The Effect of Search Frictions in Mergers*

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This draft: August 2008

Abstract

We empirically study the existence and impact of search frictions in the market for corporate control in order to explain who makes acquisitions. We proxy search frictions with the board's degree of connectedness, and also with measures of geographic proximity and business similarity. Additionally, we take into account measures of market thickness since they affect the likelihood by amplifying such frictions, and also management incentives. Using data from 1990 to 2006, we find that firms are more likely to be acquirers (targets) when search frictions are low (high), there are more firms available to buy and a golden parachute is not (is) provided to the firm's manager. These findings are largely consistent with predictions from the recent theoretical literature that models the decision of firms to actively search for potential targets. We alleviate concerns that these results are driven by firm heterogeneity or selection bias, by showing that they are robust to the use of OLS with firm-level fixed effects and instrumental variables using CEO salary and lagged board connectedness, respectively. We find that the provision of golden parachutes increases the average acquirer abnormal return by 2.5% whereas it does not significantly impact target premiums.

*We would like to thank Patrick Bolton, Mark Garmaise, Alexis Leon, Paige Ouimet, Rene Stulz and seminar participants at the University of Houston for their comments.

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1 Introduction

Recent approaches to the market for corporate control have used search models as a framework for the analysis of M&A phenomena (see for instance, Rhodes-Kropf and Robinson (2008) and especially Martos-Vila (2008)). The basic aspect of this approach is modelling explicitly the decision of firms to actively search for potential targets/synergies in a market with frictions. In contrast with a centralized market (where buyers and sellers immediately see prices and characteristics of the good to be traded), the main feature of a search model is to relax the centralized market assumption and instead assume that it takes time and resources to find a match and therefore a manager faces the choice whether to search for potential targets and synergistic profits or instead to improve the current operational efficiency of the firm. Assuming in addition that managers' incentives and shareholders' interests are not perfectly aligned, golden parachute agreements appear to be an optimal way to incentivize managers to search for acquisitions or not. This theoretical literature shows that firms are more likely to be acquirers when there are more firms available to buy, search costs are low, and discounted synergies are high, while firms are more likely to be targets when there are a lot of potential acquirers, search costs are high, and a golden parachute is provided to the firm's manager.

This paper provides the first (as far as we are aware) empirical study relating to this recent theoretical literature. Even though there is a larger literature that studies the probability that a firm will become a target, less attention has been devoted to studying when is it likely that a firm will make an acquisition. With that in mind, we focus on issues related to search frictions and also to executive compensation, more concretely, golden parachutes (henceforth GP). First, we measure and estimate the impact of variables intended to capture search frictions in the market for corporate control. To be more concrete, we proxy search frictions in three dimensions: geographic, business relatedness and board connectedness. The idea being that closer headquarters and/or more similar firms in terms of industries in which they operate, and/or more connected boards imply less search frictions. We use data on firms' boards of directors in order to construct a network such that links between two individuals indicate that they currently serve on the same board, the idea being that these business relationships should reduce the difficulty of finding a merger match. We calculate various measures of centrality for each director, which are designed to capture, e.g., the speed of information flow through a node or the influence a node has over the spread of information through

the network. Amplifying the effect of how difiicult or easy it is to locate synergies and targets is the number of available matches, as proxied by the number of firms in one's primary industry. This measure of market thickness is inherently tied to search frictions as well. Next, we test whether the provision of golden parachutes increases (decreases) the likelihood of becoming a target (acquirer), as predicted by the theoretical model.

We find that when proxying for the variables that might predict the probability of becoming an acquirer or a target, the estimation shows that the signs of the coefficients are in line with the model. Importantly, we find that low search frictions, as captured by the connectedness of a firm's board, increase the probability of being an acquirer and decrease the probability of being a target, as predicted by the theory. These effects are strong and robust both to model specification and to the econometric methodology used. The number of available matches, as proxied by the number of firms in one's primary industry, increases the probability of being an acquirer, as predicted, while the effect on the probability of being a target is not robust to specification variation. The other important result is that GP provision is positively related to the likelihood of becoming a target in a friendly deal, confirming the hypothesis.

We also check whether other variables that appear in the theoretical models affect the decision to search or not as expected. First, the discount (interest) rate has a positive effect on the probability of being a target, as predicted, though the opposite prediction for acquirers is rejected. Second, the prediction that the opportunity cost of merging as measured by the relative productivity of the company should have a negative (positive) effect on being an acquirer (target) is also rejected, potentially because this difference in productivity could also be a proxy for CEO quality, whose effect on the acquisition decision is ambiguous. We also introduce past merger decision variables, in order to capture some dynamics. We find that the probability of being an acquirer in a friendly merger increases if the company was an unsuccessful hostile acquirer in the same year and with the number of completed acquisitions in the previous year. Both results are consistent with the idea that firms that have shown a propensity to do acquisitions are more likely to do so.

Golden parachutes increase premiums, when we measure premiums using cumulative abnormal returns around the announcement date. Perhaps somewhat surprisingly, they affect acquirer premiums more than target gains, from an statistical and economical standpoint. A target with golden parachutes increases the acquiring firm's cumulative abnormal returns by around 2.5% on average.

For targets, the effect is negative, though statistically indistinguishable from zero and economically very small. We defer the discussion of the effect of those variables proxying for the search component in mergers. In short, if search is proxied by geographic closeness, less search frictions affect negatively acquirer abnormal returns, but positively target abonormal returns. With respect to other controls, and in line with past studies, firm size is the only firm variable that consistently seems to matter.

This paper contributes to the literature on M&As by assessing the importance and impact of search frictions and management compensation on the determination of who makes acquisitions as well as on merger gains. Another departure from previous studies is not only the introduction of new variables but also the use of a different econometric approach, exploiting both the cross-section and time-series dimension of the data to account for unobserved heterogeneity at the firm level. Panel data techniques are becoming more popular among empirical corporate finance studies, helping overcome potential biases and the efficiency of estimators (see Petersen (2006)).

As we just mentioned, there are several papers looking at the identification of firms that might become acquirers or targets. One of the latest examples of such exploration is Maksimovic and Phillips (2001). They find that firm organization and the ex-ante efficiency of buyers and sellers matters. There are also some papers on the effects of golden parachutes, which we next review.

Lambert and Larcker (1985) find a positive market reaction upon the announcement that the firm will grant golden parachutes to their top executives for a sample of 57 firms. They test two hypotheses. The IAH (Incentive Alignment Hypothesis) predicts a positive market reaction to GP adoption because shareholder interest is then protected during negotiations (note that this reason differs from the one proposed in Martos-Vila (2007) where the alignment of incentives is ex-ante and not during negotiations). On the other hand, the Wealth Transfer Hypothesis (WTH) corresponds to the traditional view that GPs are used by managers to expropriate shareholder value (Manne (1965)), and should yield a negative market reaction. To test these hypotheses an event study is pursued, taking the event date as the date when GP adoption is filled with the Securities Exchange Commission. They conclude that the lack of significance of the coefficients for the firms with negative market reactions is evidence of little empirical support to the WTH.

Machlin, Choe and Miles (1993) examine the impact of GPs on the likelihood of a takeover subsequent to adoption, for a sample of firms from 1975 to 1988. They find that the adoption of

Golden Parachutes increases the likelihood of a successful takeover. Second they estimate that a $1 increase in GPs translates into a $10 increase in takeover premium. Finally, The adoption of such contracts is associated with a larger frequency of multiple takeover bids.

Hall and Anderson (1997) estimate a logit model to determine if GP adoption increases the probability of receiving a takeover bid. Their results indicate that the adoption of a golden parachute contract does not significantly increase the probability of a firm receiving a takeover bid. They also can't find a significant relationship between GP size and market reaction. They conclude, however, that the significantly positive relationship between the size of the golden parachute relative to the firm's market value and market reaction of many of the firms is indicative of an incentive alignment perception of stockholders.

