Time Zone Difference and Employee Coordination: Evidence from Mergers and Acquisitions

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Abstract

I study the impact of time zone differences (TZDs) among firm segments on employee coordination in a mergers and acquisitions (M&A) setting. A model describing the synergy generated from real-time cooperation among employees suggests that TZDs impede employee coordination and reduce productivity. The model predicts negative market reactions to cross-time-zone M&A announcements. Using a sample of 3228 public M&A deals in the US, I find that the TZDs between acquirers and targets have a substantial negative effect on combined firm announcement returns: A one-hour TZD is associated with a decrease of 0.52-0.62% in the announcement return of the combined firm. Neither geographic distance nor cultural difference drives the negative effect. Consistent with the model predictions, the negative effect is stronger if the combining firms have high labor intensity or small employee numbers, or if they are similar in labor size or are in high-technology industries. I also find that, after cross-time-zone M&A, firms experience significant decline in operating performance and are more likely to conduct employee layoffs. Firms that conduct layoffs can recover their performance. Additional tests suggest that acquirers do not lower their offer price in cross-time-zone M&A and therefore, bear most of the costs caused by TZDs.

Keywords: Time zone difference, Employee cooperation, Layoffs, Mergers and acquisitions

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1. Introduction

Time zone differences (TZDs) affect business activities. Prior studies suggest that TZDs between investors and stock exchanges create frictions in trading (e.g., Portes and Rey 2005; Hailing, Pagano, Randl and Zechner 2008; Teo 2009). Zaheer and Zaheer (2001) argue that customers take TZDs into consideration when choosing their banks. Gulamhussen, Hennart and Pinheiro (2016) suggest that TZDs impede communication between banks' headquarters and their foreign subsidiaries, and hence affect the monitoring of those subsidiaries. It is also documented that TZDs have negative effects on foreign direct investment (e.g., Stein and Daude 2007) and international trade (e.g., Anderson 2014; Bista and Tomasik 2017; Christen 2017).

In this paper, I examine the effect of TZDs on employee coordination for cross-time-zone companies. Real-time cooperation among individuals creates synergy. Employees in different time zones work in different hours, and real-time cooperation can only be achieved within their overlapping work hours. TZDs shorten this time window and consequently reduce the synergy generated. I conjecture that TZDs among labor segments negatively affect a firm's employee productivity.

However, to empirically test this conjecture is challenging because productivity measures (e.g., Total Factor Productivity) and segment level information on time zones, geographic locations and employment are generally unavailable for non-manufacturing industries, in which more synergy is expected from real-time employee cooperation.

Mergers and acquisitions (M&A) provide a suitable setting. M&A transactions often involve companies from different time zones and they enable employees of two previously separate entities to collaborate. The expected synergy from such collaboration can be observed through market reactions to M&A announcements.

A simple model predicts that the TZDs between acquirers and targets have a negative effect on M&A announcement returns. The model also predicts that the negative effect is stronger if the combining firms have high labor intensity or small employee numbers, or if they are similar in labor size or are in high-technology industries. To test the predictions, I construct a sample of 3228 public M&A deals in the US completed during the period 1990-2016 and use the cumulative abnormal returns (CAR) of the combined companies around the M&A announcements as a proxy for expected synergy.

Consistent with the model prediction, I find a negative association between combined CAR and TZDs after controlling for geographic distance. The association is both statistically significant and economically substantial: A one-hour TZD is estimated to be associated with a CAR decrease of 0.52-0.62% for the combined firm. The result is robust to alternative announcement windows and multiple control variables including geographic distance and cultural differences. Subsample analysis results also support other model predictions that the negative effect is stronger if the combining firms have high labor intensity or small employee numbers, or if they are similar in labor size or are in high-technology industries.

Results of tests on post-deal operating performance suggest that firms combined in cross-time-zone M&A experience significant declines in operating performance after deal completions. Such firms are more likely to conduct layoffs, which often are associated with recoveries in performance later.

Additional tests indicate that acquires do not adjust the offer price when making cross-time-zone M&A and their shareholders bear most of the costs caused by the TZD.

