 presents the distribution of our M&A sample by announcement year. Consistent with Moeller, Schlingemann, and Stulz (2004), the number of acquisitions drops in the early 2000s from its highest level in 1999, rebounds back in 2003, and goes down to a lower level in 2008. The pattern of connected transactions across years follows a similar trend as the overall sample. There is a board connection between the acquirer and the target in about 10% of our acquisition sample.[6] In terms of dollar deal values, connected transactions represent 19.8% of the overall transaction volume from 1996 to 2008.

Panel B of Table 1 shows the industry distribution of our sample of acquisitions based on the industry of the acquirer where industry classification follows the 12 Fama-French industry definitions (Fama and French, 1997). Finance, Business equipment, and Healthcare are the most active industries in our sample in terms of the number of acquisitions. We observe the same pattern for connected transactions as well where the greatest number of connected acquisitions take place in the Finance industry, followed by Business equipment and Healthcare industries. Overall, transactions with board

[5] A given M&A deal in our sample can be classified as a connected transaction only if there is an overlap in the director sets of the acquirer and the target. This definition excludes executive connections between the acquirer and the target where a non-director executive of one of the firms serves as a director on the board of the other firm. Although studying such "non-director executive" connections would be interesting, we are not able to include such connections in our analysis since data availability regarding such non-director executives is very limited.

[6] The frequency of board connections between acquirer and target firms in our sample is of comparable magnitude to the frequency of board interlocks shown in other studies. For instance, Stuart and Yim (2010) report that 15% of the firms publicly traded in 2000–2007 have a private equity interlock in that one or more directors of the firm previously served as a director of another firm during the year that the firm became a takeover target in a private equity transaction. In his study of whether interlocked CEOs earn higher compensation, Hallock (1997) finds that 8% of firms are current-CEO interlocked in his sample of firms from the *Forbes* magazine 500s list.

connections do not concentrate strongly by industry and their industry distribution exhibits a similar pattern as the overall M&A sample. Our analysis later will include both year and industry fixed effects to control for industry and time trends affecting M&A activity.

Table 2 reports the summary statistics for various acquirer, target, and deal characteristics. We describe the variable construction in more detail in the Appendix. The table first presents the means for the full sample, followed by the three subsamples of first-degree connected transactions, second-degree connected transactions, and non-connected transactions. In the last two columns of Table 2, we compare various firm and deal characteristics between first-degree connected transactions and non-connected transactions as well as between second-degree connected transactions and non-connected transactions.

It is interesting to note that target firms in first-degree connected deals have lower return on assets (ROA), smaller amount of operating cash flow (OCF), and exhibit poorer industry-adjusted stock price performance in the six-month period prior to the acquisition announcement, compared to target firms in non-connected deals. These patterns suggest that target firms in first-degree connected transactions underperform their industry peers. In terms of deal characteristics, deals with a second-degree connection are more likely to be diversifying acquisitions compared to non-connected acquisitions, where a transaction is defined as diversifying if the acquirer and the target do not share the same two-digit Standard Industrial Classification (SIC) code. This suggests that such transactions are less likely to combine similar firms from related industries relative to non-connected transactions. In addition, the number of bidders is significantly lower in deals with a first-degree connection than in non-connected transactions, consistent with the view that the existence of an informed bidder with a connection to the target may deter less-informed outside parties from making a bid for the target firm.[7] Finally, compared to non-connected deals, transactions with a first-degree connection are less likely to be mergers of equals.

[7] We collect data on the number of bidders from the SDC M&A database. This database provides records of individual bids based on information in the news and the SEC filings of the merging firms. The reported number of bidders we obtain from SDC may fail to account for the existence of pre-public market solicited bidders and understate the true level of competition in the deal. See Boone and Mulherin (2007) for an analysis of takeover competition based on the pre-public private takeover process.

4. Board connections and announcement returns

4.1. Univariate analysis

To measure the effect of an acquisition on the value of an acquirer and a target, we obtain cumulative abnormal returns (CARs) using the standard event study method developed by Brown and Warner (1985). We use the CRSP value-weighted return as the market return and estimate the market model parameters over the 200 trading days ending two months before the merger announcement. Our choice of the estimation period is motivated by Schwert (1996) who finds that on average, target firm stock price starts to rise about two months before the initial bid announcement. Hence, our estimation procedure is likely to minimize potential bias in announcement returns due to investor anticipation or information leakage before the deal announcement. Following Bradley, Desai, and Kim (1988), we form a value-weighted portfolio of the acquirer and the target where the weights are based on their market capitalization at the two months prior to the acquisition announcement date, and also adjust for toeholds by subtracting the target equity held by the acquirer from the target's market capitalization.

Table 3 presents the cumulative abnormal returns for acquirer (ACARs), target (TCARs), as well as combined portfolio of acquirer and target firms (PCARs) around the acquisition announcement. We report the mean and median CARs over the five-day event window (-2, +2), where event day 0 is the acquisition announcement date.[8] Our results are robust if we use the alternative three-day (-1, +1) or seven-day (-3, +3) event windows around the announcement date.

Table 3 column 1 shows the mean and median CARs for the full sample. We find that the mean five-day abnormal return for acquirers is -2.14% and significantly different from zero at the 1% level. Although the mean announcement return for our sample of acquirers is lower than what is reported in other studies such as Fuller, Netter, and Stegemoller (2002) and Masulis et al. (2007), this is not very

[8] We report our results using the five-day CARs around the announcement date because SDC does not always provide accurate dates of acquisition announcements. Fuller et al. (2002) find that the announcement dates provided by SDC are correct for 92.6% of the sample and are off by no more than two trading days for the rest of the sample. Hence, the five-day event window (-2, +2) would capture most of the announcement effects. See also Masulis, Wang, and Xie (2007) and Kedia, Panchapagesan, and Uysal (2008) who use the same event window for estimating acquisition announcement returns.

surprising given that our sample contains only public targets. The negative ACARs are in line with the earlier findings that on average M&A transactions destroy value for acquirer shareholders when they involve acquisitions of public firms (Fuller et al., 2002). The mean five-day abnormal return for target firms is 21.23%, and significantly different from zero at the 1% level. The mean five-day combined abnormal return PCAR is 1.12%, consistent with the positive combined returns shown by Andrade, Mitchell, and Stafford (2001), Moeller et al. (2004), and Wang and Xie (2009). Median CARs show a similar pattern as the means.

We next split the entire M&A sample into three groups based on whether a deal involves a board connection and the type of the connection, and present the subsample CAR results. Most importantly, mean ACARs are not significantly different from zero in both first- and second-degree connected transactions, while in non-connected transactions the mean five-day ACAR is -2.33% and significantly different from zero at the 1% level. This result suggests that acquisitions of public firms do not lead to value destruction for acquirer shareholders if the acquirer and the target have a board connection at the acquisition announcement. The mean and median difference in five-day ACARs between first-degree connected transactions and non-connected transactions are 2.45% and 1.26%, respectively, and significantly different from zero at the 5% level. They are also economically large compared to the sample mean ACAR of -2.14% and median ACAR of -1.58%. Similarly, the mean and median difference in five-day ACARs between second-degree connected transactions and non-connected transactions are 1.67% and 1.22%, both significantly different from zero at the 5% level. This finding that acquirers do not experience significantly negative announcement returns in connected transactions is important since numerous studies have shown that acquisitions of public targets destroy value for the acquirer. For instance, Bradley et al. (1988) report a -3% abnormal return to acquirers during the 1980s, Wang and Xie (2009) show a -2.9% acquirer announcement return for a sample of acquisitions where both acquirers and targets are covered by the IRRC database, and Moeller et al. (2004) find a -1.7% average abnormal return for large acquirers acquiring public firms over the period from 1980 to 2004.

Target shareholders, on average, experience a sizeable announcement return in both connected and non-connected transactions. Specifically, they obtain a mean five-day announcement return of 18.72% in first-degree connected transactions, 22.82% in second-degree connected transactions, and 21.24% in non-connected transactions, all significantly different from zero at the 1% level. The difference in mean target announcement returns between first-degree connected transactions and non-connected transactions is not significant, neither is the difference between second-degree connected transactions and non-connected transactions.

Combined announcement returns are positive for both connected and non-connected transactions, suggesting that an average M&A transaction in our sample creates value. Although there is no significant difference between first-degree connected transactions and non-connected transactions in terms of the overall value creation at the acquisition announcement, we find that the difference in mean combined announcement returns between second-degree connected transactions and non-connected transactions is 1.84%, significantly different from zero at the 5% level. This magnitude is also economically significant relative to the sample average PCAR of 1.12%.[9]

Given that M&A transactions come in waves and exhibit industry clustering, we perform a number of robustness checks to make sure that our results are not specific to a certain industry or a particular time period. We repeat our univariate analysis in different subsamples by removing bank mergers where the acquirer has an SIC code between 6000 and 6999, by removing the Internet bubble period from 1998 to 2001, and by conducting our analysis using the first- and second-half of our sample period separately. Our untabulated results show that the effect of board connections on announcement returns remains robust in each of these specifications.

Taken together, our results from the univariate analysis of announcement returns suggest that compared to acquirers in non-connected transactions, acquirers in both first-degree and second-degree connected transactions perform better in terms of the announcement returns they experience. In addition,

[9] We also compare the combined announcement returns between first-degree and second-degree connected transactions, and find no significant difference between them. This is likely due to the relatively small sample size of connected deals.

deals with a second-degree connection appear to be associated with greater value creation given that combined announcement returns in such deals are significantly larger than those in non-connected transactions. An interesting question that arises from these results is why second-degree connections, but not first-degree connections, are associated with greater combined announcement returns, relative to non-connected deals. Given their more direct nature, one may expect that first-degree connections would be more likely to lead to greater value creation at deal announcement measured by combined announcement returns. We postpone the discussion of this important question to Section 5 where we address it in detail after we examine various other aspects of M&A deals with first- and second-degree board connections.

