Geography and Acquirer Returns

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Abstract

We examine the impact of geographical proximity on the acquisition decisions of US public firms over the period 1990-2003. Transactions where the acquirer and target firms are located within 100km of each other are classified as local transactions. We find that acquirer returns in local transactions are more than twice that in non-local transactions. The higher returns to local acquirers are, at least partially, due to information advantages arising from geographical proximity. These information advantages facilitate acquisition of targets that on average create higher overall return. However, bidders use their information advantages to earn a higher share of the surplus created.

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1 Introduction

An increasing and diverse literature documents the role of geographic proximity in the transmission of information. Geographic proximity is associated with knowledge spillovers, resolution of information problems in bank lending, and more accurate earnings forecasts by analysts.[1] Information advantages associated with geographic proximity have also been found to explain the "local bias" observed in mutual fund investments, as well as the portfolio decisions of individual investors.[2]

In this paper, we examine the role of geographic proximity and its potential for information transmission on the acquisition performance of U.S. public firms Geographical proximity is likely to facilitate the transmission of *soft* information which is difficult to codify and often serendipitously recognized as opposed to *hard* information that is tangible and can be easily coded, transmitted and interpreted (Petersen and Rajan, 2002; Audretsch, 2003). Transmission of soft information in geographic proximate mergers could arise from the interactions of managers through social, civic and business meetings. Furthermore, geographically proximate firms may also share customers and suppliers and be exposed to similar financial and information intermediaries such as the banks and the media. Consequently, geographically proximate bidders may have access to more information about the target than distant bidders.

Information advantages of proximate bidders may help them identify undervalued target firms. This is most likely the case when targets have low visibility and when targets face information problems. Proximity may also help achieve a higher level of synergy gains. These synergies might arise from more efficient sharing of common facilities and human capital

[1] See Baum and Sorenson (2003) for a survey. Also refer to Jaffe et al. (1993), Audretsch and Feldman (1996), Petersen and Rajan (2002), Degryse and Ongena (2004), Malloy (2005) and Section 2 for a brief discussion of this literature.

[2] See Coval and Moskowitz (1999, 2001), Huberman (2001), Grinblatt and Keloharju (2001), Zhu (2002), Ivkovich and Weisbennar (2003).

between geographically proximate firms. These synergies are exemplified by the following: "The distance between Premark headquarters and Florida Tile's operations made it more difficult for Premark's management to know when Florida Tile was experiencing problems. This was particularly important in Premark's slow response to production problems at Florida Tile" (p. 218 Kaplan, S., Mitchell, M.L. and K. H. Wruck, 2000).

These information advantages imply that bidders earn higher returns in their proximate deals. We test this hypothesis for all completed domestic transactions involving mergers and acquisition of majority interest by a U.S bidder between 1990 and 2003. A bidder is classified as geographically proximate or "local" if the bidder's headquarters is located within 100 kilometers of the target firm. We find that bidders, which are geographically proximate to their targets, earn significantly higher returns as compared to distant bidders. The average 5-day cumulative abnormal return, over [-2, 2] days around announcement, is 2.38 percent for local transactions as compared to 0.89 percent for non-local transactions. Given that the average value of the acquirer in our sample was around $8.5 billion, this difference implies that the local acquirers earned $125 million more on average than non-local acquirers in their acquisitions.

Surprisingly, there is little evidence that local transactions are predominantly within the same industry or that local acquirers earn higher returns in within industry deals relative to across industry deals. In short, higher synergies in within-industry mergers do not appear to explain the observed return to local bidders. The observed higher return to acquirers in local transactions, referred to as the "local return," varies with characteristics of the target firm. Though the local return is significant for both private and public targets, it is stronger in both magnitude and statistical significance for private targets. In addition, we find higher local acquirer returns when the target is small, R&D intensive, located in a non-metro area, and has no analyst coverage. As these characteristics are correlated with information problems of the targets, the results suggest that information advantages at least partially explain the higher return to local acquirers. Further,

we find that the higher return to local acquirers is not just confined to mergers but is also observed in local asset purchases.

For a subset of transactions, where the target is a public firm, we find that total returns are higher in local deals. Further, total gains in local deals are higher when the target has an R&D program. These findings are consistent with the following interpretation: Information advantages related to the evaluation of R&D programs of proximate targets may allow bidders to acquire targets that generate higher overall value. In line with prior literature, that documents the importance of geographic proximity for diffusion of knowledge, we find that R&D is one source of the potential information advantage in local deals. Though total returns are higher in local deals, targets returns in local deals are not significantly different suggesting that gains from local deals mostly accrue to the acquirer.

In summary, we find that bidders earn higher returns in their local acquisitions and that these gains are at least partially explained by their information advantages. These information advantages, on average, facilitate the acquisition of targets that are a better "fit", and consequently associated with higher overall returns.