Finally, Lefanowicz, Robinson and Smith (2000) regress abnormal stock returns for acquisitions on variables including managerial incentives, the value of GP payments and the interaction between GPs and management incentives. They find that management incentives (lost salary/ownership at pre-acquisition announcement value) affect positively target shareholder gains. However GP adoption has no significant effect.[1]

This paper differs from Machlin et al. (1993) in that instead of considering the likelihood of a takeover we estimate the likelihood of becoming an acquirer and a target in a friendly merger separately, using a more comprehensive dataset from 1990 to 2005. Given the lack of data regarding the exact amount of the parachute, we measure how much the premium changes by when such contracts exist versus not. Our paper offers different results from Hall and Anderson (1997) in that we do find that GPs affect the likelihood of becoming a target. We also do find some weak evidence on the effect of GPs and the market reaction at the announcement of the deal. Finally, in contrast with Lefanowicz et al. (2000) we do find a direct association between GPs and premiums, especially for acquirer gains and more so than for target gains.

2 Model and Hypotheses

Our approach to the manager's decision to actively engage in costly search for a target or not is largely based on the theoretical model presented in Martos-Vila (2007). In a nutshell, a firm's

[1] The interaction between GPs and management incentives is negative and significant, indicating, according to the authors, that GPs serve to mitigate the effect of management incentives. However, since the coefficients of management incentives and the interaction term tend to cancel each other, this suggests that, on average, GP provisions tend to offset the effects of lost salary.

decision to be a potential acquirer is positively related with the relative gains accruing to them (relative to not merging) and negatively related with search frictions.

First, the relative gains for an acquiring firm depend on a number of variables. One is its relative bargaining power, another one a measure of the relative gains from merging as opposed to remaining a stand-alone company. Such a measure is directly proportional to the operational synergies net of any direct merging costs, such as compensation costs–golden parachutes–, and inversely related to the opportunity cost of searching for synergies/targets. This opportunity cost captures the idea that a potential acquirer (versus a potential target) forgoes improving the operational side of the firm and instead search for synergies that bring such increase in profitability. Because of this, it is assumed that the ex ante operational profit flow for a potential target is larger than that for a potential acquirer. The larger this opportunity cost is, the less inclined will the firm be to search for targets. Second, the probability of being an acquirer depends on how difficult it is to find synergies/targets: the smaller the number of potential matches and the more important the searching frictions are, the lower is the probability of choosing to search for a target. Finally, the discount rate reduces the current value of future claims (real option of merging), driving the probability of being an acquirer down.

Second, the probability of being an acquirer depends on how difficult it is to find synergies/targets. According to the theoretical framework this depends on two things: the number of potential matches and how important search frictions are, that is, how difficult it is locate targets and synergistic opportunities. The more firms in the market, the easier should be to find one to merge with.[2] Finally, interest rates decrease the current value of future claims (real option of merging) driving the probability of being an acquirer down, other things equal.

We summarize the signs of the predicted effects of the key variables on the likelihood of being an acquirer in the hypothesis and figure below. Note that since, by assumption, the probability of being a potential target is inversely related to the probability of being a potential acquirer, the signs are, in that case, the opposite, with some exceptions.

(Predicted Effects on Acquirer/Target Decision)

(i) The probability of a firm becoming an acquirer depends positively on:

(a) its relative bargaining power,

[2] For the empirical analysis of the model we consider u as an exogenous varible, even though MV endogeneizes it as well.

(b) the value of potential synergies,

(c) the number of firms available to be acquired, and

(d) search frictions, that is, how easy it is to find synergies/targets.

(ii) The probability of a firm becoming an acquirer depends negatively on:

(a) the dollar amount of the golden parachute contract,

(b) the empire building motive of the firm's manager (which coincides with his remuneration),

(c) the opportunity cost of searching as measured by the (ex ante) profitability differential, and

(d) the interest rate.

(iii) The effects of the aforementioned measures on the probability of a firm becoming a target are mostly the opposite of their effects on the probability of becoming an acquirer. In particular the exceptions are the number of firms to be acquired and the importance of search frictions, whose sign is left to be determined by the data.

Hypothesis 1

Acquirer/Target Decision. Signs of Partial Derivatives

	Acquirer	Target
Acquirer's bargaining power	+	−
operational synergies, net	+	−
Difference *ex-ante* productivity of assets (opp cost searching)	−	+
Search frictions, how easy it is to find synergies/targets	+	−/+
Number of firms available to be acquired	+	−/+
Interest rate	−	+

As stated in the hypothesis above, depending upon the exact form of the matching function the effect of search frictions and the number of firms is unclear. A large number of firms makes it easier for a potential acquirer to find a match and thus the likelihood of being a target raises. However it

also makes it more likely that firms will search and try to acquire and so the likelihood of being a target goes down.

In order to test Hypothesis 1 we need to specify an econometric model suitable to the theoretical predictions. A convenient possibility is a linear specification, i.e., a linear approximation to the potentially complex effects described in the above hypothesis. An alternative econometric model assumes instead a logistic distribution of the regressors (aka Logit model),and its protentially more suitable to our limited dependent variable. We present results from both models since, as we will explain subsequently, each has its own advantages and flaws.

The theoretical model also provides testable implications regarding the change in value on announcement of the merger, for both acquirers and targets. The relative strength in negotiating affects positively one's gain from merging since the firm is able to extract a larger portion of the cake but should not affect total gains from the deal. In addition, gains, as measured by abnormal returns, are proportional to the net value of synergies. The value of synergies is the excess profitability is the excess profitability that comes from combining both firms, so it depends on how profitable the merged entity is thought to be but negatively on the pre-merger profitability and management compensation costs associated with merging: golden parachutes and increased salary for the acquirer. On the other hand, the probability of finding synergies/targets and the pool of firms subject to be bought out (which are inverse measures of search frictions) affect gains as well. However its sign is ambiguous since depends on them as well. In words, search frictions might affect positively or negatively depening on wether the matching function between firms exhibits increasing or decreasing returns. These predictions are summarized in the following hypothesis and table.

Hypothesis 2. *The acquirer gain from merging, as measured by the change in value before and after the deal depends positively on the relative bargaining power and the value of net synergies. The same applies to the target. The net value of synergies depends on the difference between post-merger profitability and pre-merger profitability plus management compensation costs. Search frictions also affect merger premia.*

Hypothesis 2

Signs for the Effects on Merger Gains

Basic Model	*Target*	*Acquirer*	*Joint*
Acquirer's bargaining power	−	+	0
Operational synergies, gross	+	+	+
Golden parachute amount	−	−	−
Acquirer CEO compensation	−	−	−
Search frictions	+/−	+/−	+/−
Number of firms available	+/−	+/−	+/−
Interest rate	−	−	−

Finally, one of the key features of MV is the potential conflict of interest between managers and shareholders regarding acquisitions. As a result, an optimal contract arises that calls for the provision of golden parachutes. This optimality result posits that all firms should adopt a golden parachute. In relation to this, it is also shown that providing GPs increases merger gains, precisely because they act as a barrier to merge, allowing only the most profitable deals to go through. In order to test this result we use the fact that not all firms provide GPs, even though the percentage of public firms providing such compensation contracts has increased a lot during the last decade. Given that there are some firms that do not provide GPs a natural test of these results is to compare M&A premiums for firms that provide golden parachutes and those who do not. If both propositions hold, we should observe a positive coefficient for the provision dummy. This is summarized in the last of our hypotheses (see below) and concludes this section. We next describe the data used to test them.

