TRADE SECRET PROTECTION AND FOREIGN ACQUIRER ENGAGEMENT

ABSTRACT

We study whether strengthened legal protection of trade secrets increases a firm's likelihood of being acquired by another firm. Strengthened protection may increase the attractiveness of a potential target firm because trade secrets are better protected from misappropriation. But it may also decrease attractiveness because of higher information asymmetries between an acquiring and target firm. Using the staggered implementation of the Uniform Trade Secrets Act (UTSA) in the U.S., we show that strengthened trade secret protection increases the likelihood of being acquired. However, we find that foreign and domestic acquirers are differentially impacted by the legal change. Foreign acquirers prefer to engage in a minority acquisition rather than taking full control of a target. We attribute this finding to the higher risk associated with fully acquiring a target firm in an unfamiliar institutional context that foreign firms may seek to compensate for by acquiring only a minority stake.

Keywords: trade secret protection, firm acquisitions, foreign versus domestic acquirers, Uniform Trade Secrets Act (UTSA)

INTRODUCTION

Firm acquisitions have frequently been characterized as instrumental in getting access to the intellectual assets of other firms, including their patents or trade secrets (e.g., Cassiman *et al.*, 2005; Chondrakis, 2016). While prior research has mostly considered an acquired firm's patent portfolio (e.g., Ahuja and Katila, 2001; Grimpe and Hussinger, 2014), more recent contributions show the importance of trade secrets in firm acquisitions for both the value of a target firm and its likelihood of being acquired (Younge, Tong, and Fleming, 2015; Castellaneta, Conti, and Kacperczyk, 2017; Chen, Gao, and Ma, 2021). In comparison with patents, trade secrets – including marketing or technical data, manufacturing expertise, or chemical formulae – have often been characterized as the most effective intellectual property rights a firm can own for appropriating the returns to innovation (e.g., Levin *et al.*, 1987; Cohen, Nelson, and Walsh, 2000). But their effectiveness, and hence their role in firm acquisitions, depends crucially on the institutional framework that governs the legal protection of trade secrets (Risch, 2007).

Exploiting exogenous variation in the legal protection of trade secrets, Younge *et al.* (2015) and Chen *et al.* (2021) find that strengthened trade secret protection increases the likelihood of firms of being acquired and indicate three main reasons. First, strengthened protection increases the value of a target's intellectual assets as they provide a better competitive position on product markets. Second, it may limit the outward flow of information about trade secrets to competitors, particularly through employee mobility, and thus lower the risk of misappropriation and imitation (Png and Samila, 2015; Png, 2017a; Contigiani, Hsu, and Barankay, 2018). Third, strengthened trade secret protection curtails the ability to hire key personnel on the labor market, and acquisitions on the market for corporate control may thus serve as a vehicle to get access to skilled human capital (Chen *et al.*, 2021). However, strengthened protection of trade secrets also

limits the amount of information available about potential target firms, increasing information asymmetries between acquirer and target and uncertainty about a potential target's market value. Castellaneta *et al.* (2017) show that the increased uncertainty about the target's value may lead acquirers to discount their offer to compensate for the higher risk of a poor-acquisition investment.

While the direction and strength of the effect have been shown to depend on target firm and industry characteristics, our understanding of the effects of strengthened trade secret protection on firm acquisitions remains rather coarse. We know little about the role of the acquiring firm and the type of acquisition firms engage in as a result of institutional change in trade secret protection. More specifically, we ask whether different types of acquirers are differentially impacted by strengthened trade secret protection and whether acquirers consequently adjust their ownership stake.

Hence, in this paper, we extend prior research on the effect of strengthened trade secret protection on firm acquisitions in two ways. First, we draw a distinction between domestic and foreign acquirers. The latter have frequently been shown to suffer considerable uncertainty when entering foreign markets (Anderson and Gatignon, 1986; Clougherty and Zhang, 2020), and – compared with domestic acquirers – information asymmetries between a foreign acquirer and a potential target firm are likely to be even larger when trade secrets become better protected. Second, we investigate the ownership stake chosen by the acquirer, drawing a distinction between majority and minority acquisitions. Prior research indicates that the ownership stake in cross-border acquisitions is contingent on the degree of institutional uncertainties (Falaster, Ferreira, and Li, 2021). Because strengthened trade secret protection increases information

asymmetries, potential acquirers – and particularly foreign firms – may therefore seek to account for the increased risk by engaging in minority rather than majority acquisitions.

Assessing the effect of strengthened trade secret protection on firm acquisitions is empirically challenging. By their very nature, trade secrets are difficult to observe, much unlike patents that have frequently been used as observable indicators of firms' technology base and research capabilities (Henderson and Cockburn, 1994; Adegbesan and Higgins, 2010). Nevertheless, prior research estimates trade secrets to comprise on average two-thirds of the value of firms' intangible assets, amounting to a total value of about $5 trillion in publicly-listed U.S. firms (Almeling, 2012; Kim, Linton, and Semanik, 2016). We therefore use the enactment of the Uniform Trade Secrets Act (UTSA) during the 1980s, 1990s and 2000s by states in the U.S. (Castellaneta *et al.,* 2017; Png, 2017a). In the U.S., trade secret protection is governed by state law and the UTSA strengthens the protection of trade secrets in two ways (Pooley, 1997). First, the UTSA extends the definition of trade secrets to incorporate non-business related inventions and those that are not in continuous use. Second, the UTSA declares the mere acquisition of a trade secret as misappropriation. Before the UTSA, U.S. states had legislation in place that offered different degrees of trade secret protection. Moreover, the states adopted the UTSA at different points in time and strengthened the protection of trade secrets to a varying degree. To depict this heterogeneity, we employ an index that measures the overall strength of trade secret protection before and after the state-wise adoption of the UTSA (Png, 2017a, b; Castellaneta *et al.*, 2017). We thus exploit the exogenous variation in timing and intensity of the adoption of the UTSA in the various states. Prior literature also suggests that the adoption of the UTSA was exogenous to state economic conditions or firm lobbying efforts, supporting our case (Png, 2017a).

Using a firm panel for the period from 1980 to 2010, our results show that the enactment of the UTSA in fact increased the likelihood of a firm of being acquired per year by 1.9% on average. As compared to the mean acquisition likelihood of 5% this corresponds to an increase of 38%. We also find that both the acquirer and the type of acquisition are impacted by strengthened trade secret protection. Foreign acquirers become less likely to make a majority acquisition when trade secret protection increases, but more likely to engage in a minority acquisition. These findings indicate that strengthened trade secret protection increases information asymmetries disproportionately for foreign acquirers which, as a consequence, revert to minority acquisitions that are less risky but also offer less control over the target firm.

The reminder of the paper is organized as follows. The next section provides the relevant background for our study and surveys the related literature. We then present our data and descriptive statistics. The empirical results follow. The paper concludes with a discussion of the results, implications and limitations.

BACKGROUND AND LITERATURE

Trade secrets and their protection in the U.S.

Keeping valuable knowledge and technology secret from rivals has been a frequently used strategy by firms in order to avoid misappropriation (Kogut and Zander, 1992; Arundel, 2001). In fact, prior research finds that such trade secrets, which include a multitude of intangible assets (Risch, 2007), are typically more effective instruments for appropriating the returns from innovation than patents (e.g., Levin *et al.*, 1987; Cohen *et al.*, 2000). While patents grant temporary legal protection against exploitation of the patented invention by third parties, they require the invention to be disclosed (Markman, Espina, and Phan, 2004). Disclosure can be costly because the information contained in patent documents is detailed enough to allow a

person “skilled in the art” to understand the patented technology, re-engineer the invention and potentially “invent around” it (Arundel, 2001). Although prior research shows that as much as 90% of all inventions are not patented (Moser, 2012; Fontana *et al.*, 2013), patents oftentimes serve as important instruments to protect against competition and to secure freedom to operate in R&D (Teece, 1986; Lepak, Smith, and Taylor, 2007; Somaya, 2012).