The study contributes to three lines of literature. First, this research contributes to the literature on the economic effects of TZDs by showing that TZDs hinder cooperation among employees and directly reduce their productivity.

Second, the study adds to the literature on labor productivity and M&A. Maksimovic and Phillips (2001) find significant increases in productivity after plants are sold to another company. Li (2013) shows that such productivity increases come from more efficient use of capital and labor, and that changes in productivity help explain combined CAR. This study shows that TZDs are associated with combined CAR, reflecting changes in productivity around M&A.

Third, the paper expands the research on M&A integration and identifies TZDs as a determinant of M&A outcome. Prior studies examine several sources of integration costs in M&A such as geographic distance, employee protection, culture and industry differences,[1] but few focus on the impact of TZDs on M&A activities. Gulamhussen, Hennart and Pinheiro (2016) study the effect of TZDs on cross-border M&A in the banking industry from the communication costs perspective. They find that TZDs among countries are negatively associated with both the probability and the value creation of cross-border M&A in the banking industry. To my knowledge, this is the first study to present evidence that TZDs incur integration costs in M&A through hindering the real-time cooperation among employees.

The remainder of the paper proceeds as follows. Section 2 describes the model construction and hypotheses development. Section 3 describes the sample construction process and presents descriptive statistics. Section 4 presents and discusses the results of the tests on the hypotheses. Section 5 investigates the post-deal operating performance of combined firms. Section 6 examines layoffs of combined firms and their effect on performance. Section 7 presents additional tests on

[1] See, e.g., Uysal, Kedia and Panchapagesan (2008); Ahern, Daminelli and Fracassi (2012); Erel, Liao and Weisbach (2012); John, Knyazeva and Knyazeva (2015).

the cost sharing between acquirers and targets. Section 8 conducts robustness tests. Section 9 concludes.

2. Model and hypotheses development

2.1 A simple model

2.11 Cooperation and synergy

Consider a company employee i who has two options: (1) work independently, and his productivity (P_i) is $P_{i,i}$, or (2) cooperate with a coworker j in the company, and his productivity is $P_{i,j}$:

$$P_i = \begin{cases} P_{i,i} & \text{if } i \text{ works independently} \\ P_{i,j} & \text{if } i \text{ cooperates with } j \end{cases}. \tag{1}$$

If i chooses the second option and cooperates with j, their total productivity may increase in the form of synergy:

$$P_{i,j} + P_{j,i} = P_{i,i} + P_{j,j} + Syn_{i,j}, \tag{2}$$

where $Syn_{i,j}$ is the synergy generated from the cooperation between i and j.

Additionally, $Syn_{i,i} = 0$ and $Syn_{i,j} = Syn_{j,i}$.

2.12 Productivity maximization

Now consider a company with N employees. There is synergy matrix that consists of the synergy of all hypothetical employee-pairs within the company:

$$\begin{bmatrix} Syn_{1,1} & Syn_{2,1} & \cdots & Syn_{N,1} \\ Syn_{1,2} & Syn_{2,2} & \cdots & Syn_{N,2} \\ \vdots & \vdots & \ddots & \vdots \\ Syn_{1,N} & Syn_{2,N} & \cdots & Syn_{N,N} \end{bmatrix} \tag{3}$$

The company gathers information about the synergy matrix and makes pairing arrangements to maximize its total employee productivity:

$$\begin{aligned} LP &= \max \sum_{i=1}^{N} P_i \\ &= \sum_{i=1}^{N} P_{i,\tilde{i}} \\ &= \sum_{i=1}^{N} P_{i,i} + \frac{1}{2} \times \sum_{i=1}^{N} Syn_{i,\tilde{i}}, \end{aligned} \tag{4}$$

where *LP* is the maximized total employee productivity, *N* is the total number of employees and $\tilde{i}$ indicates the coworker paired with employee *i*.

