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ABSTRACT

This paper investigates the relation between a firm's location and its corporate finance decisions. We develop a simple model where being located within an industry cluster increases opportunities to make acquisitions, and to facilitate those acquisitions, firms within clusters maintain more financial slack. Consistent with our model we find that firms that are located within industry clusters tend to make more acquisitions, and have lower debt ratios and larger cash balances than their industry peers located outside clusters. In addition, we document that firms in growing cities and technology centers also maintain more financial slack. Overall, these findings, which reveal systematic patterns between geography and corporate finance choices, suggest the importance of growth opportunities in firms' financial decisions.

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1 Introduction

In 1992 the Apache Corporation, then a small oil and gas firm located in Denver (CO), acquired MW Petroleum, a subsidiary of Amoco Corporation, a major integrated oil company. This acquisition, which more than doubled the size of its oil and gas reserves, was viewed by Apache's top management as a major success, and to a large extent defined Apache's future strategy: to grow by acquiring mature oil and gas fields from the major integrated oil firms. To implement this strategy Apache moved from Denver to Houston (TX), where most of the major oil firms had operations, and reduced its debt ratio to improve its credit rating. By locating in Houston, Apache's management believed that they would have better access and knowledge about potential deals. Maintaining an investment grade bond rating (Apache had a B rating when they acquired MW Petroleum and reached an A rating a few years later) was viewed by Apache's management as essential, since their acquisition strategy required an ability to raise capital on relatively short notice.[1]

This paper examines whether, as suggested by the Apache case, a firm's acquisition and financial policies are related to its location. More specifically, we examine whether a firm's tendency to make acquisitions and its capital structure choices are related to whether or not the firm is located within an industry cluster, that is, close to its industry peers. To study these issues, we start by developing a simple model that describes the relation between a firm's location, financial structure and acquisition activities. Consistent with the Apache's experience, our model assumes that firms located in industry clusters have more acquisition opportunities but also face greater competition from other potential acquirers. To take advantage of these opportunities, the firms in our model maintain more financial slack if they are located in clusters, which allows them to bid more aggressively for acquisitions.[2]

We initially examine the model's assumptions, and find that after controlling for industry affiliation, firms located in clusters do tend to make more acquisitions. In addition, consistent with previous research (e.g., Hartford, 1999), we document that firms with more

[1]The above discussion is based on three Harvard Business Cases, ("MW Petroleum Corp. A" and "MW Petroleum Corp. B" and "Risk Management at Apache") and extensive discussions with Tom Chambers, Apache's Executive Vice President.

[2]This aspect of the model is related to Clayton and Ravid (2002) and Morellec and Zhdanov (2006), which show that more levered bidders tend to bid less aggressively.

financial slack tend to make more acquisitions. Moreover, we show that the positive relation between acquisition activity and financial slack is stronger in clusters, which is consistent with the presence of greater competition for targets in clusters.

While the evidence on the relation between location and acquisition activity supports the assumptions of our model, the main focus of our empirical analysis is on the relation between a firm's choice of financial slack and whether or not the firm is located in a cluster. As we just discussed, our model focuses on an "acquisition" channel, which predicts a positive relation between being located in a cluster and having financial slack. However, there is an existing literature that suggests a "collateral" channel, which generates the opposite prediction. In particular, Williamson (1986) suggests that when firms have assets that are redeployable, which is more likely to be the case when they are located in clusters, they are able to obtain more debt financing.[3]

To assess the importance of these competing theories we extend the literature on the empirical determinants of capital structure, (e.g., Titman and Wessels 1988 and Rajan and Zingales 1995) and cash holdings (e.g., Opler et al. 1999), by considering the effects of location proxies in the traditional regressions. Our results indicate that firms in clusters have lower debt ratios and maintain higher cash balances. Our tests also show that firm characteristics like size and profitability, which are related to leverage and cash balances in the cross-section, have a weaker effect on these choices in clusters.

The empirical evidence in this paper—which rejects the null hypothesis that firms' corporate finance decisions are independent of location—can be interpreted in at least two ways. First, the evidence is consistent with the idea that location affects investment opportunities and that these in turn influence capital structure choices, (i.e., a direct cluster effect). Alternatively, these findings may reflect the possibility that firms that choose to locate either within or outside of clusters have fundamentally different characteristics (i.e., a cluster-selection effect), and that these characteristics are related to both the tendency of

[3]Shleifer and Vishny (1992) also discusses how a liquid asset market increases the ability of firms to use assets as collateral for loans. Myers and Rajan (1998), however, suggest a negative effect of liquidity on borrowing capacity that arises because a more liquid asset market makes it easier for firms to substitute more risky assets for safe assets.

firms to make acquisitions as well as their capital structure choices.[4]

In order to address the possibility that a cluster-selection effect is driving our findings, we perform the previously described tests on a sample of firms that have been in a given location for more than ten years and find that the relation between location and corporate finance choices continues to hold.[5] To the extent that the unobserved characteristics that influence a firm's location choice become less important over time, this evidence suggests that the findings are determined more by a direct cluster effect rather than by a cluster-selection effect.

Our final tests examine other geographical characteristics that may also influence the availability of growth opportunities (e.g., acquisition or other types) and thus may influence the demand for financial slack. Since location can influence a firm's opportunities in a variety of ways, it is of interest to consider other geographical characteristics that may also be related to future opportunities, and examine how these characteristics are related to firms' financing choices. Specifically, we consider both growing cities and cities with more aggregate R&D expenditure and find that in these areas—where growth opportunities are likely to be more prevalent—firms maintain more financial slack.[6] We also find that this relation also holds for firms that have been in the same location for at least ten years.

By linking a firm's location to its corporate finance decisions we contribute to two distinct literatures. The first is the literature in corporate finance that examines the relation between investment opportunities and financing choices. In this sense, our analysis is related to Harford (1999), who showed that firms with more cash do more acquisitions. His empirical tests are motivated by the theoretical literature that suggests that reduced financial slack can curb a firm's ability to fund new investments (Myers 1977, Myers and Majluf 1984, Jensen 1986, and Hart and Moore 1995). However, as is also recognized in this literature, firms anticipating good investment opportunities have an incentive to maintain financial

[4]For example, as shown in Almazan, de Motta and Titman (2007), clusters are likely to attract firms with attributes that make them more likely to succeed.

[5]Even though firms may originally self-select into different locations, their choice of location can be considered almost permanent. For instance, Pirinsky and Wang (2006) who show that in the period 1992-97 less than 2.4% of firms in Compustat changed headquarters' location.

[6]As suggested by the economic geography literature, this is consistent with the presence of innovation spillovers for firms located in the same geographical area.

slack, which suggests that the observed relation between cash holdings and acquisition activity might arise because firms accumulate financial slack when they have acquisition opportunities. The current literature provides evidence of an effect running from debt choices to investment choices.[7] In contrast, by comparing the capital structure choices of firms with different locations we develop tests that provide evidence of an effect running from investment opportunities to the choice of financial slack.[8]

By using location as a proxy for acquisitions and other growth opportunities, this paper also contributes to the economic geography literature that examines how location influences corporate choices.[9] For example, previous studies have shown that firms in urban clusters are more likely to outsource (Ono 2003), to vertically disintegrate (Holmes 1999) and to innovate (Glaeser et al. 1992). Also, Landier et al. (2006) find that geographic dispersion within the firm affects its labor and divestiture policies. Like our study, these papers provide evidence that supports the idea that being located in industry clusters affects firms' behavior.[10] Finally, the two papers that are most closely related to ours are Kedia et al. (2007), which examines how physical proximity affects the ability of firms to complete acquisitions, and Loughran (2007), which finds that firms in rural areas issue equity less often than otherwise similar urban firms.[11]

The rest of the paper is organized as follows. Section 2 presents a stylized model and describes the empirical research motivated by it. Section 3 describes the data and considers

[7]For example, Lang, et al. (1996) argue that the overall debt choice of a conglomerate can be viewed as exogenous with respect to the investment opportunities of the non-core division, and show that it is, nevertheless, negatively related to the non-core divisions investment expenditures. See also Lamont (1997) and Stein (2003) for an excellent review of this literature.

[8]Although the negative relation between market to book ratios (a commonly used proxy for growth opportunities) and debt ratios has been previously established, the direction of causation between opportunities and financial slack has not been fully resolved. Since cluster and city growth effects are likely to be directly related to growth opportunities, but can be viewed as exogenous with respect to the firm's capital structure choice, the documented relation between geography and financial slack is likely to arise from the effect that the presence of potential opportunities produces on a firm's desire to maintain financial slack.

[9]Issues relating to firm location and industrial clustering have been discussed by economists since Marshall (1890). See Fujita, Krugman and Venables (2001), Fujita and Thisse (2002), Duranton and Puga (2003) and Rosenthal and Strange (2003) for recent reviews of this literature..

[10]Better input sharing (e.g., Holmes 1999), labor market pooling (e.g., Diamond and Simon 1990, Costa and Kahn 1990, Krugman 1991, Dumais et al. 1997, and Almazan et al. 2007), and higher knowledge spillovers (e.g., Jaffee et al. 1993) have been suggested as leading forces of agglomeration economies.

[11]In contrast to Loughram's findings, however, we show that after controlling for a firm's physical proximity to its competitors there is a relatively weak but positive relation between the size of the urban area and debt ratios.

some descriptive evidence. Sections 4 and 5 present the main empirical results. Finally, section 6 presents our conclusions.

