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Location, Proximity, and M&A Transactions*

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Location, Proximity, and M&A Transactions

ABSTRACT

In this paper, we examine how the geographic location of firms affects acquisition decisions and value creation for acquirers in takeover transactions. We find that firms located in an urban area are more likely to receive a takeover bid and complete a takeover transaction as a target compared with firms located in rural areas, and takeover deals involving an urban target are associated with higher acquirer announcement returns, after controlling for the proximity between the target and the acquirer. In addition, a target's urban location significantly attenuates the negative effect of a long distance between the target and the acquirer on acquirer returns, a fact that is documented in the existing literature. Our findings reveal a previously underexplored force—firm location—that can affect takeover transactions, in addition to proximity. Our paper suggests that a firm's location plays an important role in facilitating the dissemination of soft information and enhancing information-based synergies.

Key words: geographic location, proximity, takeover exposures, acquirer announcement returns, soft information

JEL Classifications: G14, G30, G34

1. Introduction

Takeover transactions represent a large and increasingly important economic activity, especially in recent years. According to Thomson Reuters, the mergers and acquisitions (M&As) announced in 2013 amount to a total transaction volume of $2.4 trillion.[1] The large number of transactions in the takeover market has been puzzling given that M&As do not always create value for bidders (see, e.g., Moeller, Schlingemann, and Stulz, 2004; Betton, Eckbo, and Thorburn, 2008).

Why then do takeovers happen? The existing theoretical literature has proposed a range of agency, industrial organizational, and behavioral arguments that explain firms' incentives to pursue takeover activities. These explanations include market power, empire building, market timing, operating efficiency enhancement, asset complementarity, acquisition of growth option, and hubris (e.g., Jensen, 1986; Roll, 1986; Jovanovic and Rousseau, 2002; Shleifer and Vishny, 2003; Rhodes-Kropf and Robinson, 2008; Levine, 2012).[2]

Given the prevalence of takeover transactions, an equally important question is which firms are more likely to become takeover targets and to get acquired. A number of studies explore various firm characteristics, including size, profitability, market valuation, insider ownership, institutional holdings, and banking relationships, that could influence a firm's probability of becoming a takeover target (e.g., Stevens, 1973; Dietrich and Sorensen, 1984; Palepu, 1986; Mikkelson and Partch, 1989; Ambrose and Megginson, 1992; Ivashina et al., 2009; Bayar and Chemmanur, 2012). In this paper, we focus on a previously untested firm characteristic—a firm's geographic location—to explore how a firm's urban (as opposed to rural) location affects its probability of becoming a takeover target and completing a takeover transaction. We further examine upon a takeover occurring, how the urban location of a target firm affects the acquirer's shareholder wealth.

A firm's geographic location plays an important role in M&As because acquisition deals involve a large amount of soft-information production and transmission (Coff, 1999). Better communication of soft information can help the acquirer and the target to mutually discover information-based synergies (e.g., collaborative research and development ventures) and hence

[1] See, for example, http://www.pwc.es/es/servicios/transacciones/assets/thomson-reuters-mergers-and-acquisitions-review-2013.pdf.

[2] A large number of empirical papers provide evidence testing the predictions of various theoretical models. For a comprehensive survey of this literature, see Betton, Eckbo, and Thorburn (2008) and Eckbo (2014).

create higher values for both parties (Uysal, Kedia, and Panchapagesan, 2008; Kang and Kim, 2008). However, unlike hard information that is largely tangible and easy to verify and communicate, soft information is difficult to codify and transmit (Petersen, 2004). The communication of soft information, such as evaluations of knowledge-based assets and managerial skills, demands an acquirer's intensive interpersonal interactions with the target in social, civic, and business occasions (Uysal, Kedia, and Panchapagesan, 2008). This feature of soft information, in turn, makes the acquirer location and the target location important as they determine the accessibility between the two parties in an M&A transaction.

While the existing literature has examined the effect of geographical distance between an acquirer and a target on acquirer returns (e.g., Uysal, Kedia, and Panchapagesan, 2008), we focus on the target's and the acquirer's urban versus rural location. This focus is motivated by the notion that although proximity can affect the accessibility between the two parties, it is not the only determinant. A firm's physical location (i.e., urban or rural areas), which determinates the easiness of transportation, can play an additional role in enhancing or hindering accessibility. We illustrate this intuition using the following example. Consider an acquirer located in Dallas, Texas, and two potential targets located in New York City (urban) and Topeka, Kansas (rural), respectively. Even though New York City is significantly farther away from Dallas (i.e., 1,548 miles) than from Topeka (i.e., 487 miles), New York's urban location makes it much easier to travel for the Dallas acquirer.[3] This easy access, in turn, facilitates the transmission of soft information and can generate a higher value for the Dallas acquirer, making the New York firm a more attractive target in despite of its longer distance. Hence, the role of the target's urban location can function on top of the effect of proximity to affect the acquiring firm's acquisition decisions and value creation.

In line with this intuition, we show that firms located in an urban area are more likely to receive a takeover bid and complete a takeover transaction as a target, and takeover deals involving an urban target create larger values for the acquirer (i.e., higher acquirer announcement returns), after controlling for the proximity between the target and the acquirer. More importantly, an urban location of the target firm significantly attenuates the negative effect of a

[3] Indeed, a typical aircraft flight from Dallas to Topeka requires at least one connection and lasts up to eight hours. On the other hand, a nonstop flight from Dallas to New York City takes approximately 3.5 hours.

long distance between the target and the acquirer on value creation for the acquirer, a fact that is documented in the existing studies (see, e.g., Uysal, Kedia, and Panchapagesan, 2008).

In the above example, we further consider two scenarios: (1) the Dallas acquirer is located in the metropolitan area with easy access to Dallas's major airline hubs, and (2) the Dallas acquirer is located in a Dallas suburb, which is a one-hour drive from the major airline hubs. It is intuitive that the advantage of the New York target's urban location (in bringing easier access between the two parties) is more valuable in the second scenario than in the first, in which case the acquirer may already have easy access to the target to begin with. Consistent with this intuition, we find that the positive effect of the target's urban location is indeed more pronounced when the acquirer's location does not permit easy transportation to the target.

Taken together, these findings suggest a significant role of both the target and the acquirer locations in a takeover transaction, and this role functions on top of the effect of proximity. The economic magnitudes of these effects are also sizable. For example, a firm located in an urban area is 41.2% more likely to receive a takeover bid compared to a nonurban firm, and the acquirer's five-day announcement abnormal returns with an urban target are 27 basis points higher than those with a nonurban target. In addition, while a one-standard-deviation increase (810 miles) in the proximity of the two parties lowers the acquirer announcement returns by 130 basis points, the target's urban location attenuates this negative effect by 93%. This attenuation effect is even more pronounced when the acquirer does not already have convenient access to the target.

Our paper is related to two strands of the literature. First, our paper contributes to the burgeoning literature on the role of geographic proximity and firm location in corporate finance. This research has shown that geographic distance matters in various financial phenomena, such as bank lending (Petersen and Rajan, 2002; Berger et al., 2005), venture capital investment (Bengtsson and Ravid, 2009; Tian, 2011), capital structure and cash policy (Loughran, 2008; Almazan et al., 2010), payout policy (John, Knyazeva, and Knyazeva, 2011), analyst coverage (Malloy, 2005; Bae, Stulz, and Tan, 2008), patenting (Jia and Tian, 2015), feedback along the supply chain (Chu et al., 2014), board information gathering (Alam et al., 2014), and board monitoring and advising services (Bennett, 2013).[4]

In the context of M&As, Uysal, Kedia, and Panchapagesan (2008) find that acquirer returns in local transactions are more than twice as high as those in nonlocal transactions. Kang and Kim (2008) show that block acquirers have a strong preference for local targets, and local block acquirers create synergies as they are more likely to engage in post-acquisition governance improvement. In addition to examining the role of geographic proximity between acquirers and targets, our paper reveals that a previously underexplored force—firm location, either urban or rural—can impact takeover transactions.

Second, our work adds to the recent literature that explores the determinants of a firm's likelihood of being taken over. For example, Ivashina et al. (2009) investigate the effects of bank lending relationship on the probability of a borrowing firm becoming a takeover target. Bodnaruk, Massa, and Simonov (2009) introduce the role of the stake of bidder's advisory investment bank into this literature. Bayar and Chemmanur (2012) focus on private firms and find that certain firm and industry characteristics (e.g., industry competitiveness, opaqueness, private benefits of control, and venture capital backing) are related to a private firm's acquisition likelihood. Our paper extends this stream of literature by showing that a firm's geographic location is another important dimension of takeover determinants.

Our findings suggest that the effect of proximity on acquisition decisions and value creation shown in previous studies might not be monotonic. This effect could change interactively with the firm's urban location or access to transportation. This implication could be extended to areas other than the setting of M&As (e.g., capital structure, payout policy, analyst coverage, venture capital investment, and bank lending).

The rest of the paper is organized as follows. Section 2 discusses the sample selection and summary statistics. Section 3 analyzes how the location of firms affects their likelihood of becoming an attempted and completed takeover target. Section 4 examines how the location of firms impacts value creation for acquirers, as well as for targets. Section 5 concludes.

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[4] Our paper is also broadly related to the literature that studies the role of board busyness, experience, monitoring, and advising based on both soft and hard information production (e.g., Coles, Daniel, and Naveen, 2008; 2012; Faleye, Hoitash, and Hoitash, 2011, 2013; Fich and Shivdasani, 2006; Field, Lowry, and Mrktchyan, 2013).

2. Data and Sample Description

Our sample comes from several different data sources. We obtain the initial sample of firm-year observations between 1990 and 2009, from the Compustat Industrial Annual Files. We exclude firms in financial and regulated utility industries (SIC 6000–6999 and SIC 4900–4999), as well as firms located outside of the United States. We then collect firm stock return data from CRSP, financial statement information from Compustat, analyst coverage data from the Institutional Brokers Estimate Systems (I/B/E/S), institutional ownership and blockholder data from the Thomson Financial 13F institutional holdings database, and corporate governance proxy variables from the RiskMetrics database. Next, we obtain information on mergers and acquisitions from the Securities Data Company (SDC) database. Throughout the paper, we refer to these transactions as either takeover transactions or M&A transactions and use the words "takeovers" and "M&As" interchangeably.

Following the previous literature, we use a firm's headquarters as a proxy for its geographic location.[5] We collect firm headquarters location data from Compustat. We use the ZIP code information from firm headquarters to identify the firm's corresponding latitude and longitude, using the 2000 U.S. Census Bureau's Gazetteer Files. We then generate the following three location measures for our following analyses. First, for our analyses on whether urban firms have a high takeover exposure (i.e., whether they are more likely to receive a takeover bid or complete a takeover transaction), we generate an urban location dummy, *Top10MSA urban*, for each firm-year observation. This variable equals one if a firm is located in one of the top ten largest metropolitan areas of the United States identified as of the 2000 Census, and zero otherwise.[6] Second, in a sample of all announced takeover transactions, we calculate the physical distance between the target and the acquirer based on the two parties' latitude and longitude coordinates. (We discuss the detailed algorithm in Appendix A.) This distance measure allows us to examine the interaction between the *target*'s urban location and its distance from the acquirer. Third, for each announced takeover transaction, we follow John, Knyazeva, and Knyzaeva and calculate the distance between the acquirer and the nearest major airport hub in the United

[5] See, for example, Coval and Moskowitz (1999), Ivkovic and Weisbenner (2005), and Malloy (2005).
[6] The ten largest metropolitan areas include New York City, Los Angeles, Chicago, Washington-Baltimore, San Francisco, Philadelphia, Boston, Detroit, Dallas, and Houston.