Our results provide a new dimension to patterns and value creation in mergers and acquisitions. Though several decades of research on merger activity (for surveys, see Jensen and Ruback (1983), Jarrell, Brickley and Netter (1988), and Andrade, Mitchell and Stafford (2001)) successfully distinguish value-creating from value-destroying acquisitions, relatively little is known about how value is created in acquisitions. This study empirically documents mechanisms that lead to value creation in acquisitions. Though most of prior literature finds that acquirers earn on average a zero return in their acquisitions, recent papers by Fuller, Netter and Stegemoller (2002), and Moeller, Schlingemann and Stulz (2003) document that average return to acquirers is significantly positive when the targets are not publicly traded and for small acquirers

respectively.[3] We show that geographic proximity is associated with higher acquirer returns even after controlling for acquirer size and target status.

The rest of the paper is organized as follows. In Section 2, we discuss related literature. We describe data in Section 3. We examine acquirer returns in Section 4 and explore target and total returns in Section 5. We extend our analysis to asset sales in Section 6. We conclude in Section 7.

2 Related Literature

The use of geographic proximity to capture information advantages is motivated by the findings of an increasing and diverse literature that examines the role of geographic proximity in the transmission of information. Jaffe et al. (1993) find that geographic proximity facilitates information transfer between scientists contributing to the clustering of innovative activity. Audretsch and Feldman (1996) document the presence of knowledge spillovers within industry clusters. Recent studies show that information advantages associated with geographic proximity can explain the "local bias" observed in mutual fund investments (Coval and Moskowitz (1999, 2001)) as well as the portfolio decisions of individual investors (Huberman (2001), Grinblatt and Keloharju (2001), Zhu (2002), Ivkovich and Weisbennar (2003), Pirinsky and Wang (2005), Feng and Seasholes (2005), and Dvorak (2005)). Studies such as Petersen and Rajan (2002) and Degryse and Ongena (2004) document the role of distance in information resolution for bank lending. In addition, Malloy (2005) reports that local equity analysts predict the future earnings of geographically proximate firms more accurately than their distant counterparts.

[3] The finding of zero average returns for bidders is consistent with a competitive acquisition market (see Mandelker (1974), Asquith (1983) and Ruback (1983). Other explanations for the on average zero bidder returns have been examined. Song and Walkling (2004) show that zero bidder returns are due to the market anticipating the acquisition programs of firms. Bhagat, Dong, Hirchleifer and Noah (2004) argue that the announcement period returns do not take into account the probability of the bid failing and also incorporate information about the stand alone value of the bidder.

The effect of geographic proximity on acquisition decisions has been examined previously for cross-border and domestic takeovers. Eckbo and Thorburn (2000) find that Canadian bidders outperform U.S. bidders in Canada. However, Kang (1993) finds that announcement returns of Japanese bidders are significantly greater than that of U.S. bidders in the U.S. The conflicting results of these papers might be due to the impact of factors, other than information asymmetry, like cultural, legal and tax differences on bidder returns. In contrast, the studies on domestic takeovers abstract away from these differences by concentrating on takeover activity in a single industry, i.e., the banking industry. Cornett and Tehranian (1992), Houston and Ryngaert (1994), Houston, James and Ryngaert (2001) and DeLong (2001) studies the wealth effect of geographic proximity on domestic bank mergers and find larger gains associated with mergers between banks that do business in the same region. Though these studies examine mergers in the banking industry over the period of deregulation, similar synergies are likely to exist in mergers in other industries as well. In this paper, we extend the analysis to cross-industry takeovers and find that the return to local acquirers is distinct from within industry synergy gains documented by prior literature.[4]

3 Data

Our sample consists of all completed transactions on Securities Data Corporation's (SDC) U.S. Mergers and Acquisitions Database from 1990 to 2003 for which the acquirer is covered under CRSP, and data on city and state of acquirer and target are available on SDC. We include only transactions that were classified as a merger, or an acquisition of majority interest. Later we also examine asset sales to test the robustness of our findings. We exclude transactions where either the acquirer or target is a foreign firm, or is a financial firm or utility (SIC 6000 –

[4] Some prior literature, for e.g., Ashcroft, Coppins and Raeside (1994) find proximity of transactions reduces search costs especially in the presence of large information asymmetries. Our result, that local returns are higher in the presence of information problems, is consistent with this literature.

6999 and SIC 4900 – 4999). We also exclude small transactions, valued at less than five million dollars and transactions by small acquirers, i.e., with market value less than five million dollars. Lower valued transactions and transactions of small acquirers are more likely to be localized and may not reflect any significant information advantages associated with geographic proximity.

We match data on the city and state of targets and acquirers reported in SDC with data from the U S Census Bureau Gazetteer to get latitudes and longitudes for each acquirer and target. We then use the arc length between these two coordinates to estimate the distance between the acquirer and the target. The distance d_{12} between place 1 and 2 was estimated using the Haversine formula. With R the radius of the earth ($\approx$ 6378 kilometers) the distance is

$$d_{12} = R \times 2 \times \arcsin(\min(1, \sqrt{a}))$$

$$a = (\sin(dlat/2))^2 + \cos(lat1) \times \cos(lat2) \times (\sin(dlon/2))^2$$

In the above expression $dlat = lat2 - lat1$ and $dlon = lon2 - lon1$. Lat1 and lon1 are the latitude and longitude of place 1 (acquirer's location) and lat2 and lon2 are the latitude and longitude of place 2 (target location). Following, Coval and Moskowitz (2001) and Malloy (2005), we classify transactions as local if the distance between the target and acquirer is less than one hundred kilometers.