2 Empirical research design

2.1 A simple model

This section presents a simple model that motivates our empirical tests. The model is based on the idea that firms can find it useful to have financial slack when they are likely to have to compete for acquisitions.

The model includes two periods, $t = 0, 1$, and two potential acquirers, i.e., firms 1 and 2. At $t = 0$ firm i $(i = 1, 2)$ sets its leverage ratio, $0 \leq d_i \leq 1$. At $t = 1$, with probability γ, firms have the opportunity to make an acquisition, and engage in a second-price sealed bid auction for the target. The value created by such an acquisition depends on the synergy s_i with the target, which is known to the firm at $t = 1$ but unknown at $t = 0$. We assume that synergies are independent and uniformly distributed on the interval $[\bar{s} - 1/2, \bar{s} + 1/2]$, where $\bar{s} \geq 1/2$.

We make three assumptions regarding the effects of leverage. First, we assume that debt is risk-free, which allows us to abstract from wealth transfers between debt-holders and equity-holders that can arise in acquisitions. Second, we assume that leverage reduces the funds that a firm can raise to finance an acquisition. In particular, we assume that firm i can raise funds up to $(v + s_i - \rho d_i)$ to make the acquisition, where v is the value of the target as a stand alone, i.e., without the synergies, and $\rho \in (0, 1/2)$ is a measure of the financial constraints that debt creates.[12] With this specification, a firm's ability to raise funds increases in the value of the target with the synergy $(v + s_i)$ and decreases in its leverage ratio d_i. Furthermore, for simplicity we focus on the case where $\bar{s} > 1/2 + \rho$, which ensures that $s_i - \rho d_i \geq 0$ for any potential synergy realization and choice of debt. When this assumption holds, all targets are ultimately acquired.[13] Third, we assume that,

[12]The assumption $\rho < 1/2$ ensures that program (2) is concave and that its first order condition, i.e., equation (3) below, characterizes the global optimum.

[13]Since the minimum realization of the synergy is $s_i = \bar{s} - 1/2$ and the maximum choice of debt is $d_i = 1$, assuming $\bar{s} > 1/2 + \rho$ implies $s_i - \rho d_i > 0$ for all s_i, d_i. Considering the alternative case where debt can impede acquisitions when the realized synergy is small, i.e., $v - s_i - \rho d_i < 0$, complicates the presentation but does not affect the main intuitions obtained from the analysis. For brevity, we omit these additional

besides its effects on acquisitions, debt generates some net benefits on firm value, τd_i. We refer to τ as the "non-M&A" debt benefits.[14]

To solve the model, we proceed by backward induction and obtain the bidding strategy at $t = 1$ in the event that an acquisition opportunity arises. Specifically, when this is true, each firm i bids $b_i = v + s_i - \rho d_i$ and acquires the target for b_j if $b_i > b_j$ (for $j = 1, 2$ and $j \neq i$).

At $t = 0$, firm i sets its leverage ratio d_i taking into account the effect that leverage will have on its ability to acquire potential targets at $t = 1$. In particular, firm i solves:

$$\max_{d_i} \quad \tau d_i + \gamma E(v + s_i - b_j | b_i > b_j) \Pr(b_i > b_j). \tag{1}$$

Since $b_i = v + s_i - \rho d_i$, and since firm i takes firm j's leverage choice as given, (1) can be expressed as:

$$\max_{d_i} \quad \tau d_i + \gamma \int_{\bar{s}-\frac{1}{2}}^{s^*} \left(\int_{s^{**}}^{\bar{s}+\frac{1}{2}} (s_i - s_j + \rho d_j)\, ds_i \right) ds_j, \tag{2}$$

where $s^* \equiv \min\{\bar{s} + \frac{1}{2} + \rho(d_j - d_i), \bar{s} + \frac{1}{2}\}$ and $s^{**} \equiv \max\{s_j - \rho(d_j - d_i), \bar{s} - \frac{1}{2}\}$.[15] Computing the first order condition that characterizes the symmetric interior solution (i.e., $d_i = d_j$), we obtain:[16]

$$d_i^* = \frac{\tau}{\gamma \rho^2}. \tag{3}$$

The following result follows directly from equation (3):

Result 1 *The optimal debt ratio, d_i^*, is lower when:*

(i) acquisition opportunities are more likely *to arise (i.e., $\frac{dd_i^*}{d\gamma} < 0$);*

(ii) debt has a stronger negative effect on financing acquisitions (i.e., $\frac{dd_i^*}{d\rho} < 0$);

(iii) the non-M&A debt benefits are smaller *(i.e., $\frac{dd_i^*}{d\tau} > 0$).*

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derivations which are available from the authors upon request.

[14] For instance if, per dollar of debt, $\tau_1 > 0$ is the savings on taxes and $\tau_2 < 0$ the increases on financial distress costs, we are considering a case in which the net benefits of debt are positive i.e., $\tau_1 - \tau_2 = \tau > 0$.

[15] The limits of integration s^* and s^{**} capture the fact that for certain realizations of s_1 and s_2 competition between firms can be limited because of their differences in leverage. For example, if $v = 0$, $\rho = 0.25$, $d_1 = 0.2$ and $d_2 = 0.4$ then, $s^* = \bar{s} + \frac{1}{2}$ and $s^{**} \equiv \max\{s_2 - 0.05, \bar{s} - \frac{1}{2}\}$. In this case, if $s_2 < (\bar{s} - \frac{1}{2}) + 0.05$ and hence $s^{**} = \bar{s} - \frac{1}{2}$, firm 1 makes the acquisition regardless of its realized synergy. This occurs because even for the smallest possible synergy $s_1 = \bar{s} - \frac{1}{2}$ firm 1 bids more than 2, i.e., $b_1 = (\bar{s} - \frac{1}{2}) - 0.05 > b_2$. Hence, if $s_2 < (\bar{s} - \frac{1}{2}) + 0.05$ then $s^{**} \equiv \bar{s} - \frac{1}{2}$ and $s_1 \in [\bar{s} - \frac{1}{2}, \bar{s} + \frac{1}{2}]$.

[16] Solving (2) one gets: $d_i^* = \frac{\tau}{\gamma \rho^2 (1 - \rho |d_i^* - d_j|)}$ which becomes (3) under symmetry. A symmetric interior solution requires $\tau < \gamma \rho^2$.

In addition, equation (3) has the following implications about the sensitivity of debt to its determinants:

Result 2 *The sensitivity of debt to the non-M&A debt benefits (i.e.,* $\frac{dd_i^*}{d\tau}$*), is lower when:*
(i) acquisition opportunities are more likely to arise (i.e., $\frac{d^2 d_i^*}{d\tau d\gamma} < 0$*);*
(ii) debt has a stronger negative effect on financing acquisitions (i.e., $\frac{d^2 d_i^*}{d\tau d\rho} < 0$*).*

To clarify the predictions stated in Result 2 it is illustrative to consider an example where the non-M&A debt benefits are affected by two factors, e.g., taxes and costs of financial distress: $\tau = \tau_1 + \tau_2$, where $\tau_1 > 0 > \tau_2$. The previous result suggests that the empirical importance of τ_i is *ameliorated* in situations where debt has a greater influence on the ability to fund acquisitions, and when acquisition opportunities are more likely to arise. Formally: $\left|\frac{dd_i^*}{d\tau_i}\right| = \left|\frac{1}{\gamma\rho^2}\right|$ is decreasing in γ and ρ. Intuitively, while a reduction in the cost of financial distress (or an increase in the tax benefits of debt) tend to increase leverage, this effect is weaken when having financial flexibility is important (e.g., when acquisition opportunities are more likely to arise).

2.2 Empirical implementation

Following insights from the literature on Economic Geography we conjecture that firms in clusters have more opportunities to make acquisitions which are subject to competition, i.e., a higher γ in the model above. While our theory suggests that debt has a negative effect on competition and thus strictly applies to the acquisitions subject to competition, in our empirical analysis, we start by examining the differences in acquisition activities (i.e., total number of acquisitions) of firms inside and outside clusters.[17] Specifically we examine the following hypothesis:

Hypothesis 1 *Firms in clusters make more acquisitions than firms located outside clusters.*

In addition, we examine whether leverage has a negative effect on the ability to make acquisitions, and whether this effect is particularly strong for firms in clusters.[18] Notice,

[17] A larger γ can stem from either a larger number of acquisition opportunities, or a larger degree of competition for those opportunities.

[18] Notice that, if there is more competitive acquisitions in clusters (a higher γ), firms in clusters will want more financial flexibility. See *Hypothesis 3* below.

however, that leverage is an endogenous variable in our model and hence, one must interpret the empirical relation between leverage and firms' acquisition activity as stemming from exogenous shocks in leverage. Formally, this effect is described by the partial derivative of debt on the probability of making an acquisition evaluated at the equilibrium. In our model, such probability is given by $P_i = \gamma \Pr(b_i > b_j)$, and $\frac{\partial P_i}{\partial d_i} = -\gamma\rho$, which is decreasing in γ and ρ.[19] If we assume that γ is larger in clusters hypothesis 2 follows.