4.2. Multivariate analysis

In this section, we check the robustness of our finding on the positive effect of board connections on acquirer returns in a multivariate setting by controlling for factors which have been shown to affect announcement returns by earlier work in the M&A literature. The dependent variable in these regressions is the five-day ACAR. The key independent variables are a first-degree board connection indicator variable, First-degree connection, that takes on the value of one if there is a first-degree connection between the acquirer and the target, and zero otherwise, and a second-degree board connection indicator variable, Second-degree connection, that takes on the value of one if there is a second-degree connection between the acquirer and the target, and zero otherwise.

Past literature has identified a number of important factors which have a significant effect on acquirer announcement returns. Acquisitions made by smaller acquirers, acquisitions with smaller deal size relative to the size of the acquirer (Moeller et al., 2004), acquisitions financed with cash (Travlos, 1987; Amihud, Lev, and Travlos, 1990), acquisitions involving a tender offer (Jensen and Ruback, 1983), and acquisitions with a greater focus where the acquirer and the target have the same two-digit SIC code (Morck, Shleifer, and Vishny, 1990) are related to better acquirer announcement returns. In our multivariate regressions, we control for all these important drivers of acquirer performance. In addition, following Moeller et al. (2004), we include a set of firm and deal characteristics which are standard control variables in the M&A literature. Firm characteristics include Tobin's *Q*, leverage, operating cash

flow, pre-announcement stock price run-up, as well as equity ownership of directors and officers of both firms in the deal. In terms of deal characteristics, in addition to the method of payment, relative deal size, whether the deal is diversifying, and whether it involves a tender offer, we include deal attitude. All regressions include year and industry fixed effects, and the *t*-statistics are adjusted for heteroskedasticity and acquirer clustering.

Regression (1) in Table 4 presents our baseline results. The coefficients on First-degree connection and Second-degree connection are both positive and significant at the 5% level. Acquirers experience abnormal returns that are 2.4 percentage points higher in transactions with a first-degree connection and 1.8 percentage points higher in transactions with a second-degree connection, compared to the mean ACAR of -2.33% for non-connected transactions. Hence, our key result on the positive relation between board connections and acquirer announcement returns continues to hold after controlling for the factors known to affect acquirer returns in the M&A literature.

The coefficients on the other control variables are consistent with the findings in the literature. Similar to Moeller et al. (2004), we find a negative correlation between acquirer size and ACAR. We also find that stock-financed deals have lower ACARs, consistent with Travlos (1987) and Amihud et al. (1990). Acquisitions with greater deal size relative to the size of the acquirer have lower ACARs, in line with the finding in Moeller et al. (2004). As in Masulis et al. (2007), we find that acquirers with higher operating cash flows perform better. In addition, acquirers with greater stock price run-up prior to the acquisition announcement have lower ACARs, consistent with Masulis et al. (2007) and supporting the view that such acquisitions might be motivated to a greater extent by the overvalued stock of the acquirer. Consistent with the evidence in Schwert (2000) that there are no significant economic differences between deals described as friendly or hostile, we find that deal attitude is not significantly related to acquirer announcement returns. Finally, ACARs are higher when the target has lower operating cash flow.

4.3. Alternative explanations and robustness

Our results so far suggest that both first- and second-degree connections are associated with better announcement returns for acquirers even after we control for important firm and deal characteristics shown to affect acquirer returns by existing work in the M&A literature. To further check the robustness of our main result, we proceed to address a remaining concern that board connections do not arise randomly and they may be related to some factors omitted in our earlier multivariate setting which could independently affect M&A outcomes. To address such endogeneity concerns, we conduct a number of additional tests. Specifically, we investigate whether the positive relation between board connections and acquirer returns can be explained by acquirer's managerial quality and talent, corporate governance and board characteristics of the acquirer, greater firm similarity between the acquirer and the target in connected transactions, existence of a previous business relation between the acquirer and the target, greater geographic proximity between the acquirer and the target, acquisition history of the acquirer, as well as other unobservable firm characteristics of the acquirer in connected transactions.

Managerial talent/quality: Firms with talented executives could be more likely to undertake better M&A deals. At the same time, executives of such firms could be in greater demand for board service in other firms due to their talent. To address the possibility that managerial talent and quality drives both superior acquirer performance and board connections, we include Acquirer director age and Acquirer director tenure as proxies for executive talent at the acquirer firm into our baseline regression since it is plausible to expect that older directors and directors with longer tenure on the board are likely to be more experienced and of better quality. Acquirer director age is defined as the average age of the directors on the board of the acquirer, and Acquirer director tenure is defined as the average number of years directors have spent on the acquirer board. These additional control variables reduce our sample size to 1,223 because our data for director age and tenure come from the RiskMetrics database which only covers S&P1500 companies. As Regression (2) in Table 4 shows, the positive relation between board connections and acquirer announcement returns continues to hold after adding proxies for managerial quality. Interestingly, we find that director age is positively and significantly related to acquirer

announcement returns, suggesting that managerial quality at the acquirer does play an important role in undertaking deals with a greater value creation for acquirer shareholders.

Corporate governance and board characteristics of the acquirer: Masulis et al. (2007) find that corporate governance mechanisms have a significant effect on the quality of a firm's acquisitions in that acquirers with a higher value of the Gompers, Ishii, and Metrick (2003) GIM index obtain significantly lower abnormal returns around acquisition announcements. It is plausible that firms with good corporate governance are more likely to have board connections to other firms since their directors might be in greater demand from other firms. At the same time, as shown by Masulis et al. (2007), these firms might be more likely to undertake better quality M&A deals. In other words, corporate governance quality of acquirers could be the factor driving both board connections and better M&A outcomes.

To address this possibility, we would like to include in our analysis measures of corporate governance quality of the acquirer. The findings in Yermack (1996) suggest that smaller boards are more effective. Similarly, Weisbach (1988) and Rosenstein and Wyatt (1990) suggest that firms with a greater fraction of independent (outside) directors perform better. However, both empirical and theoretical research in corporate governance has evolved significantly since these earlier contributions and more recent findings show that the definition of "optimal" governance varies as a function of firm characteristics, and what might be an optimal governance structure for one firm may be ineffective for another firm. Raheja (2005) proposes a theory of corporate boards where optimal board size and composition are determined as functions of director and firm characteristics such as inside directors' inside information advantage and outside directors' ability to accept good projects and reject bad projects. Since both board size and firm performance are driven by exogenous factors such as firm and director characteristics, an important result from this paper is that there can be a negative correlation between board size and performance without necessarily implying that larger boards are less efficient. Adams and Ferreira (2007) present a model of the board's role as an advisor and as a monitor. The two roles played by the board affect the CEO's incentives to reveal his private information to the board. The model shows that management-friendly boards can be optimal since they encourage the CEO to disclose his

information to the board. Harris and Raviv (2008) provide a model of optimal control of a firm's board by inside and outside directors where the number of outside directors and firm profits are determined as functions of the importance of insiders' and outsiders' information and the extent of agency problems. An interesting result from their model is that shareholders can prefer an insider-controlled board especially if insiders possess important information compared to outsiders. If agency costs due to the private benefits of insiders are large, on the other hand, the model shows that it is optimal to have a board with a greater number of outside directors. Similar to Raheja (2005), the negative correlation between board size and performance which does not necessarily involve a causal relation arises in this model as well. The important message from these theories of corporate boards is that optimal board size and board structure are firm specific and determined as a function of firm characteristics. Consistent with this message, Boone, Field, Karpoff, and Raheja (2007) provide empirical evidence that board size and composition emerge endogenously as a function of economic considerations such as the firm's complexity and competitive environment. Similarly, Coles, Daniel, and Naveen (2008) find that both very small and large boards can be optimal depending on firm characteristics. They show that firm value increases with board size for complex, large, and diversified firms and with the percentage of inside directors for R&D intensive firms. Linck, Netter, and Yang (2008) find evidence consistent with the notion that optimal board size and structure is determined as a trade-off between the costs and benefits of monitoring and advising. They show that R&D- intensive firms with significant growth opportunities have smaller and less independent boards while larger firms are more likely to have larger and more independent boards. Duchin, Matsusaka, and Ozbas (2010) argue that outside directors are more effective when the cost of acquiring information is lower. They find that firm performance improves when outside directors are added to the board when their cost of acquiring information about the firm is low. A general conclusion from these recent studies is that board size and structure emerge as endogenous outcomes of firm characteristics and firm economic environment, and hence, are largely firm specific.

Motivated by the insights of the recent research in the governance literature, we include in our analysis a set of important board characteristics in order to see whether they have any impact on our main

results. First, we include the GIM index of the acquirer developed by Gompers, Ishii, and Metrick (2003) where a larger GIM index implies weaker corporate governance. We also include Board size which is defined as the logarithm of the total number of directors on the acquirer board. Given the more recent studies on the endogenous determination of optimal board size as a function of firm characteristics, we lack a clear prediction on the effect of this variable on M&A performance. Similarly, we control for Board independence, defined as the fraction of independent directors on the acquirer board, but we lack a precise prediction on this variable as well given the recent findings that management-friendly boards and boards with greater insider representation may be optimal for some firms. In addition, we include the same Director age and Director tenure variables as in the previous section since they could proxy for director experience. Finally, we include a variable Board connectedness measuring the fraction of acquirer directors holding three or more directorships, given the finding in Schonlau and Singh (2009) that firms with more central boards are more likely to participate in M&A as both acquirers and targets, and experience better performance in the long run. Interestingly, although Schonlau and Singh (2009) show a benefit of directors holding multiple directorships, Fich and Shivdasani (2006) present evidence that directors holding three or more directorships are associated with lower quality corporate governance and weaker firm performance. Hence, we lack a precise prediction regarding the relation between Board connectedness and acquirer performance. Our sample size in this specification reduces to 1,223 because the GIM index and other board variables are available only for S&P1500 companies.