In contrast to patents, trade secrets, by definition, do not require disclosure and can, in theory, last for an unlimited period of time. According to the UTSA, trade secrets refer to “information, including a formula, pattern, compilation, program, device, method, technique, or process, that (i) derives independent economic value, actual or potential, from not being generally known to, or readily ascertainable by proper means by other persons who might obtain economic value from its disclosure or use; and (ii) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy” (Section 1(4) of the UTSA). In that sense, trade secrets are much broader in scope than patents, encompassing work in progress and inventions that do not fulfill the patentability requirements (Liebeskind, 1997; Wadhwa, Bodas Freitas, and Sarkar, 2017). Inventions are patentable when they are novel, have industrial applicability and involve an inventive step vis-à-vis the state of the art (Arundel, 2001). This excludes a great deal of valuable information such as business models, marketing concepts or customer lists, which in turn may be protected by trade secrets (Png, 2017a).

In the United States, which is our empirical context, trade secret protection – historically governed by common law – has increased considerably with the enactment of statutes based on the Uniform Trade Secret Act in 48 U.S. states as well as in the District of Columbia, Puerto Rico, and the U.S. Virgin Islands between 1975 and 2020. To qualify for protection, the information in question must (i) not be generally known or readily ascertainable, (ii) derive

economic value from not being generally known, and (iii) be subject to significant efforts to maintain its secrecy (Sandeen, 2010). The UTSA strengthens the protection of trade secrets by eliminating the requirement that the information be in continuous use and business related. Moreover, the UTSA extends the definition of misappropriation to include the mere acquisition of the secret by improper means, which include industrial espionage, fraud, bribery, or violations of confidentiality and usage agreements (Lemley, 2008). In those cases, the UTSA provides a framework for procedures and remedies, such as regulation on a maximum period of three years between misappropriation and legal action and substantive punishment for misappropriation (injunctions long enough to eliminate any advantage from misappropriation and punitive damages up to twice the amount of the actual damage) (Sandeen, 2010). The introduction (and widespread adoption) of the UTSA has since made the application of trade secret law more consistent across U.S. states (Almeling, 2012).

Besides the UTSA, the institutional framework governing trade secret protection in a state may also include court recognition of the Inevitable Disclosure Doctrine (IDD). This doctrine stipulates that firms may obtain an injunction to prevent former or current employees from taking up employment at another firm that would inevitably lead the individual to disclose trade secrets (Png and Samila, 2015). The IDD can be invoked when a firm perceives a risk of misappropriation because an employee with trade secret information may be employed in a similar position at a rival firm. The IDD has been recognized by courts in only 21 states compared to almost all states and jurisdictions that have codified the UTSA (Klasa *et al.*, 2018).[1]

Moreover, firms may protect their trade secrets through covenants not to compete (CNCs). Contractually limiting the opportunities of former employees to work for competitors within a

[1] The UTSA has not been adopted by the states of North Carolina and New York whose own legislation, however, is very similar to the act (Klasa *et al.*, 2018).

specified geographical distance and time period (Garmaise, 2011), CNCs curtail other firms' opportunities to benefit from spillovers through hiring scientists and engineers on labor markets. CNCs are frequently used by firms in the U.S. and the degree to which CNCs can be enforced by law varies by state (Garmaise, 2011). CNCs are, for instance, not enforced in California, whereas Florida shows a high enforceability from 1997 onwards (Ertimur et al., 2018). In contrast to trade secret law, CNCs are contractual provisions that can be enforced if they serve to protect a firm's trade secrets, which renders their effectiveness to be partly dependent on the corresponding laws (Png, 2017a).

Trade secrets and firms' engagement on the market for corporate control

Gaining access to knowledge and technology has often been cited as a major motivation for firm acquisitions as firms seek to benefit from complementary resources to improve their innovation performance (e.g., Cassiman *et al.*, 2005; Chondrakis, 2016). In that regard, both disembodied and embodied knowledge and technology may be valuable resources that firms seek to acquire on the market for corporate control. Prior literature has primarily focused on patents which not only allow firms to learn but also to protect their intellectual assets from misappropriation. Grimpe and Hussinger (2014), for example, show that acquiring patent portfolios with high "blocking power" can be complementary to an acquiring firm's resources as they increase the degree to which an acquiring firm may appropriate the value from its innovation activities. Such "pre-emptive patents" secure a firm's freedom to operate in R&D by threatening the patenting activities of rivals (Guellec, Martinez, and Zuniga, 2012; Czarnitzki, Hussinger, and Leten, 2020).

Trade secrets are important in acquisitions as they are frequently embodied in the target firm's employees, and acquirers may pursue an acquisition to get access to skilled and

experienced human capital (Chen *et al.*, 2021). For example, R&D processes often build on experience (Cohen and Levinthal, 1989) or learning-by-doing (Teece, 1986), so that they feature a substantial share of tacit knowledge, embodied in scientists and engineers, which is difficult to transfer independently of the individuals holding it (Winter, 1987). Strengthened protection of trade secrets may thus increase a firm's likelihood of being acquired for three reasons. First, strengthened protection increases the value of a target firm's trade secrets because it increases the target's competitive position in product markets (Chen *et al.*, 2021). Second, stronger protection of a firm's trade secrets may limit the outward flow of information about trade secrets to competitors and thus lessen the risk of misappropriation and imitation (Png and Samila, 2015; Contigiani *et al.*, 2018). Key inventors and other personnel are less likely to leave an acquired firm if increased trade secret protection constrains their outside options (Chen *et al.*, 2021). In fact, acquiring firms oftentimes struggle to retain such individuals after an acquisition, leading to a productivity loss in innovation activities (Ernst and Vitt, 2000; Ranft and Lord, 2002; Paruchuri, Nerkar, and Hambrick, 2006; Arroyabe, Hussinger, and Hagedoorn, 2020). Third, strengthened trade secret protection limits firms' ability to hire key employees on the labor market (Png and Samila, 2015; Castellaneta *et al.*, 2017). As a result, firm acquisitions appear more attractive in order to hire key personnel.

In comparison to an observable portfolio of patents, strengthened trade secret protection however complicates the identification of valuable trade secrets in potential target firms. Castellaneta *et al.* (2017) report that target firms are reluctant to disclose information constituting a trade secret to potential acquirers during the due diligence phase since trade secrets are vulnerable to misappropriation in case the transaction does not close. The information asymmetries that such reluctance creates between acquirer and potential target firm are likely

aggravated with strengthened trade secret protection. The limited amount of information available about potential target firms increases uncertainty about the firm's market value. Castellaneta *et al.* (2017) show that increased uncertainty about the target's value may lead acquirers to discount their offer to compensate for the higher risk. But increased risk may also lead acquirers to step back from the acquisition altogether. In that sense, strengthened trade secret protection may decrease the likelihood of a firm of being acquired.