Hypothesis 2 *The negative effect of leverage on acquisitions is stronger in clusters.*

Our third hypothesis is about the effect of firm's location on its leverage. We start from (3) and consider two effects of clusters in the parameters of the model:

1. According to Williamson (1988), we assume that in clusters firms have better opportunities to redeploy their assets, which implies a positive shift in the non-M&A benefits of debt (i.e., an increase in τ). Specifically, we postulate the following linear formulation to incorporate the redeployability effects:

$$\tau_i = \alpha + \beta_c Cluster_i + \sum_j \beta_j K_i^j \tag{4}$$

   where $\{K_i^j\}$ are the determinants of the non-M&A net benefits of debt, $\{\beta_j\}$ are the coefficients of these determinants of leverage, $Cluster_i$ is a dummy variable that takes a value of 1 if the firm is located within an industry cluster and $\beta_c > 0$ represents the positive shift in τ for clustered firms.[20]

2. Consistent with our conjecture that firms in clusters encounter more acquisitions opportunities, we consider the following formulation:

$$\delta_i = \mu + \mu_c Cluster_i \tag{5}$$

   where $\mu_c > 0$ measure the additional *acquisition effects* on clusters.

[19] $\Pr(b_i > b_j) = 1 - s_j + \rho(d_j - d_i)$ and $\frac{\partial \Pr(b_i > b_j)}{\partial d_i} = \rho$.

[20] As described below, $Cluster_i$ takes a value of 1 when a firm's headquarters is located in a MSA with ten or more firms in the same three-digit SIC and 0 otherwise.

Substituting (4) and (5) in d_i^* and adding a random term ε_i we obtain the following econometric specification:

$$d_i = \frac{\alpha + \beta_c Cluster_i}{(\mu + \mu_c Cluster_i)\rho^2} + \sum_j \frac{\beta_j}{(\mu + \mu_c Cluster_i)\rho^2} K_i^j + \varepsilon_i. \tag{6}$$

Since $Cluster_i$ is a dummy variable, the previous specification can be re-written as:

$$d_i = \phi_0 + \phi_c Cluster_i + \sum_j \phi_j K_i^j - \sum_j \phi_j \cdot (1-\lambda)(K_i^j \times Cluster_i) + \varepsilon_i, \tag{7}$$

where the correspondence between ϕ's and the parameters in equation (6) follows from the comparison of expressions (6) and (7).[21] Notice that, while a priori the net effect of clusters on leverage is ambiguous, the higher likelihood of acquisitions in clusters $\mu_c > 0$ is a necessary condition for firms in clusters to have lower leverage. This condition, however, is not sufficient since firms in clusters may choose to have more leverage due to the higher redeployability of their assets (i.e., ϕ_c is positive only when $\mu_c > \frac{\gamma\beta_c}{\alpha}$).

Hypothesis 3 *When the acquisition effect is sufficiently strong (i.e., $\mu_c > \frac{\gamma\beta_c}{\alpha}$), firms in clusters will exhibit lower leverage (i.e., $\phi_c < 0$).*

Finally, our fourth and last hypothesis relates to the determinants of leverage inside and outside of clusters. As shown in equation (7), for each determinant of leverage K_j, the ratio of the coefficients for firms inside and outside of clusters is constant and equal to λ. Notice that $\lambda < 1$ (i.e., $\lambda \equiv \frac{\mu}{\mu+\mu_c}$) captures the amelioration effect described in Result 2.

Hypothesis 4 *The ratio of estimates of the determinants of leverage for firms inside versus outside clusters is constant and smaller than* 1 *(i.e., $\lambda < 1$).*

3 Data and sample characteristics

We examine firms covered in Compustat and CRSP from 1990 to 2005. Since we are interested in considering firms with a well defined location (i.e., firms with a high percentage of their assets and employees located at the firm's corporate headquarters) we exclude from our sample industries like hotels and restaurants chains, and concentrate instead on

[21] Specifically: $\phi_0 \equiv \frac{\alpha}{\gamma\rho^2}$, $\phi_c \equiv \frac{\alpha+\beta_c}{(\mu+\mu_c)\rho^2} - \phi_0$, $\phi_j \equiv \frac{\beta_j}{\gamma\rho^2}$ and $\lambda \equiv \frac{\mu}{\mu+\mu_c}$.

manufacturing firms. Furthermore, because manufacturing industries are likely to exhibit national-wide product market competition, in the interpretation of our results, we abstract from product market competition effects associated to differences in firms' locations.[22]

Specifically, we consider firms with primary three digit SIC between 200 and 399 and firms in SIC 737 (Computer Programming, and Data Processing).[23] Our data set also excludes: (1) firms in Hawaii and Puerto Rico; (2) firms with sales less than $50 million (in 1990 dollars); and (3) three-digit SIC industries that have less than 10 firms in any of the sample years. The final sample includes 21 industries, 16 years, 1,910 firms and 13,342 firm-year observations. Approximately 80% of our sample belongs to firms classified in SIC 200-399 (manufacturing) and the rest to firms in SIC 737. Variables are windsorized at the bottom and top 1% to limit the effect of outliers.

We focus on the geographical location of firms' headquarters, where location is defined by the Metropolitan Statistical Area (MSA) as specified in the 1990 Census. When the firm's headquarters are not located in an MSA we consider the county of location instead. With this information, for each firm-year, we construct three measures of industry clustering based on the geographical proximity of firms' headquarters: (i) The number firms with the same three-digit SIC that are located in a given MSA, *Number of Firms in MSA*,[24] (ii) the number of firms within the same industry in an MSA divided by the total number of firms within the same industry, *Ratio of Firms in MSA*, and (iii) a dummy variable, *Cluster*, that takes a value of 1 for firm-years in which a firm's headquarters is located within an MSA that has *ten or more firms* with the same three-digit SIC and 0 otherwise. According to this third definition, 41% of the observations correspond to firms located inside an industry cluster. The median number of firms in the same industry within an MSA, *Number of Firms in MSA*, in our sample is six.[25]

[22]This is consistent with Glaeser and Kohlhase (2003) who reports that transportation costs for manufacturing goods have fallen by over 90% in the last century, and argues that "*the world is better characterized as a place where it is essentially free to move goods.*"

[23]Most SIC 737 firms manufacture products (e.g., Microsoft Windows) rather than provide a service.

[24]To facilitate the presentation, in the regressions we divide *Number of Firms in MSA* by ten so that the coefficient measures the effect of an increase of ten firms in a given location. (The standard deviation of *Number of Firms in MSA* is 25.) We have also run regressions using the logarithm of the number of firms located in the same location as the explanatory variable and find consistent results.

[25]While we require that the firm has at least $50 million in sales to be part of our sample, both cluster measures consider all the firms that are included in Compustat in a given year even if their sales are less than $50 million.

On average, there are 1.93 clusters per industry (*i.e.*, MSAs with at least ten firms in that industry). There is, however, substantial variation across industries. For instance, *Computer Related Services Industry* (SIC 737) has seven clusters in 1990, 19 clusters in 1999, and 11 clusters in 2005. In 1999, 80% of the firms in this industry were located in an industry cluster. In contrast, *Bottled Drinks* (SIC 208) does not have any cluster during our sample period.[26] On average, each MSA has 0.71 industry clusters, but there is significant variation across MSAs. For example, *New York City* hosts eight industry clusters in 1990, seven in 1994 and five in 2005. In contrast, *Albuquerque* did not have any industry clusters during our sample period.

Table I provides descriptive statistics of the firms in the sample for a number of variables of interest. It reports firm mean values (*i.e.*, *Mean Values*) and firm mean values after subtracting industry means (*i.e.*, *Industry Adjusted Mean Values*) for firms inside and outside clusters. According to these figures, while firms in clusters are not more profitable than firms outside clusters, they have lower book and market leverage, hold more cash, have higher debt ratings, and pay dividends less often than firms outside clusters.[27] In addition, firms in clusters do more R&D, have higher *Market to Book* ratios, have less tangible assets, and are slightly smaller (as measured by their volume of sales). With the exception of size, these differences between clustered and non-clustered firms remain significant after subtracting the industry means, and hence they cannot be fully explained by the fact that industries exhibit different tendencies to cluster. Finally, the descriptive statistics show that clusters tend to be in larger MSAs, which suggest the need to control for the size of the MSA in our regressions.

4 Mergers, acquisitions and cluster location

This section presents evidence that relates a firm's location to its acquisition activity. The analysis provides descriptive statistics on acquisition activity followed by a multivariate analysis. Our sample includes all completed acquisitions on the Securities Data Corporation's (SDC) U.S. Mergers and Acquisitions Database from 1990 to 2005 where: (1) the

[26] Ellison and Glaeser (1997) document that while some industries exhibit high concentration, most industries are only slightly concentrated.

[27] Details on the definition and construction of the variables are reported in the Data Appendix.

acquirer is covered by Compustat and belongs to a manufacturing or computer services industry (SIC 200-399 and 737); (2) data on the county and state of the acquirer is available; (3) the transaction is classified as a merger or an acquisition of majority interest by SDC; and (4) the value of the transaction is more than $10 million, and it represents more than 1% of the acquirer's total assets. In a given year, we classify a firm as an acquirer if it makes at least one acquisition and as a non-acquirer otherwise. We also record the dollar volume of transactions made by each firm during the year.