Hypothesis 4. *Given the optimality of providing golden parachutes and the fact that they act as a barrier to merge, firms providing them should enjoy larger abnormal returns from a deal.*

3 Data

We use data from 1990 to 2006 from four different sources. First, we identify merger announcements using the Securities Data Company's (SDC) U.S. Mergers and Acquisitions Database. We choose deals where both the target and acquirer are U.S. public firms (i.e., listed in one of the three stock

markets) and the acquisition takes the form of a merger, as opposed to the acquisition of partial interests, remaining interests or assets. We also require the deal value to be at least \$1 million. Finally, since the theory that inspires this paper is best suited for friendly mergers we remove those deals classified as hostile by SDC. This amounts to 4,070 deals.

Second, we use CRSP data to construct the cumulative abnormal returns ($CARs$) around the announcement date. We follow the standard methodology for event studies in doing so (see for instance, the early contributions by Brown and Warner (1985), Bradley et al. (1988), among others). For robustness, we construct abnormal returns using a short (3-day), medium (41-day) and long (190-day) length of window around the announcement date (date 0): $(-1, 1)$, $(-30, 10)$, and $(-126, 63)$ respectively. For our benchmark returns we have use both market model regressions with 1, 2, 3 and 4 factors (Fama and French (1993) and Carhart (1997)). We only report the results corresponding to the 3-factor model, which seems to be the more commonly used. Also from the CRSP database is the annualized risk-free rate in the month in which the firms' fiscal year ended or in which the merger announcement occured, depending on which one applies. Another interest rate used is the annual market yield on U.S. Treasury securities at constant maturity (7 years) from the Federal Reserve Board.

In order to account for firm and industry characteristics, especially performance, we use COMPUSTAT. These variables have been used extensively in the literature (see, for instance, Moeller et al. (2005), Rhodes-Kropf et a. (2003) and Schwert (2000))[3]. The variables used are:

Return on Assets (ROA), measured as the ratio of Income before extraordinary items available for common equity to the book value of assets (compustat items 237/6).

Liquidity, measured as ratio of the difference between current assets (d4) and current liabilities to the market value of assets for the prior fiscal year (compustat items (4-5)/(24*25+6-60-74).

M/B, measured as the ratio of the market value of equity over its book value (compustat items 24*25/60).

Size, measured as the log of equity capitalization for the prior fiscal year (compustat items 24*25).

[3] As a robustness check, other variables apart from the ones showed below are used, for instance, return on equity (ROE) and net profit margin (NPM).

Number of firms in the industry, measured as the count of firms in the primary Fama-French industry the firm belongs to.

So far then, we use information from three different sources. Schwert (2000) documents that performance measures tend to be higher for the sample with complete data, as well as size and that they have lower D/E ratios, therefore one needs to be "careful in extrapolating the findings to smaller, less prosperous target firms."

Yet two more databases are used in order to test our hypotheses. One is the Investor Responsibility Research Center (IRRC), which publishes listings of corporate-governance provisions for individual firms. These data are derived from a variety of public sources, including corporate bylaws and charters, proxy statements, annual reports, as well as 10-K and 10-Q documents filled with the SEC. Our analysis uses all firms in the IRRC universe. According to Gompers, Ishii and Metrick (2003) it covers most of the value-weighted market: even in 1990 it tracked more than 93 percent of the total capitalization of the combined NYSE, AMEX and Nasdaq markets. We use a variety of different variables, but especially:

Golden Parachutes, severance agreements that provide cash and non-cash compensation to senior executives upon an event such as termination, demotion or resignation following a change in corporate control.

G-index, the Gompers et al. (2003) Governance Index, which captures various aspects of a firm's governance, such as takeover defenses, director protection, voting rules, and relevant state laws. Note that since we include a separate dummy for the existence of a golden parachute agreement, we calculate a modified version of the G-Index, which does not take into account the existence of a golden parachute agreement.

Severance agreements, some source of compensation not contingent upon a change in control.

Poison Pills, which provide their holders with special rights in the case they are triggered. Typical poison pills give the target's stockholders the right to purchase stock in the target or the bidder's company at a steep discount, making the target unattractive or diluting the acquirer's voting power.

Antigreenmail, a provision sought to discourage the accumulation of large blocks of stock.

We use IRRC data together with data from the Board Analyst database to gather information on the boards of directors of large firms. As was mentioned in the introduction, we use this data in order to construct, for each year, a network of connections between directors from different firms. Using this network we are able to calculate the average centrality of a firm's board members in the network, which we use as a proxy for search costs.

Finally, some further management compensation is included in the CAR regressions, such as salary, bonus and total compensation. These controls are necessary in order to capture some unobserved management characteristics (acquirer's compensation is part of the net value of synergies). We use ExecuComp as the source for the management compensation data.

4 Methodology and Results

4.1 Measuring Search and Firm Performance

A key issue that one faces is how to capture some of the interesting but unobservable variables contained in the model.

First, we identify a suitable proxy for search costs. We use data on firms' boards of directors in order to construct a network such that links between two individuals indicate that they currently serve on the same board, the idea being that these business relationships should reduce the difficulty of finding a merger match. We calculate various measures of centrality for each director, which are designed to capture, e.g., the speed of information flow through a node or the influence a node has over the spread of information through the network.

In particular, representing the network by a graph $G = (V, E)$, where V are the n vertices and E are the edges between the vertices, we calculate for each director (and then average over all directors on a firm's board) the following measures which are standard in graph theory: i) the Degree Centrality, which is simply the number of direct connections he has to other directors; ii) the Betweenness Centrality $C_B(v) = \frac{1}{(n-1)(n-2)} \sum_{s \neq v \neq t \in V, s \neq t} \frac{\sigma_{st}(v)}{\sigma_{st}}$, where $\sigma_{st}(v)$ is the number of shortest paths from vertices s to t that pass through vertex v and σ_{st} is the number of shortest paths from s to t; iii) Closeness Centrality $C_C(v) = \left(\sum_{t \in V \setminus v} \frac{1}{d_G(v,t)} \right) / (n-1)$, where $d_G(v,t)$ is the shortest path between vertices v and t; and iv) Eigenvector Centrality $C_E(v) = \frac{1}{\lambda} \sum_{t \in M(v)} C_E(t)$, where $M(v)$ are all the vertices that are connected to vertex t, and λ is the greatest eigenvalue

of the adjacency matrix representation of the graph G such that the corresponding eigenvector has Euclidean norm equal to 1. The interpretation of degree centrality is obvious. Betweenness centrality is thought of as representing the influence that a node has over the spread of information through the network. Closeness centrality is thought of as the speed of information flow through a node. Finally, eigenvector centrality assigns scores based on the idea that connections to important nodes contribute more to the score of the node.

We estimate our models using all four of the centrality measures, and results are identical across specifications. As a result, we present here only the results based on the simple measure of degree centrality. Interestingly, we also collect past and present employment information for each firm's board member, and also perform this analysis on a network that indicates links not only due to present simultaneous tenure on the same board, but also due to past and present simultaneous employment in the same firm. Indeed, this generates a more complete and accurate network of relationships between individuals and serves as an additional robustness check of his results, which remain unchanged.

Another component of the measure of frictions in the market is the number of firms subject to acquisitions (a measure of market "thickness"). We count the number of firms in the industry, using the 48 Fama-French industry classification. As a robustness check we also use the two-digit SIC classification (23 industries) and the NAIC classification (103), and results are unchanged.