The distribution of transactions and their characteristics is displayed in Table 1. In about 48% of the transactions the targets were private firms, in 44% they were public firms and in the remaining they were subsidiaries. Approximately, 19.87% of the transactions were classified as local. Geographic proximity is likely to facilitate transmission of soft information rather than tangible information that can be easily coded and transmitted. Recent advances in information technology therefore should not impact the information advantages garnered due to proximity. Consistent with this, we see no decreasing time trend in the fraction of local transactions.

The average market value of the acquirers is $8504 million while the median is much smaller at $622 million (Table 2). Though the average size of the local bidder is significantly

larger than that for distant bidders the medians are not significantly different. The mean relative value of the transaction, measured as the ratio of the value of the transaction to the market value of the acquirer in the year prior to the announcement of the transaction, is 0.38. The median is lower at 0.13. We do not find significant difference in relative size of transactions across local and non-local acquirers.

About 60% of the transactions are in the same two-digit SIC as reported by SDC. The proportion of same industry transactions is approximately similar in local and non-local mergers. About 27% of all transactions are cash based. Transactions are classified as cash based if payment is made with cash, debt, liabilities or some combination of these (see Martin (1996) and Fuller, Netter and Stegemoller (2002)). Approximately, 28% of transactions are hybrid, i.e., with payment in combination of cash and common stock. Local bidders are less likely to use cash than non-local acquirers, but there is no difference in hybrid offers.[5]

4 Acquirer Returns

In this section, we examine the relation between acquirer returns and local transactions. Acquirer returns are estimated using Brown and Warner's (1985) method to calculate cumulative abnormal returns (CARs) for the five-day period (-2,2) around the announcement of the transaction. The abnormal returns are given as $AR_i = r_i - r_m$ where r_i is the daily return on firm i and r_m the return on the CRSP value-weighted index. We do not estimate market parameters as acquirers in our sample are frequent bidders (see Fuller, Netter and Stegemoller (2002)).

Table 3 reports mean and median CARs for local and non-local transactions. The average return to acquirers in local transactions is 2.4%, whereas that of non-local transactions is only 0.9%. The difference of one hundred and fifty basis points in returns to acquirers of local versus

[5] In addition to asymmetric information other factors like bidder's size and the hostility of the offer may affect firm's decision on the method of payment. Therefore, we interpret the evidence related to the method of payment with caution. As will be discussed later in the paper, we focus on the impact of method of payment on acquirer returns to test informational differences suggested by Myers and Majluf (1984).

non-local transactions is significant at the 1% level. This finding indicates that average acquirer returns in local transactions are more than twice that in non-local transactions. Though, the median return to acquirers in local transactions is lower at 0.8% it is still significantly higher than the 0.4% return in non-local transactions (p value of 0.08). These results show that stock prices react more favorably to the announcement of local transactions.

We examine the sensitivity of our findings to alternate definitions of local transactions. We find that if a distance of 75 km or 125 km, instead of 100km, is used to define local transactions the results are qualitatively similar. The mean and median returns in local deals are significantly higher than that in non-local deals with these alternate cutoffs (See Table 3).

Panel B, of Table 3 displays characteristics of local deals that might explain the higher return to acquirers in local deals. We examine if the higher acquirer return in local transactions is due to local transactions having a greater probability of success as captured by being announced closer to completion. We find that the days to completion, measured as the number of days between the date of merger announcement and the date when the transaction is completed, for local deals (91 days) is actually higher than that for non-local deals (83 days). Local deals are not announced closer to completion relative to non-local deals. We also do not find any evidence that local deals are associated with lower leakage of information in the pre-announcement period contributing to their higher announcement period return. The CARs over the -10 to -3 day period do not differ between local and non-local transactions.[6]

As industries tend to be geographically concentrated, local transactions could proxy for same industry transactions. The higher return in local transactions then simply proxies for the higher synergies associated with same industry transactions. We classify transactions as being in the same industry if the target and acquirer belong to the same two-digit SIC as reported by SDC. About 20.6% of all deals in the same two-digit SIC are local and 18.8% of all deals in different

[6] We also examined the use of termination fees and lock up agreements to see if these might explain the higher returns to acquirer in local deals (see Bates and Lemmon (2003) and Officer (2003)). We find no difference between local and non-local deals in these deal characteristics.

industries are local (see Table 4). The difference is not significant suggesting that local mergers are not concentrated in the same industry transactions. There continues to be no evidence that local deals are more likely to be within industry transactions when we use three-digit SIC codes or Fama-French industry classifications. Further, we find no evidence that the local acquirer return is higher when the transaction is within the same industry. Table 4 shows that local acquirers on average earn more when the deal spans different industries. These findings indicate that synergies associated with same industry transactions are unlikely to account for the higher return to local acquirers.