Table II provides descriptive statistics for all acquisitions (Panel A), as well as for acquisitions of public targets (Panel B). While the implications of the analysis correspond more closely to the total acquisition activity of a firm, documenting the evidence on public targets is also of interest since the more stringent disclosure requirements affecting public acquisitions are likely to translate into better quality data.[28] In particular, Table II confirms that firms inside vis-à-vis outside clusters: (i) are more likely to acquire another firm (i.e., 0.192 vs. 0.144); (ii) are more likely to acquire another public firms (i.e., 0.063 vs. 0.034); (iii) make more acquisitions per year (i.e., 0.251 vs. 0.175); and (iv) make more public acquisitions per year (i.e., 0.071 vs. 0.036). Furthermore, these effects are proportionally more pronounced for local transactions, suggesting that having targets in the same geographical area facilitates the acquisition process. Finally, Table II also documents that the value of a firm's acquisitions as a percentage of its total assets is larger in clusters than outside clusters (i.e., for all acquisitions is 7.3% vs. 4.4%, and for acquisitions of public targets is 2.5% vs. 1.1%).[29]

Table III reports the results of the multivariate analysis. Regressions (1) to (4) relate industrial clustering to the probability of making an acquisition (regressions (1) and (3) consider all acquisitions, and regressions (2) and (4) restrict the analysis to acquisition of public targets).[30] Regressions (1) and (2) indicate that the effect of a firm's location on its

[28] A number of studies have raised doubts on the comprehensiveness and accuracy of the SDC database, caveats that are likely to affect the information on non-public acquisitions. See for instance Boone and Mulherin (2007) and references therein.

[29] The finding that clustering facilitates M&A transactions is also consistent with existing evidence that geographic proximity facilitates input sharing (e.g., Holmes 1999), labor market pooling (e.g., Diamond and Simon 1990, Dumais et al. 1997, and Costa and Kahn 1990) and knowledge spillovers (e.g., Jaffee et al. 1993, and Audretsch and Feldman, 1996).

[30] The reported regressions in columns (1) to (4) correspond to linear probability models. We also run a

acquisition activity remains statistically significant after controlling for year and industry dummies (and hence, for the possibility that more acquisitive industries will exhibit a greater tendency to cluster). This effect is economically significant: one standard deviation increase in the number of firms (i.e., 25 firms) raises the probability of making an acquisition by 1.5 percentage points, which is approximately a 10% increase. This finding, together with the evidence from Table II, provides support to our conjecture that firms in clusters are more acquisitive, i.e., *Hypothesis 1.*

In columns (3) and (4), we include a measure of the firm's financial slack (*Net Market Leverage*), and the interaction between this measure and our proxy for cluster (*Number of Firms in MSA* $\times$ *Net Market Leverage).* In addition, the regressions include the following controls: firm size (*Sales* in logs), profitability (*EBITDA/TA*), firm's stock return (*Average Stock Return*), firm age (*Age*), city size (*Population* in logs), and year and industry dummies. The net market leverage coefficient in this regression is consistent with Hartford (1999), which shows that financial slack increases a firm's acquisition activity. Moreover, the regressions indicate that the negative effect of leverage on acquisitions is stronger in clusters (i.e., the interaction term is negative and significant).[31] The effect is significant despite the fact that in many acquisitions the choice of payment is not cash, which suggests that having a liquid balance sheet might be important for strategic reasons during the bidding process.[32]

The stronger negative effect of debt in clusters is consistent with the idea that firms in clusters are more likely to lose out on attractive acquisitions when they have insufficient slack. Given this interpretation, as our model illustrates, firms in clusters find it desirable to maintain more financial slack in anticipation of acquisition opportunities. However, given the feedback from acquisition opportunities to the choice of financial slack, these regressions should be interpreted with some caution.[33]

probit analysis and obtain very similar results. Also, for brevity, we report the results by using *Number of Firms in MSA* as the proxy for clustering. Qualitatively similar (but less strong) results are obtained with our alternative clustering proxies.

[31]We have also run separate regressions for firms inside and outside clusters and found that in clusters *Net Market Leverage* has a larger negative effect on acquisitions.

[32]These strategic considerations, as illustrated in our model, are particularly important when the bidding process is competitive as it is more likely to be in clusters.

[33]Ideally, this endogeneity concern should be addressed with instruments for debt. We did estimate this model with instrumental variables, but because of a lack of good instruments our results were inconclusive.

In columns (5) to (8) we relate firm location to the value of the acquisitions (rather than to the number of acquisitions) using Tobit regressions. The results are consistent with our earlier results and can be summarized as follows: there is evidence that the transaction volume is larger in clusters, that leverage reduces the transaction volume, and that the negative effect of leverage is stronger in clusters. Overall, the multivariate results are consistent with our *Hypotheses 1* and *2*: relative to firms outside clusters, firm in clusters are more acquisitive and their acquisition activity is more strongly affected by leverage.

5 Financial structure and cluster location

This section explores the relation between a firm's location and its capital structure. As we discussed earlier, location can affect a firm's capital structure choice through two channels. The first channel, related to the arguments in Williamson (1986) and Shleifer and Vishny (1992), is that firms will have greater debt capacity if their assets are more easily redeployable. Hence, if firms in clusters can redeploy (e.g., sell) their assets more easily, they should also have higher debt ratios. The second channel suggest that firms may want to have more financial slack to take advantage of potential growth opportunities. These opportunities can arise, as we illustrate in our model, in the form of more competitive acquisition opportunities (which are more likely to arise in clusters),[34] or, as we discuss in section 5.4, as other types of growth opportunities. Therefore, while the collateral channel implies that firms in clusters will be more highly levered, the acquisition (or growth opportunity) channel implies that firms in clusters will maintain more financial slack.

5.1 Leverage regressions

Table IV examines the relation between capital structure and cluster location after controlling for other determinants of capital structure previously identified in the literature. In particular, we regress three measures of leverage (i.e., book, market, and net market leverage) on the following variables: (*i*) a measure of clustering; (*ii*) firm size (*Sales* in logs); (*iii*) profitability (*EBITDA/TA*); *(iv) Market to Book*, (*v*) asset tangibility (*Tangible Assets/TA*); (*vi*) R&D expenses (*R&D/TA*); (*vii*) the firm's average stock returns in the

[34]Notice that the evidence in section 4, which shows that the negative of leverage on the firms' acquisition activity is particularly strong in clusters, is consistent with the acquisition effect.

last three years (*Average Stock Return*); (*viii*) a control for the size of the MSA in which the firm is located (*Population* in logs); and (*ix*) industry and year dummies.[35] We run separate regressions for each of our three different measures of clustering: *Number of Firms in MSA, Ratio of Firms in MSA* and *Cluster*.[36]

The results in Table IV show that even after controlling for other factors previously identified as determinants of leverage, firms in clusters have *lower* debt ratios than firms outside clusters.[37] The effect is both statistically and economically significant. For instance, firms located in clusters exhibit market leverage and net market leverage ratios that are, respectively, 2.0 and 4.9 percentage points smaller than those of firms located outside clusters. Since the average net market leverage in our sample is 22.7%, this represents more than a 20% reduction from the average firm in the sample. The results are robust across different measures of clustering and leverage, and the coefficients of other determinants of leverage previously identified are all significant and have the expected sign. These findings support *Hypothesis 3* and document systematic geographical effects in Corporate Finance.

These regressions can help us interpret the negative relation between debt ratios and acquisitions documented in the previous section. Such a negative relation could be because firms with more opportunities maintain financial slack, as we illustrate in our model, or alternatively as suggested by Jensen (1986), managers may simply find it easier to exploit these opportunities when they have financial slack. However, to the extent that cluster location proxies for acquisition and growth opportunities, one can interpret the results as indicating that firms with greater opportunities maintain lower debt ratios.[38]

Table V presents a second set of regressions corresponding to the leverage model proposed in equation (7). These regressions estimate a constant λ that multiplies the estimates

[35] We also include a dummy variable, *R&D Dummy*, that takes a value of 1 for firm-year observations in which R&D is not reported. The following control variables are lagged for one fiscal year: *Sales*, *EBITDA/TA, Market to Book*, *Tangible Assets/TA*, and *R&D/TA* .

[36] We have also run regressions with the logarithm of firms in an MSA as an independent variable and found very similar results.

[37] Notice that our specification is similar to Rajan and Zingales' (1995) except that we also include a proxy for clustering (*Number of Firms in MSA* or *Cluster*) and three additional controls: *R&D/TA*, *Population,* and *Average Stock Return*. In controlling for past stock returns we follow Welch (2005) who shows that a firm's past stock return can be an important determinant of its leverage ratio. In separate regressions we have also included *Selling Expenses/Sales* and *Firm Age* and got almost identical results.

[38] Notice that this interpretation relies on the exogeneity of a firm's location. Section 5.3 addresses the firm's location choice.

of the determinants of leverage inside and outside of industry clusters. Our hypothesis is that there is an amelioration effect in clusters (i.e., $\lambda < 1$), which means that when the estimation does not take into account the additional importance of having financial flexibility in clusters, the determinants of capital structure may appear to be empirically less important in clusters. (Notice that if $\lambda = 1$ is imposed, this non-linear specification would be equivalent to the one reported in Table IV.) Specifically, Table V reports the NLLS estimation of equation (7) where d_i corresponds to each of the measures of leverage, and K_i^j are the above described control variables (i.e., (*i*) through (*viii*)).

The results in Table V document the presence of an amelioration effect in the market leverage regressions. For instance, in the net market leverage regression $\lambda = 0.636$, i.e., the effect of the determinants of capital structure is ameliorated by 36.4% in clusters. In addition to the amelioration effect, Table V also confirms the negative effect of cluster on leverage (for three of the four regressions *Cluster* is negatively related to firm leverage). Overall, these results support *Hypothesis 4*: consistent with the extra importance of financial flexibility in clusters, we observe a reduced effect of the other determinants of capital structure in clustered firms.