Finally, we also employ more direct measures of how easy/difficult it is to locate targets. In particular, we construct several measures of geographic and business overlap between the merging firms. The former is measured using dummies that indicate if the target's and acquirer's headquarters are in the same city and state. The operational similarity is measured using a business segment index. Essentially, for firm j, the index for industry i is valued at one if firm j operates in that industry. Then, for each industry, we pairwise multiply the acquirer's and the target's indices, and add up these pairwise multiplicative terms. Finally we normalize by the number of total segments. We call this, *similarity*. The larger this measure is, the more business segments the two companies operate commonly. As Figure 1 below summarizes, *Same City*, *Same State* and *Related Primary Industry* are dummies that take the value of one if the acquirer's and target's headquarter are in the same city, same state or of the companies coincide in their primary industry.

Figure 1

Measuring Proximity as a Proxy for Search

Variable	*Definition*
Same City	= 1 if target and acquirer belong to same city, 0 if not.
Same State	= 1 if target and acquirer beling to same state, 0 if not.
Related Primary Industry	= 1 if target and acquirer share same primary industry.
Similarity	$= \frac{1}{K}\sum_{i=1}^{K} BSI(acquirer)_i * BSI(target)_i$ where
Business Segment Index (BSI) i	= 1 if firm operates in industry i, 0 otherwise.
Proximity	$= Same\ City + Same\ State + \frac{1}{K}\sum_{i=1}^{K} BSI(acq)_i * BSI(targ)_i$

Second, to measure the part of total net synergies captured by one of the sides in a deal we use an aggregate measure: the average acquirer (target) cumulative abnormal return for the whole sample of deals at any given year or quarter. With this measure we hope to proxy for the unobservability of both the relative bargaining power and the value of operational synergies and avoid endogeneity problems since it is a cross-sectional average.

To measure the pre-merger (or ex-ante) profitability of assets we use different measures, such as the return on assets (ROA*),* return on equity (ROE) or sales growth.[4] As we mentioned earlier, we also need to quantify the opportunity cost of searching for targets/synergies, that is, the fact that searching for synerges reduces the current profitability of assets. In order to do so, we calculate the deviations of a firm's ROA with respect to the mean industry-year ROA. In the theory, we assumed that targets have relatively larger profitability measures due to their focus on the operational performance of the firm (instead of trying to increase profitability *via* acquisitions.) Therefore a positive difference in ROA with respect to the mean should affect positively the probability of becoming a target but negatively the probability of becoming an acquirer (higher opportunity cost). This variable is also used in Kuhnen and Zwiebel (2006) in order to capture management ability.

Finally, we attempt to capture the aggregate effect of interest rates with two different measures: the annualized risk-free rate used in the market model for the year or the month in which the merger took place and the Federal Reserve 3-months Treasure Bill annualized return.

We use two sets of controls. On the one hand, we acknowledge the fact that past merger decisions might affect the current decision to merge: the existence of the so-called serial or frequent acquirers

[4] We only report the results with ROA as it is the more commonly used measure in the literature.

is well known. Not only the number of completed acquisitions in the past might potentially explain in part the decision of acquiring yet again, but also the existence of past hostile and withdrawn acquisitions might be indicative of a future acquisition. Finally, if the firm was recently acquired, it seems unlikely that it is going to bid for a target the year after. On the target side the reasoning is similar. One would expect that the probability of becoming a target increases if there is a past withdrawn hostile attempt to buy that company, or that given that it was bought recently (in the past year) it is not likely that it is going to be bought anytime soon. Finally, one can think that attempting to buy a firm and not being able exposes the company itself to be the object of an acquisition by some other company, especially if the company's reason to have failed in the attempt to buy is due to incompetent management. All these hypotheses are tested and confirmed by the estimations summarized later on.

Finally we include the Governance Index calculated with data from the IRRC Corporate Governance database. Failing to include this measure could yield biased estimates of the golden parachute effect, to the extent that the anti-takeover and other governance provisions might be complements or substitutes with the provision of GPs.

4.2 Econometric Methodology

The most basic estimations that we do are simple OLS and simple Logit, as well as specifications that include industry-level fixed effects. But whenever possible (see Tables 1 through 4) we also exploit the panel structure of our dataset to account for unobserved heterogeneity at the firm level. Estimating firm-level fixed effects and clustering at the firm level (or at the industry level as we explain below in a robustness check) helps overcome potential biases and improves the accuracy of the standard errors by allowing for non-independence of the error term within the cluster.

In addition, we identify that there is potential endogeneity for the key variables of interest – the provision of a golden parachute and the board's connectedness – since a firm fearing that it might be targeted might adopt a golden parachute, while a firm intending to search for an acquirer might hire a better-connected board. To deal with this source of endogeneity we estimate GMM specifications, where the CEO's salary and the twice-lagged board's connectedness serve as instruments. On the one hand, the CEO's salary should be (and is) related to the provision of a golden parachute, because they are both elements of the compensation scheme agreed upon by the

board and the management. However, salary is likely to be exogenous to the error in the estimation of the probability to be an acquirer or a target, because neither the theory, e.g., Martos-Vila (2007), nor intuition suggest that a CEO's salary should affect the firm's decision to search for a target or not. On the other hand, the twice-lagged board connectedness helps deal with the types of endogeneity mentioned above, e.g., those that arise due to the firm anticipating that it would like to participate in an acquisition. Note that if the firm anticipates far in advance that it will search for targets at some point in the future, then this instrument would not be exogenous, but this seems unlikely.

Another source of endogeneity is the inclusion as a control of the lagged dependent variable – the dummy for being an acquirer or a target – in the firm-level fixed effects specification. This is the common endogeneity problem in dynamic panels, and to deal with it we employ the Arellano & Bond (1991) estimator developed precisely for this situation.

It is very reassuring that all the important results are robust and in fact stronger in these more sophisticated specifications.

Our results are also robust to the following alternative specifications which are not presented here for the sake of brevity. First, note that in the specifications we do present, whenever we estimate firm-level fixed effects we cluster standard errors at the firm level. An alternative would be to cluster standard errors at the industry level, to allow for non-independence of the error terms at the industry level. Indeed, with a large sample, the right approach when we want to perform two-way clustering that is nested is to simply cluster at the highest level of aggregation (see Cameron et al. (2006)), which in our case is the industry level. However, the consistency of the standard errors requires a large number of clusters, and clearly we have a lot more when we cluster at the firm level, and possibly too few when we cluster at the industry level. Nonetheless, when we do cluster at the industry level, our results remain unchanged.

Second, instead of clustering at the firm level, we also estimate specifications in which we cluster at the year level. This estimation allows for non-independence of errors within a year. Again our results remain unchanged. Somewhat related to this variation is another estimation that we perform, in which we include year dummies instead. All results are as before.

Finally, we estimate models in which we exclude the golden parachute dummy, in order to check the robustness of the coeffcient on board connectedness. The coefficient is still significant in the

GMM estimation, though it loses significance in the OLS estimation.

5 Results

5.1 Estimating the Target/Acquirer Decision

We start by evaluating the firm's decision whether to become a potential target or acquirer, that is, Hypothesis 1. Tables 1 and 3 show the results of estimating the probability of being an acquirer and a target, respectively, in the case of the linear probability model, while Tables 2 and 4 show mostly the same estimations in the case of the logistic probability model. Note that some specifications are missing from Tables 2 and 4, due to the lack of enough data or due to the absence of a consistent IV estimator in the logit case with fixed effects. We highlight the main results next.

First, the provision of golden parachutes has a strong positive effect on the likelihood of being targeted, as predicted by the theory, but no consistent effect on the probability of being an acquirer. It might be expected that the effect should be stronger for targets than for acquirers, since for targets it not only has an ex ante effect of making firms more likely to be passive, but it also has an ex post effect of making firms more likely to accept merger offers. What is not very clear is whether the estimated effect of the golden parachute captures the ex ante or the ex post effect, or both. However, we anticipate that it captures the ex ante effect mostly, since in this analysis we are focusing on friendly deals and so hostile, rejected or withdrawn offers are not present. Of course, it could still be that offers that were anticipated not to be accepted were never made in the first place.