In the following, we suggest that our understanding of the effects of strengthened trade secret protection on firm acquisitions is incomplete unless we account for the type of acquirer and type of acquisition. First, we ask whether acquirers are differentially impacted by strengthened trade secret protection. Specifically, foreign acquirers may be disproportionately affected by increasing information asymmetries when they seek to identify and assess potential target firms. Foreign acquirers need to interpret information in the light of the legal provisions in a host country that they have less experience with compared to domestic firms (Gehrig, 1993). As domestic acquirers are better able to assess the relevant implications of legal trade secret protection than foreign acquirers, the latter may overestimate the risks and underestimate the benefits of acquiring a host-country target (Liesch, Welch, and Buckley, 2011). Foreign acquirers also face higher transaction costs that they need to take into account when deciding on a cross-border acquisition, both because legal provisions in a host country create costs (e.g., legal and advisory fees) and because acquirers face organizational costs that arise from building legal expertise and allocating management attention (Clougherty and Zhang, 2020). Moreover, strengthened trade secret protection and associated information asymmetries are likely experienced differently by foreign acquirer managers compared to domestic firm managers as the former perceive a lower sense of control and mastery of a particular domain (Liesch *et al.*, 2011).

As a result, higher perceived risk as a function of available information and prior experience may deter foreign acquirers from pursuing an acquisition to a larger extent than domestic acquirers (Clougherty and Zhang, 2020).

Second, the perception of higher risk by foreign acquirers likely has implications for the type of acquisition chosen. In that sense, foreign acquirers may tend to refrain from the acquisition of a majority ownership stake but rather pursue acquisitions of minority ownership stakes. The ownership stake that acquirers pursue reflects the degree of control and risk (Chen, 2008) and determines their exposure in the host country (Henisz, 2000), control of local operations, and access to proprietary knowledge (Anderson and Gatignon, 1986). Foreign acquirers face liabilities of foreignness as a result of unfamiliarity with the local environment and institutional framework (Mezias, 2002; Falaster *et al.*, 2021). Taking a minority stake in a target firm and hence engaging in a partnership rather than a full acquisition can help to reduce information asymmetries and to compensate for the increased risk that foreign acquirers face with strengthened trade secret protection. Acquirers gain knowledge about a target's trade secrets and may decide to increase their ownership stake at a later point. In contrast, taking full control by means of a majority acquisition associates with higher risk that foreign acquirers may not want to take when strengthened trade secret protection complicates their assessment of the target's attractiveness.

In conclusion, while prior literature has established a positive effect of strengthened trade secret protection on firm acquisitions in general, the effects on the type of acquirer and type of acquisition have not been documented in the empirical literature. In the following, we exploit the staggered implementation of the UTSA in U.S. states to shed light on the distinction between domestic and foreign acquirers and the ownership stake in firm acquisitions.

METHODS

Data

Our empirical analysis is based on a firm-year panel dataset that combines variables from different data sources. Firm acquisition data was extracted from the database Thomson One Banker provided by Thomson Reuters. We consider only those deals that were completed and involved target firms in the U.S. Our sample spans the period from 1980 to 2010 and includes all manufacturing and services industries. Our dataset includes a total of 4,369 acquisitions, distributed over 74 industries.

We combine the firm acquisition data with information on firms' characteristics, obtained from Compustat. The match between the two databases relies on different firms' identifiers (CUSIP and PERMNO, retrieved from the Center for Research in Security Prices (CRSP) database). We also add data on firms' innovation activity. Data on firms' patents are taken from Kogan *et al.* (2017) and matched to the Compustat dataset using firms' PERMNO identifier.

We obtain data on the strength of state-level trade secret protection and the changes induced by the UTSA from Png (2017a). Firms are matched to states based on the location of the firm's headquarters, considering trade secret protection in that location. We take the information on a firm's headquarters from the Compustat database. For most firms, particularly small and medium-sized firms, R&D facilities, where many trade secrets are held, are typically collocated with the firm's headquarters (Malecki, 1980). But for some firms, the location of the R&D and the firm's headquarters may indeed not coincide. Prior research indicates that this discrepancy is unlikely to affect results (Li, Lin, and Zhang, 2018) which we also believe to hold in our context for four reasons. First, trade secrets can cover much more than R&D outcomes, for example marketing or technical data, manufacturing expertise, or other non-technology related business

secrets. These are likely located at the firm's headquarters. But even if they were not, accounting for the firm's R&D locations would not allow to trace the location of those trade secrets.

Second, when selecting the state's law that governs a dispute, courts often favor the state with the most significant relation to the dispute which in many cases is the headquarters' location (Jones, 2014). Third, the headquarters' state is relevant because of "the law of the place where the contract is made" principle in labor laws (Pollard, 2014). Fourth, firms can designate the law of the headquarters' state as the applicable law using either the "choice of law provision" in employment contracts (Steinmeyer and Freeman, 2016) or the "choice of forum provision" (Jones, 2014). Hence, we are confident that the matching of firms to their headquarters' state is appropriate.

Furthermore, we add data on the enforceability of noncompete agreements at the state level from Garmaise (2011) and Ertimur *et al.* (2018), data on state court recognition of the IDD from Klasa *et al.* (2018), and data on the existence of business combination laws from Giroud and Mueller (2010) as well as Chen *et al.* (2021). Finally, we also include data on the state GDP growth rate and the state population, obtained from the Bureau of Economic Analysis. Our final sample consists of 87,028 firm-year observations.

Measures

Dependent variables

Our model has three dependent binary variables. The first dependent variable is a dummy variable that is equal to one if a firm has been acquired in a given year, and zero otherwise. The second dependent variable is a dummy equal to one if a firm is acquired in a majority acquisition

in a given year, and zero otherwise. The third dependent variable is a dummy equal to one if a firm is acquired in a minority acquisition in a given year, and zero otherwise.

Explanatory variables

Our main explanatory variable measures the effective legal protection of trade secrets in a given state and year. Several recent contributions have exploited the opportunity that the staggered adoption of the UTSA by U.S. states offers for assessing the implications of strengthened trade secret protection. Drawing on different legal sources, Png (2017b) builds a state-year level index of the legal protection of trade secrets comparing the changes in protection before and after the adoption of the UTSA across U.S. states during the period from 1980 to 2010 (see Table A1 in the appendix). The index can range from 0 to 1, with higher scores representing stronger legal protection of trade secrets (see Png, 2017a, for detailed information). The variable changes over time as trade secret protection was strengthened in different states and different years.

We include several variables measuring firm characteristics that might affect the likelihood of a firm of being acquired. We measure a firm's size as the firm's total assets and take the logarithm to account for the skewness of the distribution of this variable. We include a firm's sales growth as the percentage change of sales from the previous period. Moreover, we include R&D expenditures as the ratio of R&D expenditures to firm assets. We replace missing expenditures data by zero and include a dummy variable recording these missing values. To reflect the patenting activity of firms, we include a binary variable that is equal to one if the firm has a patent stock different from zero.

We also include a set of state-level control variables. We measure the recognition of the IDD with an indicator variable developed by Klasa *et al.* (2018) who examine all the legal cases addressing the IDD in each state since 1919 to identify the precedent-setting legal cases in which

state courts adopted the IDD. When a case becomes precedent-setting, the case becomes case law, so that courts in that state will follow its ruling on subsequent cases with regards to the applicability of the IDD. The indicator takes the value 1 in the year of the recognition of the IDD in a specific state and in the years thereafter, and zero otherwise.

The enforceability of CNCs is measured using an index on the state-year level developed by Garmaise (2011) that captures the degree of enforceability of non-compete agreements by state for the period from 1992 to 2004. The index has been extended by Ertimur *et al.* (2018) to cover the years from 1980 to 2013. The index is constructed by using a survey of the state laws surrounding CNCs (Malsberger, 2004). A total of twelve questions (e.g. burden of proof, geographic restrictions, and damages) are used to evaluate the level of CNC enforceability. Each state is granted one point for each question for which its law lies above a certain threshold, and the scores for all the questions are added up. The index ranges between 0 to 12, with higher scores indicating higher enforceability of CNCs.