5.2 Cash regressions

From a comparison between the leverage and the net leverage regressions, it can be inferred that firms in clusters vis-a-vis outside clusters tend to hold more cash. In this section we explore the relation between firm location and cash holdings in more detail.[39] Similar to our analysis of location and leverage, we estimate two types of regressions. First, we estimate OLS regressions that examine how location affects a firm's cash holdings after controlling for the usual determinants of cash. Specifically, we regress the ratio of cash and marketable securities to total assets minus cash, *Cash/nTA*, and its logarithm, *Log(Cash/nTA)*, on our measures of clustering (*Number of Firms in MSA, Ratio of Firms in MSA,* or *Cluster*) and the following controls:[40] (*i*) *Sales* (in logs, a control for firm size); (*ii*) *Market to Book* (a

[39] See Opler et al., (1999), Dittmar et al., (2003), Acharya et al., (2005), Harford et al. (2005) and Foley et al., (2007) for papers that examine firms' decisions to hold cash.

[40] Both cash variables i.e., *Cash/nTA* and *log(Cash/nTA)* are constructed by substracting cash balances from total assets. This is for consistency with the literature e.g., Foley et al. (2007). Identical results are obtained when cash balances are not substracted from total assets.

proxy for investment opportunities); (*iii) R&D/TA* (a proxy for expected costs of financial distress); (*iv*) *Capital Exp/TA* (a proxy for the firms' investment needs); (*v*) *Debt Rating,* a dummy that takes a value of 1 if the firm has long term debt rated by S&P and of 0 otherwise (a proxy for the costs of accessing financial markets); (*vi*) *Dividend,* a dummy that takes a value of 1 if the firm pays dividends in that year and 0 (to account for ability to raise funds by reducing dividends); (*vii*) *Cash Flow Std. Dev.* (a measure of cash flow volatility); (*viii*) *Average Stock Return,* the firm's average stock returns in the last three years; (*ix*) *Population* in logs, *(*a control for the size of the MSA in which the firm is located); and (*x*) industry and year dummies.[41]

The OLS regressions reported in Table VI, columns (1) through (6), indicate that after controlling for other variables previously identified as determinants of cash holdings, *Cash/nTA* is 13.7 percentage points higher for firms in clusters.[42] Since firms in the sample have, on average, 32.3% *Cash/nTA*, the cluster effect represents 42% increase of the average firm cash holdings. The effect is statistically significant, and robust across the different measures of clustering and of cash balances. Among the controls, *Sales* and *Capital Exp/TA* decrease cash holdings while *Market to Book*, *R&D/TA, Cash Flow Std. Dev* and *Average Stock Return* increase cash balances.

We also estimate a non-linear model similar to the one proposed by (7) and estimated in Table V:

$$\log(Cash/nTA)_i = \phi_0 + \phi_c Cluster_i + \sum_j \phi_j K_i^j - \sum_j \phi_j \cdot (1-\lambda)(K_i^j \times Cluster_i) + \varepsilon_i \quad (8)$$

where K_i^j are the above described control variables (i.e., (*i*) through (*x*)). As in the leverage regressions from Table V, the estimate of λ will allow us to test for the presence of the amelioration effect (i.e., $\lambda < 1$). The NLLS estimation of equation (8), which is reported in column (7), confirms that firms in clusters hold more cash. In addition, it shows that there is a significant amelioration effect in the determinants of cash holdings in clusters. Specifically, the amelioration effect, which is statistically significant at the 1% level, represents a

[41] Controls (*i*) through (*vii*) are those considered in Foley et al. (2007) and, as in their analysis, they are lagged for one fiscal year. As in the leverage regressions, we set *R&D* equal to zero if the *R&D* value is not reported and include a dummy variable for these observations, i.e., *R&D Dummy.*

[42] This value is obtained from regression (5), the specification where *Cash/nTA* is used as the dependent variable and Cluster is used as the clustering measure.

reduction of 26.2% (i.e., $\lambda = 0.738$) in the coefficients of the determinants of cash holdings in clusters. Overall, the findings in this section are consistent with the previous results on leverage and with *Hypothesis 3* and *4*, and confirm the importance of geographical location on firms' financial decisions.

5.3 The choice of location

Our results, up to this point, can be summarized as follows: Firms in clusters (1) make more acquisitions; (2) have acquisition activities that are more negatively affected by leverage; (3) have more financial slack (i.e., less leverage and more cash); and (4) are less sensitive to the usual determinants of financial slack. These findings reject the null hypothesis that firm's corporate finance decisions are independent of location and, to the extent that location choices are exogenous with respect to the firm's capital structure choice, support the hypothesis that firms maintain financial slack when they anticipate acquisition opportunities.

A potential concern is that firms with better growth and acquisition opportunities as well as more financial slack, choose to locate in clusters.[43] This cluster-selection effect can potentially be a serious issue for young firms, that have recently chosen their locations.[44] However, to the extent that the unobserved characteristics that may influence a firm's location choice become less important over time, the observed effect on capital structures of older firms which chose locations many years ago, is unlikely to arise because of a cluster-selection effect. For this reason it is interesting to explore whether the relation between capital structure and location for older firms is indeed consistent with what we observe for the entire sample.

In Table VII we present regressions that replicate our previous analysis but on a sample of firms that have been public for at least 10 years. As was the case in the full sample, our regressions indicate that firms in clusters make more acquisitions and that leverage reduces

[43] A large literature has examined the incentives of firms to locate in clusters. For instance Almazan, de Motta and Titman (2007) show that clusters are likely to attract firms with attributes that make them more likely to succeed.

[44] Indeed, Pirinsky and Wang (2006) document that from 1992 to 1997 less than 2.4% of firms in Compustat moved its headquarters from one MSA to another (i.e., 118 out of 5,000 firms did so).

the tendency to make acquisitions more in clusters (the coefficient of the interaction term between *Net Market Leverage* and *Number of Firms in MSA* is significantly negative also for older firms). In addition, older firms in clusters have lower leverage and larger cash balances than older firms outside clusters. As in the full sample case, these results are both economically and statistically significant. Furthermore, these effects are not significantly different for the older firms. For instance, a one standard deviation increase in the number of firms, that is, 25 firms, decreases the net market leverage by 2.25 percentage points in the full-sample case (see Table IV), and by 2.75 percentage points in the sample of older firms (Table VII panel b). Overall, the consistency of the effects between older firms and the entire sample suggests that the results are likely to be generated by direct cluster effects.

5.4 Location, growth opportunities and firms' financial slack

Up to this point our focus has been on the greater acquisition opportunities in clusters, and how this influences the demand for financial slack. Our focus on clusters is motivated by the economic geography literature that suggests that opportunities may be more available to firms that are located close to their industry peers, for instance, due to the importance of input sharing and resource pooling. In contrast, our focus on acquisitions is motivated by data considerations. Since acquisitions must be reported publicly, they provide an observable example of a growth opportunity that may influence a firm's desire to hold financial slack.

In reality, however, location can influence a firm's opportunities in a variety of ways, so in practice it is difficult to pin down the specific channel through which location influences the demand for financial slack.[45] For this reason it is of interest to consider other geographical characteristics that may also be related to future opportunities, and examine how these characteristics are related to firms' financing choices. In this section we consider R&D expenditures within an MSA, which we measure by the ratio of the aggregate R&D expenditures to the aggregate firms' total assets in the MSA (*MSA R&D/MSA TA*), as a measure of the regional business climate. If, as discussed in the economic geography literature, innovation has spillover effects, it is likely that high R&D cities generate

[45] As documented above, location effects on financial slack (both in leverage and cash) are substantial, which suggests that acquisitions are only a manifestation of a more general effect.

opportunities for firms that go beyond what one might expect given their firm specific characteristics (e.g., their own R&D expenditures). Similarly, there may be more opportunities in growing cities, which would also indicate a positive relation between financial slack and MSA growth (*Population Growth*).[46]

The results in Table VIII document a significant relation between these regional characteristics (*MSA R&D/MSA TA* and *Population Growth*) and capital structure choices. Specifically, firms in high R&D and growing MSAs have lower leverage and hold more cash, which is consistent with the idea that these urban characteristics are associated with greater future business opportunities.[47] The effect is economically significant. For instance, a 5% increase in *MSA R&D/MSA TA*, (i.e., one standard deviation), reduces firms' net market leverage ratio by 3 percentage points, a 13% reduction from the average net market leverage in the sample. Furthermore, after controlling for these effects, the effect of cluster on financial slack continues to be statistically and economically significant (i.e., the coefficient estimates for *Number of Firms in the MSA* and *Ratio of Firms in the MSA* in Table VII are very similar to those obtained in Tables IV and VI).[48] Overall, the effect of these regional characteristics on debt ratios and cash are consistent with firms maintaining financial slack in anticipation of future growth opportunities (acquisition or otherwise).

6 Concluding remarks

As we mentioned in the introduction, there is a growing economic geography literature that describes how a firm's location can be related to a number of its choices. This paper contributes to that literature by documenting that firms that are located in industry clusters are involved in more acquisitions and maintain more financial slack than their industry peers that are located away from clusters. Although our main focus has been on industry clusters, like Silicon Valley, we have also considered other urban characteristics, such as the size of

[46] We also test a specification with state dummies (not reported) to account for differences in taxation and regulation across states. When we include state dummies the results are weakened for market leverage but remain statistically very significant for net market leverage and cash-holdings.

[47] The regressions in Table VII follow the same specifications as the Net Market Leverage regressions in Table IV, and the *Log(Cash/n-TA)* regressions in Table VI (except that now we add the new variable of interest: *MSA R&D/MSA TA* or/and *Population Growth*). These regressions also include industry dummies and hence, control for the possibility that high R&D industries exhibit a greater tendency to cluster.