The univariate evidence on higher acquirer returns in local transactions does not control for several important variables that affect acquirer returns. We follow prior literature and control for deal and acquirer characteristics. We control for relatedness of acquisition by including a same industry dummy which takes the value of one if a bidder and its target share the same two-digit SIC. To control for mode of payment we include a dummy for cash and hybrid deals. A non-public dummy, that takes the value one if the target is not public, is included to control for target organization. Market value of the acquirer in the year prior to the announcement of the transaction is included to control for the size of the acquirer. We also control for the relative size of the transaction by including the log of the ratio of the transaction value to the market value of the acquirer. Year dummies are included to control for merger waves or other time trends in the data. Lastly, we include the local dummy that takes the value one when the transaction is local, i.e., when the target and acquirer firm are within 100 km of each other. As distribution of public firms effect the probability of a firm being acquired locally, we control for it by including the fraction of all public firms that were located within 100km of the target

The estimated return to acquirers in local transactions, after controlling for other determinants of acquirer returns, is a highly significant 180 basis points (Table 5). This estimate is in line with the higher average return to local acquirers seen in Table 3. After controlling for

the other factors that effect acquirer returns, in particular target organization and acquirer size, we continue to find that the geographic proximity of bidders and targets influences acquirer stock returns around merger announcements. This higher return to local acquirers is somewhat lower when the target is public (about 155 basis points) relative to when the target is a private firm or a subsidiary of a public firm (about 210 basis points). As information asymmetries are likely to be higher for private firms, this suggests that information advantages might explain some of the higher return to local acquirers.

We examine the impact of mode of payment on the acquirer return to identify the role of information in local transactions. Previous studies on takeovers argue that positive stock price reactions to *Cash* offers are a consequence of asymmetric information between bidders and targets.[7] Myers and Majluf (1984) suggest that under-valued bidders shy away from stock offers and resort to cash acquisitions. Consequently, cash offers are associated with a positive announcement period return. In the absence of information asymmetries, there should be no positive announcement return associated with cash offers. If local targets and bidders are well informed about each other, then use of cash in local deals should have no impact on announcement period returns. Consistent with this we find that cash offers are associated with a positive announcement period return only when the acquirer is distant (Table 6, model 1). In contrast, the return to cash offers in local deals in not significantly different from zero.

Smaller firms are likely to face greater information asymmetries. If the local return is due to information advantages, then the local return should be higher in acquisitions of smaller targets. As we do not have data on the size of the private firms, we use transaction value to proxy for the size of the target firm. Transactions in the top quartile of all transactions, approximately greater than 239 million, are classified as large and the remaining as small transactions. We find that the acquirer earn about 197 basis points more in local deals when the

[7] See Franks, Harris and Mayer 1988; Eckbo and Langohr 1989; Eckbo, Giammarino and Heinkel 1990.

transaction value is small. For large transactions, acquirer return in local deals is not different from that in distant deals.

Coval and Moskowitz (2001), Malloy (2005), and Loughran and Schulz (2004) find that non-metro firms are associated with greater information problems. This might be due to these firms being distant from the majority of the financial intermediaries, like banks, analysts and market makers that are associated with reducing information asymmetries. We use the location of the target firm's headquarters to classify it as metro or non-metro firms. Metro firms are those that are located within 50 km from the 21 largest cities in the country.[8] All other target firms are classified as non-metro firms. Local acquirers of targets, that are located in non-metro areas, earn a higher return (about 220 basis points) in their deals relative to when they acquire targets in metro areas (about 120 basis points).

To further examine the role of information, we use lack of any analyst coverage to capture potentially greater information asymmetry or lower visibility of targets. The presence of analysts is associated with a reduction in the information asymmetry between firms and markets.[9] We use the IBES summary history database to get data on the target firms that were covered by analysts. As there is no analyst coverage for private firms, we restrict our sample to cases where the target is a public firm and has the potential to be covered. About 60% of our public targets are covered.[10] Acquirers of targets, that have no analyst coverage, earn on average 240 basis points more in their local deals. In contrast, bidder returns are not higher when they acquire covered targets locally (see Table 6, Model 4).

Lastly, we try to characterize the nature of information advantages arising from proximity. As prior research documents the importance of geographic proximity in the diffusion

[8] Coval and Moskowitz (2001) classify metro firms as the 20 largest cities in the country. As our sample spans from 1990 to 2003, we use both the 1990 and 2000 census to classify the 20 largest cities. The metro cities are those that are either on the 1990 or 2000 list of the 20 largest cities. The two lists are the same with one exception. Our list of metro cities therefore includes 21 cities.
[9] See Womack (1996) and Hong and Kubik (2003) for analyst's role in information generation.
[10] Our results are unchanged if we treat all private firms as being uncovered and include them in our estimation.

of knowledge and innovation (see Jaffe et. al (1993); Audretsch and Feldman (1996)), information advantages in local deals might be with respect to target R&D programs. The R&D expenses of target public firms are obtained from Compustat in the year prior to the acquisition announcement. Firms that do not report any R&D expenses are assumed to have no R&D.[11] In a subset of transactions where the target is public, and therefore data on R&D is available, we find that acquirer returns in local deals is higher when the target has a R&D program. Better information about target R&D programs is one of the advantages of local bidders.

In summary, we find that acquirer returns in local deals are increasing in the information asymmetry of the target and when the target has a R&D program. This suggests that the higher acquirer return in local transactions is partially associated with information advantages.[12]

5 Total and Target Returns

In this section, we explore the effect of geographic proximity on target and total returns. If local transactions are associated with greater synergies or information advantages and facilitate the acquisition of targets that are a better "fit", they should create higher overall value and have higher total returns (See Bradley, Desai and Kim (1983) and Lang, Stulz, and Walkling (1989)).