States as a measure of the acquirer's easiness of transportation.[7] This measure enables us to analyze the effect of the *acquirer*'s location on value creation in a takeover transaction, in addition to the target's location and the proximity between the two parties.

Table 1 reports descriptive statistics for firms' location measures and various firm characteristics. This table consists of the full sample of 18,606 firm-year observations, which we use in our analysis on firms' takeover exposures. Among these observations, 9,943 are urban firms and the remaining 8,663 observations are nonurban firms. The first two rows show that in the full sample, 5.1% of firm-years receive at least one takeover bid and 4.4% of firm-years observe a completed takeover transaction during our sample period. After breaking down these numbers based on firms' headquarters location, we observe that 5.8% of urban firm-years receive at least one takeover bid and 5.1% of urban firm-years become completed takeover targets. These propensities are significantly higher compared with 4.3% (attempted takeovers) and 3.6% (completed takeovers) for nonurban firms. The differences in these univariate comparisons are both significant at the 1% level, suggesting that urban firms are subject to higher takeover exposures than are nonurban firms.

The rest of Table 1 compares firm characteristics between urban and nonurban firms. Consistent with the findings of Loughran (2008), urban firms are on average larger than nonurban firms. The average total assets of urban firms are approximately $4 billion, while those of nonurban firms are $2.8 billion. Urban firms also have a larger cash reserve, higher growth opportunities (measured by Tobin's q), fewer tangible assets, lower leverage, and are more profitable than nonurban firms. Urban firms are covered by a larger number of financial analysts than are nonurban firms, consistent with Loughran and Schulz (2005). In addition, they have a larger number of potential local acquirers, but also face a greater competition as there are a larger number of potential local targets. The geographic distance between potential local acquirers and the target firm is significantly smaller for urban firms. Lastly, urban firms have fewer antitakeover provisions in corporate charters. In particular, they are less likely to have a poison pill and a classified board in place. We discuss variable constructions in more detail in Appendix B.

[7] Major airport hubs are the ones that account for over 0.25% of totally U.S. passenger enplanements, as classified by the Federal Aviation Administration.

Table 2 presents descriptive statistics for 11,584 announced takeover transactions at the deal level that are used in our analysis on value creation for acquirers (i.e., acquirer announcement returns). For these announced deals, we are able to observe acquirer-target-pair-specific location measures (e.g., the distance between the acquirer and the target, and the acquirer's location) and deal-specific characteristics (e.g., the acquirer's and the target's announcement returns). Among all the announced transactions, 50.4% deals involve a target that is located in an urban area, and 49.6% of deals involve a nonurban target. The average distance between the acquirer and the target is 806 miles. The average distance between an acquirer and the nearest airport hub (*Acquirer-to-hub distance*) is 30 miles.

Table 2 also displays deal-specific characteristics. An average acquirer in our sample has a market value of $6 billion, a market-to-book ratio of 2.3, and an ROA of 9.7% prior to the deal announcement. The M&A transactions in our sample have an average deal value of $419 million. Seventy percent of these transactions involve nonpublic (private or a subsidiary of a public entity) targets. In terms of payment methods, 27% of transactions are financed by cash, and 26% are all-equity acquisitions. In addition, 38% of the deals are diversifying acquisitions (in which the acquirer and the target do not share the same two-digit SIC code). When we compare deals with urban targets and those with nonurban targets, we notice a few differences in the characteristics between the two groups. For example, acquirers of an urban target have a larger market value, a higher Tobin's q, and a lower leverage. Deals involving an urban target are larger and more likely to use cash as opposed to stock as a method of payment. They are also more likely to be diversifying acquisitions, to combine high-tech firms, and to be tender offers. We control for these deal characteristics in our later multivariate analyses.

3. Firm Location and Takeover Exposures

The geographic location of firms plays an important role in an acquirer's takeover decision. Takeover transactions typically involve a large amount of soft-information production and transmission (Coff, 1999). Better communication of soft information typically leads to higher value creation because it helps the acquirer and target to discover information-based synergies, such as the discovery of promising collaborative research and development ventures (Uysal, Kedia, and Panchapagesan, 2008), and the collaboration of scientists in the two parties (Jaffe, Trajtenberg, and Henderson, 1993). An urban location makes a firm more accessible, thereby facilitating the communication of soft information. To this extent, we expect that an urban firm will emerge as a more attractive target than a similar nonurban firm. Hence, an urban firm is more likely to receive a takeover bid or complete a takeover transaction.

In this section, we test this hypothesis by examining how the geographic location of firms affects acquirers' acquisition decisions. We first provide baseline analysis in the full firm-year sample. We then employ an instrumental variable approach, propensity score matching, and a nonmoving subsample to alleviate potential endogeneity concerns in the baseline findings. We further supplement our analyses with a few robustness checks.

3.1. Baseline analyses

In Figure 1, we present a graphical analysis to compare takeover exposures between urban (solid line) and nonurban firms (dotted line). Panels A and B plot the time-series trends of attempted and completed takeovers (in which the firm is actually acquired) from 1990 to 2009, respectively. In all years, except for 2001 and 2005, the solid lines in both panels stay above the dotted lines. These observations suggest that urban firms tend to receive more attempted takeover bids than do nonurban firms, and these bids are more likely to land as completed deals. They provide preliminary evidence that firms located in urban areas have a higher takeover exposure.

To formalize this graphical analysis, we estimate the following probit model:

$$Pr(\textit{receiving a takeover bid/completing a deal})_{i,t} = \Phi\,(\alpha + \beta * \textit{Top10MSA urban}_{i,t} + \gamma' \textit{Controls}_{i,t-1} + \varepsilon_{i,t}), \quad (1)$$

where i indexes firms and t indexes time. The dependent variable is an indicator that equals one if firm i receives a takeover bid (or if the transaction is complete) in year t, and zero otherwise. $\Phi(.)$ represents the cumulative distribution function of a standard normal distribution. The variable of interest is the *Top10MSA urban* dummy that captures whether a firm is located in an urban or a nonurban area.

We incorporate a comprehensive set of controls that can predict a firm's takeover exposure. First, we follow Cremers, Nair, and John (2009) and control for firm size, Tobin's q, ROA, leverage, cash availability, sales growth, asset tangibility, and analyst coverage. Second, we account for the industry merger intensity and include an indicator variable for whether there is a takeover attempt in the same two-digit SIC industry in the year prior to the acquisition.

we control for the effect of firms' financial distress with a dummy variable indicating whether a firm has high default probabilities (i.e., Altman (1968) z-scores below 1.81). Fourth, because takeovers are more likely to occur as shareholder control increases (e.g., Shleifer and Vishny 1986, Ambrose and Megginson 1992), we include *Blockholder* to capture the existence of a block shareholder, defined as an institutional shareholder who owns more than 5% of the firm's outstanding shares. Fifth, because urban firms tend to adopt fewer antitakeover provisions (which mechanically expose them to a higher takeover likelihood than nonurban firms) we control for a firm's takeover protections in the regressions. We focus on whether a firm has a poison pill and a classified board in place, because these two characteristics are the most effective takeover deterrent mechanisms against a takeover attempt.[8]

Lastly, we take into account the possibility that our location measure, *Top10MSA urban*, might simply capture a cluster of potential local acquirers and hence more takeover opportunities in urban areas. For a given firm, we define all firms that are in the same metropolitan area and have larger total assets than this focal firm as its potential local acquirers. We then include the number of potential local bidders as a control variable.[9] In addition, the local pool of potential targets could also affect a certain firm's takeover likelihood: urban firms that face more competition are less likely to become a takeover target in this area. Hence, for a given firm, we define all firms that are in the same two-digit SIC industry and in the same metropolitan area with total assets within a [50%, 150%] bandwidth of this focal firm as its potential local targets. We then include the number of potential local targets as a control.[10] Furthermore, to ensure that our *Top10MSA urban* dummy does not merely capture proximity, which is the focus of the existing literature, we control for geographic distance between acquirers and targets. For firm-year observations that have received takeover bids, this measure is straightforward to calculate. For the rest of firm-year observations with no acquisition activities, we calculate the average distance between potential local acquirers and the focal firm.[11]

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[8] We also use alternative proxies for antitakeover protections, such as poison pill alone, classified board alone, the E-index (Bebchuk, Cohen, and Ferrell, 2009), or the G-index (Gompers, Ishii, and Metrick, 2003). We find similar results.

[9] Our results are robust to using alternative total assets cutoffs, such as 150% or 200%, or to using the same two-digit SIC industry potential local bidders.

[10] Our results are robust if we use an alternative [80%, 120%] or [70%, 130%] bandwidth.

[11] We have also used an alternative proxy for proximity by examining the total number of firms in the same MSA, and the results are robust. Because this alternative measure is highly correlated with the distance measure, we only include one variable in the regression.

In all regressions, we include both year and two-digit SIC industry fixed effects to control for time trends and industry patterns of takeover exposures. We cluster standard errors at the firm level as suggested by Petersen (2009). For easier interpretation of a probit model, we report marginal effects of all independent variables.

Table 3 presents the regression results. We report results based on both attempted and completed takeovers. In columns (1) and (2), the dependent variable equals one if the firm receives at least one takeover bid in a given year, and zero otherwise. In columns (3) and (4), the dependent variable equals one if the transaction is completed in a given year, and zero otherwise. In all specifications, we find evidence that an urban location is positively related to firms' takeover exposures, as indicated by the significant positive coefficients of *Top10MSA urban*. The economic magnitude is sizable. For example, based on column (2), being located in an urban region increases a firm's likelihood of becoming a takeover target by 2.1 percentage points in a given year. In comparison, the average unconditional probability of a firm receiving a takeover bid in our sample is 5.1 percentage points (Table 1). As such, an urban location increases a firm's takeover exposure by 41.2% (= 2.1/5.1). We find a similar interpretation when examining completed takeover transactions in columns (3) and (4).

Other control variables have the expected signs as suggested in the existing literature. For example, larger firms and firms with a higher *q* have lower exposures to takeovers, whereas firms followed by more financial analysts are more likely to receive a takeover bid. In line with Cremers, Nair, and John (2009) and Ivashina et al. (2009), *Blockholder* dummy has a positive coefficient, confirming the active role of external blockholders in takeover activities. Interestingly, a firm's takeover likelihood decreases as the number of potential local targets increases. However, the number of potential local bidders and the distance between potential acquirers and the focal firm do not play a significant role. In addition, firms' antitakeover protections do not appear to have a significant effect on their takeover exposures.