We also include an indicator variable to reflect whether a state has adopted business combination laws. Business combination laws enforce a moratorium on transactions such as M&As for a period of three to five years. We employ an indicator developed by Giroud and Mueller (2010) and extended by Chen *et al.* (2021), which equals one if a state has adopted business combination laws and zero otherwise.

To explore the potential effects that the UTSA can have on acquisition activity depending on the type of acquirer, we include a binary variable that indicates a foreign acquirer and zero otherwise.

Finally, we control for two state characteristics that may influence the extent to which firm acquisitions occur in that state. We use the logarithm of the number of inhabitants in a given

state and year to measure the size of the state. We also control for state economic conditions by including a state's GDP growth rate as more prosperous states may exhibit higher acquisition activity. Finally, we include year dummies to control for changing patterns of firm acquisition activity over time. Table 1 provides a brief description of our variables.

[Insert Table 1 about here]

Model

Our identification strategy exploits differences in the timing and intensity of the change in the legal protection of trade secrets arising from the UTSA coming into effect in the various states (Castellaneta *et al.*, 2017; Png, 2017a, b). We employ fixed-effects linear regressions, which allow us to account for any unobserved industry-specific fixed effects (Wooldridge, 2007), and clustered standard errors by state as our treatment is defined at the state level (Bertrand, Duflo, and Mullainathan, 2004).

Our empirical analysis presents three basic specifications. We start by estimating a parsimonious specification, in which only the index variable reflecting the legal protection afforded by the UTSA is included as an explanatory variable along with a set of year dummies. This specification assumes that all remaining effects are absorbed by the firm fixed effects. The second specification adds a set of control variables, namely, the firm's size, sales growth, R&D intensity and patenting activity. The third specification builds on the second specification and further includes the set of state-level controls (IDD, CNC, business combination laws, a state's GDP growth and a state's population). The specification is as follows:

$$Acquisition_{i,t} = \alpha + \beta_1 * UTSA_{s,t} + \beta_2 * Firm\ characteristics_{i,t} + \beta_3 * State\ characteristics_{s,t} + Firm\ FE + Year\ FE + \varepsilon_{i,t} \quad (1)$$

where *i* indicates the firm, *t* the year and *s* the state respectively. *Firm FE* depict time-invariant firm specific effects and *Year FE* describe year fixed effects. β is the coefficient of interest that shows the effect of the enactment of the UTSA.

For the regressions with majority and minority acquisitions as dependent variable, we further add different specifications including the type of acquirer. The fourth specification is a parsimonious specification including the UTSA index, the variable indicating whether the acquirer is a foreign firm and a set of year dummies. The fifth specification also includes the specification with the UTSA index, all firm and state level control variables plus the foreign acquirer indicator. The last two specifications include an interaction term of the UTSA index with the foreign acquirer indicator. Specification 6 includes the firm level set of controls, and specification 7 the firm and state level set of controls. The full specification is as follows:

$$Acquisition_{i,t} = \alpha + \beta_1 * UTSA_{s,t} + \beta_2 * Foreign\ acquirer_{i,t} + \beta_3 * UTSA_{s,t} * Foreign\ acquirer_{i,t} + \beta_4 * Firm\ characteristics_{i,t} + \beta_5 * State\ characteristics_{s,t} + Firm\ FE + Year\ FE + \varepsilon_{i,t} \quad (2)$$

where *i* indicates the firm, *t* the year and *s* the state respectively. *Firm FE* depict time-invariant firm specific effects and *Year FE* describe year fixed effects. β is the coefficient of interest that shows the effect of the enactment of the UTSA.

To check the robustness of our results, we run a set of alternative analyses. First, while our previous results exploit the variation in the adoption of the UTSA over time and geography, we use a second identification strategy following Png (2017a). We run our analysis for California, New York, Massachusetts, Texas and New Jersey only. California successfully enacted the UTSA apparently for the primary motivation to increase the number of successful bills introduced by the senator. In New York, the UTSA was blocked unexpectedly for reasons

unrelated to the content of the bill. Similarly, Massachusetts, Texas and New Jersey did not manage to enact the UTSA until the 2010s, which is outside of our sample window (even though the bill was passed in the 1980s).

Second, we re-estimate the different specifications using alternative standard errors. We run our analysis employing (1) two-way clustered standard errors at the state and industry level, and (2) clustered standard errors at the industry level.

RESULTS

Descriptive statistics

Tables 2, 3 and 4 show descriptive statistics, pairwise correlations and a comparison of means (before and after the enactment of the UTSA) of the variables of interest, respectively. The average probability for a firm to be acquired is 0.05. The probability of being acquired before the enactment of the UTSA is significantly smaller (0.049) than afterwards (0.054). States have an average strength of legal protection of trade secrets of 0.12, with an average strength before the UTSA of 0.02 and 0.38 after the enactment. The firms in our sample have an average of $95 million in total assets, average sales of $703 million and average R&D expenditures of $10 million. On average, 17.7% of the firms in our sample have a positive patent stock. Further, 49.2% of the firms are located in states that recognize the IDD, and 40% in states that have adopted business combination laws, while the average value of the CNC enforceability index is 3.9. Finally, firms in our sample are located in states that have an average GDP growth of 6% and an average population of 10 million inhabitants. Figure 1 shows the graphical representation of the treatment effect on the number of acquisitions over time in the years around the enactment of UTSA.

[Insert Table 2 about here]

[Insert Table 3 about here]

[Insert Table 4 about here]

[Insert Figure 1 about here]

Regression results

Table 5 shows the results of the main regressions for the probability of being acquired. The first column shows the basic specification in which only the UTSA index variable is included. The estimated coefficient is significant and shows that the enactment of the UTSA in U.S. states increases the likelihood of being acquired. The marginal effect is 0.05, which indicates that if a state moves from no protection (i.e. a value of 0 of the UTSA index variable) to full protection (a value of 1 of the UTSA index variable), the probability of a firm located in that state of being acquired will increase by 5%. As there is no state that moved from no protection to maximum protection[2], the more realistic change of trade secret protection to consider is the average increase in the protection index after the enactment of the UTSA across all states (0.38). The UTSA led, hence, to an increase in acquisition probability of 1.9%.

The second and third column show the model including the state and firm level control variables. The results for our variable of interest are very similar. Moreover, we find that the coefficients for the firm's size, R&D intensity, patent stock, the state's enforceability of CNC and population are positive and significant. The other variables turn out to be insignificant.

[Insert Table 5 about here]

Table 6 shows the main results for the probability of being acquired in a majority deal. The coefficients exhibit the same level of significance and positive sign as the full specification for the probability of being acquired (Table 5). The estimated coefficient for the enactment of the UTSA is 0.029, which indicates that on average the UTSA increased the probability of being

[2] The maximum value that the UTSA index reaches is 0.767, well below the theoretical maximum of 1.

acquired in a majority acquisition by 1.1%. Columns 5 to 7 in Table 6 show the effects when the UTSA is interacted with the foreign acquirer indicator. The interaction term of the UTSA indicator and the foreign indicator is negative and significant. With a coefficient of -0.198, the probability of a firm to be acquired by a foreign firm in a majority acquisition decreases by almost 20% in those states that move from no protection to maximum protection. For the average increase in the UTSA index after the enactment of the UTSA across all states, this corresponds to a decrease of 7.5% in the probability of being acquired.