We also find that the probability of being an acquirer in a friendly merger increases if the company was an unsuccessful hostile acquirer in the same year and with the number of completed acquisitions in the previous year. Both results are consistent with the idea that firms that have shown a propensity to do acquisitions are more likely to do so. We do not find similar results for targets, except weak support for the idea that firms that were unsuccessfully targeted are more likely to be successfully targeted soon afterwards. Also, larger firms are relatively more likely to become an acquirer. But size also affects positively the probability of becoming a target, though this effect is not very robust to the specification. One can therefore conclude that larger firms are more likely to engage in acquisitions, regardless of the role played, other things being equal.[5] The

[5] Another, less direct explanation would be that size could capture bargaining power. Then it would be consistent

industry-adjusted ROA does not have a consistent effect as we vary the econometric specification, neither for targets nor for acquirers, so we cannot conclude with certainty whether it truly has an effect. This rejects the theoretical prediction that firms with high opportunity cost to searching should be more likely to become targets, though it is possible that this result could change if we introduced an interaction term for search costs times industry-adjusted performance.

In terms of search aspects, we find that board connectedness has a strong positive effect on the probability of being an acquirer and a negative effect on the probability of being a target. This verifies the theoretical prediction from Martos-Vila (2007), though it is interesting to point out here, that the theoretically-predicted effect of search costs on the probability of being a target should actually be ambiguous, and it depends on the search technology that is assumed. In particular, there are two effects at work: the higher the search cost, the more likely is the firm to choose not to actively search for a target and hence to become a potential target itself, but also the less likely it is to be found by a firm searching for a target, and hence the less likely it is to become an actual target. Which effect dominates in theory depends on model parameters. Empirically, we find that higher search costs have an overall negative (postive) effect on the probability of being an acquirer (target.)

Also interestingly, the number of firms in the industry (a measure for market thickness and therefore of search frictions) affects positively the likelihood of acquiring, as predicted by the model, and also the likelihood of being a target. Essentially, the thicker the market, the more likely it is that an acquisition will happen, which raises both likelihoods.

A comparison with previous studies is in order. Comment and Schwert (1995) estimate a probit model using 21,887 firm-years of data for all exchange-listed firms with the requisite CRSP and COMPUSTAT data from 1976 to 1991. They find size to be negatively related to takeover probability but that none of the other performance variables are reliable predictors. The size result is the opposite of what we find. More in line with our results, Mørck et al. (1988) find that larger size and market/book ratios deter hostile takeovers but not friendly ones.

with our hypothesis (whether size might be capturing something else we are not controlling for is still a possibility, so we need to exercise caution with this interpretation).

5.2 Evaluating Merger Abnormal Returns

5.2.1 The Effect of Golden Parachutes and Search Frictions

There is a vast empirical literature regarding what explains or not abnormal returns from takeover announcements (see for instance, Schwert (2000) or Moeller et al. (2005) for some of the latest evidence). We will therefore concentrate on Hypotheses 2 and 4. This essentially boils down to looking at whether the data confirms the direction of the effects predicted by the model (Hypothesis 2) and testing the optimality of golden parachutes (Hypothesis 4).

We start by evaluating the effect of golden parachutes. For that purpose, Table 5 shows a comparison of means and medians of Cumulative Abnormal Returns (CARs) for acquirers, targets and both (acquirer plus target) for two window lengths (short and long.) The table shows similar results for both mean and median comparisons. If we look at acquirer returns in the shorter window, they are larger (in this case less negative) when targets provide golden parachutes, however none of the tests shows a statistically significant difference in means or medians. For instance, the mean CAR for acquirers whose target provides GPs is -1.9% whereas the mean CAR for acquiring firms whose target does not provide a GP is -2.6%. When it comes to targets, the short-window statistics are indistinguishably different but the longer window results do show that CARs are larger for targets providing golden parachutes, the difference being statistically significant using both a t-test and the Wilcoxon rank-sum test. The difference in returns is economically significant: it appears to be 8.7% and 10.4% in means and medians respectively.

A multivariate regression analysis is needed in order to further test and document the relation between GP provision and friendly M&A returns. As we already mentioned, the IRRC database only provides information on the existence of golden parachutes, but not on the amount of such compensation agreements. Hypothesis 2 claims that the dollar amount spent in golden parachutes should affect negatively merger gains since it is a compensation cost; but providing them *versus* not should yield higher expected returns since they act as a barrier to merge and only better deals would go through. On the other hand, Hypothesis 4 tells us that golden parachutes are optimal in providing incentives. In fact it should be in the compensation package of every manager. If Hypotheses 2 and 4 hold, including a GP dummy in the CAR regressions would test such optimality result: acquisitions where the target provided golden parachutes to their management should experience larger gains, controlling for other relevant variables.

The results are contained in Tables 6 and 7. First, as in the case with hostile takeovers (See Schwert (2000)) we find evidence that target size is negatively related to target and acquirer premia, with negative effects of 2, 4 and 6 percent respectively. The magnitudes of the effects are very similar to Schwert (2000). The acquirer's size positively affects target premia, while it has no statistically significant effect on the acquirer premia (Moeller et al. (2005).)

Secondly, there is some evidence that the acquirer's market/book is positively related to target premiums but target's market/book is negatively related to their own premium (see Table 7). In line with past research, the form of payment seems to matter. We find that in friendly deals, target CARs are lower for deals where at least 75% is paid with stock.This would yield to the conclusion that targets benefit more from deals where the form of payment is mixed. The theory predicts that past performance should be negatively related to merger premia, since it represents an opportunity cost of merging. This is confirmed in the estimations since target's ROA affects negatively their own gains as well as the acquirer's gains.

Third, the golden parachute dummy has a positive effect on acquirers' premia, though no effect on targets' premia. For acquirers, the existence of a golden parachute agreement increases the premium by 2.5%, while it has a negative, though statistically and economically insignificant, effect for targets. A possible explanation for this is that golden parachutes act as barriers to merger deals and hence they preclude less profitable deals from occurring, but mainly from the point of view of acquirers. That is, acquirers might be more likely to engage in deals in which they have relatively higher bargaining power and hence they are able to expropriate all of the additional value that is present in the deals that do go through conditional on the presence of the golden parachute. This effect seems then to be economically significant as well.

The model also includes measures of the acquirer's management total compensation, hoping to capture some of the empire building effect. The larger the compensation is, the lower the premium. We do not find evidence of that in the regressions, as the coefficient appears to be significantly positive (see Table 6.) This result is not completely surprising. To the extend that management compensation is linked to its ability, which is not included as a variable in the regressions, the coefficient of total acquirer compensation could well be capturing management ability as well. Then, a more skilled acquirer CEO would be able realize larger gains.

We next comment on the search measures. We find that the number of firms in the industry has

no effect on premia. This is not inconsistent with the theory, which makes no specific prediction regarding the effect that market thickness should have on premia, for reasons explained earlier. The *similarity* variable is significantly different from zero in the target CAR regression (Table 7). One concern that might arise when using just this variable as a proxy for search frictions is that similar firms might also be able to realize more synergies, affecting CARs for that reason and not because they are capturing search frictions. We tried to mitigate that problem when proxying synergies with *Avg Gains.* If one is not convinced with that, we also introduce the rest of the dummy variables explained in Figure 1 and we interact them. Model 3 shows that when interacting the city dummy with the similarity variable, being in the same city affects negatively acquirer abnormal returns (although the coefficient is not signigicant.) If we instead analize target CARs, the opposite holds true: being in the same city increases target abnormal returns, significantly. This is in line with the model, that predicts that whatever sign search frictions have, it should be different for both targets and acquirers. At the same time, the geographic proxies for search frictions are much less susceptible to the criticism that the similarity variable has.