3.2. Addressing endogeneity concerns

Next, we address a number of potential endogeneity concerns that may bias the estimations in our baseline analyses. First, there might be omitted variable that affects both a firm's location and its takeover exposure. That is, firms may co-locate because of certain common geographic advantages (e.g., proximity to research resources) that can lower the cost of horizontal or vertical takeovers and make M&As more likely to happen. Second, our baseline results might be driven by reverse causality. That is, firms that intend to increase their takeover exposures relocate to urban areas to explore this opportunity. In both cases, our key variable of interest, *Top10MSA urban*, is endogenous. We employ three approaches to address these concerns.

3.2.1. Instrumental variable analyses

We start by using an instrumental variable approach to establish a causal link between a firm's urban location and its takeover exposure. We construct two alternative instrumental variables for *Top10MSA urban* and undertake two separate instrumental variable analyses.

Our first instrument for *Top10MSA urban* is the proportion of firms in each firm's same industry that are located in the urban areas (where industries are defined using two-digit SIC). The intuition is that, if a high proportion of a firm's industry peers are located in urban areas, then this firm, which presumably has the same location preference (due to a similar clientele distribution or marketing strategy), is also likely to be located in an urban area. Hence, this instrument satisfies the relevance condition of a valid instrument. This intuition is consistent with Almazan et al. (2010) and Betton, Eckbo, and Thorburn (2008). However, the industry-level location is unlikely to be directly correlated with the takeover exposure of this particular firm, which ensures that the instrumental variable reasonably satisfies the exclusion restriction. We report the regression results using this instrument in Table 4 panel A.

In the first stage, we regress *Top10MSA urban* on *Industry urban* (i.e., the instrument), as well as on all control variables used in the second stage. In column (1), the first-stage regression shows that our instrument is significantly correlated with *Top10MSA urban.* The coefficient estimate of the instrument is positive and significant at the 1% level. It suggests that a firm's industry-level concentration in urban areas significantly predicts the firm's location in urban areas. The F-statistic of the first-stage regression is 13.34 and significant at the 1% level. Based on the rule-of-thumb diagnostics suggested by Staiger and Stock (1997), we reject the null hypothesis that our instrument is a weak instrument. Therefore, the coefficient estimates in the second stage are likely unbiased and the inferences based on them are reasonably valid.

In the second stage (columns (2) and (3) of Table 4 panel A), we replace the key independent variable with the instrumented *Top10MSA urban.* Its coefficient estimates are positive and significant at the 1% level for both attempted and completed takeovers, with sizable economic magnitudes. This evidence suggests that, after controlling for potential endogeneity in a firm's physical location, all our main results hold.

Since the success of an instrumental variable analysis hinges on the satisfaction of the exclusion restriction, which is inherently untestable and has to be conceptually motivated, we construct an alternative instrument for *Top10MSA urban* to check the robustness of our results. The alternative instrument pertains to the birthplace of a firm's founder. It is an indicator variable that equals one if the founder of a firm was born in an urban area and zero otherwise. This instrument follows the intuition that entrepreneurs tend to start businesses in regions in which they have deep roots (e.g., Dahl and Sorenson, 2007; Parwada, 2008; Borowiecki, 2013). These regions provide entrepreneurs with abundant social capital (Stouffer, 1940; Zipf, 1949), which is crucial for the survival and success of their ventures (see Hoang and Antonicic (2003) for a review of the large literature on this argument). Given the founder's "home preference," we expect (and verify) that the urban status of a firm founder's birthplace is highly correlated with the urban status of the firm's location as the entrepreneur is likely to build the firm near his birthplace.[12] This argument ensures that the instrument variable satisfies the relevance condition.

Regarding the exclusion restriction, firm founders cannot control their birth location, and parental choice is also unlikely to be correlated with factors that would affect the takeover exposure of the firm founded many years later by the child they give birth to. Hence, this instrument is likely to satisfy the exclusion condition.

Following this intuition, we hand-collect founder information, including founder identities and birthplaces. Specifically, we first search each of our sample firms' founder information from sources including the *Marquis Who's Who* database, Wikipedia, and online searches. We then rely on these sources to collect birthplaces information for the identified founders. This step requires the availability of birthplace information at the city or county level, so that we can classify whether or not a founder's birthplace is an urban area (see the procedure described in Section 2). We end up with a sample of 772 firms (approximately 34% of our total

[12] Indeed, approximately 32% of our sample firms have headquarters located within 60 miles of their founders' birthplaces (as identified by the ZIP codes). This ratio is consistent with Yonker (2014), who documents that about 30% of the sample firms' CEOs are matched to firms headquartered in the CEO's origin state, supporting the argument that CEOs have a "home preference" for career decisions.

sample firms), for which we are able to collect detailed information on founders' birthplaces. This is the subsample we employ for analyses using founders' birthplaces as the instrument.

We report the results in Table 4 panel B. In the first stage, we regress *Top10MSA urban* on *Founder birthplace urban* (i.e., the instrument) as well as all control variables used in the second stage. In column (1), the coefficient estimate of the instrument is positive and significant at the 1% level. The F-statistic is 244 and significant at the 1% level. Based on the rule-of-thumb diagnostics, we are able to reject the null hypothesis that the instrument is a weak instrument.

In the second stage, reported in columns (2) and (3) of Table 4 panel B, we replace the key independent variable with the instrumented *Top10MSA urban.* Its coefficient estimates are positive and significant at the 1% level for both attempted and completed takeovers. Overall, our instrumental variable approach suggests a positive and causal effect of a firm's urban location on its takeover exposure.

3.2.2. Propensity matching

Next, we reinforce the instrumental variable approach by performing a propensity score matching analysis. Specifically, we match firms located in urban areas in our sample (the treatment group) to those located in nonurban areas based on various observable dimensions that could affect firms' location. This approach enables us to put together a set of similar firms, except for their urban location, as a control group. If the differences in takeover exposures between the two groups are mainly driven by these observable dimensions, then we should not see such differences between the treated and the matched control groups. Otherwise, our previous findings should continue to hold.

We match the urban firms in our sample based on a comprehensive set of firm characteristics as listed in panel A of Table 5. Following Rosenbaum and Rubin (1985), we match firms based on the nearest-neighbor propensity score. Specifically, we first run a logistic model among all the urban and nonurban firm-year observations by regressing *Top10MSA urban* on various firm characteristics. This regression generates a propensity score, that is, the predicted probability of being located in an urban area for each firm-year. Next, for each urban firm-year, we select 1, 3, and 5 firm-year observations from the nonurban firm-year sample that have the closest propensity scores (i.e., the 1, 3, and 5 nearest neighbors). These matched firms-years constitute the control group for our sample of urban firms.

Panels A and B of Table 5 provide three sets of diagnostic tests to compare the extent of balancing between the treatment and matched control samples. Following Rosenbaum and Rubin (1985), panel A reports the *t*-statistics testing the difference in the means of each firm characteristic between the two samples before and after the matching. After the matching, none of the differences across these two groups are statistically significant like before. This observation suggests that our matching process has removed meaningful observable differences between the two groups of firms.

Second, we calculate the standardized percentage bias between the two groups before and after the matching, following Rosenbaum and Rubin (1985). This measure is defined as the difference in the sample means of each variable in the two groups, as a percentage of the square root of the average of sample variances for this variable. Intuitively, this measure captures the magnitude of a variable's deviation between the two groups. Hence, a well-performed propensity score matching should reduce this bias to a fairly low level. The first two columns of panel B report the mean and median of the standardized percentage biases for all the characteristics in panel A. It shows that before the matching, the two groups observe an average (median) deviation of 14.8% (14.2%), meaning that there is a 14.8% (14.2%) discrepancy among all the firm characteristics between the two groups. This deviation is greatly reduced to 1% (0.7%) after the matching, suggesting that the matched control group now becomes more balanced to the treatment group.

Third, because the propensity score matching algorithm matches firm characteristics jointly, rather than individually, it is necessary to further examine the overall balancing of these variables. Therefore, we follow Sianesi (2004) and evaluate the joint significance/insignificance of the firm characteristics. Specifically, we generate several statistics based on our first-stage propensity score regression (i.e., a probit model that regresses a *Treatment* indicator on all the characteristics in panel A). These statistics include the pseudo *R*-squared, likelihood ratio, and the *p*-values testing the joint insignificance of the regressors. Intuitively, a well-performed matching should sufficiently lower the likelihood ratio and the pseudo *R*-squared. In addition, after the matching, we should be unable to reject the null hypothesis that all the matching variables are jointly insignificant in determining the *Treatment* indicator (i.e., the *p*-value of the *F*-test should be greater than 10%). This is indeed what we observe in columns (3) to (5) of panel B.

After validating our propensity score matching procedure, we present the differences of takeover exposure between our urban firms (the treatment group) and the matched nonurban firms (the control group) in panel C. Our main findings continue to hold for both attempted and completed takeovers, with sizable economic magnitudes. Based on the nearst-1 neighborhood matching, a firm's urban location increases its takeover exposure by 18% in a given year. We find similar interpretations for the nearest-3 and nearest-5 neighborhood matching, as well as for completed takeover deals.

3.2.3. Nonmoving subsample analyses

Next, we employ a test to further address the reverse causality concern: firms that intend to increase their takeover exposures may endogenously relocate to urban areas to explore this opportunity. We limit our attention to a subsample of firms whose location was determined well before they are exposed to a takeover opportunity and have never moved since then. In this subsample, a firm's location is pre-determined and is unlikely to be affected by the takeover opportunities far into the future.

We identify whether a firm's headquarters have moved using data on the historical headquarters location of firms from the Compact Disclosure database.[13] We consider a firm as a moving firm if the city name of its headquarters changes from one year to another. We choose to identify moving firms based on the change of their city names because changes in street numbers/names or ZIP codes may overestimate the number of meaningful moving firms, whereas a change in state name may omit situations in which firms move within a state.[14] We then repeat our analyses in this sample, using both the baseline and instrumental variable regressions.

Table 6 reports the results. Columns (1) and (2) present the baseline regressions estimating equation (1). Columns (3) and (4) present the instrumental variable regressions using *Industry urban* as the instrument, and Columns (5) and (6) present the instrumental variable regressions using *Founder birthplace urban* as the instrument. To save space, we suppress the

[13] Unlike Compustat, Compact Disclosure publishes data, from historical SEC filings, on the street address, city, state, and area ZIP code for firm headquarters.

[14] We are able to identify 1,785 moving firms in our sample. Because our data from Compact Disclosure starts from 1990 and ends at 2004, we leave a five-year window out of our sample and only focus on the period from 1995–2004, to ensure that there are at least five years separating a firm's location decision and its future takeover exposure. This restriction ensures the predetermination of the firm's location, independent of its future takeover exposure.

coefficient estimates of other control variables. We continue to observe positive and significant coefficient estimates of the *Top10MSA urban* dummy. This finding again suggests that our baseline results are unlikely driven by firms' endogenous choices of location.