The maximization procedure suggests:

$$\frac{\partial \mathrm{E}\left(Syn_{i,\tilde{i}}\right)}{\partial N} > 0. \tag{5}$$

2.13 Employee productivity and mergers and acquisitions

Now consider an acquiring company, whose maximized total employee productivity is

$$LP_{acq} = \sum_{i=1}^{N_{acq}} P_{i,i} + \frac{1}{2} \times \sum_{i=1}^{N_{acq}} Syn_{i,\tilde{i}_{acq}}, \tag{6}$$

and a target company whose maximized total employee productivity is

$$LP_{tar} = \sum_{i=1}^{N_{tar}} P_{i,i} + \frac{1}{2} \times \sum_{i=1}^{N_{tar}} Syn_{i,\tilde{i}_{tar}}, \tag{7}$$

where $\tilde{i}_{acq}$ ($\tilde{i}_{tar}$) represents the coworker paired with employee *i* within the acquiring (target) firm.

After the acquisition is complete, employees of the acquirer can cooperate with coworkers in the target company. The combined company may adjust the pairing arrangements to increase maximized total productivity. If the acquirer and the target are located in the same time zone, the total employee productivity of the combined company is:

$$LP_{com} = \sum_{i=1}^{N_{acq}} P_{i,i} + \sum_{i=1}^{N_{tar}} P_{i,i} + \frac{1}{2} \times \left(\sum_{i=1}^{N_{acq}} Syn_{i,\tilde{i}_{com}} + \sum_{i=1}^{N_{tar}} Syn_{i,\tilde{i}_{com}} \right), \quad (8)$$

where $\tilde{i}_{com}$ represents the coworker paired with employee *i* in the combined company.

Now suppose that the acquirer and the target are located in different time zones, with a TZD of *D* hours. That TZD leads to imperfect employee integration: every work day, there will be *D* hours during which employees of only one of the combining companies are at work. During those hours, the employees at work can only cooperate with coworkers in their own time zone.

For example, suppose the target is located in Los Angeles and the acquirer is in New York, and the employees of both companies work from 9:00 to 17:00 (local time) every day. Because there is a three-hour TZD, the office hour is 9:00-17:00 (Eastern Time) in New York but 6:00-14:00 (Eastern Time) in Los Angeles. Hence, the two merging companies have only five overlapping office hours. This means that after the acquisition, the two combining companies work cooperatively as a whole for five hours every workday, but independently for the remaining three.

With a *D*-hour TZD between the acquirer and the target, the maximized employee productivity of the combined company is:

$$\begin{aligned} LP_{com} &= (1 - D/8) \times \left[\sum_{i=1}^{N_{acq}} P_{i,i} + \sum_{i=1}^{N_{tar}} P_{i,i} + 1/2 \times \left(\sum_{i=1}^{N_{acq}} Syn_{i,\tilde{i}_{com}} + \sum_{i=1}^{N_{tar}} Syn_{i,\tilde{i}_{com}} \right) \right] \\ &\quad + D/8 \times \left(\sum_{i=1}^{N_{acq}} P_{i,i} + 1/2 \times \sum_{i=1}^{N_{acq}} Syn_{i,\tilde{i}_{acq}} + \sum_{i=1}^{N_{tar}} P_{i,i} + 1/2 \times \sum_{i=1}^{N_{tar}} Syn_{i,\tilde{i}_{tar}} \right) \\ &= LP_{acq} + LP_{tar} \\ &\quad + \left(1 - \frac{D}{8} \right) \times \frac{1}{2} \times \left[\sum_{i=1}^{N_{acq}} \left(Syn_{i,\tilde{i}_{com}} - Syn_{i,\tilde{i}_{acq}} \right) + \sum_{i=1}^{N_{tar}} \left(Syn_{i,\tilde{i}_{com}} - Syn_{i,\tilde{i}_{tar}} \right) \right]. \end{aligned} \quad (9)$$

Thus, the change in maximized total employee productivity (ΔLP) after the acquisition is:

$$\begin{aligned} \Delta LP &= LP_{com} - LP_{acq} - LP_{tar} \\ &= \left(1 - \frac{D}{8} \right) \times \frac{1}{2} \times \left[\sum_{i=1}^{N_{acq}} \left(Syn_{i,\tilde{i}_{com}} - Syn_{i,\tilde{i}_{acq}} \right) + \sum_{i=1}^{N_{tar}} \left(Syn_{i,\tilde{i}_{com}} - Syn_{i,\tilde{i}_{tar}} \right) \right]. \end{aligned} \quad (10)$$