6 Concluding Remarks

This paper contributes to the literature on M&As by using recent theoretical developments to assess the importance and impact of search frictions, golden parachutes, and other key variables in a firm's role in a merger deal and in gains/losses to both parties. We generally find evidence that is consistent with the predictions.

First, we find that search frictions (as proxied by board connectedness) reduce the probability of being an acquirer, and market thickeness increases the likelihood of becoming both an acquirer and a target. Finally some geographic and similarity of business proxies do seem to matter as well, for acquistion gains. Second, we find that the adoption of golden parachutes affects positively the likelihood of becoming the target in a friendly merger, and also that deals where targets are providing GPs seem to enjoy larger returns, especially for acquirers. This can be explained because GPs provide the right incentives ex-ante (they are an optimal contract) and probably due to a barrier-to-merge effect which prevents less synergistic mergers to be accepted since at the end a golden parachute is a cost of acquiring.

Finally, a better understanding of the role of Golden Parachutes in M&A activity would by

achieved if data on the dollar amount of such contracts could be collected. This seems to be a challenge, since the contracts are very opaque in terms of quantifying the exact amount of them but a promising area for future research.

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Table 1: **Linear Models of Acquirer Decision**

The dependent variable is a Dummy that equals 1 if the firm was the Acquirer in a completed friendly M&A deal during its fiscal year. The explanatory variables are: (1) Golden Parachute, i.e., a dummy that equals 0 or 1; (2) G-index, i.e., the Gompers, Ishii, and Metrick (2003) Governance Index; (3) Board Connectedness, i.e., the average Degree of each director in the network of connections between board members of large U.S. firms; (4) # Firms in firm's Fama-French Industry; (5) Risk-free Rate; (6) Industry-Adjusted ROA; (7) Average Acquirer Premium, i.e., average Acquirer Cumulative Abnormal Return over the year before the merger; (8) Firm Size, measured as Log of market cap; Dummies for (9) Withdrawn Hostile, (10) Completed Friendly, (11) Withdrawn Friendly, and (12) Withdrawn Hostile Acquisitions in the year before the merger. Specifications (1)-(3) and (5) present results from linear OLS estimation, while specifications (4) and (6) present results from linear GMM estimation, using the method proposed by Arellando and Bond (1991). t-statistics derived from standard errors clustered at the industry level (specification (2) or firm level (specifications (3)-(6)) are reported in parentheses. */**/*** indicate significance at the 10%/5%/1% levels.

	(1)	(2)	(3)	(4)	(5)	(6)
Golden Parachute	-0.004	-0.004	-0.011*	-0.134***	0.003	-0.062
	(-1.192)	(-1.087)	(-1.883)	(-2.647)	(0.276)	(-0.712)
G-index	0.001**	0.001	-0.003	0.005**	-0.003	-0.000
	(2.114)	(1.131)	(-1.515)	(2.129)	(-0.759)	(-0.078)
Board Connectedness					18.615*	75.444***
					(1.815)	(5.229)
# Firms in Industry	0.017***	0.029**	0.085***	0.017***	0.052**	0.022***
	(10.267)	(2.560)	(7.568)	(5.375)	(2.189)	(5.423)
Risk-free Rate	0.398***	0.295***	0.011	0.150	0.441**	-0.001
	(4.746)	(2.928)	(0.108)	(0.816)	(2.166)	(-0.003)
ROA	0.012**	-0.014	-0.005	0.012	0.002	0.040***
	(1.994)	(-1.249)	(-0.491)	(1.184)	(0.150)	(2.987)
Average Acquirer Premium	0.096*	0.095**	-0.018	0.000	-0.085	-0.177**
	(1.875)	(2.474)	(-0.359)	(0.001)	(-1.263)	(-2.389)
Firm Size	0.018***	0.019***	0.013***	0.018***	0.017***	0.011**
	(15.999)	(9.604)	(4.488)	(8.799)	(3.568)	(2.409)
Withdrawn H'le Acq	0.123***	0.117**	0.106*	0.934	0.126*	0.043
	(4.276)	(2.231)	(1.805)	(1.561)	(1.673)	(0.088)
Completed F'ly Acq $(t-1)$	0.147***	0.134***	-0.037***	0.078***	-0.081***	0.050**
	(22.125)	(7.485)	(-2.863)	(4.834)	(-5.189)	(2.726)
Withdrawn F'ly Acq $(t-1)$	0.102***	0.099***	0.064*	0.066	0.039	0.078
	(4.842)	(2.867)	(1.653)	(1.222)	(0.768)	(1.380)
Withdrawn H'le Acq $(t-1)$	0.127***	0.122**	0.126**	0.072	0.135**	0.107*
	(4.614)	(2.573)	(2.511)	(1.219)	(2.313)	(1.679)
Firm Dummies			Yes	Yes	Yes	Yes
Industry Dummies		Yes				
N	20,604	20,604	20,604	14,483	11,490	10,330
# Clusters		47	2,639		2,094	
R^2	0.058	0.046	0.010		0.014	

Table 2: **Logit Models of Acquirer Decision**

The dependent variable is a Dummy that equals 1 if the firm was the Acquirer in a completed friendly M&A deal during its fiscal year. The explanatory variables are: (1) Golden Parachute, i.e., a dummy that equals 0 or 1; (2) G-index, i.e., the Gompers, Ishii, and Metrick (2003) Governance Index; (3) Board Connectedness, i.e., the average Degree of each director in the network of connections between board members of large U.S. firms; (4) # Firms in firm's Fama-French Industry; (5) Risk-free Rate; (6) Industry-Adjusted ROA; (7) Average Acquirer Premium, i.e., average Acquirer Cumulative Abnormal Return over the year before the merger; (8) Firm Size, measured as Log of market cap; Dummies for (9) Withdrawn Hostile, (10) Completed Friendly, (11) Withdrawn Friendly, and (12) Withdrawn Hostile Acquisitions in the year before the merger. Specification (3) presents results from the constrained logit estimation. Robust t-statistics are reported in parentheses. */**/*** indicate significance at the 10%/5%/1% levels.

	(1)	(2)	(3)	(4)
Golden Parachute	-0.059	-0.080	-0.050***	0.010
	(-0.834)	(-1.095)	(-2.788)	(0.116)
G-index	0.032**	0.025*	-0.015**	0.007
	(2.349)	(1.776)	(-2.392)	(0.435)
Board Connectedness				187.632***
				(2.669)
# Firms in Industry	0.412***	0.658***	0.279***	0.375*
	(10.353)	(3.973)	(8.089)	(1.670)
Risk-free Rate	10.262***	7.542***	0.229	9.661***
	(5.101)	(3.554)	(0.710)	(3.514)
ROA	0.401***	-0.358*	-0.029	-0.188
	(2.964)	(-1.657)	(-0.838)	(-0.684)
Average Acquirer Premium	1.469	1.305	-0.097	-1.662
	(1.244)	(1.076)	(-0.556)	(-1.185)
Firm Size	0.670***	0.692***	0.056***	0.686***
	(16.691)	(16.772)	(5.114)	(11.282)
Withdrawn H'le Acq	1.222***	1.132***	0.161**	1.080**
	(3.183)	(2.907)	(2.163)	(2.574)
Completed F'ly Acq $(t-1)$	1.266***	1.088***	-0.047***	0.979***
	(14.399)	(12.195)	(-4.024)	(9.462)
Withdrawn F'ly Acq $(t-1)$	1.034***	1.004***	0.097*	0.870**
	(3.638)	(3.454)	(1.869)	(2.261)
Withdrawn H'le Acq $(t-1)$	1.218***	1.154***	0.204***	1.033**
	(3.456)	(3.200)	(2.747)	(2.491)
Firm Dummies			Yes	
Industry Dummies		Yes		Yes
N	20,604	20,432	6,172	11,338