3.2.4. Additional robustness analyses

We undertake several additional tests to check the robustness of our baseline findings. First, we split our sample into two subperiods: 1991–2001 and 2002–2010. We do so to examine whether our results still hold in the most recent decade when the information technology and communication tools developed quickly. While these developments largely facilitate the transmission of hard information, their impact on the communication of soft information is limited because, as discussed before, the collection and communication of soft information rely on intensive interpersonal interactions. If the advantage of a firm's urban location lies in the improved dissemination of soft information, then we should expect our results to hold in this latter period. This is indeed what we observe in Table 7 panel A.

Second, we exclude from our sample takeovers in the Bay area, New York, and Boston. We do this test because firms in the same industry are particularly likely to endogenously co-locate to these locations to take advantage of certain geographic advantages (e.g., proximity to research resources) and at the same time see more horizontal or vertical takeovers. Table 7 panel B shows that our main findings remain statistically significant after excluding these locations, with a sizable economic significance.

Third, we conduct a set of tests to examine whether the target's urban location affects the completion of a deal after the deal is announced. These tests are in a similar vein as our baseline regressions but are conditional on the set of announced M&A deals. Therefore, we are able to observe the actual distance between the acquirer and the target in an announced deal and gauge its effect on the likelihood of deal completions. In our sample, about 89% of announced deals are eventually completed. In an untabulated analysis, using both a probit and a rare-event logit model, we find that the target urban dummy appears to be positively associated with a deal's completion, as expected. However, the relation is not statistically significant. This result seems to suggest that the advantage of the target's urban location tends to play a more important role when acquirers are identifying candidate targets. It exhibits a limited role in determining a deal's completion once it is announced; this is presumably because by nature, a deal's completion tends to be determined by other factors (such as antitrust practices or other regulatory considerations) that are beyond the choice of either the acquirer or the target.

4. Firm Location and Value Creation for Acquirers and Targets

After establishing the link between a firm's urban location and its takeover exposure at the firm-year level analysis, we now turn to examining the effect of firm location on value creation for acquirers by analyzing the acquirer announcement returns. We also analyze how firm location affects the target and combined announcement returns.

We undertake these analyses at the takeover deal level. One advantage of these deal-level analyses is that we can identify multiple acquirer-target-pair-specific location variables, including the geographical distance (proximity) between the acquirer and the target, the acquirer's location relative to major airport hubs (which we describe in more details below), in addition to the target's urban location. These acquirer-target-pair-specific location variables enable us to investigate a rich set of interaction effects between firm location and proximity. Examining these interaction effects is important because, as discussed before, value creation in takeovers largely depends on the communication of soft information, which in turn depends on the accessibility between the two parties. While proximity is one important factor that affects accessibility, a firm's location can play an additional role, given the same extent of proximity. Hence, the target's location and the acquirer's location may function interactively with proximity in affecting value creation.

4.1. The acquirer's announcement returns

We first examine value creation for acquirers by calculating the acquirer's stock market cumulative abnormal returns (CARs) over the event window [-2, +2] surrounding the acquisition announcement date (i.e., event day 0).[15] We use the CRSP equal-weighted return as the market return and estimate the market model parameters over the 200 trading days ending two months before the takeover announcement.[16] Following the existing takeover literature, such as Masulis

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[15] Our choice of the five-day event window is based on Fuller et al. (2002), who find that the announcement dates provided by the 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.

[16] Schwert (1996) finds that, on average, the target firm stock price starts to rise about two months before the initial bid announcement. Therefore, ending our estimation period two months before can help to minimize potential bias

et al. (2007) and Cai and Sevilir (2012), we run OLS regressions estimating the following equation:

$$Acquirer's\ CAR_{i,t} = \alpha + \beta' Location\ Variables_{\ i,t} + \gamma' Controls_{i,t-1} + \varepsilon_{\ i,t}\ , \qquad (2)$$

where *i* indexes firm and *t* indexes time. *Controls* include a vector of standard deal characteristics used in the M&A literature that affects acquirer returns. We cluster standard errors at the acquirer level.

We report the regression results estimating equation (2) in Table 8. Columns (1) and (2) present the key findings of this test. First, column (1) shows that the two dimensions of firms' location—the target's urban location and the proximity between the target and the acquirer—affect acquirer returns independently. Consistent with the results in Table 3, the positive and significant coefficient estimate of the *Target top10MSA urban* dummy suggests that the target's urban location facilitates the dissemination of soft information and hence increases values created for the acquirer. The acquirer of an urban target enjoys an average 26.6 basis points higher announcement return than that acquiring a nonurban target. In addition, the distance between the acquirer and the target, *Ln (1+AT distance)*, has a negative effect on acquirer returns (although it is statistically insignificant). This finding is in line with Uysal, Kedia, and Panchapagesan (2008) and suggests that a longer distance puts the acquirer in a relatively disadvantageous position in collecting soft information from the target, lowering the value of the deal to the acquirer.

Column (2) shows that the two dimensions of location—the target's urban location and the proximity between the target and the acquirer—also affect acquirer returns interactively. This effect is captured by the interaction term between *Target top10MSA urban* and *Ln (1+AT distance)*. Its positive and significant coefficient suggests that the advantage of the target's urban location attenuates the negative effect of the target's long distance from the acquirer. a one-standard-deviation increase (810 miles) in the distance between the target and acquirer decreases acquirer returns by 130 basis points (= -0.194 * *Ln*(810)) for a nonurban target, but by

in announcement returns resulting from investors' anticipation or information leakage before the deal announcements.

only 9 basis points (= (-0.194+0.180) * *Ln*(810)) for an urban target. This represents a 93% reduction in the negative effect of proximity on acquire returns (= (130-9)/130). [17]

Columns (3) to (5) further explore an additional layer—the location of the acquirer—of this attenuation effect. We expect that the effect of the target's urban location in column (2) will be more pronounced if the acquirer does not have easy transportation to the target. To test this intuition, following John, Knyazeva, and Knyzaeva (2011), we condition our column (2) results on the acquirer's access to transportation, as measured by the physical distance between the acquirer and the nearest major airport hub.[18]

Columns (3) and (4) repeat the analysis in column (2) in two subsamples that are partitioned based on whether the distance between the acquirer and the nearest major airport hub is above (i.e., the acquirer is far away from an airport hub) or below (i.e., the acquirer is close to an airport hub) the sample median, respectively. Comparing the coefficients of the interaction term (*Target top10MSA urban * Ln (1+AT distance)*) between columns (3) and (4), we see that the attenuation effect of the target's urban location is more pronounced, both statistically and economically, when the acquirer is far away from an airport hub than in the other group. As shown in column (3), the target's urban location not only attenuates but also slightly reverses (-0.257+0.305=0.048) the negative effect of a long distance between the two parties. This effect is obtained after controlling for whether the acquirer is already in an urban area (i.e., *Acquirer top10MSA urban*). In contrast, column (4) shows that distance does not have much negative effect on acquirer returns to begin with (indicated by the insignificant coefficient of *Ln(1+AT distance)*); this is not surprisingly given that the acquirer already has easy access to transportation and easy access to the target. As such, even though the interaction term *Target top10MSA urban * Ln(1+AT distance)* has a positive coefficient, it is not statistically significant.[19]

[17] In column (2), we also see that the coefficient estimate of *Target top10MSA urban* becomes insignificant (and negative). This is intuitive because as the distance between the target and the acquirer shortens (in the extreme case to zero), the role of the target's urban location in facilitating the transmission of soft information no longer matters.

[18] Alternatively, as a measure of the acquirer's access to transportation, we have also used whether the acquirer is located in an urban area, assuming that an urban location is more likely to have a major airport hub. This measure, however, is a less direct measure than the distance between the acquirer and the nearest major airport hub. For this reason, we use the distance measure to present our following results. Nevertheless, our findings are robust to the alternative measure.

[19] This cross-sectional finding itself does not deny the beneficial effect of target urban location as shown in column (2). It merely documents that there is heterogeneity, conditional on the location of acquirers, in the average effect in column (2).

In column (5), we pool the two subsamples and include a triple interaction term, *Target top10MSA urban * Ln(1+AT distance) * Ln(1+AH distance)*, where *Ln(1+AH distance)* measures the (logarithm of) the distance between the acquirer and the nearest airport hub. The significant and positive coefficient estimate of the triple interaction term confirms that the difference in the interaction terms between columns (3) and (4) is statistically significant. As the acquirer moves away from a major airport hub by one standard deviation (48 miles, which is approximately a one-hour drive via a combination of freeways and local roads), the coefficient of the two-way interaction term *Target top10MSA urban * Ln(1+AT distance)* changes from being insignificantly different from zero (-0.192) to being significantly positive (0.45 = -0.192+0.164 * *Ln*(1+48)). Once again, this observation suggests that the attenuation effect becomes more pronounced when the acquirer does not have handy transportation access.

In all our analyses, we control for a number of bidder and deal characteristics that could affect acquirer returns: acquirer's size, Tobin's q, leverage, ROA, pre-announcement stock price runup, and deal value. We include a stock dummy that equals one if at least part of the transaction is financed with stock, a dummy on industry relatedness of the acquisition, and a dummy variable indicating whether the bidder and the target are both from high-tech industries. Chang (1998) and Faccio, McConnell, and Stolin (2003) find that higher acquirer announcement returns, especially in deals involving private targets, can be explained by a potential monitoring role performed by new target block holders. Hence, we control for target public status by including a *Nonpublic target* dummy that equals one if the target is not publicly traded, and zero otherwise.[20] Lastly, because we include both mergers and acquisitions in our sample, we include a *Merger* dummy that equals one if the deal is a merger and equals zero otherwise. Most of the control variable estimates show signs consistent with previous studies. For example, the acquirer's size is negatively related with the announcement returns, consistent with Moeller, Schlingemann, and Stulz (2004). Acquirers earn higher returns when they acquirer private consistent with Chang (1998) and Fuller, Netter, and Stegemoller (2002).

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[20] Ideally, we would also like to include the target's corporate governance measures, for example, the E-index, poison pills, or classified boards, as additional control variables. However, typical proxies for corporate governance, such as board characteristics or shareholder rights, are only available for selected publicly traded firms (such as S&P 1500 firms) for a limited period. This small sample size greatly reduces the power of our tests. Indeed, in unreported results, we repeat our analyses in Table 8 and include the target's E-index in all the regressions. The number of observations shrinks from 11,584 (in Table 8) to only 422. Although the coefficient estimates in this small sample generate the same interpretation as that in Table 8, they are not statistically significant at the 10% level. We find similar results if we use the target's poison pill or classified board as a proxy for its corporate governance.

Overall, our results on the acquirer's announcement returns support the notion that an urban location of a target helps to facilitate the transmission of soft information through enhancing the accessibility between the two parties in a takeover transaction. However, an alternative explanation of this finding is that after an acquirer takes over an urban target, this acquirer may face increasing product demands from the target's urban area. If this is the case, the advantage of an urban location is merely driven by an improved product market position, rather than by better transmission of soft information.