As Regression (3) of Table 4 shows, our main finding on the effect of board connections on acquirer returns survives controlling for these corporate governance variables. The GIM index has a negative and significant coefficient, consistent with Masulis et al. (2007) that acquirers with weaker governance obtain worse announcement returns. As before, we continue to find that the average age of the directors on the acquirer board is positively related to acquirer announcement returns, supporting the positive role of director experience in M&As. The Board connectedness variable is insignificant, suggesting that our results are unlikely to be driven by directors holding a large number of board seats in other firms. This variable is important for the robustness of our results for another reason. As we

mentioned previously, Schonlau and Singh (2009) show that firms with boards which are more connected to other firms are more likely to participate in M&As both as an acquirer and as a target, and obtain better performance in the long run after their M&A activity. It is plausible to expect that a firm whose board has many connections to other firms is more likely to have a board connection to the target it acquires. Given that direct board connections between the acquirer and the target continue to matter for acquirer announcement returns after including the Board connectedness variable, our paper suggests that it is the direct board connection between the acquirer and the target which results in higher acquirer announcement returns, rather than how connected the acquirer's board is to other firms.

Firm similarity between the acquirer and the target: Existing work in the M&A literature has established that more focused acquisitions lead to greater acquirer announcement returns (Morck et al., 1990). Given this finding, one potential explanation for our results could be that firms with greater similarity might be more likely to have common directors on their boards. At the same time, M&A deals combining more similar firms would generate superior acquirer performance. To address this possibility, we investigate whether acquirer and target firms exhibit greater similarity in connected transactions than in non-connected transactions. Given that firms in related industries are expected to display greater similarity, first we revisit our earlier observation on the industry classifications of acquirer and target firms in our sample. Acquirer and target firms share the same two-digit SIC code in 62% of the first-degree connected transactions, in 59% of the second-degree connected transactions, and in 70% of the non-connected transactions. Thus, in terms of industry classification, connected transactions are not more likely to combine similar firms from related industries. In our earlier multivariate framework, we already include a variable, Diversifying acquisition, measuring whether the deal combines firms from different or similar industries. In addition to this variable, we add to our multivariate setting a second measure of firm similarity, Corr(Stock return), measuring the stock return correlation between the acquirer and the target in the six-month period ending two months prior to the acquisition announcement (Fama and French, 1992). In Table 4 Regression (4) which includes these two measures of firm similarity, we continue to find that both types of board connections are positively related to acquirer announcement returns.

As another measure of firm similarity, we use the Parrino Industry Homogeneity Index proposed in Parrino (1997) as a proxy of firm homogeneity/similarity in a given two-digit SIC industry. This similarity index measures the correlation between stock returns in a given industry. Regression (5) in Table 4 shows that the effect of board connections on acquirer announcement returns remains positive and significant while Parrino Industry Homogeneity Index turns out to be insignificantly related to acquirer returns. Hence, it is unlikely that our results can be explained by greater similarity between the acquirer and the target in connected transactions.

Previous business relation between the acquirer and the target: One potential explanation for the positive effect of board connections on acquirer performance could be that M&A transactions between connected firms are preceded by a business relation between the acquirer and the target such as strategic alliances and joint ventures, and formation of such business relation is positively correlated with one or both firms gaining a board of director from the partner firm. If the two firms in such a relation end up merging subsequently, such transactions could be expected to generate better performance due to the previous business relation between the two firms. In other words, the existence of previous strategic alliances between the acquirer and the target may be driving board connections as well as better merger performance. Consistent with this view, Higgins and Rodriguez (2006) find that acquisitions in the pharmaceutical industry generate better announcement returns for acquirers if they are preceded by a strategic alliance activity between the acquirer and the target.

To understand whether our results are driven by a previous business relation between the acquirer and the target, we add additional control variables into our specification. In Table 4 Regression (6), we include a Previous business relation indicator variable that takes on the value of one if there exists any kind of alliance and joint venture activity between the acquirer and the target in the three years prior to the acquisition announcement, and zero otherwise. We obtain our alliance and joint venture data from the SDC Joint Ventures/Alliances database. The second variable we include in Table 4 Regression (6) is the acquirer's toehold in the target prior to the acquisition announcement given the possibility that previous business relations might involve an equity investment by the acquirer in the target. We create a Toehold

indicator variable that takes on the value of one if the acquirer has an equity stake in the target before the deal announcement, and zero otherwise. Note that in only 2.6% of our M&A sample, the acquirer possesses a toehold in the target prior to launching a bid. Regression (6) shows that including the two new control variables does not change our main results, and both types of board connections remain positively related to acquirer returns. In addition, neither the Previous business relation variable nor the Toehold variable is significantly related to acquirer announcement returns.[10]

Geographic proximity between the acquirer and the target: Kedia et al. (2008) find that acquirer announcement returns in local transactions are higher than those in non-local transactions, where a local transaction is defined as having the acquirer and the target's headquarters located within 100km of each other. If geographically closer firms are more likely to share common directors, our results regarding higher acquirer returns could be driven by the greater geographic proximity of the acquirer and the target in connected transactions. To evaluate this possibility, we add geographic proximity variables into our regression. We obtain data on the city and the state of acquirer and target firms from the SDC, and match this data from the US Census Bureau Gazette to get the latitude and the longitude for each acquirer and target firm. The geographic distance between each acquirer and target firm's headquarters is then calculated using the Great Circle Distance Formula.[11] In Table 4 Regression (7) we include the same Local deal variable as in Kedia et al. (2008) and find that both types of board connections continue to have a positive and significant effect on ACARs. The Local deal variable enters positively but not significantly.

Acquirer acquisition experience: One possible explanation for the positive relation between board connections and acquirer returns could be that firms which are more frequent and experienced acquirers may gain more connected directors on their boards as an outcome of their past acquisitions. At the same

[10] As an alternative control for the existence of toeholds, we follow Bates, Lemmon, and Linck (2006) and classify deals into "minority toehold bids" where acquirers hold non-controlling equity toeholds in the target and "no-toehold bids" where acquirers hold no pre-bid equity stake in the target. Our results remain robust when we exclude deals with minority toeholds and re-run our analysis for those deals with no-toehold bids.

[11] $D(a,b) = \arccos\left[\cos(a_1)\cos(a_2)\cos(b_1)\cos(b_2) + \cos(a_1)\sin(a_2)\cos(b_1)\sin(b_2) + \sin(a_1)\sin(b_1)\right] * r$, where a_1 and b_1 (a_2 and b_2) are the latitudes (longitudes) of the two points (in radians), respectively, and r denotes the radius of the earth (approximately 3,963 statutory miles).

time, they may also be less likely to undertake value-destroying deals due to their acquisition experience. Supportive of this conjecture, Jaffe, Pedersen, and Voetmann (2009) find that there is persistence in the performance of corporate acquirers when successive deals take place under the same CEO. Hence, we proceed to check whether it is the past acquisition experience of the acquirer which explains both better performance and the existence of board connections. To evaluate this possibility, in Table 4 Regression (8), we add a new variable, Acquirer pre3YR num of deals, defined as the total number of acquisitions an acquirer has made in the past three years preceding the current acquisition announcement. This variable does not show up significantly, and both first- and second-degree board connection indicators remain significant in explaining ACARs.

Finally, in Table 4 Regression (9), we include all the control variables together from each robustness specification, and continue to find that board connections remain positively related to acquirer announcement returns.

Unobservable firm characteristics: To further control for any other unobservable or omitted acquirer characteristics which could affect both board connections and M&A outcomes, we conduct an analysis with firm fixed effects. This specification will not rule out all remaining omitted variables problems, but it will help control for time-invariant acquirer characteristics. Specifically, we compare the deals in which the acquirer has a board connection to the target with those deals by the same acquirer in which the acquirer has no board connection to the target. Put differently, keeping the identity of the acquirer fixed, we compare the connected and non-connected deals made by the same acquirer. Our sample size reduces significantly to 318 in this specification since we focus only on the deals made by those acquirers which undertake at least one acquisition where they have a board connection to the target.

Table 5 presents our subsample CAR results. Importantly, our key result on the positive relation between board connections and acquirer announcement returns continues to hold. Acquirers we consider in this subsample obtain greater announcement returns from those acquisitions where they have a connection to the target, compared to the acquisitions where they have no connection to the target. This result implies that it is the board connection between the acquirer and the target which leads to higher

acquirer returns as opposed to some unobservable characteristics of the connected acquirers. We also run the same baseline regression as in Table 4 Regression (1) using the subsample of acquisitions made by connected acquirers. In untabulated results, we continue to find both first- and second-degree board connections remain positively related to acquirer announcement returns, although the significance levels are only 17% and 9% because of the considerably reduced sample size.[12]

Having established the robustness of our finding that acquirers obtain greater announcement returns in the presence of both first- and second-degree board connections, in the following sections we proceed to gain insights into the economic mechanisms driving these greater announcement returns.

5. What explains superior acquirer performance in transactions with a board connection?

Superior acquirer performance in connected acquisitions could be a reflection of the acquirer's ability to buy the target at a lower price due to the connected director's more informed position. It is also possible that acquirers obtain better announcement returns in connected acquisitions because board connections facilitate communication between the acquirer and the target, and lead to a better M&A deal with greater profitability. In addition, superior acquirer returns in connected deals could be due to lower transaction costs of undertaking such deals if board connections help reduce the need for investment banks in initiating, pricing, and structuring the deal. To investigate these conjectures, we first explore the relation between board connections and takeover premiums. Second, we examine whether board connections are associated with greater profitability. In doing so, we employ two commonly used measures of M&A profitability—combined announcement returns obtained by acquirer and target shareholders and the long-run operating performance of the new firm after deal completion. Third, we

[12] Although we have investigated whether our results might be driven by omission of some important factors that determine both the dependent variable (i.e., M&A performance) and the independent variable (i.e., board connections), we admit that our tests cannot provide a perfect control for the possibility of endogeneity. A more rigorous treatment of endogeneity would be possible by developing and estimating a structural model of the relation between M&A performance and board connections. See Coles, Lemmon, and Meschke (2007), Lemmon, Roberts, and Zender (2008), and Wintoki, Linck, and Netter (2010) for applying structural models and dynamic panel estimation methodology to better deal with endogeneity concerns in corporate finance.

study financial advisory services and investment banking fees to see whether connected deals have lower transaction costs.