[48] We have also run these tests for older firms, and have found consistent results: older firms in high R&D and growing MSAs also have more financial slack.

the metropolitan area, the rate of growth of the metropolitan area and the R&D intensity of the metropolitan area. In this regard, we find that, ceteris paribus, firms in high tech cities and growing cities tend to maintain more financial slack.[49]

This paper contributes to the corporate finance literature that examines the determinants of corporate debt ratios and cash holdings. Up to now, the focus of this literature has been on the characteristics of firms, and the extent to which these characteristics correlate with how they are financed. In this paper we show that firm's locations are also related to their capital structure choices, and argue that firms in locations that facilitate investment opportunities maintain more financial slack.

As we discussed in the introduction, although the negative relation between acquisitions and debt ratios has been previously established, the direction of causation between opportunities and financial slack has not been fully resolved. Given the arguments in Jensen (1986) and others, it is plausible that this association arises because firms exploit opportunities when they have financial slack rather than maintaining financial slack when they anticipate opportunities. However, since cluster and city growth effects are likely to be directly related to acquisitions and other opportunities, but can be viewed as exogenous with respect to the firm's capital structure choice, the observed relation between geography and financial slack in this study is likely to arise from the effect that the presence of potential opportunities produces on a firm's desire to maintain financial slack.

[49]Since knowledge spillovers are particularly important for high R&D industries, this finding is consistent with Glaeser et al. (1992) which documents the importance of knowledge spillovers for the growth in cities.

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Table I

Descriptive Statistics

	Mean Values				Industry Adjusted Mean Values		
	Whole Sample	*Cluster*	*Off-Cluster*	*Difference* [b]	*Cluster*	*Off-Cluster*	*Difference* [b]
Sales	1385	1281	1459	-178 (-0.77)	244	-172	**416** (2.72)
EBITDA / TA	0.159	0.155	0.162	-0.007 (-1.42)	-0.004	0.003	-0.007 (-1.84)
Market to Book	2.201	2.741	1.820	**0.922** (14.50)	0.181	-0.128	**0.310** (6.74)
Tangible Assets / TA	0.227	0.170	0.268	**-0.097** (-14.12)	-0.011	0.008	**-0.018** (-4.08)
R&D / TA	0.065	0.098	0.042	**0.056** (18.83)	0.010	-0.007	**0.018** (7.70)
Capital Exp. / TA	0.067	0.069	0.066	0.003 (1.53)	0.001	-0.001	0.001 (0.80)
Stock Return	0.254	0.317	0.209	**0.108** (9.19)	0.023	-0.016	**0.039** (4.19)
Cash Flow Std. Dev.	0.032	0.041	0.026	**0.016** (12.50)	0.003	-0.002	**0.005** (5.72)
Firm Age	18.264	14.562	20.884	**-6.322** (-8.71)	-0.702	0.497	**-1.199** (-2.32)
Book Leverage	0.476	0.436	0.504	**-0.069** (-7.33)	-0.008	0.006	**-0.014** (-1.95)
Market Leverage	0.322	0.247	0.374	**-0.127** (-13.08)	-0.018	0.013	**-0.031** (-4.57)
Net Book Leverage	0.285	0.152	0.379	**-0.227** (-14.98)	-0.044	0.031	**-0.074** (-6.65)
Net Market Leverage	0.227	0.118	0.305	**-0.187** (-16.72)	-0.032	0.023	**-0.054** (-6.84)
Cash / n-TA	0.323	0.526	0.180	**0.346** (17.41)	0.085	-0.060	**0.145** (9.83)
Log(Cash / n-TA)	-2.246	-1.381	-2.860	**1.479** (21.62)	0.302	-0.214	**0.516** (10.39)
Rating	0.035	0.041	0.030	0.011 (0.91)	0.009	-0.006	0.015 (1.78)
Dividend	0.340	0.187	0.447	**-0.260** (-11.13)	-0.032	0.023	**-0.055** (-3.39)
Population	15.085	15.849	14.545	**1.304** (21.98)			

NOTES

a. Details on the definition and construction of the variables reported in the table are available in the Data Appendix.

b. "Difference" is the difference between the mean value In-Cluster and Off-Cluster (robust and clustered by firm t-statistics are provided in parenthesis).

Table II Mergers & Acquisitions
Descriptive Statistics (Mean Values)

Panel A	**Whole Sample**			
	All-Firms	*In-Cluster*	*Off-Cluster*	*Difference* [b]
Ratio of acquirers	0.164	0.192	0.144	**0.047**
				(7.30)
Ratio of local acquirers	0.026	0.050	0.009	**0.041**
				(14.80)
Acquisitions per firm	0.207	0.251	0.175	**0.076**
				(8.14)
Local acquisitions per firm	0.027	0.053	0.009	**0.044**
				(14.57)
Total transaction value / TA	0.056	0.073	0.044	**0.029**
				(8.71)
Total local transaction value / TA	0.005	0.009	0.001	**0.008**
				(13.41)

Panel B	**Public Targets**			
	All-Firms	*In-Cluster*	*Off-Cluster*	"*Difference*"
Ratio of acquirers	0.046	0.063	0.034	**0.029**
				(7.93)
Ratio of local acquirers	0.008	0.019	0.001	**0.018**
				(10.76)
Acquisitions per firm	0.051	0.071	0.036	**0.035**
				(8.17)
Local acquisitions per firm	0.009	0.019	0.001	**0.018**
				(10.68)
Total transaction value / TA	0.017	0.025	0.011	**0.014**
				(8.34)
Total local transaction value / TA	0.002	0.004	0.000	**0.004**
				(10.73)

NOTES

a. Details on the definition and construction of the variables reported in the table are available in the Data Appendix.

b. "Difference" is the difference between the mean value In-Cluster and Off-Cluster (robust and clustered by firm t- statistics are provided in parenthesis).

Table III
Mergers & Acquisitions Regressions

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Number of Firms in MSA / 10	**0.006**	**0.006**	0.001	**0.005**	**0.015**	**0.032**	0.003	**0.019**
	(2.42)	(3.94)	(0.59)	(3.09)	(3.11)	(4.38)	(0.53)	(2.52)
Net Market Leverage			**-0.123**	**-0.039**			**-0.473**	**-0.687**
			(6.15)	(4.40)			(7.47)	(6.30)
Net Market Leverage x (Number of Firms in MSA / 10)			**-0.034**	**-0.015**			**-0.056**	-0.054
			(3.19)	(2.89)			(1.94)	(1.25)
Sales			**0.039**	**0.024**			**0.078**	**0.188**
			(9.29)	(11.05)			(7.80)	(12.56)
EBITDA/TA			**0.085**	0.023			**0.278**	0.105
			(2.59)	(1.27)			(3.46)	(0.78)
Average Stock Return			**0.064**	**0.018**			**0.205**	**0.164**
			(6.87)	(3.75)			(9.47)	(4.63)
Firm Age			**-0.002**	**-0.001**			**-0.004**	**-0.005**
			(4.27)	(2.47)			(3.82)	(2.82)
Population			-0.002	**-0.003**			-0.005	**-0.032**
			(0.48)	(1.95)			(0.55)	(2.29)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	13342	13342	13328	13328	13342	13342	13328	13328
R^2	0.03	0.02	0.07	0.04				

NOTES

a. Details on the definition and construction of the variables reported in the table are available in the Data Appendix.

b. Each column corresponds to a different regression. Reported are the estimated coefficients with their t-statistics in parenthesis (standard errors are robust and clustered by firm). For (1) and (3), dummy variable indicating an acquisition is the dependent variable. For (2) and (4), dummy variable indicating acquisition of a public target is the dependent variable. For (5) and (7) Total Transaction Value/TA is the dependent variable. For (6) and (8), Total Public Transaction Value/TA is the dependent variable.

Table IV
Leverage Regressions (OLS)

	Book Leverage	*Market Leverage*	*Net Market Leverage*	*Book Leverage*	*Market Leverage*	*Net Market Leverage*	*Book Leverage*	*Market Leverage*	*Net Market Leverage*
Number of Firms in MSA / 10	**-0.007**	**-0.003**	**-0.009**						
	(3.66)	(2.41)	(4.99)						
Ratio of Firms in MSA				**-0.178**	**-0.137**	**-0.302**			
				(3.28)	(3.00)	(5.36)			
Cluster							**-0.027**	**-0.020**	**-0.049**
							(2.61)	(2.20)	(4.35)
Sales	**0.035**	**0.013**	**0.022**	**0.036**	**0.014**	**0.023**	**0.035**	**0.013**	**0.022**
	(12.59)	(4.93)	(7.40)	(12.72)	(5.08)	(7.64)	(12.50)	(4.94)	(7.35)
EBITDA / TA	**-0.447**	**-0.396**	**-0.360**	**-0.441**	**-0.394**	**-0.353**	**-0.442**	**-0.394**	**-0.356**
	(16.24)	(18.47)	(14.55)	(16.05)	(18.55)	(14.46)	(16.05)	(18.56)	(14.52)
Market to Book	**-0.007**	**-0.031**	**-0.026**	**-0.007**	**-0.031**	**-0.026**	**-0.007**	**-0.031**	**-0.027**
	(2.57)	(17.60)	(12.53)	(2.84)	(17.59)	(12.66)	(2.96)	(17.85)	(13.08)
Tangible Assets / TA	**0.081**	**0.072**	**0.208**	**0.080**	**0.070**	**0.203**	**0.082**	**0.072**	**0.208**
	(2.12)	(2.07)	(5.32)	(2.06)	(1.98)	(5.15)	(2.15)	(2.05)	(5.31)
R&D / TA	**-0.280**	**-0.515**	**-0.700**	**-0.275**	**-0.502**	**-0.678**	**-0.289**	**-0.514**	**-0.700**
	(4.19)	(10.19)	(11.11)	(4.07)	(9.86)	(10.73)	(4.32)	(10.18)	(11.1)
R&D Dummy	-0.007	0.020	0.023	-0.005	0.021	0.025	-0.004	0.021	0.026
	(0.51)	(1.54)	(1.51)	(0.37)	(1.60)	(1.65)	(0.31)	(1.64)	(1.74)
Average Stock Return	-0.008	**-0.092**	**-0.072**	-0.009	**-0.093**	**-0.073**	-0.008	**-0.092**	**-0.072**
	(1.23)	(18.52)	(11.98)	(1.31)	(18.65)	(12.18)	(1.22)	(18.50)	(11.93)
Population	0.006	0.002	-0.001	**0.008**	0.004	0.004	0.006	0.003	0.002
	(1.56)	(0.54)	(0.20)	(1.99)	(1.21)	(0.99)	(1.62)	(0.84)	(0.45)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13342	13342	13342	13342	13342	13342	13342	13342	13342
R^2	0.22	0.47	0.46	0.22	0.48	0.46	0.22	0.47	0.46