We first note that our analysis on the acquirer's distance to an airport hub (i.e., columns (3)–(5) of Table 8) may help to alleviate this concern. If an urban advantage to the acquirer merely comes from increased product market demands, then there should be no differential effects of this advantage on the acquirer's announcement returns that are dependent on the acquirer's location. In other words, customers' product demands should stay the same regardless of whether the supplier is close to or far away from an airport hub.

To further address this concern, we repeat our analyses in Table 8 in a subsample of unrelated takeover transactions. The intuition is that if an acquirer and the target are not in the same product market space, then product demands coming through the target should be unlikely to affect the acquirer's announcement returns. Hence, the results we observe in this subsample should be less likely to be driven by the increasing product demands. Following the existing literature (e.g., Morck, Shleifer, and Vishny, 1990; Wang and Xie, 2009), we define unrelated takeover transactions as the ones in which the acquirer and the target are from different industries as categorized by the two-digit SIC codes. Table 9 presents the results. In this subsample analysis, all of our previous findings hold: an urban target attenuates the negative effect of a long distance between the two parties on acquirer returns, especially when the acquirer does not already have handy access to transportation.

4.2. The target's announcement returns and the combined returns

Next, we examine whether firm location has a similar effect on the target's returns and the total announcement returns (both the acquirer and the target combined). In our sample, we obtain 2,589 transactions in which the target is a public firm with available stock information for us to calculate their abnormal returns. We use the target CARs over the event window [-2, +2] as defined before and employ a similar regression model as in equation (2) for the following analyses.

Columns (1) to (3) of Table 10 examine the target's announcement returns. Firm location shows a similar set of interaction effects to those discussed before. First, in column (1), where the acquirer is located farther away from an airport hub, a long distance between the acquirer and the target has a negative effect on the target's announcement returns. This effect is consistent with that of Uysal, Kedia, and Panchapagesan (2008). Second, an urban location of a target attenuates this negative distance effect by 91% (1.547/ (-1.691)), captured by the interaction term *Target top10MSA urban * Ln(1+AT distance).* Third, the first two effects are notably weaker in column (2), where the acquirer is located close to an airport hub (i.e., its distance to an airport hub is below the sample median). This observation is again consistent with the intuition that easy access to transportation for the acquirer limits the role of both proximity and the target's urban location. Column (3) further confirms these findings in a combined sample by including a triple interaction term, *Target top10MSA urban * Ln(1+AT distance) * Ln(1+AH distance)*. Its coefficient is positive and significant, as expected.

We note that in column (1), the coefficient estimate of *Target top10MSA urban* is negative and significant at the 5% level. This finding suggests that when the distance between the acquirer and the target goes to zero (i.e., the interaction term *Target top10MSA urban * Ln(1+AT distance)* plays no role), an urban location of a target has a negative effect on its announcement returns. This effect might arise because as the proximity of the two parties converges to zero (i.e., the target and the acquirer are literally located in the same location), *Target top10MSA urban* no longer captures the target's accessibility. Instead, it might capture the better information environment of an urban firm than that of a nonurban firm, presumably because of higher analyst coverage, more institutional investors being around, and higher stock liquidity (Loughran and Schultz, 2005). This better information environment makes an urban firm less likely to be overvalued (and overpaid) by the acquirer, giving rise to lower target announcement returns. However, we interpret this finding with caution and do not conclude on this point because we do not know whether the same pattern holds for transactions involving private targets whose stock prices and announcement returns are not observable to us.

In columns (4) to (6), we report the results for combined announcement returns of the acquirer and the target. We find similar interpretations as those reported in columns (1) to (3).

That is, a target's urban location can attenuate the negative effect of long distance on total takeover values, and this attenuation effects are heterogeneous depending on the acquirer's access to transportation. In all specifications in Table 10, we include, but do not tabulate, the same set of control variables as in Table 8. The coefficient estimates of these control variables show expected signs.

5. Conclusion

In this paper, we examine how the geographic location of firms affect acquisition decisions and value creation for acquirers and targets in takeover transactions, based on a sample of U.S. firms from 1990 to 2009. We find that firms located in an urban area are more likely to receive a takeover bid and complete a takeover transaction as a target. Conditional on an announced takeover transaction, deals involving an urban target generate higher acquirer announcement returns. Moreover, the target's urban location attenuates the negative effect of a long distance between the target and the acquirer on the acquirer's returns, a fact that is documented in the existing literature. Interestingly, this attenuation effect is dependent on the acquirer's geographic location: it is more pronounced when the acquirer does not have easy transportation to the target, and is weaker when the acquirer's location already permits convenient access to the target.

Our paper reveals that firm location, in addition to proximity, has a significant impact on takeover transactions. Our findings also suggest that the effect of proximity on acquisition decisions and value creation studied in the existing literature may not be monotonic. It could depend on the urban location of firms or access to transportation. This implication could be extended to areas other than the setting of mergers and acquisitions. For example, a growing literature finds that geographic proximity matters for capital structure, payout policy, analyst coverage, venture capital investment, and bank lending. A similar nonmonotonic effect of proximity may arise in these contexts. The findings in this paper, to our best knowledge, provide the first set of evidence documenting this nonmonotonic effect and call for future research along this line in other contexts.

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Appendix A: The Distance Calculation between Two Locations

For each firm, we obtain the pair of latitude and longitude coordinates (measured in degrees of decimal) of its headquarters from the U.S. Census Bureau's Gazetteer City-State File. Because of the earth's near-spherical shape (technically an oblate spheroid), calculating an accurate distance between two points requires the use of spherical geometry and trigonometric math functions. We therefore convert latitude or longitude from decimal degrees to radians by dividing the latitude and longitude values by 180/π, or approximately 57.296. Because the radius of the Earth is assumed to be 6,378.8 kilometers, or 3,963 miles, we use the great circle distance formula to calculate mileage between two pairs of latitudes and longitudes:

$$3{,}963 \times Arccos[Sin(Lat1) \times Sin(Lat2) + Cos(Lat1) \times Cos(Lat2) \times Cos(Long2 - Long1)],$$

where *Lat1* and *Lat2* (*Long1* and *Long2*) represent the latitudes (longitudes) of two points, respectively.

Appendix B: Variable Definitions and Data Sources

Location Measures	
Top10MSA urban	Indicator variable for the sample of all firm-years: equals one if a firm's headquarters is located in one of the top ten largest U.S. metropolitan areas (including suburbs) and zero otherwise. (Source: Compustat)
Industry urban	The proportion of firms located in the top ten largest U.S. metropolitan areas in each firm's same year and same two-digit SIC industry. (Source: Compustat)
Founder birthplace urban	Indicator variable for the sample of all firm-years with founder birthplace data: equals one if the birthplace of a firm's founder is located in one of the top ten largest U.S. metropolitan areas and zero otherwise. (Source: Compustat)
Target top10MSA urban	Indicator variable for the sample of announced takeover deals: equals one if a target's headquarters is located in one of the top ten largest U.S. metropolitan areas (including suburbs) and zero otherwise. (Source: SDC)
Acquirer top10MSA urban	Indicator variable for the sample of announced takeover deals: one if an acquirer's headquarters is located in one of the top ten largest U.S. metropolitan areas (including suburbs) and zero otherwise. (Source: SDC)
Ln(1+AT distance)	Variable for the sample of announced takeover deals: natural logarithm of the one plus geographic distance between an acquirer's headquarters and a target's headquarters. (Source: SDC)
Ln(1+AH distance)	Variable for the sample of announced takeover deals: natural logarithm of the geographic distance between an acquirer's headquarters and the nearest major airport hub in the United State. (Source: SDC and the Federal Aviation Administration)
Other variables	
Acquirer CAR	The acquirer's five-day stock market cumulative abnormal returns (CARs) over the event window [-2, +2] surrounding the takeover announcement date, event day 0, calculated using the CRSP equal-weighted return as the market return and by estimating the market model parameters over the 200 trading day period ending two months prior to deal announcement. (Source: CRSP)
Acquirer market value of equity	Acquirer's market capitalization two months prior to the acquisition announcement. (Source: CRSP)
Acquirer size	Natural logarithm of acquirer's market capitalization two months prior to

	the acquisition announcement. (Source: CRSP)
All cash deal	Indicator variable: one if the acquisition is purely finance with cash, zero otherwise. (Source: SDC)
All stock deal	Indicator variable: one if the acquisition is purely finance with stock, zero otherwise. (Source: SDC)
Bad z-score	Indicator variable: one if the z-score is below 1.81, and zero otherwise. Following the Altman (1968) model, z = 12(working capital/total assets) + 1.4(retained earnings/total assets) + 3.3(EBIT/total assets) + 0.6(market value of equity/book value of total liabilities) + 1.0(sales/total assets). (Source: Compustat)
Blockholder	Indicator variable: one if there is at least one institutional shareholder who owns more than 5% of the total shares outstanding and zero otherwise. (Source: Thomson Financial 13f)
Cash	Cash and short-term investments (item 1), scaled by book value of total assets (item 6). (Source: Compustat)
Classified board	Indicator variable: one if the firm has classified board, and zero otherwise. (Source: RiskMetrics)
Combined CAR	The combined acquirer's and target's five-day stock market cumulative abnormal returns (CARs) over the event window [-2, +2] surrounding the takeover announcement date, event day 0, calculated using the CRSP equal-weighted return as the market return and by estimating the market model parameters over the 200 trading day period ending two months prior to deal announcement. (Source: CRSP)
Diversifying acquisition	Indicator variable: one if the acquirer and the target are not within the same two-digit SIC code industry, and zero otherwise. (Source: SDC)
E-index	Entrenchment index based on six antitakeover provisions, taken from Bebchuk, Cohen, and Ferrell (2009). (Source: RiskMetrics)
G-index	Governance index based on 24 antitakeover provisions, taken from Gompers, Ishii, and Metrick (2003). (Source: RiskMetrics)
High-tech combination	Indicator variable: one if the bidder and the target are both in the high tech industries, and zero otherwise. (Source: SDC)
Industry M&A intensity	Indicator variable: one if there are takeovers with the same two-digit SIC industry in the year prior to the event, and zero otherwise. (Source: SDC)
Leverage	Book value of debts over book value of total assets: (item 34 + item 9)/item 6. (Source: Compustat)
Ln(1+distance b/w potential acquirers and targets)	For firm-year observations that have received takeover bids, we calculate the natural logarithm of the distance between the focal target firm and the acquirer. For the rest of firm-year observations with no acquisition activities, we calculate the average distance between potential local acquirers and the firm *i*. A potential acquire is a firm in the same metropolitan area with total assets larger than firm *i*. This measure is divided by 1,000 to ensure that the coefficient of this variable in regressions has a readable scale. (Source: Compustat)
Ln(1+No. of analysts)	Natural logarithm of the number of following analysts. (Source: I/B/E/S)
Ln(1+No. of local potential acquirers)	Natural logarithm of the number of firms in the same metropolitan area have larger total assets than firm *i*. (Source: Compustat)
Ln(1+No. of local potential targets)	Natural logarithm of the number of firms in the same two-digit SIC industry and in the same metropolitan area with total assets within a [50%, 150%] bandwidth of the firm *i*. (Scoure: Compustat)
Ln(Deal value)	Natural logarithm of the acquisition deal value in millions. (Source: SDC)