5.1. Board connections and takeover premiums

As we discuss in Section 2.1, one possible economic mechanism driving superior acquirer performance in connected transactions could be that acquirers with a board connection to the target have an information advantage about the true value of the target and this advantage allows them to acquire the target at a lower price or to avoid overpaying for the target, one of the most commonly referred to reasons why acquirers lose in M&A transactions. To the extent that the information advantage is greater in first-degree connections, the ability to acquire the target at a lower price would be higher in first-degree connections than in second-degree connections. To examine this conjecture, we investigate the relation between board connections and takeover premiums. We calculate the takeover premium measure PREM following the procedure suggested in Officer (2003), given the concerns regarding the use of takeover premiums provided by SDC.[13] The mean takeover premiums are 55.8% and 61.5% in first- and second-degree connected transactions, respectively, while in non-connected transactions the mean takeover premium is 63.3%.

Using PREM as the dependent variable and our earlier key independent variables, First-degree connection and Second-degree connection, Regression (1) in Table 6 presents the results on the relation between board connections and takeover premiums after controlling for the same firm and deal characteristics as in the ACAR baseline regression. We find that first-degree connections are negatively and significantly related to the level of takeover premiums. A first-degree board connection is associated with a 14.4 percentage points reduction in takeover premiums paid by acquirers, relative to the mean takeover premium of 63.3% in the non-connected transaction sample. Hence, lower takeover premiums observed in first-degree connected transactions provide an explanation for higher acquirer announcement

[13] Officer (2003) notes that SDC provides several different data sources for takeover premiums, and different data definitions often give inconsistent premium estimates. To mitigate this problem, we follow the approach provided in this paper and calculate a "combined premium estimate" which integrates the different data sources for premium calculation given in SDC. See the Appendix for more details on the definition of this variable.

returns in such transactions. Second-degree board connections, however, are not significantly related to takeover premiums.

The ability and the incentive to acquire the target at a lower premium could be greater if the connected director is an executive at the acquirer firm. On the other hand, if the connected director is an executive at the target, his incentives and ability to bargain for a higher premium could be greater. A director is classified as an executive director if he is a CEO, president, chairman, vice-chairman, or holding other senior executive positions in the company. We define an indicator variable, Executive at acquirer, which takes on the value of one if the connected director is an executive at the acquirer, and zero otherwise. The indicator variable Executive at target is defined similarly. To check whether executive directors have a stronger impact on acquisition premiums, in Table 6 Regression (2) we include four interaction terms of first- and second-degree board connections and executive indicator variables. We find that the coefficient on First-degree connection * Executive at acquirer is negative and significant at the 5% level. This result is consistent with the notion that the connected directors who are executives at the acquirer have greater incentives to implement deals at a more favorable price from the perspective of the acquirer. We do not observe a similar effect for executive directors at the target in terms of obtaining a higher premium. This could be due to the fact that these directors may not have a strong bargaining position in the negotiations given that their firm exhibits poor performance before the deal. It is also interesting to note that we do not find a significant role for second-degree connections involving executive directors. In such deals, although the connected executive director at the acquirer would have the same incentive to bargain for a lower premium, his access to inside information about the target is likely to be smaller, relative to first-degree connections, given that he does not directly serve on the target's board. In addition, his ability to buy the target at a lower premium would be lower since the connected director at the target represents only target firm shareholders.

The results on the relation between board connections and takeover premiums suggest that the economic driver of superior acquirer performance in first-degree connections appears to be the ability to buy the target firm at a lower premium. This interpretation, however, raises an important question. Why

would target shareholders agree to a lower takeover premium? First, it is important to note that although TCARs are lower in the presence of a first-degree connection, target shareholders in such transactions still obtain sizeable returns at the acquisition announcement. The mean five-day TCAR in first-degree connected transactions is 18.72%, significantly different from zero at the 1% level. Second, recall our earlier summary statistics from Table 2 that target firms in deals with a first-degree connection exhibit weaker financial and operational profiles. Specifically, they have lower profitability measured by ROA, lower operating cash flow, and exhibit weaker industry-adjusted stock return performance before the acquisition announcement. Given their weaker financial and operational profile, their ability to negotiate a higher price or generate outside offers from other bidders might be limited. Third, from Table 2 we observe that the number of competing bids is significantly lower in first-degree connections. This observation is consistent with the notion that the presence of an informed bidder in first-degree connections may deter competition from less-informed outside bidders. Lower competition, in turn, may allow the connected acquirer to purchase the target at a lower premium, and limit his exposure to winner's curse and overpayment. This argument follows directly from the main prediction of the winner's curse theories in that the incidence and magnitude of winner's curse are positively related to the number of bidders. To examine this conjecture, we include a new interaction variable of First-degree connection and Number of competing bids in our multivariate framework. Regression (3) in Table 6 shows that this interaction variable is positively related to takeover premiums, suggesting that acquirers have a greater ability to pay a lower premium in first-degree connections when there is lower competition from outside bidders. When we include a similar interaction variable for deals with a second-degree connection, we find that it is insignificant.

Given our result that first-degree connections are negatively related to takeover premiums, it is natural to investigate whether they are significantly related to announcement returns experienced by target shareholders. In Regression (1) in Table 7, we analyze target announcement returns using a multivariate framework where the dependent variable is the five-day TCAR. The key independent variables are the

same indicator variables, First-degree connection and Second-degree connection, as in the previous section. We also include the same set of control variables as in the baseline ACAR regression.

Table 7 Regression (1) shows that first-degree connections are negatively related to TCARs while second-degree connections have no significant relation with target announcement returns. This is consistent with our earlier result regarding takeover premiums in first-degree connections. A first-degree board connection is associated with a 4.8 percentage points reduction in the five-day target announcement returns, relative to the sample mean TCAR of 21.24% in non-connected transactions. However, it is worth mentioning again that target shareholders still obtain a sizeable abnormal return at the announcement and experience significant value creation.

In order to understand whether first-degree connections have a similar effect on the allocation of the surplus created at the deal announcement between the acquirer and the target, we proceed with the analysis of abnormal dollar returns. Following the method used in Malatesta (1983) and Bates et al. (2006), we calculate cumulative abnormal dollar returns over the five-day window around the deal announcement by multiplying cumulative abnormal returns by the firm's market value of equity 50 trading days prior to the acquisition announcement. One can measure the target's share of surplus from a deal by calculating the percentage of the total dollar returns contributed by the target. However, this method would lead to biased results since it is possible to have negative dollar returns for either or both firms. Ahern (2010) proposes a methodology to avoid misleading results when dollar returns are negative.[14] Hence, we follow the procedure in Ahern (2010) and calculate the surplus obtained by the target as the difference in dollar gains between the target and the acquirer divided by the sum of the acquirer's and the target's market value of equity 50 trading days prior to the announcement date. More specifically, we define

$$\Delta\$TCAR = \frac{Target\ MVE * TCAR - Acquirer\ MVE * ACAR}{Acquirer\ MVE + Target\ MVE} \qquad (1)$$

[14] Consider the example presented in Ahern (2010) where the target dollar gain is \$100, and the acquirer dollar gain is -\$99. This leads to a misleading conclusion that the target's percentage of the overall surplus would be \$100/\$1 = 10,000%.

as a measure of the relative gain of the target versus the acquirer for each dollar value of total market value. This procedure eliminates the worry that the total gains may be negative.

After calculating the relative gain of the target from the deal, in Regression (2) in Table 7 we investigate the relation between $\Delta\$TCAR$ and board connections in a multivariate framework. As in the case of target announcement returns, we find that first-degree connections are negatively related to the relative gain of the target versus the acquirer from the deal. This result provides further support for the view that first-degree connections help acquirers pay a lower price for the target and keep a larger share of surplus created at the deal announcement.

5.2. Board connections and deal profitability

In order to see whether superior acquirer performance in connected acquisitions originates from the positive effect of board connections on deal profitability, we proceed with the analysis of combined announcement returns as a measure of value creation from the deal around the announcement date. Our dependent variable in this multivariate analysis is the five-day PCAR, and the key independent variables are First-degree connection and Second-degree connection. We include the same set of control variables as in the ACAR and TCAR regressions.

Table 8 Regression (1) shows that the PCARs are positively related to the Second-degree connection variable, suggesting that deals with a second-degree connection are associated with greater value creation at the deal announcement. A second-degree board connection translates into a 1.98 percentage points increase in the five-day combined announcement returns, relative to the sample mean five-day PCAR of 0.97% in non-connected transactions. Although the coefficient of the first-degree board connection variable is positive, it is not significant. The effect of board connections on deal profitability could be greater if the connected directors are executives at either firm. Hence, one may expect to see an even stronger effect of board connections on PCARs when the connected directors are executives. To examine this conjecture, we define an indicator variable, Executive, which takes the value of one if the connected director is an executive at either the acquirer or the target, and zero otherwise. In Table 8 Regression (2) we include the interaction term between First-degree connection and Executive, as well as

Second-degree connection and Executive, and find that the positive effect of second-degree connections on combined announcement returns is more pronounced when the connected directors are executives at either firm. These results favor the interpretation that greater acquirer announcement returns in deals with a second-degree connection are a reflection of greater profitability inherent in these deals.

As an alternative way to examine whether board connections lead to better M&A performance, we also examine whether board connections have a significant effect on the long-run operating performance of the newly merged firm after the deal completion. We use return on assets ROA as our measure of operating performance. For each fiscal year in the three-year period preceding the deal announcement, we calculate the industry-adjusted ROA of the acquirer and the target by subtracting the median ROA in their industry based on the two-digit SIC codes. Following Healy, Palepu, and Ruback (1992), we construct a portfolio of the acquirer and the target, and calculate the industry-adjusted ROA of the portfolio for a given fiscal year as the weighted average of acquirer's and target's industry-adjusted ROA, where the portfolio weights are calculated using the book values of the acquirer and the target at the beginning of that fiscal year. We use the three-year average of the industry-adjusted ROA as a measure of the pre-merger ROA of the acquirer and the target. We then track each acquisition for three years after the deal completion year, and calculate the three-year average of the combined firm's industry-adjusted ROA as our measure of post-merger ROA. Finally, we calculate the change in operating performance of the combined company ΔROA as the difference between post-merger ROA and pre-merger ROA. We find that the mean ΔROA is 0.015 for first-degree connected transactions, 0.030 for second-degree connected transactions, and 0.004 for non-connected transactions. The difference in ΔROA between second-degree connected transactions and non-connected transactions is significant at the 10% level.