NOTES

a. Details on the definition and construction of the variables reported in the table are available in the Data Appendix.

b. Each column corresponds to a different regression. Reported are the estimated coefficients with their t-statistics in parenthesis (standard errors are robust and clustered by firm). Also included in each regression are year and industry dummies.

Table V
Leverage Regressions (NLLS)

	Book Leverage	*Market Leverage*	*Net Book Leverage*	*Net Market Leverage*
Cluster	-0.010	**-0.062**	**-0.083**	**-0.069**
	(0.62)	(3.05)	(4.23)	(2.88)
Sales	**0.037**	**0.014**	**0.057**	**0.024**
	(11.81)	(4.62)	(14.1)	(6.93)
EBITDA / TA	**-0.465**	**-0.475**	**-0.448**	**-0.433**
	(13.69)	(17.14)	(11.21)	(13.71)
Market to Book	**-0.008**	**-0.044**	**-0.040**	**-0.040**
	(2.96)	(16.15)	(10.29)	(13.17)
Tangible Assets / TA	**0.082**	0.068	**0.373**	**0.202**
	(2.04)	(1.73)	(7.56)	(4.54)
R&D / TA	**-0.317**	**-0.659**	**-0.749**	**-0.905**
	(4.41)	(10.11)	(7.88)	(11.00)
R&D Dummy	-0.005	0.015	0.020	0.020
	(-0.39)	(1.08)	(1.14)	(1.16)
Average Stock Return	-0.008	**-0.109**	**-0.031**	**-0.088**
	(1.20)	(16.89)	(3.39)	(11.86)
Population	0.006	0.003	0.004	0.001
	(1.57)	(0.82)	(0.72)	(0.34)
λ	0.910	**0.652**	1.016	**0.636**
	(1.30)	(11.10)	(0.27)	(9.57)
Year Dummies	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes
Observations	13342	13342	13342	13342
R^2	0.22	0.49	0.42	0.47

NOTES

a. Details on the definition and construction of the variables reported in the table are available in the Data Appendix.

b. Each column corresponds to a different regression. Reported are the estimated coefficients with their t-statistics in parenthesis (standard errors are robust and clustered by firm). For λ, the reported t statistic corresponds to the test of hypothesis $\lambda \neq 1$.

Table VI
Cash Regressions

	OLS						NLLS
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Number of Firms in MSA / 10	**0.034** (7.51)	**0.077** (7.46)					
Ratio of Firms in MSA			**0.898** (7.27)	**2.527** (7.38)			
Cluster					**0.137** (7.11)	**0.460** (6.50)	**0.805** (5.76)
Sales	**-0.043** (7.67)	**-0.064** (2.90)	**-0.046** (8.21)	**-0.075** (3.43)	**-0.043** (7.83)	**-0.067** (3.05)	**-0.079** (3.09)
Market to Book	**0.077** (12.05)	**0.213** (15.49)	**0.079** (12.65)	**0.216** (15.92)	**0.081** (12.78)	**0.220** (16.39)	**0.274** (13.50)
R&D / TA	**1.324** (9.73)	**4.898** (12.45)	**1.317** (9.56)	**4.784** (12.14)	**1.381** (10.22)	**4.902** (12.50)	**5.899** (11.24)
R&D Dummy	-0.001 (0.04)	**-0.218** (2.26)	-0.009 (0.54)	**-0.235** (2.43)	-0.013 (0.80)	**-0.248** (2.59)	**-0.246** (2.33)
Capital Exp / TA	**-0.776** (8.06)	**-1.552** (4.22)	**-0.784** (8.14)	**-1.570** (4.26)	**-0.780** (8.05)	**-1.555** (4.23)	**-1.837** (4.35)
Debt Rating	**-0.086** (2.64)	0.035 (0.19)	**-0.081** (2.29)	0.053 (0.28)	**-0.094** (2.85)	0.015 (0.08)	0.046 (0.20)
Dividend	0.004 (0.24)	0.010 (0.13)	0.009 (0.54)	0.027 (0.37)	0.005 (0.28)	0.019 (0.27)	0.068 (0.86)
Cash Flow Std. Dev.	0.634 (1.72)	**2.429** (2.55)	0.637 (1.75)	**2.350** (2.49)	0.637 (1.73)	**2.276** (2.41)	**2.922** (2.6)
Average Stock Return	**0.051** (3.87)	**0.256** (6.84)	**0.052** (4.05)	**0.261** (6.99)	**0.050** (3.76)	**0.252** (6.69)	**0.286** (6.54)
Population	0.008 (1.84)	**0.064** (2.51)	-0.003 (0.53)	0.025 (0.91)	0.005 (1.24)	0.037 (1.35)	0.041 (1.47)
λ							**0.738** (5.11)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13342	13277	13342	13277	13342	13277	13342
R^2	0.38	0.43	0.38	0.43	0.38	0.43	0.43

NOTES

a. Each column corresponds to a different regression. Reported are the estimated coefficients with their t-statistics in parenthesis (standard errors are robust and clustered by firm). For λ the reported t-statistic corresponds to the test of the hypothesis $\lambda \neq 1$. Coefficients that are significant at the 5% level are highlighted in bold.

b. For (1), (3), and (5), Cash/n-TA is the dependent variable. For (2), (4), (6), and (7), LogCash/n-TA) is the dependent variable.

Table VII Older Firm Regressions

Panel A: M&A Regression Analysis

	All Acquisitions	*Public Acquisitions*	*All Acquisitions*	*Public Acquisitions*
Number of Firms in MSA / 10	0.005	**0.006**	-0.001	0.004
	(1.28)	(2.45)	(0.26)	(1.61)
Net Market Leverage			**-0.123**	**-0.034**
			(4.84)	(3.13)
Net Market Leverage. x (Number of Firms in MSA/10)			**-0.035**	**-0.024**
			(2.22)	(3.20)
Sales			0.071	0.040
			(1.53)	(1.47)
EBITDA/TA			**0.032**	**0.022**
			(6.67)	(8.82)
Average Stock Return (3)			**0.040**	0.013
			(3.16)	(1.87)
Firm Age			**-0.001**	**-0.001**
			(2.27)	(1.98)
Population			0.001	-0.003
			(0.13)	(1.82)
R-squared	0.03	0.02	0.06	0.05

Panel B: Leverage and Cash Regressions

	Book Leverage		*Market Leverage*		*Net Market Leverage*		*Cash / n-TA*	
Number of Firms in MSA / 10	**-0.009**		**-0.004**		**-0.011**		**0.043**	
	(3.30)		(1.94)		(4.06)		(5.86)	
Ratio of Firms in MSA		**-0.178**		-0.109		**-0.275**		**0.769**
		(2.58)		(1.81)		(3.66)		(4.93)
Sales	**0.033**	**0.033**	**0.011**	**0.012**	**0.019**	**0.020**	**-0.029**	**-0.030**
	(9.84)	(9.89)	(3.64)	(3.73)	(5.37)	(5.48)	(4.86)	(5.00)
EBITDA/TA	**-0.499**	**-0.499**	**-0.451**	**-0.451**	**-0.401**	**-0.401**		
	(11.17)	(11.16)	(12.97)	(12.97)	(10.17)	(10.19)		
Market to Book	-0.007	-0.007	**-0.042**	**-0.042**	**-0.038**	**-0.038**	**0.079**	**0.081**
	(1.64)	(1.73)	(14.14)	(14.05)	(11.24)	(11.19)	(8.03)	(8.17)
Tangible Assets / TA	0.051	0.052	0.036	0.035	**0.161**	**0.161**		
	(1.05)	(1.06)	(0.84)	(0.84)	(3.39)	(3.38)		
R&D / TA	**-0.339**	**-0.358**	**-0.476**	**-0.478**	**-0.667**	**-0.679**	**1.191**	**1.319**
	(3.21)	(3.35)	(6.26)	(6.18)	(7.12)	(7.16)	(6.29)	(6.83)
R&D Dummy	-0.027	-0.025	0.007	0.008	0.004	0.006	0.015	0.008
	(1.60)	(1.50)	(0.43)	(0.49)	(0.19)	(0.31)	(0.80)	(0.42)
Capital Exp / TA							**-0.912**	**-0.964**
							(7.25)	(7.59)
Debt Rating							**-0.104**	**-0.098**
							(3.14)	(2.90)
Dividend							0.008	0.009
							(0.48)	(0.56)
Cash Flow Std. Dev.							**1.410**	**1.489**
							(2.09)	(2.21)
Average Stock Return	-0.005	-0.006	**-0.101**	**-0.101**	**-0.086**	**-0.086**	0.029	0.032
	(0.56)	(0.59)	(12.80)	(12.83)	(9.19)	(9.24)	(1.75)	(1.90)
Population	**0.009**	**0.010**	0.004	0.006	0.003	0.006	0.004	-0.001
	(2.09)	(2.29)	(1.07)	(1.33)	(0.55)	(1.16)	(0.85)	(0.18)
R-squared	0.22	0.22	0.48	0.48	0.44	0.44	0.38	0.37

Notes:

a) Older Firms are firms that did their IPO at least 10 years before; b) All regressions contain *Year Dummies* and *Industry Dummies*; c) The number of firm-year *observations* is *8415;* d). Standard errors are robust and clustered by firm.