Market equity	Market value of equity: item 25*item 199. (Source: Compustat)
Merger	Indicator variable: one if the transaction is a merger of equals and zero if it is an acquisition (Source: SDC)
Nonpublic target	Indicator variable: one if the takeover transaction involves a target whose equity is not publicly traded. (Source: SDC)
PP&E	Property, plant, and equipment (item 7), scaled by book value of total assets (item 6). (Source: Compustat)
Poison pill	Indicator variable: one if the firm has poison pill in place, and zero otherwise. (Source: RiskMetrics)
Poison pill + cboard	Indicator variable: one if the firm has both poison pill and classified board in place, and zero otherwise. (Source: RiskMetrics)
ROA	Operating income before depreciation (item 13), scaled by total assets (item 6). (Source: Compustat)
Sales growth	Δsales/sales: Δitem 12/item 12. (Source: Compustat)
Stock price runup	Buy-and-hold abnormal return during the 200 trading days ending two months before the announcement date. (Source: CRSP)
Target CAR	The target's five-day stock market cumulative abnormal returns (CARs) over the event window [-2, +2] surrounding the takeover announcement date, event day 0, calculated using the CRSP equal-weighted return as the market return and by estimating the market model parameters over the 200 trading day period ending two months prior to deal announcement. (Source: CRSP)
Tender offer	Indicator variable: one for tender offers, and zero otherwise. (Source: SDC)
Tobin's q	Market value of assets over book value of assets: (item 6 – item 60 + item 25*item 199)/item 6. (Source: Compustat)

Figure 1: Attempted Takeovers of Public Firms between 1990 and 2009

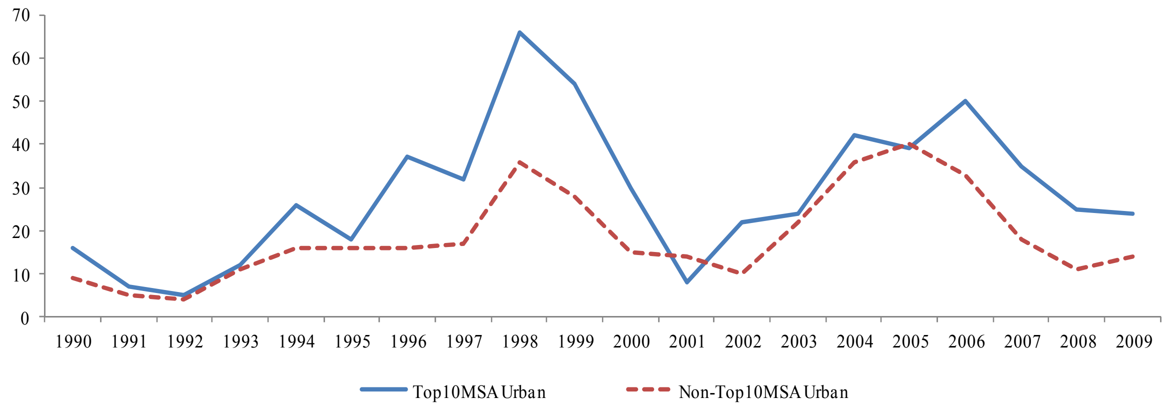

Figure 2: Completed Takeovers of Public Firms between 1990 and 2009

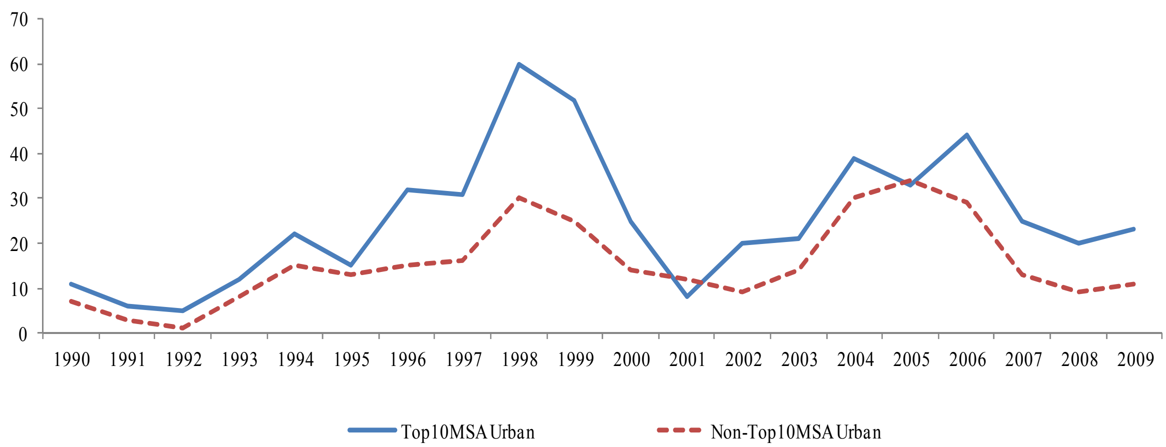

Table 1: Descriptive Statistics for the Universal Firm-Year Sample

This table reports descriptive statistics for firm characteristics in the sample of U.S. firm-year observations on Compustat universe between 1990 and 2009. Variable definitions are discussed in Appendix B. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Full Sample		Top10MSA Urban		Nontop10MSA Urban			
	N	Mean	N	Mean (1)	N	Mean (2)	Diff. (1) - (2)	
Sample distribution statistics								
Indicator for firm-years in attempted takeovers	18,606	0.051	9,943	0.058	8,663	0.043	0.015	***
Indicator for firm-years in completed takeovers	18,606	0.044	9,943	0.051	8,663	0.036	0.015	***
Firm characteristics								
Total assets (mil.)	18,606	3,449	9,943	3,996	8,663	2,822	1,175	***
Tobin's q	18,606	1.946	9,943	2.036	8,663	1.842	0.194	***
PP&E	18,606	0.302	9,943	0.274	8,663	0.334	-0.060	***
Cash	18,606	0.140	9,943	0.169	8,663	0.106	0.063	***
Market value of equity (mil.)	18,606	4,699	9,943	5,590	8,663	3,676	1,914	***
Leverage	18,606	0.232	9,943	0.216	8,663	0.249	-0.033	***
ROA	18,606	0.134	9,943	0.126	8,663	0.142	-0.016	***
Sales growth	18,606	0.096	9,943	0.106	8,663	0.084	0.022	***
Bad z-score	18,606	0.099	9,943	0.109	8,663	0.087	0.022	***
No. of analysts	18,606	9.660	9,943	10.476	8,663	8.722	1.754	***
Blockholder	18,606	0.751	9,943	0.750	8,663	0.751	-0.001	
No. of local potential acquirers	18,606	62	9,943	99	8,663	20.361	78	***
No. of local potential targets	18,606	3	9,943	4	8,663	0.777	3	***
Distance b/w local potential acquirers and a target	18,606	31	9,943	12	8,663	52.849	-41	***
Poison pill + classified board	18,606	0.373	9,943	0.346	8,663	0.405	-0.059	***
Poison pill	18,606	0.543	9,943	0.537	8,663	0.550	-0.013	*
Classified board	18,606	0.576	9,943	0.535	8,663	0.622	-0.088	***
E-index	18,606	2.127	9,943	2.050	8,663	2.215	-0.165	***
G-index	18,606	9.014	9,943	8.783	8,663	9.279	-0.496	***

Table 2: Descriptive Statistics for Announced Takeover Deals

This table reports descriptive statistics for deal characteristics in the sample of U.S. announced takeover deals between 1990 and 2009. We obtain takeover deal information from the SDC Mergers and Acquisitions database. Variable definitions are discussed in Appendix B. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Full Sample		Top10MSA Urban		Nontop10MSA Urban			
	N	Mean	N	Mean (1)	N	Mean (2)	Diff. (1) - (2)	
Target top10MSA urban	11,584	0.504						
Acquirer top10MSA urban	11,584	0.524	5,835	0.660	5,749	0.385	0.276	***
Acquirer-to-target distance	11,584	806	5,835	859	5,749	752	107	***
Acquirer-to-hub distance	11,584	30	5,835	22	5,749	37	-15	***
Acquirer market value of equity ($mil)	11,584	6,098	5,835	7,873	5,749	4,297	3,576	***
Acquirer Tobin's q	11,584	2.256	5,835	2.497	5,749	2.011	0.486	***
Acquirer leverage	11,584	0.192	5,835	0.182	5,749	0.202	-0.021	***
Acquirer ROA	11,584	0.097	5,835	0.099	5,749	0.095	0.003	
Acquirer stock price runup	11,584	0.090	5,835	0.097	5,749	0.082	0.016	*
Deal value ($mil)	11,584	419	5,835	571	5,749	264	306	***
Nonpublic target	11,584	0.700	5,835	0.693	5,749	0.707	-0.013	
Indicator of all cash deal	11,584	0.273	5,835	0.294	5,749	0.251	0.043	***
Indicator of all stock deal	11,584	0.262	5,835	0.248	5,749	0.275	-0.027	***
Diversifying acquisition	11,584	0.382	5,835	0.401	5,749	0.363	0.038	***
High-tech combination	11,584	0.244	5,835	0.302	5,749	0.184	0.117	***
Tender offer	11,584	0.042	5,835	0.050	5,749	0.033	0.017	***
Merger	11,584	0.007	5,835	0.008	5,749	0.005	0.003	*

Table 3: Regressions for Firm's Takeover Likelihood

This table presents the probit regressions for a firm's takeover likelihood in the full sample of all firm-years. Marginal effects of estimated coefficients are reported. The dependent variable in columns "Attempted Takeover" is a dummy variable that equals one if the firm is the target of an attempted takeover in a given year and zero otherwise. The dependent variable in columns "Completed Takeover" is an indicator variable that equals one if the firm is the target of a completed takeover in a given year and zero otherwise. All regressions include year and two-digit SIC industry fixed effects. Definitions of independent variables are discussed in Appendix B. *t*-statistics, based on standard errors clustered at the firm level, are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Attempted Takeover		Completed Takeover	
	(1)	(2)	(3)	(4)
Top10MSA urban	0.018***	0.021***	0.016***	0.018***
	(2.726)	(3.064)	(2.814)	(2.898)
Tobin's q		-0.005***		-0.004***
		(-3.077)		(-2.709)
PP&E		-0.009		-0.007
		(-0.869)		(-0.773)
Ln(cash)		0.002*		0.002**
		(1.840)		(2.188)
Ln(market equity)		-0.012***		-0.010***
		(-6.604)		(-6.375)
Industry M&A intensity		0.007		0.004
		(0.981)		(0.764)
Leverage		0.009		0.005
		(1.269)		(0.774)
ROA		-0.001		0.003
		(-0.154)		(0.289)
Sales growth		-0.007		-0.007*
		(-1.569)		(-1.846)
Bad z-score		0.008		0.006
		(1.454)		(1.196)
Ln(1+No. of analysts)		0.007***		0.008***
		(2.877)		(3.733)
Blockholder		0.021***		0.020***
		(6.076)		(6.331)
Ln(1+No. of local potential acquirers)		0.000		0.000
		(0.049)		(0.235)
Ln(1+No. of local potential targets)		-0.005**		-0.003
		(-2.174)		(-1.479)
Ln(1+distance b/w potential		-0.000		-0.000
acquirers and targets)		(-0.112)		(-0.007)
Poison pill + cboard		-0.002		-0.001
		(-0.638)		(-0.537)
Year fixed effects	yes	yes	yes	yes
Industry fixed effects	yes	yes	yes	yes
Observations	18,606	18,606	18,606	18,606
Pseudo R-squared	0.054	0.084	0.061	0.090