Analysis of total returns is restricted to a subset of transactions where the target is public and data is available on CRSP to calculate target and total returns. Abnormal return for the target is given as $AR_i = r_i - r_m$ where r_i is the daily return on the target firm i and r_m is the return on the CRSP value-weighted index. Consistent with the measurement of acquirer returns, we estimate target return over the [-2, 2] period around announcement. Total return is the weighted

[11] As firms are required to report R&D expenses only if they exceed one percent of sales, this is a reasonable assumption.

[12] We also examined acquirer characteristics that proxied for local transactions motivated by information advantages. In particular, as acquirers with high agency costs may be motivated to grow their firms beyond their optimal size to increase their power and control (see Jensen (1986), Lang, Stulz and Walkling (1991)), their acquisitions are less likely to be associated with information advantages. We use free cash in the firm and size of the acquirer to capture agency costs and find that higher return in local deals is primarily seen in the acquisitions of low agency cost acquirers (results available upon request).

average return to acquirers and targets with the weights being the market value of the acquirer and target firms three days prior to the announcement of the transaction.

Total return in local transactions is significantly higher relative to distant transactions after controlling for the usual acquirer and deal characteristics (Table 7, Panel A). Further, we find that the higher total returns are mostly observed when the target has an R&D program. These results suggest that local transactions on average create greater overall value, and information advantages especially those related to R&D programs of targets are at least partially responsible for the higher overall value created.

We find that target returns in local deals are not different from those in non-local deals (Table 7, Panel B). Gains in local deals appear primarily to accrue to acquirers. Some local deals are motivated by the higher overall value associated with these deals, while others may arise as bidders opportunistically acquire undervalued local targets. In the latter case, overall value should be no different but there may be a distribution of value away from the target. [13] To examine this possibility, we study target returns in local deals that are not associated with positive overall value. We find that these deals are associated with significantly lower target returns. In sum, geographical proximity impacts both the overall value creation as well as the distribution of value in merger transactions.

6 Asset Sales

We examine whether a similar return to local transactions exists in other investment decisions of firms, in particular asset sales. The sample selection criterion for asset sales is similar to mergers and acquisition transactions. We include all completed asset sales on SDC from 1990 to 2003 for which the acquirer is covered under CRSP, and data on city and state of

[13] Targets may accept a lower return if it has preferences for being acquired locally. These preferences for a local acquisition may be due to the lower dislocation costs to employees. This has been expressed by Glaeser and Kohlhase (2003) in "It is essentially free to move goods, but expensive to move people." Target may also accept a lower return if it has high costs to search for another bidder.

acquirer and target are available on SDC. We exclude transactions valued at less than five million and where either the acquirer or the target is a foreign firm, a financial firm or utility with market value of less than five millions. Acquirer returns are cumulative abnormal returns over the [–2,2] day period.

On average acquirers earn significant positive five-day returns around the announcement of asset sales. This is consistent with prior evidence on the gains to acquirers in asset sales (See Jain (1985)). The average acquirer return in non-local asset sales is 2.2%. This is significantly lower (at the 2% level) than the average acquirer return of 4% seen in local transactions (See Table 8, Panel B). The results are similar when we examine median returns. The median acquirer return in local transactions is 2.05% that is significantly higher than the 1.33% for non-local transactions (at the 1% level). After controlling for the mode of payment, status of the target and size of the transaction, local acquirers of asset continue to be associated with a significantly higher return of about 1.79% (Table 8, Panel C).

7 Conclusion

We find that acquirers earn significantly higher returns in their local transactions relative to their non-local transactions. This higher return to acquirers in local transactions is also economically significant: on average it is more than twice that in non-local transactions. Further, this higher return to acquirers in local transactions is, at least partially, explained by information advantages arising from geographic proximity. For the subset of transactions where the target is public, we find that local transactions are associated with higher total returns. These higher overall returns in local transactions are again, at least partially, related to information advantages especially with respect to the evaluation of target R&D programs. The higher gains in local mergers primarily accrue to local acquirers. These findings add an important dimension –

geographic proximity – to understanding both how value is created and distributed in acquisitions.

We do not find evidence that the higher acquirer return in local deals is associated with industry clusters. In fact, local acquisitions happen within industries and across industries in approximately the same proportion and earn similar returns. These findings extend our knowledge of cross-industry takeovers and the role of proximity in generating value in these acquisitions.

This paper also sheds light on the role of information asymmetries in merger and acquisitions. Despite extensive theoretical work on asymmetric information in mergers and acquisitions (see Milgrom (1981), Milgrom and Weber (1982), Fishman (1988), Hirshleifer and Png (1989)), the empirical literature on the role of information asymmetries is somewhat sparse due to the difficulty of capturing information differences. Using geographic proximity allows us to capture the role of information advantages in acquisitions. The results suggest that information flow across spatially constrained networks is slow. Though we find that R&D is one source of the local information advantage, the paper highlights the importance of further research that identifies the precise nature of the information advantages that arise from geographic proximity.