[Insert Table 6 about here]

Table 7 shows the main results for the probability of being acquired in a minority deal. Again, the coefficients exhibit the same level of significance and positive sign as the full specification for the probability of being acquired (Table 5). The estimated coefficient for the enactment of the UTSA is 0.02, which indicates that on average the UTSA increased the probability of being acquired in a minority acquisition by 0.8%. Columns 5 to 7 from Table 7 show the effects when the UTSA is interacted with the foreign acquirer indicator. The interaction term of the UTSA indicator and the foreign indicator is positive and significant. The coefficient is 0.176 and indicates that the probability of foreign acquirers to engage in minority acquisitions increases by 18% in those states that move from no protection to maximum possible protection. For the average increase in the protection index after the enactment of the UTSA across all states, this is an increase of 6.7% in the probability of being acquired by a foreign firm in a minority acquisition.

[Insert Table 7 about here]

Robustness checks

Tables 8, 9 and 10 show the results for selected states (California, New York, Massachusetts, Texas and New Jersey) in which the adoption of the UTSA or failure to adopt was due to arbitrary reasons. The results confirm the main findings. Moreover, our results are robust to different choices of standard errors.[3]

[Insert Table 8 about here]

[Insert Table 9 about here]

[Insert Table 10 about here]

DISCUSSION AND CONCLUSION

How does strengthened trade secret protection influence firms' engagement on the market for corporate control? Prior research that examines a firm's decision to acquire another firm in order to get access to knowledge and technology has largely focused on the role of patents, including the technological relatedness between the acquirer's and target's patent portfolios (e.g., Ahuja and Katila, 2001; Chondrakis, 2016) or the pre-emptive power of a target's patent portfolio (Grimpe and Hussinger, 2014). Although firms typically face the choice between patents and secrecy in order to protect their knowledge (Hall *et al.*, 2014), they are oftentimes complementary: "Patents and trade secrets are not incompatible but dovetail: the former can protect patentable inventions, and the latter, the volumes of important, if not essential, collateral know-how" (Jorda, 2008: 1). Yet, trade secrets are, by definition, hard to observe, posing challenges for empirical research on the role and importance of trade secrets.

Our research extends a recent stream of literature which infers indirect evidence from legal changes in the strength of trade secret protection to learn about the importance of trade secrets

[3] Our results are robust when standard errors are clustered at the industry level and at both the state and industry level. Results are available upon request from the authors.

for firms' decision making (Castellaneta *et al.*, 2017; Png, 2017a, b; Contigiani *et al.*, 2018). Following this approach, our results confirm the expectation that trade secrets play an important role for firms' decision to engage in the market for corporate control. The findings suggest that the enactment of the UTSA, which strengthened the protection of trade secrets, increases the likelihood of firms of being acquired. Extending prior literature, we also take other legal provisions regarding trade secret protection into account – such as IDD and CNC – to provide a more comprehensive picture of legal trade secret protection in a particular state.

But our research also uncovers important heterogeneity in the effects depending on the type of acquirer and the type of acquisition. Here we find that foreign acquirers revert to minority acquisitions rather than taking full control of an acquisition target. In fact, foreign acquirers have frequently been shown to suffer considerable uncertainty when entering foreign markets (Anderson and Gatignon, 1986), and our results suggest that – compared with domestic acquirers – information asymmetries between a foreign acquirer and a potential target firm are likely to be even larger when trade secrets become better protected. Hence, our research contributes to the literature on cross-border acquisitions (e.g., Clougherty and Zhang, 2020; Falaster *et al.*, 2021) by documenting the effect of trade secret protection on the engagement of acquirers on foreign markets.

The broader question that our study addresses regards the institutional framework that governs strategic factor markets such as the market for corporate control, and, more specifically, how a legal change can impact the attractiveness of a particular strategic factor market. Strategic factor markets are typically governed by a complex institutional framework that – among many other aspects – defines how intellectual property rights, such as patents or trade secrets, are protected and how they can be acquired (Besen and Raskind, 1991; Risch, 2007). A change in

the institutional framework towards strengthened legal protection of trade secrets may, on the one hand, shift intellectual property protection from patents to trade secrets, while, on the other hand, restricting employees familiar with trade secrets in their mobility to other employers (Png and Samila, 2015; Contigiani *et al.*, 2018; Chen *et al.*, 2021). As a result, valuable knowledge and technology not only become less observable, but also less accessible through labor markets, which will likely change firms' engagement on strategic factor markets.

Implications

Institutional change can have consequences both intended and unintended by policymakers (e.g., Eberhart, Eesley, and Eisenhardt, 2017; Castellaneta, Conti, and Kacperczyk, 2020). Strengthened trade secret protection intends to protect firms' competitive advantage by sanctioning the misappropriation of trade secrets that primarily occurs through employee mobility (Castellaneta *et al.*, 2017) and to provide incentives to invest in R&D (Png, 2017a). But a higher degree of protection also affects other firms' ability to get access to human capital through labor markets. In fact, our results are suggestive of a substitute relationship between different strategic factor markets as a consequence of institutional change. If increased trade secret protection not only makes firms more attractive acquisition targets but also limits other firms' ability to hire away highly skilled and experienced employees, firms revert to the market for corporate control to gain access to valuable knowledge and technology.

Moreover, our results indicate that strengthened trade secret protection has implications for the level of foreign direct investment (FDI) in a particular state. By increasing information asymmetries, strengthened trade secret protection decreases the ownership share that foreign acquirers seek to hold, making the acquisition of minority stakes much more likely than majority acquisitions. In that sense, trade secret protection interacts with FDI policies, and policymakers

need to be aware of such an interaction when promoting FDI in their states. If, in contrast to the promotion of FDI, policymakers seek to prevent foreign acquirers from taking too much control over domestic industry, trade secret law may be an instrument to achieve such a policy goal.

For the management of acquiring firms, our findings hold implications with respect to the degree of competition for potential acquisition targets. If trade secret protection leads foreign acquirers to prefer the acquisition of minority stakes, domestic acquirers face less competition when bidding for targets which may reduce acquisition prices. Conversely, foreign acquirers need to reconsider whether minority ownership allows for taking sufficient control over a target to benefit from its trade secrets.

Limitations

While leveraging the UTSA provides us with an identification strategy for assessing the importance of trade secrets, our research is not without limitations, which in turn provide avenues for future research. First, our results suggest that the increased engagement of firms on the market for corporate control may substitute for hiring employees on labor markets. Since increased trade secret protection curtails employee mobility, firms may face constrains when using labor markets in order to hire scientists and engineers who possess valuable knowledge. Our research only focuses on the market for corporate control as one strategic factor market, assuming that knowledge and technology acquired here cannot be accessed through the labor market. Future research could thus seek to investigate the interplay of different strategic factor markets when the institutional conditions change.

Second, we share the limitation with other UTSA-based studies (e.g., Png, 2017a) that our analysis is limited to de jure law and does not capture actual financial consequences of misappropriation. We do not consider this a major drawback for our study though because our

interest is on the strategic consequences of the UTSA. Lastly, our study is limited to publicly listed firms and hence cannot make claims for private US firms and their likelihood to be acquired before and after the UTSA.