Table 4: Instrumental Variable Regressions for Firm's Takeover Likelihood

This table presents the instrumental variable regressions. Marginal effects of estimated coefficients are reported. Panel A presents the regression results with *Industry urban* as an instrument, and panel B presents the regression results with *Founder birthplace urban* as an instrument. In the first stage, the dependent variable is the *Top10MSA urban* dummy, and the independent variables include the instrument, as well as the same control variables as in the second-stage regressions. In the second stage, the dependent variable in the column "Attempted Takeover" ("Completed Takeover") is a dummy variable that equals one if the firm is the target of an attempted (completed) takeover in a year and zero otherwise. The independent variables include the instrumented Top10MSA urban dummy, predicted using the first-stage regression estimates, as well as the same set of firm characteristics control variables as in Table 3. All regressions include year and two-digit SIC industry fixed effects. Definitions of all other variables are discussed in Appendix B. *t*-statistics, based on standard errors clustered at firm level, are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Industry urban as an instrument

	First-stage	Second-stage	
		Attempted Takeover	Completed Takeover
	(1)	(2)	(3)
Industry urban	0.174***		
	(3.652)		
Top10MSA urban (instrumented)		0.051***	0.047***
		(3.928)	(4.229)
Tobin's q	-0.232***	-0.003**	-0.002*
	(-20.806)	(-2.145)	(-1.671)
PP&E	-0.004	-0.010	-0.008
	(-0.036)	(-0.903)	(-0.825)
Ln(cash)	0.073***	0.001	0.002
	(6.330)	(1.143)	(1.453)
Ln(market equity)	0.623***	-0.015***	-0.014***
	(41.365)	(-7.231)	(-7.302)
Industry M&A intensity	-0.130**	0.008	0.005
	(-2.249)	(1.127)	(0.892)
Leverage	0.613***	0.006	0.002
	(8.248)	(0.807)	(0.283)
ROA	-0.809***	0.005	0.008
	(-8.659)	(0.547)	(0.888)
Sales growth	-0.030	-0.007*	-0.008*
	(-1.196)	(-1.659)	(-1.902)
Bad z-score	0.477***	0.004	0.002
	(8.763)	(0.728)	(0.454)
Ln(1+No. of analysts)	0.054**	0.007***	0.008***
	(2.399)	(2.712)	(3.561)
Blockholder	-0.006	0.021***	0.020***
	(-0.183)	(6.124)	(6.406)
Ln(1+No. of local potential acquirers)	1.059***	-0.007**	-0.006**
	(62.942)	(-2.196)	(-2.314)
Ln(1+No. of local potential targets)	0.267***	-0.007***	-0.005**
	(11.984)	(-2.909)	(-2.254)

Ln(1+distance between potential acquirers and targets)	-0.380***	0.003	0.003*
	(-28.848)	(1.566)	(1.794)
Poison pill + cboard	-0.190***	-0.001	-0.000
	(-6.732)	(-0.193)	(-0.067)
Year fixed effects	yes	yes	yes
Industry fixed effects	yes	yes	yes
Observations	18,606	18,606	18,606
Pseudo R-squared	0.552	0.085	0.091
F-statistics	13.337	–	–

Panel B: Founder birthplace urban as an instrument

	First-stage	Second-stage	
		Attempted Takeover	Completed Takeover
	(1)	(2)	(3)
Founder birthplace urban	0.884***		
	(15.612)		
Top10MSA urban (instrumented)		0.052***	0.051***
		(3.826)	(4.132)
Tobin's q	-0.255***	-0.005**	-0.003
	(-12.163)	(-2.025)	(-1.642)
PP&E	-0.092	-0.030*	-0.040***
	(-0.464)	(-1.936)	(-2.971)
Ln(cash)	0.007	0.001	0.001
	(0.300)	(0.672)	(0.446)
Ln(market equity)	1.033***	-0.015***	-0.013***
	(30.396)	(-4.813)	(-4.712)
Industry M&A intensity	-0.124	0.005	0.008
	(-1.164)	(0.519)	(1.094)
Leverage	0.727***	0.003	-0.003
	(4.855)	(0.301)	(-0.284)
ROA	-3.009***	0.011	0.018
	(-8.848)	(0.512)	(0.934)
Sales growth	-0.003	-0.008	-0.011*
	(-0.063)	(-1.287)	(-1.951)
Bad z-score	0.717***	-0.002	-0.001
	(6.640)	(-0.311)	(-0.217)
Ln(1+No. of analysts)	0.025	0.006*	0.006**
	(0.545)	(1.841)	(2.135)
Blockholder	-0.009	0.014***	0.012***
	(-0.149)	(2.797)	(2.727)
Ln(1+No. of local potential acquirers)	1.476***	-0.003	-0.003
	(38.601)	(-0.668)	(-0.794)
Ln(1+No. of local potential targets)	0.514***	-0.003	-0.001
	(11.379)	(-0.852)	(-0.351)
Ln(1+distance between potential acquirers and targets)	-293.719***	5.455***	5.065***
	(-11.407)	(2.724)	(2.863)
Poison pill + cboard	-0.189***	0.003	0.003

	(-3.379)	(0.651)	(0.837)
Year fixed effects	yes	yes	yes
Industry fixed effects	yes	yes	yes
Observations	6,986	6,986	6,986
Pseudo R-squared	0.671	0.117	0.129
F-statistics	243.735	–	–

Table 5: Propensity Score Matching

This table presents the propensity score matching analyses. Panel A reports the pairwise comparisons of the variables on which the matching is performed both pre-matching and post-matching. Panel B reports the standardized percentage bias between two samples before and after the match, as well as joint significance test of firm characteristics. Panel C presents the difference in takeover exposures between the treatment group and the control group. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Pre- and post-matching differences

	Pre-matching					Post-matching			
Variable	Treated	Control	Diff.	*t*-stat		Treated	Control	Diff.	*t*-stat
Tobin's q	2.037	1.836	0.201	10.05	***	2.037	2.068	-0.030	-1.37
PP&E	0.274	0.333	-0.059	-19.07	***	0.274	0.271	0.002	0.73
Ln(cash)	-2.560	-3.085	0.525	24.04	***	-2.560	-2.554	-0.006	-0.32
Ln(market equity)	7.132	6.903	0.229	9.62	***	7.132	7.098	0.034	1.47
Leverage	0.215	0.248	-0.033	-10.93	***	0.215	0.219	-0.004	-1.25
ROA	0.127	0.144	-0.017	-9.96	***	0.127	0.127	0.000	-0.18
Sales growth	0.107	0.085	0.022	3.03	***	0.107	0.109	-0.002	-0.32
Bad z-score	0.108	0.085	0.024	5.39	***	0.108	0.103	0.005	1.23
Ln(1+No. of analysts)	2.100	1.977	0.123	9.34	***	2.100	2.094	0.006	0.44
Blockholder	0.751	0.751	-0.001	-0.09		0.751	0.748	0.003	0.48
Poison pill+cboard	0.346	0.405	-0.059	-8.23	***	0.346	0.349	-0.002	-0.32

Panel B: Joint significance/insignificance

Sample	(1) Mean Bias	(2) Median Bias	(3) Pseudo R2	(4) LR chi2	(5) p>chi2
Pre-matching	14.80	14.20	0.043	1102.33	0.000
Post-matching	1.10	0.70	0.000	13.24	0.278

Panel C: PSM differences

	Treated	Control	Difference	*t*-stat	
Attempted Takeover					
Unmatched	0.057	0.043	0.015	4.52	***
Nearest neighbor = 1	0.057	0.048	0.009	1.86	*
Nearest neighbor = 3	0.057	0.049	0.008	2.05	**
Nearest neighbor = 5	0.057	0.050	0.007	1.89	*
Completed Takeover					
Unmatched	0.050	0.035	0.015	4.98	***
Nearest neighbor = 1	0.050	0.041	0.009	2.10	**
Nearest neighbor = 3	0.050	0.042	0.008	2.24	**
Nearest neighbor = 5	0.050	0.042	0.008	2.22	**

Table 6: Regressions for Firm's Takeover Likelihood in a Nonmoving Subsample

This table presents the baseline probit regressions and the IV regressions for a firm's takeover likelihood in a subsample of firm-years in which a firm's headquarters location does not change. The dependent variable in columns "Attempted Takeover" is a dummy variable that equals one if the firm is the target of an attempted takeover in a given year and zero otherwise. The dependent variable in columns "Completed Takeover" is an indicator variable that equals one if the firm is the target of a completed takeover in a given year and zero otherwise. All panels include firm characteristics control variables as those in Table 3. All regressions include year and two-digit SIC industry fixed effects. Definitions of independent variables are discussed in Appendix B. *t*-statistics, based on standard errors clustered at firm level, are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Baseline regression		Second-stage IV		Second-stage IV	
	Attempted Takeover	Completed Takeover	Attempted Takeover	Completed Takeover	Attempted Takeover	Completed Takeover
	(1)	(2)	(3)	(4)	(5)	(6)
Top10MSA urban	0.022**	0.019**				
	(2.265)	(2.177)				
Top10MSA urban (instrumented with *Industry urban*)			0.074***	0.069***		
			(4.078)	(4.259)		
Top10MSA urban (instrumented with *Founder birthplace urban*)					0.091***	0.085***
					(4.158)	(4.781)
Firm controls	Same as Table 3, Columns (2) and (4)					
Year fixed effects	yes	yes	yes	yes	yes	yes
Industry fixed effects	yes	yes	yes	yes	yes	yes
Observations	8,157	8,157	8,157	8,157	3,152	3,152
Pseudo R-squared	0.103	0.113	0.106	0.118	0.145	0.171

Table 7: Regressions for Firm's Takeover Likelihood: Robustness Checks

This table presents the robustness of the impact of a firm's takeover likelihood on takeover exposures. The dependent variable in columns "Attempted Takeover" is a dummy variable that equals one if the firm is the target of an attempted takeover in a given year and zero otherwise. The dependent variable in columns "Completed Takeover" is an indicator variable that equals one if the firm is the target of a completed takeover in a given year and zero otherwise. Panel A repeats the analyses in Table 3 in two subperiods: 1990–2001 and 2002–2009, separately. Panel B consists of a subsample of firm-years that exclude observations from states California, New York, and Massachusetts. All regressions include year and two-digit SIC industry fixed effects. Definitions of independent variables are discussed in the Appendix B. *t*-statistics, based on standard errors clustered at firm level, are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Subperiods