We next analyze the relation between board connections and long-run operating performance of the newly merged firm in a multivariate setting where our dependent variable is ΔROA and the key independent variables are First-degree connection and Second-degree connection. We also include the same set of control variables as in our earlier announcement return regressions. Table 8 Regression (3)

shows that the Second-degree connection variable has a positive and significant coefficient. A second-degree board connection leads to a 1.9 percentage points increase in ΔROA from the sample mean of 0.4% in non-connected transactions. This result is supportive of our earlier finding that transactions with a second-degree connection are associated with greater value creation measured by combined abnormal returns around the announcement date. In Regression (4) of Table 8, we include our earlier interaction variables on board connections and executive directors, and find that the post-deal operating performance in second-degree connected transactions is significantly better when the connected directors are executives. This result mirrors our earlier finding that deal profitability measured in terms of combined announcement returns is greater for second-degree board connections involving executive directors.

5.3. Board connections and transaction costs

Investment banks play an important role in the market for corporate control. They identify potential target firms, propose high synergy deals, facilitate M&A transactions (McLaughlin, 1990, 1992), and provide fairness opinions (Kisgen, Qian, and Song, 2009). If firms in connected transactions have greater information and knowledge about deal profitability and sources of synergy gains, they might have a lower need for investment banks for initiating, pricing, and structuring the deal, leading to the prediction that transaction costs in connected transactions should be lower. Similarly, board connections may have an effect on the use of fairness opinions in M&A deals. Fairness opinions provide third-party assessments regarding the fairness of the transaction price. They could be valuable to executives in establishing a more fair transaction price. They could also be valuable to shareholders in terms of certifying the quality and the fairness of a deal. If board connections provide connected directors with inside information about the deal, the need for third-party assessments could be lower. Finally, deals where there is a board connection between the acquirer and target can be perceived as more compelling and profitable deals by investment banks, and hence may lead them to charge lower fees upon successful completion of the deal.

To examine these conjectures, we obtain investment banking fee data from SDC and use the hand-collected data on fairness opinions from Kisgen et al. (2009).[15] In our sample, an average M&A deal involves one financial advisor for the acquirer and one for the target, 0.35 fairness opinions for the acquirer and 0.74 for the target. The mean level of investment banking fees paid by acquirers is $5.72M in first-degree connected transactions, $10.24M in second-degree connected transactions, and $5.95M in non-connected transactions. Target firms on average pay $5.55M, $11.73M, and $6.71M in first-degree connected transactions, second-degree connected transactions, and non-connected transactions, respectively. Because investment banking fees are usually charged as a percentage of deal value, we also calculate the percentage investment banking fees paid in the deal as the ratio of dollar amount of total investment banking fees to the dollar amount of deal value. We find that acquirers on average pay a percentage investment banking fee of 0.55% in first-degree connected transactions, 0.40% in second-degree connected transactions, and 0.62% in non-connected transactions. A similar pattern emerges for the percentage investment banking fees paid by target firms: the mean percentage fees are 0.77% and 0.64% for first-degree and second-degree connected transactions, respectively, and 0.84% for non-connected transactions.

To understand whether board connections are significantly related to investment banking fees paid in the transaction, we use a multivariate setting where our key independent variables are, as before, the First-degree connection and Second-degree connection indicator variables. The dependent variable is the percentage investment banking fee paid by the acquirer in Table 9 Regression (1), the percentage investment banking fee paid by the target in Regression (2), and the sum of the percentage investment banking fees paid by the acquirer and the target in Regression (3). We also include a number of firm and deal characteristics such as deal size, acquirer size, method of payment, whether the deal is diversifying, whether it is done in the form of a tender offer, and deal attitude. Firms with a greater level of M&A activity in the past may be expected to pay lower investment banking fees because of their repeated

[15] We are grateful to Darren Kisgen, Jun Qian, and Weihong Song for providing us with their hand-collected data on the use of fairness opinions in M&A transactions.

business with investment banks. Hence, we also include in the regressions our earlier variable, Acquirer pre3YR num of deals, which measures the total number of acquisitions an acquirer has made in the last three years, and the corresponding variable Target pre3YR num of deals for target firms.

We find that both acquirer and target firms pay lower investment banking fees in the presence of a first-degree board connection. Regression (1) shows that having a first-degree connection reduces the percentage investment banking fees paid by acquirers by 0.22 percentage points from the sample average of 0.62% in non-connected deals. Target firms also pay lower fees in first-degree connected transactions: the coefficient of the First-degree connection variable in Regression (2) is -0.21 and significant at the 5% level. This implies that a first-degree connection is associated with a 0.21 percentage points reduction in percentage fees paid by the target, relative to the sample mean percentage fee of 0.84% in non-connected transactions. Finally, Regression (3) shows that the total percentage fees paid by the acquirer and the target are significantly lower in the presence of a first-degree connection. Economically, a first-degree connection leads to a 0.64 percentage points reduction in percentage investment banking fees from the sample mean of 1.34% in non-connected acquisitions, reducing total percentage fees almost by half. These results support the interpretation that directors in the first-degree connections have an information advantage regarding the underlying value of the target, leading to a lower need for the advisory role of investment banks in initiating and pricing the deal.

Taken together, our analyses of takeover premiums, deal profitability, and transaction fees suggest that first- and second-degree board connections have different implications for an M&A transaction. Although a priori one may expect that first-degree connections should be associated with higher profitability than second-deal connections, it appears from our analysis that the information and communication facilitating role of first-degree connections provides acquirers with an opportunity to acquire underperforming firms at an attractive price. In other words, they enjoy an information and negotiation advantage through their connections to target firms at the right time when target firms exhibit performance issues and have a limited ability to generate bids from less-informed outside bidders. The communication advantage provided in second-degree connections, on the other hand, leads to better

M&A deals with greater value creation. This is perhaps not too surprising given that in such deals, each firm's shareholders are represented by separate directors. Hence, it is plausible that the two directors acting independently on behalf of their own shareholders would undertake the deal only if the deal is promising in terms of its overall value-creation potential. In addition, the combined knowledge of two separate directors in second-degree connections may dominate the more direct nature of first-degree connections in driving greater profitability from the deal. In first-degree connections, on the other hand, one director represents both acquirer and target firm shareholders. This may create a conflict of interest situation and affect the connected director's incentives to implement the deal at more favorable terms from the perspective of acquirer firm shareholders, especially when he is an executive director at the acquirer. Nevertheless, deals with a first-degree connection are still value-creating deals in terms of combined announcement returns experienced by acquirer and target shareholders, given that the average combined announcement return in first-degree connected transactions is 2.24% and significantly different from zero at the 5% level.

6. Conclusions

This paper examines M&A transactions with a board connection between acquirer and target firms and presents evidence that acquirers obtain significantly higher announcement returns in such transactions. We study two types of board connections between acquirer and target firms. In first-degree connections, the acquirer and the target share a common director before the deal announcement. In second-degree connections, one director from the acquirer and one director from the target serve on the board of a third firm before the deal announcement.

Our results suggest that first-degree connections benefit acquirers by providing them with an information advantage about the true value of the target firm, limiting competition from outside less-informed bidders, and allowing them to acquire underperforming firms at an attractive price. In addition, advisory fees paid to investment banks are significantly lower in the presence of a first-degree connection. Second-degree connections, on the other hand, appear to facilitate efficient deal-making as evidenced by

greater overall value creation experienced by acquirer and target shareholders at the deal announcement, and better operating performance of the combined firm after the deal completion. The differences in how first- and second-degree connections affect M&A outcomes can be explained by the fact that in first-degree connections, one director represents both acquirer and target firm shareholders, while second-degree connections involve two directors separately representing acquirer and target firm shareholders, with less scope for conflict of interest. Overall, we conclude that professional board connections play an important role in corporate investment policy with significant implications for value creation.

Appendix. Variable definitions

Variables	Definitions	Data source
Panel A: Measures of acquisition performance		
ACAR	Cumulative abnormal percentage return for the acquirer using the market model estimated using the return data of 200 trading days ending two months before the announcement date.	CRSP
TCAR	Cumulative abnormal percentage return for the target using the market model estimated using the return data of 200 trading days ending two months before the announcement date.	CRSP
PCAR	Cumulative abnormal percentage return for a value-weighted portfolio of the acquirer and the target using the market model estimated using the return data of 200 trading days ending two months before the announcement date. The weights are based on the market capitalizations of the acquirer and the target at two months prior to the announcement date. The target's weight is adjusted for the acquirer's toehold.	CRSP
PREM	We follow Officer (2003) and calculate a combined premium (PREM). We first calculate a premium measure (PREM1) based on SDC component data, which is the total value of compensation paid to target shareholders divided by target's market value of equity 43 trading days prior to the acquisition announcement less one. Our second premium measure (PREM2) is based on SDC price data, which equals the initial offer price (or the final offer price if the initial offer price is missing) divided by target's share price 43 trading days prior to the announcement less one. Our combined premium measure (PREM) equals to PREM1 if PREM1 is between 0 and 2, if not, equals to PREM2 if PREM2 is between 0 and 2. Otherwise the combined premium is left as a missing observation.	SDC/CRSP
ΔROA	Change in industry-adjusted ROA from three years prior to the deal announcement to three years after deal completion.	Compustat
Panel B: Firm and deal characteristics		
Firm size	Natural logarithm of market value of equity in millions calculated as the number of shares outstanding multiplied by the stock price at two months prior to deal announcement.	CRSP
Tobin's *Q*	Market value of assets over book value of assets.	Compustat
Leverage	Book value of debt over book value of assets.	Compustat
ROA	Operating income before depreciation, scaled by book value of assets.	Compustat
OCF	Sales minus the cost of goods sold, sales and general administration expenses, and working capital change, scaled by book value of assets.	Compustat
Prior ind-adjusted returns	Industry-adjusted returns during the six-month period prior to deal announcement.	CRSP
Stock price run-up	Buy-and-hold abnormal return (BHAR) during the 200 trading days ending two months before the announcement date with CRSP value-weighted return as the market index.	CRSP
D&O ownership	Percentage of equity ownership held by directors and officers.	Compact Disclosure/ SEC
Stock deal	Indicator variable: one for deals financed partially or fully with stock, zero otherwise.	SDC