Table 3: **Linear Models of Target Decision**

The dependent variable is a Dummy that equals 1 if the firm was the Target in a completed friendly M&A deal during its fiscal year. The explanatory variables are: (1) Golden Parachute, i.e., a dummy that equals 0 or 1; (2) G-index, i.e., the Gompers, Ishii, and Metrick (2003) Governance Index; (3) Board Connectedness, i.e., the average Degree of each director in the network of connections between board members of large U.S. firms; (4) # Firms in firm's Fama-French Industry; (5) Risk-free Rate; (6) Industry-Adjusted ROA; (7) Average Target Premium, i.e., average Target Cumulative Abnormal Return over the year before the merger; (8) Firm Size, measured as Log of market cap; Dummies for participation as Target in (9) Withdrawn Hostile, (10) Completed Friendly, (11) Withdrawn Friendly, and (12) Withdrawn Hostile deals in the year before the merger. Specifications (1)-(3) and (5) present results from linear OLS estimation, while specifications (4) and (6) present results from linear GMM estimation, using the method proposed by Arellando and Bond (1991). t-statistics derived from standard errors clustered at the industry level (specification (2) or firm level (specifications (3)-(6)) are reported in parentheses. */**/*** indicate significance at the 10%/5%/1% levels.

	(1)	(2)	(3)	(4)	(5)	(6)
Golden Parachute	0.008***	0.008***	0.024***	0.102***	0.005*	0.014
	(3.465)	(3.498)	(5.666)	(3.391)	(1.913)	(1.382)
G-index	-0.000	-0.001	0.005***	-0.004***	-0.000	-0.001
	(-1.177)	(-1.437)	(3.271)	(-2.955)	(-0.043)	(-1.643)
Board Connectedness					-4.077*	-3.748*
					(-1.957)	(-1.803)
# Firms in Industry	0.009***	0.026***	0.030***	0.009***	-0.002	-0.000
	(7.557)	(4.631)	(4.596)	(4.935)	(-0.642)	(-0.902)
Risk-free Rate	0.272***	0.173***	-0.048	0.508***	0.060**	0.106**
	(4.284)	(3.043)	(-0.772)	(4.007)	(2.081)	(2.019)
ROA	0.001	-0.006	0.000	-0.006	-0.001	-0.002
	(0.144)	(-0.733)	(0.052)	(-1.002)	(-0.342)	(-0.926)
Average Target Premium	-0.001	-0.008	0.013	0.014	0.009	0.005
	(-0.080)	(-0.461)	(0.888)	(0.878)	(1.571)	(0.818)
Firm Size	-0.002**	-0.002*	0.013***	0.001	0.001	0.002**
	(-2.472)	(-1.749)	(7.288)	(0.954)	(1.515)	(2.449)
Withdrawn H'le Tar	0.223***	0.217***	0.187***	0.212	0.001	0.003
	(8.767)	(3.405)	(2.597)	(0.471)	(1.301)	(0.343)
Completed F'ly Tar $(t-1)$	0.009	0.004	-0.230***	-0.048	-0.078	0.062
	(0.724)	(0.218)	(-10.682)	(-1.363)	(-0.956)	(0.877)
Withdrawn F'ly Tar $(t-1)$	0.017	0.013	-0.013	-0.060	-0.001	-0.001
	(0.773)	(0.510)	(-0.369)	(-0.659)	(-1.613)	(-0.866)
Withdrawn H'le Tar $(t-1)$	0.143***	0.139**	0.110*	0.168	0.000	-0.000
	(5.543)	(2.540)	(1.853)	(1.430)	(0.435)	(-0.066)
Firm Dummies			Yes	Yes	Yes	Yes
Industry Dummies		Yes				
N	20,604	20,604	20,604	14,483	11,490	10,330
# Clusters		47	2,639		2,094	
R^2	0.010	0.008	0.030		0.006	

Table 4: **Logit Models of Target Decision**

The dependent variable is a Dummy that equals 1 if the firm was the Target in a completed friendly M&A deal during its fiscal year. The explanatory variables are: (1) Golden Parachute, i.e., a dummy that equals 0 or 1; (2) G-index, i.e., the Gompers, Ishii, and Metrick (2003) Governance Index; (3) Board Connectedness, i.e., the average Degree of each director in the network of connections between board members of large U.S. firms; (4) # Firms in firm's Fama-French Industry; (5) Risk-free Rate; (6) Industry-Adjusted ROA; (7) Average Target Premium, i.e., average Target Cumulative Abnormal Return over the year before the merger; (8) Firm Size, measured as Log of market cap; Dummies for participation as Target in (9) Withdrawn Hostile, (10) Completed Friendly, (11) Withdrawn Friendly, and (12) Withdrawn Hostile deals in the year before the merger. Specifications (4) and (6) present results from the constrained logit estimation. Robust t-statistics are reported in parentheses. */**/*** indicate significance at the 10%/5%/1% levels.

	(1)	(2)	(3)	(4)	(5)	(6)
Golden Parachute	0.007***	0.006***	0.131***	0.237***	0.952**	0.278
	(3.371)	(3.300)	(7.260)	(6.631)	(1.996)	(1.508)
G-index	-0.001	-0.001	0.005***	0.095***	-0.075	-0.022
	(-1.164)	(-1.525)	(6.781)	(6.212)	(-0.881)	(-0.475)
Board Connectedness					-385.046	-482.116***
					(-0.953)	(-2.663)
# Firms in Industry	0.009***	0.028***	0.155***	0.306***	-1.353	-0.563
	(7.592)	(5.273)	(4.108)	(3.828)	(-0.902)	(-1.231)
Risk-free Rate	0.252***	0.144**	-0.592*	-1.127*	29.923**	6.706*
	(4.347)	(2.496)	(-1.941)	(-1.746)	(2.047)	(1.797)
ROA	0.001	-0.006	0.056*	0.112*	-1.055	-0.070
	(0.129)	(-1.271)	(1.908)	(1.805)	(-0.845)	(-0.262)
Average Target Premium	-0.001	-0.011	0.036	0.082	1.013	1.093**
	(-0.059)	(-0.717)	(0.589)	(0.639)	(0.374)	(2.012)
Firm Size	-0.002**	-0.002**	0.096***	0.175***	0.382	0.238
	(-2.553)	(-2.665)	(8.947)	(8.037)	(1.607)	(1.394)
Withdrawn H'le Tar	0.201***	0.159***	0.428***	0.413***		
	(6.446)	(5.847)	(3.473)	(2.993)		
Completed F'ly Tar $(t-1)$	0.007	0.002	-0.071***	-0.166***	2.210*	-0.161
	(0.706)	(0.256)	(-7.141)	(-6.267)	(1.906)	(-1.537)
Withdrawn F'ly Tar $(t-1)$	0.007	0.002	-0.023	-0.038		
	(0.422)	(0.147)	(-0.549)	(-0.405)		
Withdrawn H'le Tar $(t-1)$	0.121***	0.101***	0.371***	0.375**		
	(4.373)	(4.011)	(2.797)	(2.444)		
Firm Dummies			Yes	Yes		Yes
Industry Dummies		Yes			Yes	
N	20,604	20,432	2,872	2,856	6,110	149

Table 5: **Abnormal Returns and the Provision of Golden Parachutes**

This table presentes the average Cumulative Abnormal Return (CAR) for Acquirers, Targets, and both together. Statistics are presented for short (-1,+1) and long (-126, 63) windows of trading days relative to the date of announcement. The CAR is calculated as $CAR_i = \sum_{t=-1}^{1} (r_{it} - \hat{r}_{it})$, where $\hat{r}_{it}$ is as predicted by the Fama-French-Carhart asset-pricing model estimated using daily returns for a window of 250 trading days immediately before the window for which the respective CAR is calculated. Panel 1 presents the means and the probabilty value from the one-sided t-test of the null hypothesis that the difference in means between the groups that involve deals with and without a Golden Parachute for the Target is zero. Panel 2 presents the medians and a non-parametric test for their equality across the two samples. Panel 3 presents the Wilcoxon rank test on the equality of distributions. */**/*** indicate significance at the 10%/5%/1% levels.