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Table 1
Data Characteristics over Time

The table presents the distribution of mergers and acquisitions over time. Transactions are classified as local if the acquirer and target are located within 100km of each other.

Year	Number of deals	Percentage of deals		Percentage of local deals
		with public targets	with private targets	
1990	66	56.06	36.36	28.79
1991	91	38.46	43.96	27.47
1992	128	27.34	56.25	17.97
1993	162	31.48	55.56	24.07
1994	242	39.67	46.69	18.18
1995	321	40.81	49.53	16.20
1996	370	40.27	52.70	17.57
1997	396	44.19	48.99	18.18
1998	476	50.00	43.70	17.65
1999	435	50.57	45.98	20.23
2000	449	39.64	55.90	26.50
2001	246	57.72	36.99	21.14
2002	179	48.60	45.25	19.55
2003	177	48.02	45.20	15.82
Total	3,738	44.38	48.10	19.93

Table 2
Summary Statistics

Market value of the acquirer, in millions of dollars, is the market value in the year prior to the announcement of the deal. Relative value is the ratio of deal value to the market value of the acquirer in the year prior to the announcement of the deal. Mode of payment is classified as cash if the payment consisted of cash, debt, liabilities or some combination of these. Mode of payment is classified as stock if the payment consisted of stock, warrants, options or some combination of these. All other deals are classified as Hybrid. Acquirer and target firms are classified as being in the same industry if they belong to the same two-digit SIC. Bidders are classified as local if they were located within 100km of the target. P-values correspond to a t test for the difference in means between local and non-local transactions. *,**,*** refer to significant at the 10%, 5% and 1% level.

	Full sample	Local	Non-local	p-value	
Mean market value of acquirer	8504	10770	7940	0.035	**
Median market value of acquirer	622	636	621	0.968	
Mean relative value of deal	0.379	0.397	0.375	0.543	
Median relative value of deal	0.128	0.133	0.127	0.595	
Fraction of deals					
Using only cash	0.270	0.205	0.287	0.000	***
Using cash and stock (Hybrid)	0.278	0.275	0.279	0.850	
Fraction of deals					
Within the same industry	0.602	0.627	0.596	0.129	

Table 3
Returns to Local Acquirers

Panel A: The table displays mean and median acquirer returns over [-2,2] days around announcement for local and non-local transactions. Transactions are classified as local if the target and acquirer are within 100 km (or 75 km or 125 km) of each other. P-values correspond to a t test for difference in means (column 4) and to a z test for difference in medians (column 7). *,**,*** refer to significant at the 10%, 5% and 1% level.

	Mean acquirer returns (%)				Median acquirer returns (%)			
	Local	Non-local	p-value		Local	Non-local	p-value	
Deals are classified as 'Local' when the target and acquirer are within								
100 km	2.4	0.9	0.002	***	0.008	0.004	0.080	*
75 km	2.5	0.9	0.000	***	0.008	0.004	0.039	**
125 km	2.3	0.9	0.005	***	0.008	0.004	0.092	*

Panel B: Transactions are classified as local if the target and acquirer are located within 100 kms of each other. Days to completion are the number of days between the announcement of the deal and the date when it is effective. P-values correspond to a t test for difference in means (column 4) and a Z test for difference in medians (column 7). *,**, ***, represent significance at the 10%, 5% and 1% level.

	Mean acquirer returns (%)				Median acquirer returns (%)		
	Local	Non-local	p-value		Local	Non-local	p-value
-10 to -3 day CAR (%)	1.9	1.2	0.137		1	0.4	0.124
Time to completion (in days)	90.9	83.5	0.071	*	73	68	0.102

Table 4
Acquirer Returns in Within and Outside Industry Deals

We use three different industry classification schemes. First, transactions are classified as being in the same industry if the target and the acquirer are in the same two-digit SIC. Second, transactions are classified as being in the same industry if they belong to the same industry classification proposed by Fama and French. Lastly, transactions are classified as being in the same industry if they have the same three-digit SIC. Transactions are classified as local if the acquirer and target are within 100 kms of each other. P-values correspond to a t test for difference in means (column 5) and Z test for difference in medians (column 8). *,**,*** denote significance at the 10%, 5%, and 1% level.

		Mean acquirer returns (%)				Median acquirer returns (%)				% of local deals
		Local	Non-local	p-value		Local	Non-local	p-value		
Two-digit SIC	Same industry	2.1	0.8	0.034	**	0.5	0.5	0.421		20.7
	Different industry	2.9	1.1	0.022	**	1.3	0.3	0.061	*	18.8
FF industries	Same industry	1.9	0.8	0.064	*	0.2	0.6	0.594		20.4
	Different industry	3.1	1.0	0.009	***	1.5	0.2	0.026	**	19.2
Three-digit SIC	Same industry	1.7	0.9	0.218		0.0	0.6	0.835		20.8
	Different industry	3.0	0.8	0.001	*	1.5	0.2	0.005	***	19.0