Diversifying acquisition	Indicator variable: one if acquirer and target do not share the same 2-digit SIC code, zero otherwise.	SDC
Relative deal size	Deal value divided by acquirer's market value of equity.	SDC/CRSP
Tender offer	Indicator variable: one for tender offers, zero otherwise.	SDC
Hostile	Indicator variable: one if the bid is hostile, zero otherwise.	SDC
Number of bidders	Total number of bids received by the target.	SDC
Merger of equals	Indicator variable: one if the deal is a merger of equals, zero otherwise.	SDC
Director age	Average age of board of directors.	RiskMetrics
Director tenure	Average number of years a director has been appointed to the board.	RiskMetrics
GIM index	Governance index based on 24 antitakeover provisions.	RiskMetrics
Board size	Natural logarithm of total number of directors on board.	RiskMetrics
Board independence	Percentage of independent directors on board.	RiskMetrics
Board connectedness	Percentage of directors holding three or more directorships.	RiskMetrics
Corr(Stock return)	Correlation of stock returns between acquirer and target firms in the six-month period ending at one month prior to acquisition announcement.	CRSP
Parrino Industry Homogeneity Index	Correlation between common stock returns within two-digit SIC industries as in Parrino (1997).	CRSP
Previous business relation	Indicator variable: one if there are strategic alliances or joint ventures between acquirers and targets in the three years prior to the announcement, zero otherwise.	SDC
Toehold	Indicator variable: one if the acquirer owns a non-zero percentage of target's stock prior to announcement date, zero otherwise.	SDC
Local deal	Indicator variable: one if the acquirer's headquarter is located within 100km of the target's headquarters, zero otherwise.	Compustat
Pre3YR num of deals	Total number of acquisitions a firm has made in the past three years preceding the current acquisition announcement.	SDC

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Table 1
Sample distribution

This table presents the sample distribution of 1,664 completed US mergers and acquisitions between 1996 and 2008. Panels A and B present the number of M&A transactions by announcement year and by acquirer industry classification, respectively. Both the acquirer and the target are public firms with complete CRSP and Compustat information, and have proxy statements on EDGAR or have available director data in the RiskMetrics database in the year immediately prior to the deal announcement. Numbers for the full sample are presented first, followed by three subsamples based on the presence and the degree of board connections. First-degree connected transactions are the deals where the acquirer and the target share at least one common director. Second-degree connected transactions are the deals where at least one director from the acquirer and one director from the target sit together on the board of a third firm. The rest of the deals are classified as non-connected transactions.

Panel A: By announcement year

Year	Full sample	First-degree connected transactions		Second-degree connected transactions		Non-connected transactions	
		Number	Percentage	Number	Percentage	Number	Percentage
1996	66	1	1.5%	4	4.4%	61	4.0%
1997	167	10	15.4%	14	15.4%	143	9.5%
1998	229	7	10.8%	12	13.2%	210	13.9%
1999	226	10	15.4%	16	17.6%	200	13.3%
2000	181	11	16.9%	8	8.8%	162	10.7%
2001	147	9	13.8%	5	5.5%	133	8.8%
2002	57	4	6.2%	3	3.3%	50	3.3%
2003	117	3	4.6%	2	2.2%	112	7.4%
2004	117	1	1.5%	1	1.1%	115	7.6%
2005	110	3	4.6%	5	5.5%	102	6.8%
2006	119	3	4.6%	6	6.6%	110	7.3%
2007	104	3	4.6%	12	13.2%	89	5.9%
2008	24	0	0.0%	3	3.3%	21	1.4%
Total	1,664	65	100.0%	91	100.0%	1,508	100.0%

Panel B: By acquirer industry

12 Fama-French industry classifications	Full sample	First-degree connected transactions		Second-degree connected transactions		Non-connected transactions	
		Number	Percentage	Number	Percentage	Number	Percentage
Consumer nondurables	54	3	4.6%	3	3.3%	48	3.2%
Consumer durables	22	0	0.0%	3	3.3%	19	1.3%
Manufacturing	113	4	6.2%	7	7.7%	102	6.8%
Energy	61	4	6.2%	5	5.5%	52	3.4%
Chemical products	30	1	1.5%	5	5.5%	24	1.6%
Business equipment	399	20	30.8%	14	15.4%	365	24.2%
Telecom	63	1	1.5%	2	2.2%	60	4.0%
Utilities	43	2	3.1%	4	4.4%	37	2.5%
Wholesale and retail	91	4	6.2%	3	3.3%	84	5.6%
Healthcare	144	8	12.3%	11	12.1%	125	8.3%
Finance	516	15	23.1%	26	28.6%	475	31.5%
Other	128	3	4.6%	8	8.8%	117	7.8%
Total	1,664	65	100.0%	91	100.0%	1,508	100.0%

Table 2
Summary statistics

This table presents the mean summary statistics of 1,664 completed US mergers and acquisitions between 1996 and 2008. Both the acquirer and the target are public firms with complete CRSP and Compustat information, and have proxy statements on EDGAR or have available director data in the RiskMetrics database in the year immediately prior to the deal announcement. Full sample means are displayed first, followed by means of three subsamples based on the presence and the degree of board connections. First-degree connected transactions are the deals where the acquirer and the target share at least one common director. Second-degree connected transactions are the deals where at least one director from the acquirer and one director from the target sit together on the board of a third firm. The rest of the deals are classified as non-connected transactions. The remaining variable definitions are in the Appendix. ***, **, and * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

	(1) Full sample	(2) First-degree connected transactions	(3) Second-degree connected transactions	(4) Non-connected transactions	(2)–(4)	(3)–(4)
No. of observations	1,664	65	91	1,508		
Acquirer characteristics						
Firm size	7.65	7.00	8.47	7.63	-0.63**	0.84***
Tobin's *Q*	2.15	2.45	2.22	2.14	0.31	0.08
Leverage	0.21	0.23	0.24	0.21	0.02	0.03*
ROA	0.10	0.09	0.11	0.09	0.00	0.01
OCF	0.10	0.09	0.11	0.10	0.00	0.01
Prior ind-adjusted returns	0.05	0.04	0.03	0.05	0.00	-0.02
Target characteristics						
Firm size	5.58	5.14	6.62	5.53	-0.39**	1.08***
Tobin's *Q*	1.86	1.88	2.03	1.85	0.03	0.19
Leverage	0.20	0.21	0.25	0.20	0.01	0.05**
ROA	0.06	0.02	0.09	0.06	-0.04*	0.03*
OCF	0.06	0.02	0.09	0.06	-0.04*	0.03*
Prior ind-adjusted returns	0.01	-0.07	-0.01	0.01	-0.09*	-0.02
Deal characteristics						
Stock deal	0.69	0.68	0.69	0.69	-0.01	0.00
Diversifying acquisition	0.31	0.38	0.41	0.30	0.08	0.10*
Relative deal size	0.42	0.38	0.46	0.42	-0.04	0.04
Tender offer	0.14	0.15	0.18	0.13	0.02	0.04
Hostile	0.01	0.00	0.01	0.01	-0.01	0.00
Number of bidders	1.05	1.02	1.05	1.05	-0.03*	0.01
Merger of equals	0.02	0.00	0.03	0.02	-0.02***	0.01

Table 3

Univariate CAR comparisons

This table presents the mean and median acquirer announcement returns (ACAR), target announcement returns (TCAR), and combined portfolio announcement returns (PCAR) over the five-day event window around the deal announcement date for the sample of 1,664 completed US mergers and acquisitions between 1996 and 2008. Column 1 reports full sample CARs, and columns 2, 3, and 4 report the mean and median for three subsamples based on the presence and the degree of board connections. First-degree connected transactions are the deals where the acquirer and the target share at least one common director. Second-degree connected transactions are the deals where at least one director from the acquirer and one director from the target sit together on the board of a third firm. The rest of the deals are classified as non-connected transactions. The last two columns report the mean and median differences in CARs between the first-degree connected transactions and the non-connected transactions, and the second-degree connected transactions and non-connected transactions, respectively. The remaining variable definitions are in the Appendix. ***, **, and * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

Event window [-2,+2]	(1) Full sample		(2) First-degree connected transactions		(3) Second-degree connected transactions		(4) Non-connected transactions		(2)–(4)		(3)–(4)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ACAR	-2.14***	-1.58***	0.12	-0.39	-0.65	-0.42	-2.33***	-1.64***	2.45**	1.26**	1.67**	1.22**
TCAR	21.23***	18.22***	18.72***	17.12***	22.82***	21.51***	21.24***	18.17***	-2.52	-1.06	1.58	3.34
PCAR	1.12***	0.75***	2.24**	1.58**	2.81***	2.17***	0.97***	0.67***	1.27	0.91	1.84**	1.50***