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APPENDIX

Table A1. UTSA index (years 1980-2010)

State	Year	Level of protection before the UTSA	Increase in level of protection due to the UTSA
Alaska	1988	0	0.47
Arizona	1990	0.25	0.22
Arkansas	1981	0.5	-0.10
California	1985	0.22	0.25
Colorado	1986	0	0.77
Connecticut	1983	0	0.47
Delaware	1982	0	0.47
District. of Columbia	1989	0	0.47
Florida	1988	0.1	0.37
Georgia	1990	0	0.70
Hawaii	1989	0	0.47
Idaho	1981	0	0.47
Illinois	1988	0	0.70
Indiana	1982	0	0.47
Iowa	1990	0	0.47
Kansas	1981	0	0.47
Kentucky	1990	0	0.47
Louisiana	1981	0	0.40
Maine	1987	0	0.50
Maryland	1989	0.22	0.25
Michigan	1998	0.25	0.15
Minnesota	1980	0	0.47
Mississippi	1990	0	0.57
Missouri	1995	0	0.63
Montana	1985	0	0.57
Nebraska	1988	0	0.43
Nevada	1987	0	0.47
New Hampshire	1990	0.025	0.44
New Mexico	1989	0	0.47
North Dakota	1983	0	0.47
Ohio	1994	0.25	0.28
Oklahoma	1986	0.025	0.44
Oregon	1988	0	0.47
Pennsylvania	2004	0.24	-0.11
Rhode Island	1986	0	0.47
South Carolina	1992	0	0.47
South Dakota	1988	0	0.47
Tennessee	2000	0	0.63
Utah	1989	0	0.47
Vermont	1996	0	0.57
Virginia	1986	0.025	0.44
Washington	1982	0	0.47
West Virginia	1986	0	0.47
Wyoming	2006	0.5	0.00

Source: Png (2017b)

TABLES

Table 1. Variable definitions

Variable label	Type	Description	Source
M&A	B	Dummy equal to 1 if a firm is acquired in year *t*	Thomson One Banker
Majority	B	Dummy equal to 1 if the deal is a majority acquisition	Thomson One Banker
Minority	B	Dummy equal to 1 if the deal is a minority acquisition	Thomson One Banker
UTSA	C	A state-year level index of the legal protection of trade secrets, ranging from 0 to 1, with higher scores indicating greater trade secret protection	Png (2017b)
Foreign	B	Dummy equal to 1 if the acquirer is a foreign firm	Thomson One Banker
Assets	C	Logarithm of book value of total assets (in millions of US dollars)	Compustat
Sales growth	C	Sale's growth rate (percent change from the preceding period)	Compustat
R&D	C	Ratio of R&D expenditures to assets (in millions of US dollars) (missing values are set to zero)	Compustat
R&D Dummy	B	Dummy equal to 1 if R&D expenditures data is missing	-
Patents	B	Dummy equal to 1 if patent stock different from zero	Kogan et al. (2017)
IDD	B	Dummy equal to 1 if the state courts recognize the Inevitable Disclosure Doctrine	Klasa et al. (2018)
CNC		A state-year level index of the degree of enforceability of non-compete agreements, ranging from 0 to 9, with higher scores indicating greater enforceability	Garmaise (2011) & Ertimur et al. (2018)
B. Comb. Law	B	Dummy equal to 1 if the state has adopted business combination laws	Chen et al. (2021)
GDP growth	C	A state's GDP growth rate (percent change from preceding period)	Bureau of Economic Analysis
Population	C	Logarithm of a state's population (in thousands of inhabitants)	Bureau of Economic Analysis

Note: B and C denote binary and continuous variables, respectively.

Table 2. Descriptive statistics

Variable	Mean	Std. Dev.	P25	P75	Obs.
M&A	0.050	0.218	0	0	87,028
Majority	0.028	0.166	0	0	87,028
Minority	0.019	0.136	0	0	87,028
UTSA	0.123	0.212	0	0.22	87,028
Foreign	0.016	0.126	0	0	87,028
Assets	4.556	2.362	2.691	6.267	87,028
Sales growth	1.123	46.783	-0.033	0.265	87,028
R&D	0.039	0.172	0	0.018	87,028
R&D Dummy	0.554	0.497	0	1	87,028
Patents	0.177	0.381	0	0	87,028
IDD	0.492	0.500	0	1	87,028
CNC	3.945	1.713	3	5	87,028
B. Comb. Law	0.408	0.492	0	1	87,028
GDP growth	6.636	3.510	4.5	8.7	87,028
Population	9.212	0.743	8.705	9.806	87,028

Note: the sample consists of 87,028 firm year observations for the period 1980-2010, corresponding to a total of 13,343 firms. P25 and P75 stand for the 25% and 75% percentile, respectively. Bivariate correlations are provided in the Appendix.

Table 3. Bivariate correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) M&A	1													
(2) Majority	0.741	1												
(3) Minority	0.603	-0.024	1											
(4) UTSA	0.009	-0.005	0.019	1										
(5) Foreign	0.558	0.216	0.578	0.011	1									
(6) Assets	0.045	0.042	0.020	-0.031	0.013	1								
(7) Sales growth	-0.003	-0.003	-0.001	-0.006	-0.001	-0.015	1							
(8) R&D	0.001	-0.006	0.006	-0.026	0.005	-0.174	0.004	1						
(9) R&D Dummy	-0.010	0.002	-0.014	-0.002	-0.016	0.175	-0.001	-0.254	1					
(10) Patents	0.026	0.014	0.019	0.009	0.022	0.138	-0.007	0.118	-0.333	1				
(11) IDD	0.006	0.014	-0.004	-0.322	0.001	0.038	0.006	0.055	-0.022	-0.014	1			
(12) CNC	0.004	0.006	0.002	-0.062	0.000	0.092	0.001	0.006	-0.015	0.035	0.090	1		
(13) B. Comb. Law	0.006	0.011	0.002	-0.054	0.004	0.100	0.003	0.066	-0.055	0.022	0.426	0.183	1	
(14) GDP growth	0.005	0.000	0.005	0.058	0.002	-0.091	0.001	-0.033	-0.006	0.015	-0.216	-0.076	-0.380	1
(15) Population	0.004	0.005	0.001	-0.195	0.005	0.016	0.003	0.003	0.021	-0.037	0.291	-0.384	-0.009	-0.023

Table 4. Comparison of means before and after the enactment of the UTSA

Variable	Mean before	Mean after	Std. dev. before	Std. dev. after	t-test	Significance level
M&A	0.049	0.054	0.216	0.226	-2.676	0.007
Majority	0.029	0.027	0.166	0.162	1.178	0.239
Minority	0.018	0.024	0.131	0.152	-5.293	0.000

Note: This table performs t tests on the equality of means. The number of firm-year observations before the enactment of UTSA is 68,417, and the number of firm-year observations after the enactment of UTSA: 18,611.