Table 5
OLS Regressions of Acquirer Returns

The dependent variable is the [-2,2] days acquirer return around announcement. Relative size is the ratio of the value of the transaction to the market value of the acquirer at the end of the year prior to the announcement. MV is the market value of the acquirer in the year prior to the announcement of the transaction. Non-public is a dummy that takes the value one if the target is a private or subsidiary firm. Mode of payment is classified as cash if the payment consisted of cash, debt, liabilities or some combination of these. Mode of payment is classified as hybrid if the payment included cash and some combination of stock, warrants or options. Transactions are classified as local if the acquirer and target were within 100 km of each other. Log of frac is the natural logarithm of the ratio of number of firms within 100 kms to the target to the total number of firms. SameInd dummy takes the value of one if a bidder and its target share the same two-digit SIC. Results are presented for the full sample as well as for deals involving public and non-public targets only. Year dummies were included but have not been displayed here for brevity. P-values of coefficients are in italics and are based on heteroscedastic-corrected errors. *,**,*** refer to significant at the 10%, 5% and 1% level.

	Full sample		Public targets		Non-public targets	
Local	0.018	***	0.015	**	0.021	**
	0.002		*0.036*		*0.013*	
Log of frac	-0.003	**	-0.006	***	-0.002	
	0.047		*0.007*		*0.260*	
Cash	0.009	**	0.025	***	-0.015	**
	0.037		*0.000*		*0.013*	
Hybrid	0.006		0.023	***	-0.009	
	0.245		*0.001*		*0.206*	
Log (Relative size)	-0.004	**	-0.012	***	0.007	**
	0.022		*0.000*		*0.018*	
MV	-0.008	***	-0.007	***	-0.006	***
	0.000		*0.000*		*0.003*	
SameInd dummy	-0.002		0.000		-0.002	
	0.590		*1.000*		*0.764*	
Non- Public	0.031	***				
	0.000					
N	3738		1659		2079	
R-square	0.05		0.06		0.04	
Year Dummies	Yes		Yes		Yes	

Table 6
OLS Regressions of Acquirer Returns on Target Characteristics

The dependent variable is the [-2,2] days acquirer return around announcement. Transactions are classified as local if the acquirer and target were within 100 km of each other. Relative size is the ratio of transaction value to market value of acquirer in the year prior to the announcement (MV). Non-public is a dummy that takes the value one if the target is a subsidiary or private firm. Mode of payment is classified as cash if the payment consisted of cash, debt, liabilities or some combination of these. Mode of payment is classified as hybrid if the payment included cash and some combination of stock, warrants or options. Metro (Non-metro) refers to targets that are located within (outside) 50 km of the 21 largest cities as defined by the US census. Covered (Not covered) targets are those with (without) analyst coverage according to I/B/E/S. Large (Small) Target is a dummy variable which takes the value of one if target falls (does not fall) in the highest quartile in transaction value. Target R&D is a dummy which takes the value of one if target firm reports R&D expenses in the year prior to the acquisition announcement. Year dummies were included but have not been displayed here for brevity. Log of frac is the natural logarithm of the ratio of number of firms within 100 kms of the target to the total number of firms. SameInd dummy takes the value of one if a bidder and its target share the same two-digit SIC. Estimation for Model 4 and 5 are for public targets only. P-values of coefficients are in italics and are based on heteroscedastic-corrected errors. *,**, *** represent significance at the 10%, 5% and 1% level.

	Model 1	Model 2	Model 3	Model 4	Model 5
Local	0.023 ***				
	0.001				
Local*Cash	-0.012				
	0.237				
Non-local*Cash	0.013 ***				
	0.003				
Small Target		0.007			
		0.320			
Local* Small Target		0.020 ***			
		0.003			
Local * Large Target		0.008			
		0.409			
Metro			0.005		
			0.326		
Local*Metro			0.012		
			0.219		
Local*Non-Metro			0.022 ***		
			0.001		

Table 6 (*continued*)

Covered						0.003				
						0.587				
Local*Covered						0.008				
						0.278				
Local * Not Covered						0.024	*			
						0.060				
Local* Target R&D								0.019	*	
								0.065		
Local* (1- Target R&D)								0.010		
								0.288		
Target R&D								0.001		
								0.899		
Log of fraction	-0.003	**	-0.003	**	-0.004	**	-0.006	***	-0.006	***
	0.049		*0.044*		*0.029*		*0.009*		*0.007*	
Cash			0.009	**	0.009	**	0.025	***	0.025	***
			0.040		*0.035*		*0.000*		*0.000*	
Hybrid	0.006		0.006		0.006		0.023	***	0.023	***
	0.229		*0.248*		*0.254*		*0.001*		*0.000*	
Log (Relative size)	-0.004	**	-0.002		-0.004	**	-0.012	***	-0.012	***
	0.019		*0.411*		*0.025*		*0.000*		*0.000*	
MV	-0.008	***	-0.006	***	-0.008	***	-0.007	***	-0.007	***
	0.000		*0.001*		*0.000*		*0.000*		*0.000*	
Same Ind dummy	-0.002		-0.002		-0.002		0.000		0.000	
	0.613		*0.605*		*0.580*		*0.992*		*0.974*	
Non-Public	0.031	***	0.031	***	0.031	***				
	0.000		*0.000*		*0.000*					
N	3,738		3,738		3,738		1,659		1659	
R-square	0.05		0.05		0.05		0.06		0.06	
Year Dummies	Yes		Yes		Yes		Yes		Yes	