Panel 1: Mean t-tests. The null hypothesis is that the difference in means is zero

		Acquirer		Target		Joint	
CAR Window		short	long	short	long	short	long
	target golden parachute?						
Mean	no	-0.026	-0.010	0.168	0.197	0.170	0.236
	yes	-0.019	-0.037	0.177	0.284	0.168	0.274
P-value		0.218	0.792	0.319	0.015**	0.536	0.294

Panel 2: Median Sign Tests. The null hypothesis is that the difference in medians is zero

	target golden parachute?						
Median	no	-0.020	0.005	0.138	0.156	0.152	0.158
	yes	-0.019	-0.048	0.130	0.260	0.123	0.261
P-value		0.836	0.215	0.563	0.001***	0.457	0.243

Panel 3: Non-parametric Tests: Two-sample Wilcoxon rank-sum test

P-value		0.341	0.242	0.657	0.003***	0.595	0.215

Table 6: **Acquirer Abnormal Returns**

The dependent variable is the Cumulative Abnormal Return (CAR) that accrues to the Acquirer in the window (-1,+1) trading days relative to the date of announcement. The CAR is calculated as $CAR_i = \sum_{t=-1}^{1}(r_{it} - \hat{r}_{it})$, where $\hat{r}_{it}$ is as predicted by the Fama-French-Carhart asset-pricing model estimated using daily returns for the window $(-300, -50)$. The explanatory variables are: (1) Target Golden Parachute, i.e., a dummy that equals 0 or 1; (2) Target G-index, i.e., the Gompers, Ishii, and Metrick (2003) Governance Index; (3) Acquirer CEO Compensation, i.e., Log of Salary, Bonuses, and other compensation; (4) # Firms in Acquirer's Fama-French Industry; (5) Target and (6) Acquirer Size, measured as Log of market cap; (7) Target and (8) Acquirer ROA, industry-adjusted, for the year before the merger; (9) Target and (10) Acquirer Tobin's Q; (11) Stock Deal Dummy; (12) Risk-free Rate; (13) Business Similarity Index; (14) Same-City and (15) Same-State Dummies; (16) Similarity · Same City Dummy. All specifications contain fixed effects for the Fama-French industries. t-statistics derived from standard errors clustered at the industry level are reported in parentheses. */**/*** indicate significance at the 10%/5%/1% levels.

	(1)	(2)	(3)
Target Golden Parachute	0.024***	0.025***	0.025***
	(2.907)	(2.997)	(2.963)
Target G-index	-0.002	-0.002	-0.002
	(-1.069)	(-0.973)	(-0.973)
Acquirer CEO Compensation	0.018**	0.019**	0.019**
	(2.394)	(2.425)	(2.352)
# Firms in Acq's Industry	-0.014	-0.016	-0.023
	(-0.320)	(-0.365)	(-0.500)
Target Size	-0.023***	-0.023***	-0.024***
	(-3.660)	(-3.594)	(-3.650)
Acquirer Size	0.008	0.008	0.009
	(1.307)	(1.319)	(1.469)
Target ROA	-0.049**	-0.050**	-0.046**
	(-2.546)	(-2.572)	(-2.430)
Acquirer ROA	0.051	0.055	0.053
	(1.254)	(1.267)	(1.294)
Target Q	0.000	0.000	0.001
	(0.060)	(0.115)	(0.251)
Acquirer Q	-0.001	-0.002	-0.001
	(-0.492)	(-0.542)	(-0.527)
Stock Deal Dummy	-0.011	-0.011	-0.011
	(-0.948)	(-0.950)	(-0.961)
Risk-free Rate	0.046	0.030	0.050
	(0.056)	(0.037)	(0.060)
Business Similarity Index	0.194	0.166	0.102
	(1.217)	(1.065)	(0.627)
Same City Dummy		-0.010	-0.089
		(-0.354)	(-1.353)
Same State Dummy		0.008	0.009
		(0.627)	(0.728)
Similarity · Same City			0.064
			(1.379)
N	257	257	257
R^2	0.296	0.297	0.306

Table 7: **Target Abnormal Returns**

The dependent variable is the Cumulative Abnormal Return (CAR) that accrues to the Target in the window (-1,+1) trading days relative to the date of announcement. The CAR is calculated as $CAR_i = \sum_{t=-1}^{1}(r_{it} - \hat{r}_{it})$, where $\hat{r}_{it}$ is as predicted by the Fama-French-Carhart asset-pricing model estimated using daily returns for the window $(-300, -50)$. The explanatory variables are: (1) Target Golden Parachute, i.e., a dummy that equals 0 or 1; (2) Target G-index, i.e., the Gompers, Ishii, and Metrick (2003) Governance Index; (3) Acquirer CEO Compensation, i.e., Log of Salary, Bonuses, and other compensation; (4) # Firms in Acquirer's Fama-French Industry; (5) Target and (6) Acquirer Size, measured as Log of market cap; (7) Target and (8) Acquirer ROA, industry-adjusted, for the year before the merger; (9) Target and (10) Acquirer Tobin's Q; (11) Stock Deal Dummy; (12) Risk-free Rate; (13) Business Similarity Index; (14) Same-City and (15) Same-State Dummies; (16) Similarity · Same City Dummy. All specifications contain fixed effects for the Fama-French industries. t-statistics derived from standard errors clustered at the industry level are reported in parentheses. */**/*** indicate significance at the 10%/5%/1% levels.

	(1)	(2)	(3)
Target Golden Parachute	-0.007	-0.005	-0.007
	(-0.223)	(-0.163)	(-0.201)
Target G-index	-0.000	0.000	0.001
	(-0.063)	(0.060)	(0.126)
Acquirer CEO Compensation	0.006	0.011	0.007
	(0.210)	(0.356)	(0.237)
# Firms in Targ's Industry	-0.145	-0.142	-0.142
	(-0.963)	(-0.974)	(-0.984)
Target Size	-0.044**	-0.046**	-0.043**
	(-2.423)	(-2.676)	(-2.478)
Acquirer Size	0.026*	0.026*	0.025*
	(1.727)	(1.733)	(1.726)
Target ROA	-0.166**	-0.156*	-0.170*
	(-2.028)	(-1.866)	(-1.997)
Acquirer ROA	0.005	0.006	0.023
	(0.064)	(0.084)	(0.326)
Target Q	-0.014**	-0.014**	-0.015**
	(-2.169)	(-2.083)	(-2.252)
Acquirer Q	0.011**	0.012**	0.011**
	(2.145)	(2.149)	(2.081)
Stock Deal Dummy	-0.055**	-0.057**	-0.057**
	(-2.228)	(-2.329)	(-2.376)
Risk-free Rate	3.264	3.119	3.176
	(1.119)	(1.112)	(1.141)
Business Similarity Index	1.053**	0.860*	1.207***
	(2.317)	(1.886)	(2.891)
Same City Dummy		0.031	0.316***
		(0.497)	(2.382)
Same State Dummy		0.048	0.046
		(1.415)	(1.414)
Similarity · Same City			-0.240***
			(-2.191)
N	261	261	261
R^2	0.231	0.244	0.267