Table 5. Fixed effects regressions for the probability of being acquired

	(1)	(2)	(3)
UTSA	0.050***	0.049***	0.045***
	(0.010)	(0.010)	(0.010)
Assets		0.013***	0.013***
		(0.002)	(0.002)
Sales growth		-0.000	-0.000
		(0.000)	(0.000)
R&D		0.016***	0.016***
		(0.004)	(0.004)
R&D Dummy		-0.008**	-0.008**
		(0.003)	(0.003)
Patents		0.012***	0.012***
		(0.003)	(0.003)
IDD			0.006
			(0.005)
CNC			0.011**
			(0.005)
B. Comb. Law			0.000
			(0.006)
GDP growth			0.000
			(0.000)
Population			0.105*
			(0.056)
Constant	-0.067***	-0.114***	-1.121**
	(0.004)	(0.009)	(0.529)
Observations	87,028	87,028	87,028
Number of firms	13,343	13,343	13,343
R-sq.	0.000	0.002	0.001
Year dummies	Yes	Yes	Yes
Clustered SE	Yes	Yes	Yes

*Note: This tables reports the regression results that examine a firms' likelihood of being acquired. The specification employed is a panel linear regression with fixed effects with year dummies and clustered standard errors at the state level (in parentheses). * , **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.*

Table 6. Fixed effects regressions for the probability of being acquired (majority)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
UTSA	0.029***	0.028***	0.026***	0.025***	0.022***	0.029***	0.026***
	(0.006)	(0.006)	(0.006)	(0.005)	(0.005)	(0.006)	(0.005)
Foreign				0.286***	0.285***	0.312***	0.312***
				(0.015)	(0.015)	(0.008)	(0.008)
UTSA*Foreign						-0.197***	-0.198***
						(0.052)	(0.052)
Assets		0.007***	0.007***		0.006***	0.006***	0.006***
		(0.001)	(0.001)		(0.001)	(0.001)	(0.001)
Sales growth		-0.000	-0.000		-0.000	-0.000	-0.000
		(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
R&D		0.007***	0.007***		0.006***	0.006***	0.006***
		(0.002)	(0.002)		(0.002)	(0.002)	(0.002)
R&D Dummy		-0.003	-0.003		-0.002	-0.002	-0.002
		(0.002)	(0.002)		(0.002)	(0.002)	(0.002)
Patents		0.012***	0.012***		0.010***	0.010***	0.010***
		(0.002)	(0.002)		(0.002)	(0.002)	(0.002)
IDD			0.004		0.004*		0.004*
			(0.003)		(0.002)		(0.002)
CNC			0.007**		0.006**		0.006**
			(0.003)		(0.003)		(0.003)
B. Comb. Law			-0.002		-0.002		-0.002
			(0.003)		(0.003)		(0.003)
GDP growth			0.000		0.000		0.000
			(0.000)		(0.000)		(0.000)
Population			0.061*		0.053		0.057
			(0.035)		(0.033)		(0.035)
Constant	-0.036***	-0.061***	-0.650*	-0.029***	-0.555*	-0.050***	-0.592*
	(0.002)	(0.005)	(0.324)	(0.002)	(0.308)	(0.005)	(0.325)
Observations	87,028	87,028	87,028	87,028	87,028	87,028	87,028
Number of firms	13,343	13,343	13,343	13,343	13,343	13,343	13,343
R-sq.	0.001	0.002	0.001	0.038	0.023	0.040	0.023
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Note: This tables reports the regression results that examine a firms' likelihood of being acquired, in a majority acquisition. The specification employed is a panel linear regression with fixed effects with year dummies and clustered standard errors at the state level (in parentheses). * , **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.*

Table 7. Fixed effects regressions for the probability of being acquired (minority)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
UTSA	0.020***	0.019***	0.018***	0.012***	0.011***	0.008***	0.008***
	(0.006)	(0.006)	(0.005)	(0.003)	(0.003)	(0.002)	(0.002)
Foreign				0.613***	0.612***	0.588***	0.588***
				(0.015)	(0.015)	(0.010)	(0.010)
UTSA*Foreign						0.176***	0.176***
						(0.061)	(0.061)
Assets		0.005***	0.005***		0.003***	0.003***	0.003***
		(0.001)	(0.001)		(0.001)	(0.001)	(0.001)
Sales growth		-0.000	-0.000		0.000	0.000	0.000
		(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
R&D		0.008***	0.008***		0.005***	0.005***	0.005***
		(0.002)	(0.002)		(0.001)	(0.001)	(0.001)
R&D Dummy		-0.005	-0.005		-0.003	-0.003	-0.003
		(0.003)	(0.003)		(0.003)	(0.003)	(0.003)
Patents		0.000	0.000		-0.003**	-0.003**	-0.003**
		(0.002)	(0.002)		(0.001)	(0.001)	(0.001)
IDD			0.000		-0.000		-0.000
			(0.002)		(0.001)		(0.001)
CNC			0.004*		0.001		0.001
			(0.002)		(0.001)		(0.001)
B. Comb. Law			0.003		0.003		0.003
			(0.004)		(0.003)		(0.003)
GDP growth			0.000		0.000		0.000
			(0.000)		(0.000)		(0.000)
Population			0.046**		0.027*		0.024
			(0.022)		(0.015)		(0.014)
Constant	-0.028***	-0.047***	-0.483**	-0.014***	-0.280*	-0.025***	-0.247*
	(0.003)	(0.005)	(0.207)	(0.002)	(0.143)	(0.003)	(0.134)
Observations	87,028	87,028	87,028	87,028	87,028	87,028	87,028
Number of firms	13,343	13,343	13,343	13,343	13,343	13,343	13,343
R-sq.	0.001	0.002	0.001	0.333	0.314	0.333	0.319
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Note: This tables reports the regression results that examine a firms' likelihood of being acquired, in a minority acquisition. The specification employed is a panel linear regression with fixed effects with year dummies and clustered standard errors at the state level (in parentheses). * , **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.*

Table 8. Fixed effects regressions for the probability of being acquired – California, New York, Massachusetts, Texas and New Jersey

	(1)	(2)	(3)
UTSA	0.106***	0.094***	0.079**
	(0.018)	(0.014)	(0.027)
Assets		0.015***	0.015***
		(0.002)	(0.002)
Sales growth		-0.000	-0.000
		(0.000)	(0.000)
R&D		0.015**	0.015**
		(0.004)	(0.004)
R&D Dummy		-0.003	-0.003
		(0.003)	(0.003)
Patents		0.012**	0.012**
		(0.004)	(0.004)
IDD			0.006
			(0.005)
CNC			0.006
			(0.004)
B. Comb. Law			-0.008
			(0.008)
GDP growth			0.001**
			(0.000)
Population			0.012
			(0.041)
Constant	-0.072***	-0.125***	-0.268
	(0.003)	(0.008)	(0.395)
Observations	53,999	53,999	53,999
Number of firms	7,370	7,370	7,370
R-sq.	0.000	0.002	0.002
Year dummies	Yes	Yes	Yes
Clustered SE	Yes	Yes	Yes

*Note: This tables reports the regression results that examine a firms' likelihood of being acquired. This table only includes the states of California, New York, Massachusetts, Texas and New Jersey. California successfully enacted the UTSA apparently for the primary motivation to increase the number of successful bills introduced by the senator; in New York, the UTSA was blocked unexpectedly for reasons unrelated to the content of the bill; and Massachusetts, Texas and New Jersey did not manage to enact the UTSA until after the 2010s (outside of our sample). The specification employed is a panel linear regression with fixed effects with year dummies and clustered standard errors at the state level (in parentheses). * , **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.*

Table 9. Fixed effects regressions for the probability of being acquired (majority) – California, New York, Massachusetts, Texas and New Jersey