Table 7
OLS Regressions of Total and Target Returns

Panel A Total Returns: The dependent variable is total CAR, which is the value weighted CARS of the acquirer and its target. The weights are market equity capitalizations of acquirer and target three days prior to the announcement. Target CAR is the [-2,2] days target return around the announcement. Target R&D is a dummy which takes the value of one if target firm reports R&D expenses in the year prior to the acquisition announcement. RS is the ratio of transaction value to market value of acquirer in the year prior to the announcement (MV). Mode of payment is classified as cash if the payment consisted of cash, debt, liabilities or some combination of these. Mode of payment is classified as hybrid if the payment included cash and some combination of stock, warrants or options. Log of frac is the natural logarithm of the ratio of number of firms within 100 kms of the target to the total number of firms. SameInd dummy takes the value of one if a bidder and its target share the same two-digit SIC. Transactions are classified as local if the acquirer and target were within 100 km of each other. Year dummies were included but have not been displayed here fore brevity. Other variables are as defined in previous tables. P-values of coefficients are in italics and are based on heteroscedastic-corrected errors. *,**, *** represent significance at the 10%, 5% and 1% level.

	Local	*Local* Target R&D*	*Local* (1- T R&D)*	*Target R&D*	*Log of frac*	*Cash*	*Hybrid*	*Log (RS)*	*MV*	*Same Ind*	*N*	*R2*	*Year Dummies*
Model 1	0.014				-0.005	0.037	0.021	0.002	-0.005	-0.001	1544	0.06	Yes
	*0.043***				*0.007****	*0.000****	*0.001****	*0.278*	*0.000****	*0.863*			
Model 2		0.018	0.009	0.008	-0.006	0.039	0.024	0.002	-0.006	0	1544	0.06	Yes
		*0.065**	*0.340*	*0.146*	*0.004****	*0.000****	*0.000****	*0.210*	*0.000****	*0.969*			

Panel B Target Returns: The dependent variable is target CAR defined as the [-2,2] days target return around the announcement. Total CAR>0 is a dummy which takes the value of one if Total CAR is positive. The other variables are as defined in Panel A. Year dummies were included but have not been displayed here fore brevity. Other variables are as defined in previous tables. P-values of coefficients are in italics and are based on heteroscedastic-corrected errors. *,**, *** represent significance at the 10%, 5% and 1% level.

	Local	*Local * Total CAR>0*	*Local * Total CAR<0*	*Total CAR>0*	*Log of frac*	*Cash*	*Hybrid*	*Log (RS)*	*MV*	*Same Ind*	*N*	*R2*	*Year Dummies*
Model 1	0.004				0.000	0.113	0.000	-0.010	0.006	0.002	1544	0.07	Yes
	0.838				*0.956*	*0.000****	*0.978*	*0.058**	*0.150*	*0.903*			
Model 2		0.042	-0.063	0.096	0.002	0.094	-0.006	-0.014	0.007	0.007	1544	0.11	Yes
		*0.076**	*0.010****	*0.000****	*0.669*	*0.000****	*0.702*	*0.010****	*0.090*	*0.652*			

Table 8
Asset sales

Panel A: Descriptive Statistics for the sample of assets sales

Fraction of transactions classified as Local	16.14%
Average Market Value of Acquirer	3724
Median Market Value of Acquirer	372.6
Average Relative Value of Transaction	0.24
Median Relative Value of Transaction	0.083

Panel B: This table presents means and medians for transactions classified as local and non-local. Transactions are classified as local if the acquirer and target were within 100 km of each other. *,**,*** refer to significant at the 10%, 5% and 1% level.

	Mean Local Deals	Mean Non Local Deals	T Stat for difference in Means	Median Local Deals	Median Non local Deals	Z Stat for difference in Medians
Acquirer Returns	0.04	0.0221	2.44**	0.021	0.0134	3.44***

Panel C: The table results of an OLS regression where the dependent variable is it the [-2,2] days acquirer return around announcement. RS is the ratio of the value of the transaction to the market value of the acquirer at the end of the year prior to the announcement (MV). Non-public is a dummy that takes the value one if the target is a private or subsidiary firm. Mode of payment is classified as cash if the payment consisted of cash, debt, liabilities or some combination of these. Mode of payment is classified as hybrid if the payment included cash and some combination of stock, warrants or options. Transactions are classified as local if the acquirer and target were within 100 km of each other. Log of frac is the natural logarithm of the ratio of number of firms within 100 kms to the target to the total number of firms. SameInd dummy takes the value of one if a bidder and its target share the same two-digit SIC. Year dummies were included but have not been displayed here for brevity. P-values of coefficients are in italics and are based on heteroscedastic-corrected errors. *,**,*** refer to significant at the 10%, 5% and 1% level.

	Local	Log of Frac	Cash	Hybrid	Log (RS)	MV	Same Ind	Non-public	N	R2	Year Dummies
Coefficient	0.016	0.002	-0.008	-0.006	0.014	0.000	-0.003	0.001	3946	0.04	Yes
P-Value	*0.014***	*0.223*	*0.311*	*0.470*	*0.000****	*0.008****	*0.492*	*0.96*			