1990–2001	Baseline regression		Second-stage IV		Second-stage IV	
	Attempted Takeover	Completed Takeover	Attempted Takeover	Completed Takeover	Attempted Takeover	Completed Takeover
	(1)	(2)	(3)	(4)	(5)	(6)
Top10MSA urban	0.022**	0.017**				
	(2.496)	(2.241)				
Top10MSA urban (instrumented with *Industry urban*)			0.069***	0.070***		
			(4.288)	(5.162)		
Top10MSA urban (instrumented with *Founder birthplace urban*)					0.055***	0.055***
					(3.610)	(3.942)
Firm controls	Same as Table 3, Columns (2) and (4)					
Year fixed effects	yes	yes	yes	yes	yes	yes
Industry fixed effects	yes	yes	yes	yes	yes	yes
Observations	9,036	9,036	9,036	9,036	3,465	3,465
Pseudo R-squared	0.109	0.124	0.112	0.130	0.165	0.182

2002–2010	Baseline regression		Second-stage IV		Second-stage IV	
	Attempted Takeover	Completed Takeover	Attempted Takeover	Completed Takeover	Attempted Takeover	Completed Takeover
	(1)	(2)	(3)	(4)	(5)	(6)
Top10MSA urban	0.020**	0.018**				

	(2.159)	(2.085)				
Top10MSA urban (instrumented with *Industry urban*)			0.030*	0.021		
			(1.648)	(1.275)		
Top10MSA urban (instrumented with *Founder birthplace urban*)					0.045**	0.051**
					(2.067)	(2.315)
Firm controls	Same as Table 3, Columns (2) and (4)					
Year fixed effects	yes	yes	yes	yes	yes	yes
Industry fixed effects	yes	yes	yes	yes	yes	yes
Observations	9,570	9,570	9,570	9,570	3,521	3,521
Pseudo R-squared	0.083	0.080	0.083	0.079	0.126	0.131

Panel B: Excluding observations from CA, NY, and MA

	Baseline regression		Second-stage IV		Second-stage IV	
	Attempted Takeover	Completed Takeover	Attempted Takeover	Completed Takeover	Attempted Takeover	Completed Takeover
	(1)	(2)	(3)	(4)	(5)	(6)
Top10MSA urban	0.021**	0.019***				
	(2.488)	(2.698)				
Top10MSA urban (instrumented with *Industry urban*)			0.058***	0.050***		
			(4.125)	(4.653)		
Top10MSA urban (instrumented with *Founder birthplace urban*)					0.056***	0.061***
					(3.302)	(3.831)
Firm controls	Same as Table 3, Columns (2) and (4)					
Year fixed effects	yes	yes	yes	yes	yes	yes
Industry fixed effects	yes	yes	yes	yes	yes	yes
Observations	13,538	13,538	13,538	13,538	4,970	4,970
Pseudo R-squared	0.093	0.102	0.095	0.104	0.130	0.142

Table 8: Regressions for Acquirer Announcement Returns

This table presents the OLS regressions for acquirer announcement returns. The dependent variable is the five-day acquirer cumulative abnormal returns (CARs, in percentage) surrounding the take announcement date from two days prior to the announcement date through two days after the announcement date. All regressions control for year and industry fixed effects. Definitions of independent variables are discussed in the Appendix B. *t*-statistics, based on standard errors adjusted for heteroskedasticity and firm clustering, are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	Acquirer far from an airport hub (3)	Acquirer close to an airport hub (4)	(5)
Target top10MSA urban * Ln(1+AT distance) * Ln (1+AH distance)					0.164**
					(2.508)
Target top10MSA urban * Ln(1+AT distance)		0.180**	0.305**	0.033	-0.192
		(2.003)	(2.314)	(0.249)	(-1.072)
Target top10MSA urban * Ln (1+AH distance)					-0.738**
					(-2.030)
Ln(1+AT distance) * Ln (1+AH distance)					-0.084*
					(-1.764)
Ln(1+AT distance)	-0.057	-0.194***	-0.257***	-0.098	0.021
	(-1.471)	(-2.665)	(-2.670)	(-0.862)	(0.140)
Ln (1+AH distance)					0.536*
					(1.890)
Target top10MSA urban	0.266*	-0.857	-1.538*	-0.097	0.757
	(1.649)	(-1.514)	(-1.917)	(-0.116)	(0.706)
Acquirer top10MSA urban	-0.076	0.031	0.331	-0.080	0.172
	(-0.467)	(0.151)	(1.203)	(-0.276)	(0.857)
Acquirer size	-0.676***	-0.609***	-0.618***	-0.515***	-0.564***
	(-12.823)	(-9.470)	(-6.658)	(-5.743)	(-8.723)
Acquirer Tobin's q	-0.074*	-0.077	-0.123	-0.044	-0.079
	(-1.736)	(-1.235)	(-1.358)	(-0.501)	(-1.236)
Acquirer leverage	1.400***	1.156**	0.821	1.404*	1.136**
	(3.188)	(2.245)	(1.105)	(1.840)	(2.136)

Acquirer ROA	0.819	-0.109	-2.381*	0.684	-0.773
	(1.210)	(-0.110)	(-1.673)	(0.478)	(-0.772)
Acquirer stock price runup	-0.898***	-0.912***	-0.617	-1.291***	-0.916***
	(-5.265)	(-2.728)	(-1.234)	(-3.451)	(-2.754)
Ln(deal value)	0.255***	0.262***	0.327***	0.199**	0.254***
	(4.221)	(3.665)	(3.312)	(2.062)	(3.611)
Nonpublic target	2.902***	2.813***	3.243***	2.257***	2.773***
	(14.069)	(11.455)	(10.111)	(6.663)	(11.450)
All cash deal	0.298	0.342*	0.395	0.264	0.358**
	(1.558)	(1.903)	(1.645)	(1.043)	(1.999)
All stock deal	0.039	-0.036	0.284	-0.360	-0.003
	(0.191)	(-0.150)	(0.889)	(-0.996)	(-0.011)
Diversifying acquisition	0.189	0.152	-0.018	-0.042	0.022
	(1.163)	(0.831)	(-0.068)	(-0.165)	(0.115)
High-tech combination	-0.367*	-0.235	-0.577	-0.387	-0.433
	(-1.873)	(-0.714)	(-1.375)	(-0.856)	(-1.409)
Tender offer	3.062***	2.669***	3.520***	1.376***	2.566***
	(7.380)	(3.233)	(3.223)	(2.630)	(3.389)
Merger	2.807***	2.903**	4.241**	1.407	2.858**
	(2.968)	(2.219)	(2.361)	(0.783)	(2.194)
Constant	2.149***	2.973***	-1.228	0.342	-2.096
	(5.135)	(2.726)	(-0.651)	(0.158)	(-1.216)
Year fixed effects	yes	yes	yes	yes	yes
Industry fixed effects	yes	yes	yes	yes	yes
Observations	11,584	11,584	6,198	5,386	11,584
Adj. R-squared	0.050	0.053	0.071	0.042	0.056

Table 9: Regressions for Acquirer Announcement Returns, Subsample of Unrelated Takeovers

This table presents the OLS regressions for acquirer announcement returns in a subsample of unrelated takeovers. Unrelated takeovers are the ones in which the acquirer and the target are from different industries, categorized by the 2-digit SIC codes. The dependent variable is the five-day acquirer cumulative abnormal returns (CARs, in percentage) surrounding the take announcement date from two days prior to the announcement date through two days after the announcement date. All regressions control for year and industry fixed effects. Definitions of independent variables are discussed in the Appendix B. *t*-statistics, based on standard errors adjusted for heteroskedasticity and firm clustering, are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Acquirer far from an airport hub	Acquirer close to an airport hub	
	(1)	(2)	(3)
Target top10MSA urban * Ln(1+AT distance)			0.201*
* Ln (1+AH distance)			(1.813)
Target top10MSA urban * Ln(1+AT distance)	0.409*	0.122	-0.123
	(1.734)	(0.610)	(-0.432)
Target top10MSA urban * Ln (1+AH distance)			-0.831
			(-1.285)
Ln(1+AT distance) * Ln (1+AH distance)			-0.042
			(-0.479)
Ln(1+AT distance)	-0.368**	-0.132	-0.157
	(-2.005)	(-0.792)	(-0.636)
Ln (1+AH distance)			0.249
			(0.466)
Target top10MSA urban	-2.410	-0.924	-0.115
	(-1.609)	(-0.725)	(-0.066)
Controls		Same as Table 8	
Year fixed effects	yes	yes	yes
Industry fixed effects	yes	yes	yes
Observations	2,246	2,176	4,422
Adj. R-squared	0.084	0.034	0.057

Table 10: Regressions for Target and Combined Announcement Returns

This table presents the OLS regressions for target and combined announcement returns in panels A and B, respectively. The dependent variable is the five-day target (combined) cumulative abnormal returns (CARs, in percentage) surrounding the take announcement date from two days prior to the announcement date through two days after the announcement date. All regressions control for year and industry fixed effects. Definitions of independent variables are discussed in Appendix B. *t*-statistics, based on standard errors adjusted for heteroskedasticity and firm clustering, are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Panel A: Target announcement returns			Panel B: Combined announcement returns		
	Acquirer far from an airport hub	Acquirer close to airport hub		Acquirer far from an airport hub	Acquirer close to an airport hub	
	(1)	(2)	(3)	(4)	(5)	(6)
Target top10MSA urban * Ln(1+AT distance) * Ln (1+AH distance)			0.579*			0.103
			(1.810)			(0.914)
Target top10MSA urban * Ln(1+AT distance)	1.547**	-0.052	-0.531	0.580**	0.146	0.175
	(2.195)	(-0.085)	(-0.625)	(2.400)	(0.602)	(0.551)
Target top10MSA urban * Ln (1+AH distance)			-2.640			-0.533
			(-1.422)			(-0.798)
Ln(1+AT distance) * Ln (1+AH distance)			-0.440*			0.005
			(-1.767)			(0.056)
Ln(1+AT distance)	-1.691***	0.262	0.408	-0.403**	-0.175	-0.326
	(-3.344)	(0.538)	(0.572)	(-2.230)	(-0.830)	(-1.156)
Ln (1+AH distance)			3.023**			0.255
			(2.132)			(0.457)
Target top10MSA urban	-8.875**	-2.223	0.164	-4.192***	-1.513	-1.998
	(-2.130)	(-0.586)	(0.032)	(-2.946)	(-1.005)	(-1.025)
Controls	Same as Table 8					
Year fixed effects	yes	yes	yes	yes	yes	yes
Industry fixed effects	yes	yes	yes	yes	yes	yes
Observations	1,356	1,233	2,589	1,356	1,233	2,589
Adj. R-squared	0.137	0.108	0.121	0.116	0.085	0.103