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
UTSA	0.066***	0.060***	0.052**	0.058***	0.047**	0.066***	0.059**
	(0.011)	(0.009)	(0.015)	(0.009)	(0.012)	(0.007)	(0.013)
Foreign				0.304***	0.303***	0.317***	0.317***
				(0.014)	(0.014)	(0.005)	(0.005)
UTSA*Foreign						-0.263***	-0.263***
						(0.012)	(0.013)
Assets		0.007***	0.007***		0.006**	0.006***	0.006**
		(0.001)	(0.001)		(0.001)	(0.001)	(0.001)
Sales growth		-0.000	-0.000		-0.000	-0.000	-0.000
		(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
R&D		0.006*	0.006*		0.004*	0.004*	0.004*
		(0.002)	(0.002)		(0.002)	(0.002)	(0.002)
R&D Dummy		-0.000	-0.000		-0.000	-0.000	-0.000
		(0.002)	(0.002)		(0.002)	(0.002)	(0.002)
Patents		0.012**	0.012**		0.010**	0.010**	0.010**
		(0.003)	(0.003)		(0.002)	(0.002)	(0.002)
IDD			0.005		0.004*		0.004*
			(0.002)		(0.002)		(0.002)
CNC			0.001		0.001		0.001
			(0.002)		(0.002)		(0.002)
B. Comb. Law			-0.005		-0.003		-0.003
			(0.004)		(0.004)		(0.004)
GDP growth			0.000		0.000		0.000
			(0.000)		(0.000)		(0.000)
Population			0.004		0.005		0.007
			(0.032)		(0.037)		(0.038)
Constant	-0.038***	-0.065***	-0.109	-0.030***	-0.108	-0.051***	-0.129
	(0.002)	(0.005)	(0.307)	(0.002)	(0.351)	(0.006)	(0.362)
Observations	53,999	53,999	53,999	53,999	53,999	53,999	53,999
Number of firms	7,370	7,370	7,370	7,370	7,370	7,370	7,370
R-sq.	0.001	0.002	0.002	0.043	0.045	0.046	0.046
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Note: This tables reports the regression results that examine a firms' likelihood of being acquired, in a majority acquisition. This table only includes the states of California, New York, Massachusetts, Texas and New Jersey. California successfully enacted the UTSA apparently for the primary motivation to increase the number of successful bills introduced by the senator; in New York, the UTSA was blocked unexpectedly for reasons unrelated to the content of the bill; and Massachusetts, Texas and New Jersey did not manage to enact the UTSA until after the 2010s (outside of our sample). The specification employed is a panel linear regression with fixed effects with year dummies and clustered standard errors at the state level (in parentheses). * , **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.*

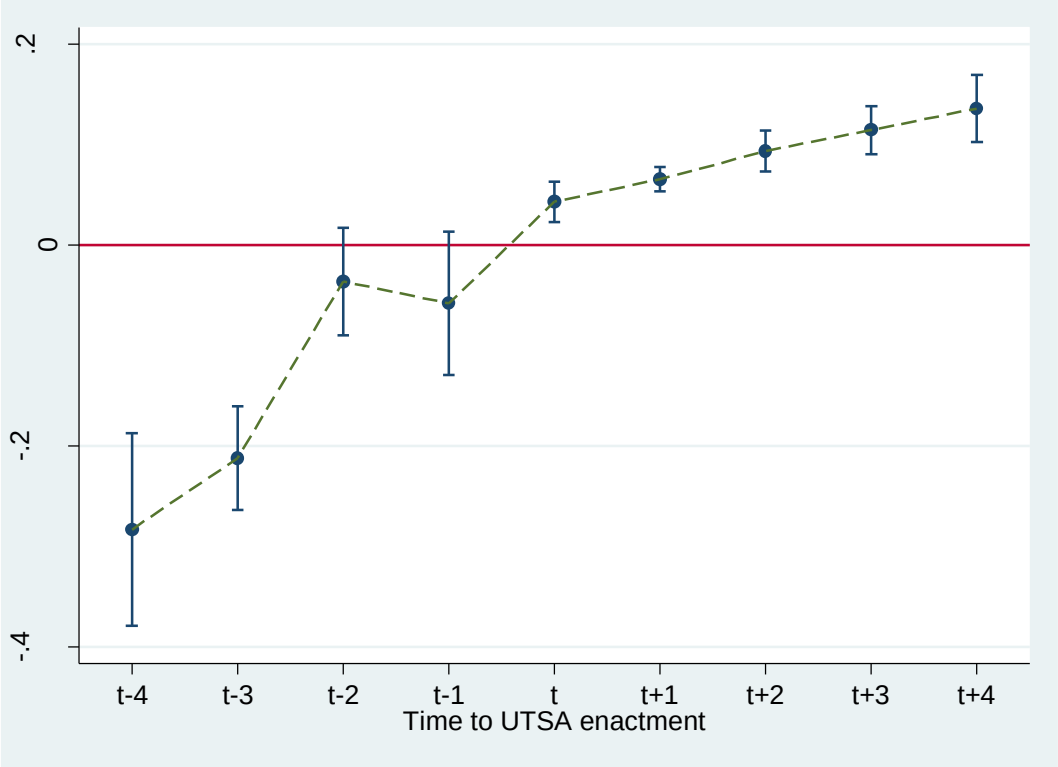
Table 10. Fixed effects regressions for the probability of being acquired (minority) – California, New York, Massachusetts, Texas and New Jersey

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
UTSA	0.038**	0.034**	0.028*	0.023*	0.018*	0.008	0.006
	(0.012)	(0.011)	(0.013)	(0.009)	(0.007)	(0.008)	(0.007)
Foreign				0.603***	0.603***	0.589***	0.589***
				(0.014)	(0.014)	(0.009)	(0.009)
UTSA*Foreign						0.261***	0.261***
						(0.021)	(0.021)
Assets		0.006***	0.006***		0.003**	0.004**	0.004**
		(0.001)	(0.001)		(0.001)	(0.001)	(0.001)
Sales growth		0.000	0.000		0.000	0.000	0.000
		(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
R&D		0.008**	0.008**		0.005**	0.005**	0.005**
		(0.002)	(0.002)		(0.001)	(0.001)	(0.001)
R&D Dummy		-0.002	-0.002		-0.002	-0.002	-0.002
		(0.005)	(0.005)		(0.004)	(0.004)	(0.004)
Patents		-0.001	-0.001		-0.004**	-0.004**	-0.004**
		(0.002)	(0.002)		(0.001)	(0.001)	(0.001)
IDD			0.000		-0.001		-0.001
			(0.002)		(0.001)		(0.001)
CNC			0.003		0.001		0.001
			(0.003)		(0.001)		(0.001)
B. Comb. Law			-0.002		0.001		0.001
			(0.004)		(0.004)		(0.004)
GDP growth			0.000**		0.000*		0.000*
			(0.000)		(0.000)		(0.000)
Population			0.008		0.012		0.009
			(0.016)		(0.013)		(0.013)
Constant	-0.032***	-0.054***	-0.146	-0.017***	-0.144	-0.027***	-0.124
	(0.003)	(0.002)	(0.157)	(0.002)	(0.127)	(0.003)	(0.127)
Observations	53,999	53,999	53,999	53,999	53,999	53,999	53,999
Number of firms	7,370	7,370	7,370	7,370	7,370	7,370	7,370
R-sq.	0.001	0.002	0.002	0.328	0.327	0.328	0.328
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Note: This tables reports the regression results that examine a firms' likelihood of being acquired, in a minority acquisition. This table only includes the states of California, New York, Massachusetts, Texas and New Jersey. California successfully enacted the UTSA apparently for the primary motivation to increase the number of successful bills introduced by the senator; in New York, the UTSA was blocked unexpectedly for reasons unrelated to the content of the bill; and Massachusetts, Texas and New Jersey did not manage to enact the UTSA until after the 2010s (outside of our sample). The specification employed is a panel linear regression with fixed effects with year dummies and clustered standard errors at the state level (in parentheses). * , **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.*

FIGURES

Figure 1. Effect of UTSA on the probability of being acquired



Note: This graph shows a plot of the coefficients resulting from a linear regression model where the interaction of the UTSA treatment is interacted with individual year dummies (centered around the UTSA enactment) as regressors.