Table VIII
Region Specific Controls

	Market Leverage				*Net Market Leverage*				*Log(Cash/ n-TA)*			
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*
Number of Firms in MSA / 10	**-0.003**	-0.002	-0.002		**-0.009**	**-0.007**	**-0.007**		**0.080**	**0.067**	**0.069**	
	(2.23)	(1.75)	(1.53)		(4.73)	(4.01)	(3.74)		(7.02)	(6.32)	(6.01)	
Ratio of Firms in MSA				**-0.136**				**-0.292**				**2.414**
				(2.65)				(4.66)				(6.28)
Population Growth	**-0.698**		**-0.804**	**-0.882**	-0.776		**-0.962**	**-1.065**	4.944		**6.209**	**6.726**
	(2.00)		(2.30)	(2.53)	(1.86)		(2.31)	(2.57)	(1.74)		(2.18)	(2.37)
MSA R&D / MSA TA		**-0.267**	**-0.350**	**-0.321**		**-0.497**	**-0.615**	**-0.580**		**3.587**	**4.077**	**3.964**
		(2.32)	(2.77)	(2.54)		(3.69)	(4.08)	(3.86)		(4.19)	(4.07)	(3.93)
Sales	**0.013**	**0.013**	**0.013**	**0.013**	**0.023**	**0.022**	**0.022**	**0.023**	**-0.061**	**-0.065**	**-0.061**	**-0.073**
	(4.58)	(4.86)	(4.48)	(4.66)	(7.04)	(7.30)	(6.91)	(7.17)	(2.51)	(2.96)	(2.54)	(3.03)
EBITDA / TA	**-0.415**	**-0.394**	**-0.413**	**-0.412**	**-0.376**	**-0.356**	**-0.372**	**-0.369**				
	(15.89)	(18.44)	(15.83)	(15.88)	(12.55)	(14.50)	(12.47)	(12.47)				
Market to Book	**-0.033**	**-0.031**	**-0.033**	**-0.033**	**-0.028**	**-0.026**	**-0.028**	**-0.028**	**0.218**	**0.211**	**0.215**	**0.217**
	(15.74)	(17.47)	(15.62)	(15.53)	(11.43)	(12.37)	(11.27)	(11.26)	(13.29)	(15.43)	(13.20)	(13.56)
Tangible Assets / TA	**0.074**	**0.074**	**0.076**	**0.072**	**0.208**	**0.211**	**0.211**	**0.205**				
	(1.97)	(2.11)	(2.03)	(1.92)	(4.93)	(5.41)	(5.04)	(4.86)				
R&D / TA	**-0.520**	**-0.489**	**-0.488**	**-0.472**	**-0.736**	**-0.652**	**-0.680**	**-0.654**	**5.004**	**4.577**	**4.674**	**4.551**
	(9.06)	(9.60)	(8.42)	(8.08)	(10.32)	(10.23)	(9.42)	(9.05)	(11.32)	(11.44)	(10.36)	(10.08)
R&D Dummy	0.020	0.018	0.018	0.019	0.021	0.020	0.018	0.021	**-0.208**	**-0.196**	-0.186	**-0.206**
	(1.42)	(1.43)	(1.30)	(1.38)	(1.28)	(1.33)	(1.09)	(1.25)	(1.96)	(2.03)	(1.74)	(1.93)
Average Stock Return	**-0.086**	**-0.092**	**-0.086**	**-0.086**	**-0.066**	**-0.072**	**-0.066**	**-0.066**	**0.238**	**0.260**	**0.239**	**0.241**
	(14.81)	(18.60)	(14.84)	(14.91)	(9.58)	(12.11)	(9.64)	(9.73)	(5.59)	(6.99)	(5.67)	(5.75)
Capital Exp/TA									**-1.848**	**-1.622**	**-1.963**	**-2.006**
									(4.37)	(4.43)	(4.66)	(4.77)
Debt Rating									0.020	0.035	0.017	0.038
									(0.11)	(0.19)	(0.09)	(0.20)
Dividend									-0.030	0.033	-0.002	0.017
									(0.40)	(0.47)	(0.02)	(0.22)
Cash Flow Std. Dev.									**2.769**	**2.360**	**2.643**	**2.517**
									(2.53)	(2.47)	(2.42)	(2.32)
Population	0.001	0.003	0.001	0.005	-0.003	0.001	-0.001	0.005	**0.074**	**0.054**	**0.063**	0.021
	(0.12)	(0.77)	(0.36)	(1.04)	(0.60)	(0.15)	(0.25)	(0.86)	(2.41)	(2.16)	(2.06)	(0.65)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10839	13342	10839	10839	10839	13342	10839	10839	10791	13277	10791	10791
R^2	0.47	0.48	0.47	0.47	0.45	0.46	0.46	0.46	0.43	0.43	0.44	0.44

Notes:

a. Details on the definition and construction of the variables reported in the table are available in the Data Appendix.

b. Each column corresponds to a different regression. Reported are the estimated coefficients with their t-statistics in parenthesis (standard errors are robust and clustered by firm).

Data Appendix

Acquisitions per firm is the number of acquisitions per firm.

All Acquisitions is a dummy variable that takes a value of 1 if during that year the firm acquires another firm and of 0 otherwise.

Average Stock Return is the firm's average stock return over the last three years.

Book Debt (BD) is TA minus BE.

Book Equity (BE) is defined as TA minus liabilities (Item 181) plus balance sheet deferred taxes and investment tax credit (Item35) minus PS.
Book Leverage is BD over TA.

Capital Exp. / TA is capital expenditures (Item 128) over TA.

Cash Flow Std Dev. is the standard deviation of EBITDA/TA during the sample period.

Cash/ n-TA is cash and marketable securities (Item 1) over TA minus cash.

Cluster is a dummy variable that takes a value of 1 if there are 10 or more firms from the same industry within the Metropolitan Statistical Area (MSA) as identified by the U.S. Census Bureau in 1990 and of 0 otherwise.

Debt Rating takes the value of one if the firm has an S&P investment grade long-term debt rating.

Dividend takes the value of one if the firm pays dividend (Item 26).

EBITDA/TA is EBITDA (Item13) over lagged TA.

Local acquisitions per firm is the number of acquisitions within the same MSA per firm.

Market Equity (ME) is common shares outstanding (Item 25) times the stock price (Item 199).

Market Leverage is BD over MV.

Market-to-Book ratio is defined as MV over TA.

Market Value (MV) is defined as liabilities (Item181) minus balance sheet deferred taxes and investment tax credit (Item 35) plus PS plus ME.

MSA R&D / MSA TA is the ratio of total expenditures to total assets in the MSA.

Net Book Leverage is BD minus cash and marketable securities (Item 1) over TA.

Net Cash/ TA is cash and marketable securities (Item 1) minus short-term debt (Item 34) over TA.

Net Market Leverage is BD minus cash and marketable securities (Item 1) over MV.

Number of Firms in MSA is the number of firms within the same industry in an MSA.

Public Acquisitions is a dummy variable that takes a value of 1 if during that year the firm acquires another public firm and of 0 otherwise.

Population is the natural logarithm of population estimate of MSA.

Population Growth is annual population growth in the MSA.

Preferred Stock (PS) is equal to liquidating value (Item 10) if available, else redemption value (Item 56) if available, else carrying value (Item 130).

Ratio of acquirers is the proportion of firms that acquire another firm.

Ratio of local acquirers is the proportion of firms that acquire another firm within the same MSA.

Ratio of local firms is the ratio of number of firms within the same industry to total number of firms classified in the same industry in the U.S

R&D Dummy takes the value of one if COMPUSTAT reports R&D expense as missing.

Ratio of Firms in MSA is the number of firms within the same industry in an MSA divided by the total number of firms within the same industry.

R&D / TA is defined as R&D expenses (Item 46) over TA.

Sales is the natural logarithm of sales (Item 12) in 1990 dollars.

Selling Exp. / TA is selling and administrative expenses (Item 189) over TA.

Stock Return is the firm's annual stock return.

Tangible Assets / TA is net property, plant and equipment (Item 8) over TA.

Total Assets (TA) is measured as the book value of assets (Item 6)

Total transaction value / TA is the total value of the acquisitions over TA

Total local transaction value / TA is the total value of the local acquisitions over TA