Table 4

Determinants of acquirer CARs

This table presents ordinary least squares (OLS) regressions for the sample of 1,664 completed US mergers and acquisitions between 1996 and 2008. The dependent variable is ACAR, the cumulative abnormal returns of the acquirers from two days before to two days after the deal announcement. First-degree connection is an indicator variable which takes on the value of one if the acquirer and the target share at least one common director, and zero otherwise. Second-degree connection is an indicator variable which takes on the value of one if at least one director from the acquirer and one director from the target sit together on the board of a third firm, and zero otherwise. The remaining variable definitions are in the Appendix. All regressions control for calendar-year fixed effects and 12 Fama-French industry fixed effects whose coefficients are suppressed for brevity. *t*-Statistics based on standard errors adjusted for heteroskedasticity (White, 1980) and firm clustering are reported in parentheses. ***, **, and * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
First-degree connection	2.401**	2.348*	2.347*	2.497**	2.419**	2.623**	2.304*	2.369*	2.583**
	(1.970)	(1.955)	(1.908)	(2.040)	(1.984)	(2.008)	(1.908)	(1.940)	(2.026)
Second-degree connection	1.842**	1.344*	1.393*	1.850***	1.860***	1.826**	1.802**	1.825**	1.351*
	(2.580)	(1.863)	(1.938)	(2.588)	(2.603)	(2.536)	(2.502)	(2.571)	(1.851)
Acquirer size	-0.227*	-0.266*	-0.192	-0.149	-0.225*	-0.232*	-0.218*	-0.184	-0.057
	(-1.731)	(-1.653)	(-1.003)	(-0.996)	(-1.718)	(-1.761)	(-1.655)	(-1.381)	(-0.284)
Stock deal	-2.694***	-2.158***	-2.145***	-2.605***	-2.702***	-2.726***	-2.714***	-2.695***	-2.082***
	(-5.896)	(-4.378)	(-4.318)	(-5.692)	(-5.904)	(-5.950)	(-5.940)	(-5.893)	(-4.159)
Diversifying acquisition	0.399	0.222	0.252	0.358		0.398	0.403	0.411	0.167
	(0.931)	(0.496)	(0.556)	(0.837)		(0.930)	(0.940)	(0.960)	(0.372)
Relative deal size	-1.487***	-2.614***	-2.633***	-1.339**	-1.501***	-1.497***	-1.498***	-1.471**	-2.411***
	(-2.607)	(-3.968)	(-4.017)	(-2.221)	(-2.627)	(-2.630)	(-2.625)	(-2.577)	(-3.463)
Tender offer	0.932	0.748	0.787	0.912	0.944	0.970*	0.950	0.915	0.828
	(1.612)	(1.253)	(1.321)	(1.575)	(1.632)	(1.681)	(1.640)	(1.583)	(1.383)
Hostile	-0.484	0.578	0.755	-0.237	-0.465	-0.432	-0.494	-0.463	1.072
	(-0.336)	(0.470)	(0.594)	(-0.162)	(-0.323)	(-0.301)	(-0.341)	(-0.329)	(0.833)
Acquirer Tobin's *Q*	-0.339	-0.412*	-0.428*	-0.336	-0.341	-0.338	-0.345*	-0.347*	-0.436*
	(-1.630)	(-1.818)	(-1.845)	(-1.614)	(-1.638)	(-1.620)	(-1.660)	(-1.669)	(-1.865)
Acquirer leverage	1.518	-0.593	-0.486	1.575	1.526	1.495	1.561	1.660	-0.279
	(1.068)	(-0.363)	(-0.295)	(1.106)	(1.074)	(1.052)	(1.102)	(1.167)	(-0.169)
Acquirer OCF	6.586***	5.045	4.986	6.473**	6.573***	6.499**	6.617***	6.475**	4.497
	(2.602)	(1.483)	(1.460)	(2.548)	(2.595)	(2.564)	(2.617)	(2.553)	(1.313)
Acquirer stock price run-up	-3.232***	-2.068**	-2.136**	-3.242***	-3.225***	-3.241***	-3.206***	-3.255***	-2.131**
	(-3.791)	(-2.069)	(-2.141)	(-3.795)	(-3.782)	(-3.776)	(-3.772)	(-3.817)	(-2.121)
Acquirer D&O ownership	0.015	0.045*	0.040	0.015	0.015	0.016	0.016	0.016	0.039
	(0.808)	(1.881)	(1.545)	(0.777)	(0.817)	(0.849)	(0.831)	(0.832)	(1.496)
Target Tobin's *Q*	-0.093	-0.032	-0.035	-0.096	-0.092	-0.091	-0.092	-0.095	-0.040
	(-0.459)	(-0.148)	(-0.164)	(-0.472)	(-0.457)	(-0.450)	(-0.456)	(-0.469)	(-0.182)

Target leverage	-0.572	0.561	0.517	-0.638	-0.584	-0.544	-0.547	-0.633	0.401
	(-0.488)	(0.452)	(0.416)	(-0.538)	(-0.499)	(-0.464)	(-0.466)	(-0.540)	(0.319)
Target OCF	-5.112***	-3.042	-2.963	-4.999**	-5.063***	-5.002***	-5.123***	-5.108***	-2.596
	(-2.640)	(-1.380)	(-1.344)	(-2.559)	(-2.620)	(-2.584)	(-2.646)	(-2.633)	(-1.154)
Target stock price run-up	0.583	0.144	0.183	0.530	0.575	0.579	0.584	0.604	0.099
	(0.841)	(0.182)	(0.230)	(0.764)	(0.829)	(0.833)	(0.842)	(0.867)	(0.124)
Target D&O ownership	-0.000	-0.001	-0.001	-0.000	-0.000	-0.000	-0.000	-0.000	-0.001
	(-0.126)	(-0.666)	(-0.584)	(-0.112)	(-0.137)	(-0.133)	(-0.100)	(-0.116)	(-0.539)
Acquirer director age		0.135**	0.144**						0.146**
		(1.971)	(2.065)						(2.092)
Acquirer director tenure		-0.007	-0.013						-0.020
		(-0.105)	(-0.193)						(-0.298)
Acquirer GIM index			-0.125*						-0.129*
			(-1.662)						(-1.713)
Acquirer board size			-0.396						-0.362
			(-0.506)						(-0.459)
Acquirer board independence			0.426						0.377
			(0.318)						(0.280)
Acquirer board connectedness			-1.069						-0.898
			(-0.854)						(-0.714)
Corr(Stock return)				-1.407					-1.896
				(-1.187)					(-1.554)
Parrino Industry Homogeneity Index					-0.228				
					(-0.481)				
Previous business relation						2.162			1.809
						(1.385)			(1.311)
Toehold						-0.988			-0.867
						(-1.075)			(-0.806)
Local deal							0.392		0.396
							(0.860)		(0.770)
Acquirer pre3YR num of deals								-0.077	-0.088
								(-1.079)	(-1.229)
Constant	3.453*	-4.470	-3.564	2.911	3.708*	3.427*	3.311*	3.276*	-4.569
	(1.876)	(-0.983)	(-0.737)	(1.530)	(1.895)	(1.865)	(1.787)	(1.793)	(-0.940)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,664	1,223	1,223	1,664	1,664	1,664	1,664	1,664	1,223
Adj. R^2	0.110	0.108	0.108	0.110	0.109	0.110	0.109	0.110	0.108

Table 5
CARs of connected acquirers

This table presents the mean subsample acquirer returns (ACAR), target announcement returns (TCAR), and combined portfolio announcement returns (PCAR) over the five-day event window around the deal announcement date. This subsample contains 318 acquisitions of those acquirers who have a board connection to the target in at least one of the acquisitions they undertake. Column 1 reports the full sample CARs, and columns 2, 3, and 4 report the mean CARs for three subsamples based on the presence and the degree of board connections. First-degree connected transactions are the deals where the acquirer and the target share at least one common director. Second-degree connected transactions are the deals where at least one director from the acquirer and one director from the target sit together on the board of a third firm. The rest of the deals are classified as non-connected transactions. The last two columns report the difference in the CARs between the first-degree connected transactions and the non-connected transactions, and the second-degree connected transactions and the non-connected transactions, respectively. The remaining variable definitions are in the Appendix. ***, **, and * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

Event window [-2,+2]	(1) Full sample	(2) First-degree connected transactions	(3) Second-degree connected transactions	(4) Non-connected transactions	(2)–(4)	(3)–(4)
N	318	65	91	162		
ACAR	-1.48***	0.12	-0.65	-2.58***	2.70**	1.92**
TCAR	20.62***	18.72***	22.82***	20.14***	-1.42	2.68
PCAR	1.01**	2.24**	2.81***	-0.50	2.74**	3.31***

Table 6
Determinants of takeover premiums

This table presents OLS regressions for the sample of 1,572 completed US mergers and acquisitions between 1996 and 2008. The dependent variable is the takeover premium calculated using the same methodology as in Officer (2003). First-degree connection is an indicator variable which takes on the value of one if the acquirer and the target share at least one common director, and zero otherwise. Second-degree connection is an indicator variable which takes on the value of one if at least one director from the acquirer and one director from the target sit together on the board of a third firm, and zero otherwise. The remaining variable definitions are in the Appendix. All regressions control for calendar-year fixed effects and 12 Fama-French industry fixed effects whose coefficients are suppressed for brevity. *t*-Statistics based on standard errors adjusted for heteroskedasticity (White, 1980) and firm clustering are reported in parentheses. ***, **, and * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)
First-degree connection	-14.403***	5.554	-74.470***
	(-2.719)	(0.517)	(-5.989)
Second-degree connection	-4.087	-2.294	14.717
	(-0.912)	(-0.457)	(0.890)
First-degree connection * Executive at acquirer		-21.827**	
		(-2.055)	
First-degree connection * Executive at target		-13.603	
		(-1.451)	
Second-degree connection * Executive at acquirer		-5.617	
		(-0.590)	
Second-degree connection * Executive at target		-2.431	
		(-0.252)	
First-degree connection * Number of bidders			58.976***
			(6.862)
Second-degree connection * Number of bidders			-17.979
			(-1.217)
Number of bidders			-4.795
			(-1.288)
Acquirer size	-0.785	-0.838	-0.764
	(-1.074)	(-1.149)	(-1.042)
Stock deal	-9.557***	-9.495***	-9.625***
	(-3.385)	(-3.389)	(-3.412)
Diversifying acquisition	3.291	3.162	3.165
	(1.354)	(1.300)	(1.299)
Relative deal size	5.902**	5.872**	6.063**
	(2.158)	(2.148)	(2.186)
Tender offer	-0.736	-0.341	-0.784
	(-0.199)	(-0.092)	(-0.211)
Hostile	11.621	11.417	15.697
	(1.052)	(1.030)	(1.420)
Acquirer Tobin's *Q*	2.983***	2.936***	3.031***
	(3.130)	(3.069)	(3.179)
Acquirer leverage	-9.623	-8.931	-9.335
	(-1.256)	(-1.163)	(-1.214)
Acquirer OCF	0.945	1.469	0.451
	(0.073)	(0.113)	(0.035)
Acquirer stock price run-up	13.065***	13.110***	12.857***
	(3.197)	(3.208)	(3.143)
Acquirer D&O ownership	-0.083	-0.081	-0.080
	(-0.789)	(-0.777)	(-0.762)
Target Tobin's *Q*	-1.002	-0.967	-0.990
	(-0.820)	(-0.786)	(-0.809)
Target leverage	47.763***	47.821***	47.541***

	(6.704)	(6.721)	(6.686)
Target OCF	-17.575*	-17.588*	-17.169*
	(-1.954)	(-1.946)	(-1.911)
Target stock price run-up	-12.783***	-12.967***	-12.718***
	(-3.238)	(-3.268)	(-3.220)
Target D&O ownership	0.087	0.086	0.088
	(1.043)	(1.031)	(1.055)
Constant	78.344***	78.343***	83.032***
	(7.180)	(7.180)	(7.200)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Observations	1,572	1,572	1,572
Adj. R^2	0.150	0.150	0.150

Table 7
Determinants of target announcement returns and target share of gains in the acquisition

This table presents OLS regressions for the sample of 1,664 completed US mergers and acquisitions between 1996 and 2008. The dependent variable in Regression (1) is TCAR, the cumulative abnormal returns of the targets from two days before to two days after the deal announcement. The dependent variable in Regression (2) is $\Delta\$TCAR$, the difference in dollar gains between the target and the acquirer divided by the sum of the acquirer's and the target's market value of equity 50 trading days prior to the deal announcement. First-degree connection is an indicator variable which takes on the value of one if the acquirer and the target share at least one common director, and zero otherwise. Second-degree connection is an indicator variable which takes on the value of one if at least one director from the acquirer and one director from the target sit together on the board of a third firm, and zero otherwise. The remaining variable definitions are in the Appendix. All regressions control for calendar-year fixed effects and 12 Fama-French industry fixed effects whose coefficients are suppressed for brevity. *t*-Statistics based on standard errors adjusted for heteroskedasticity (White, 1980) and firm clustering are reported in parentheses. ***, **, and * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

	(1) TCAR	(2) $\Delta\$TCAR$
First-degree connection	-4.844*	-0.017*
	(-1.835)	(-1.813)
Second-degree connection	2.213	-0.007
	(0.961)	(-0.915)
Acquirer size	-0.412	-0.002*
	(-1.224)	(-1.717)
Stock deal	-5.593***	0.018***
	(-4.142)	(4.408)
Diversifying acquisition	0.446	-0.006
	(0.381)	(-1.538)
Relative deal size	-5.696***	0.030***
	(-5.742)	(6.116)
Tender offer	6.155***	-0.000
	(3.562)	(-0.057)
Hostile	-1.837	0.018
	(-0.421)	(1.203)
Acquirer Tobin's *Q*	0.417	0.003*
	(1.206)	(1.764)
Acquirer leverage	-0.221	-0.013
	(-0.062)	(-0.990)
Acquirer OCF	2.009	-0.057**
	(0.332)	(-2.374)
Acquirer stock price run-up	1.340	0.030***
	(0.819)	(4.352)
Acquirer D&O ownership	0.000	-0.000
	(0.005)	(-0.360)
Target Tobin's *Q*	-1.025**	-0.000
	(-2.329)	(-0.222)
Target leverage	-3.288	-0.006
	(-1.075)	(-0.626)
Target OCF	-5.937	0.055***
	(-1.487)	(3.285)
Target stock price run-up	-7.556***	-0.015***
	(-4.840)	(-2.649)
Target D&O ownership	0.030	-0.000
	(0.857)	(-1.642)
Constant	31.116***	0.028*
	(6.199)	(1.679)
Year fixed effects	Yes	Yes

Industry fixed effects	Yes	Yes
Observations	1,664	1,664
Adj. R^2	0.126	0.134

Table 8
Determinants of combined portfolio announcement returns and long-run operating performance

This table presents OLS regressions for the sample of 1,664 completed US mergers and acquisitions between 1996 and 2008. The dependent variable in Regressions (1)–(2) is PCAR, the cumulative abnormal returns of the combined portfolio of acquirer and target firms from two days before to two days after the deal announcement. The dependent variable in Regressions (3)–(4) is ΔROA, the change in industry-adjusted ROA from three years before the deal announcement to three years after the deal completion. First-degree connection is an indicator variable which takes on the value of one if the acquirer and the target share at least one common director, and zero otherwise. Second-degree connection is an indicator variable which takes on the value of one if at least one director from the acquirer and one director from the target sit together on the board of a third firm, and zero otherwise. The remaining variable definitions are in the Appendix. All regressions control for calendar-year fixed effects and 12 Fama-French industry fixed effects whose coefficients are suppressed for brevity. *t*-Statistics based on standard errors adjusted for heteroskedasticity (White, 1980) and firm clustering are reported in parentheses. ***, **, and * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

	PCAR		ΔROA	
	(1)	(2)	(3)	(4)
First-degree connection	1.254	0.344	0.001	-0.005
	(1.255)	(0.394)	(0.060)	(-0.191)
Second-degree connection	1.983***	1.249	0.019*	-0.008
	(2.719)	(1.439)	(1.690)	(-0.766)
First-degree connection * executive		1.111		0.008
		(0.784)		(0.259)
Second-degree connection * executive		2.483*		0.106**
		(1.666)		(2.490)
Acquirer size	-0.524***	-0.520***	0.003	0.003
	(-3.950)	(-3.935)	(0.882)	(0.927)
Stock deal	-2.077***	-2.070***	0.001	0.001
	(-4.971)	(-4.939)	(0.076)	(0.195)
Diversifying acquisition	0.138	0.133	0.006	0.006
	(0.341)	(0.329)	(0.703)	(0.679)
Relative deal size	1.719***	1.717***	-0.005	-0.004
	(3.124)	(3.120)	(-0.822)	(-0.744)
Tender offer	1.482***	1.478***	0.011	0.012
	(2.669)	(2.647)	(1.056)	(1.113)
Hostile	1.471	1.510	-0.027	-0.026
	(0.967)	(0.999)	(-1.416)	(-1.304)
Acquirer Tobin's *Q*	-0.298	-0.302	0.004	0.004
	(-1.526)	(-1.544)	(1.352)	(1.307)
Acquirer leverage	1.128	1.028	0.069***	0.065***
	(0.875)	(0.796)	(2.933)	(2.784)
Acquirer OCF	4.812**	4.818**	-0.245***	-0.246***
	(2.053)	(2.052)	(-4.513)	(-4.623)
Acquirer stock price run-up	-2.553***	-2.576***	0.008	0.006
	(-3.140)	(-3.165)	(0.593)	(0.493)
Acquirer D&O ownership	0.006	0.006	0.000	0.000
	(0.343)	(0.339)	(1.468)	(1.482)
Target Tobin's *Q*	-0.088	-0.088	0.004	0.004
	(-0.399)	(-0.399)	(1.153)	(1.260)
Target leverage	-1.642	-1.598	0.026*	0.029*
	(-1.510)	(-1.466)	(1.665)	(1.795)
Target OCF	-1.733	-1.678	-0.073**	-0.070**
	(-0.936)	(-0.904)	(-2.398)	(-2.342)
Target stock price run-up	-0.300	-0.291	-0.013	-0.013

	(-0.456)	(-0.442)	(-1.485)	(-1.421)
Target D&O ownership	0.009	0.009	0.000	0.000
	(0.691)	(0.683)	(0.237)	(0.216)
Constant	6.609***	6.627***	-0.030	-0.031
	(3.649)	(3.659)	(-1.220)	(-1.263)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	1,664	1,664	1,164	1,164
Adj. R^2	0.113	0.113	0.127	0.138

Table 9
Determinants of Total Investment Bank Fees

This table presents OLS regressions for the sample of completed US mergers and acquisitions between 1996 and 2008. The dependent variables in Regressions (1), (2), and (3) are the total investment bank fees paid by the acquirer, by the target, and by both firms as a percentage of deal value, respectively. First-degree connection is an indicator variable which takes on the value of one if the acquirer and the target share at least one common director, and zero otherwise. Second-degree connection is an indicator variable which takes on the value of one if at least one director from the acquirer and one director from the target sit together on the board of a third firm, and zero otherwise. The remaining variable definitions are in the Appendix. All regressions control for calendar-year fixed effects and 12 Fama-French industry fixed effects whose coefficients are suppressed for brevity. *t*-Statistics based on standard errors adjusted for heteroskedasticity (White, 1980) and firm clustering are reported in parentheses. ***, **, and * stand for statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)
	Acquirer	Target	Acquirer+Target
First-degree connection	-0.215*	-0.213**	-0.635***
	(-1.732)	(-2.168)	(-3.136)
Second-degree connection	0.030	0.015	-0.009
	(0.362)	(0.289)	(-0.081)
Deal size	-0.136***	-0.236***	-0.327***
	(-3.847)	(-8.399)	(-5.591)
Acquirer size	-0.035	0.027	-0.036
	(-1.037)	(1.532)	(-0.687)
Stock deal	-0.151	0.010	-0.159
	(-1.510)	(0.213)	(-0.698)
Diversifying acquisition	-0.003	0.070*	0.048
	(-0.052)	(1.795)	(0.478)
Tender offer	0.004	0.035	0.115
	(0.046)	(0.649)	(0.601)
Hostile	0.088	0.069	0.166
	(1.303)	(0.806)	(1.117)
Acquirer pre3YR num of deals	-0.007		-0.004
	(-1.119)		(-0.290)
Target pre3YR num of deals		0.016	0.015
		(1.360)	(0.680)
Constant	1.803***	2.009***	3.551***
	(8.290)	(12.092)	(8.331)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Observations	477	1,162	446
Adj. R^2	0.359	0.314	0.427