I denote the average increase of employee synergy in the combined company as $\overline{\Delta Syn}$:

$$\overline{\Delta Syn} = \frac{1}{2} \times \frac{\sum_{i=1}^{N_{acq}} \left(Syn_{i,\tilde{i}_{com}} - Syn_{i,\tilde{i}_{acq}} \right) + \sum_{i=1}^{N_{tar}} \left(Syn_{i,\tilde{i}_{com}} - Syn_{i,\tilde{i}_{tar}} \right)}{N_{com}}. \tag{11}$$

2.2 Hypotheses development

2.21 Hypothesis H1

Intuitively, M&A can increase employee productivity because they provide employees with the option to cooperate with new coworkers. Such option has value, which will be discounted if there is a TZD between the two combining companies. Therefore, I expect the time difference to have a negative effect on employee productivity.

Taking the derivative of ΔLP with respect to D in (10), we have:

$$\frac{\partial \Delta LP}{\partial D} = -\frac{1}{8} \times \frac{1}{2} \times \left[\sum_{i=1}^{N_{acq}} \left(Syn_{i,\tilde{i}_{com}} - Syn_{i,\tilde{i}_{acq}} \right) + \sum_{i=1}^{N_{tar}} \left(Syn_{i,\tilde{i}_{com}} - Syn_{i,\tilde{i}_{tar}} \right) \right]. \tag{12}$$

Because $\sum_{i=1}^{N_{acq}} \left(Syn_{i,\tilde{i}_{com}} - Syn_{i,\tilde{i}_{acq}} \right) > 0$ and $\sum_{i=1}^{N_{tar}} \left(Syn_{i,\tilde{i}_{com}} - Syn_{i,\tilde{i}_{tar}} \right) > 0$, we have

$$\frac{\partial \Delta LP}{\partial D} < 0. \tag{13}$$

I use combined CAR as a proxy for expected changes in total productivity (*TP*):

$$CAR = \mathrm{R}\left[\mathrm{E}\left(\Delta TP / TP \right) \right], \ \mathrm{R}' > 0. \tag{14}$$

The total productivity comprises employee productivity (*LP*) and capital productivity (*CP*):

$$TP = LP + CP, \ \Delta TP = \Delta LP + \Delta CP. \tag{15}$$

Therefore,

$$CAR = \mathrm{R}\left[\mathrm{E}\left(\Delta LP / TP \right) + \mathrm{E}\left(\Delta CP / TP \right) \right]. \tag{16}$$

Taking the derivative of *CAR* with respect to *D*, we have:

$$\frac{\partial CAR}{\partial D} = \mathrm{R}' \times \left[\frac{\partial \mathrm{E}\left(\Delta LP\right)}{TP \times \partial D} + \frac{\partial \mathrm{E}\left(\Delta CP\right)}{TP \times \partial D} \right]. \tag{17}$$

Because machines can run beyond office hours without incurring additional costs, I do not expect capital productivity to be affected by the TZD (i.e., $\frac{\partial \mathrm{E}\left(\Delta CP / TP\right)}{\partial D} = 0$). Therefore,

$$\frac{\partial CAR}{\partial D} = \frac{\mathrm{R}'}{TP} \times \frac{\partial \mathrm{E}\left(\Delta LP\right)}{\partial D} < 0. \tag{18}$$

I propose Hypothesis H1:

H1. Combined CAR are negatively associated with the TZD between the acquirer and the target.

2.22 Hypothesis H2a

Because the market value of labor-intensive companies is more sensitive to changes in employee productivity, and because TZDs affect employee productivity only, I expect the market reactions to cross-time-zone M&A to be more negative if the merging companies are labor intensive.

From (11), (12) and (18) we have

$$\begin{aligned} \frac{\partial CAR}{\partial D} &= -\frac{1}{8} \times \frac{\mathrm{R}'}{TP} \times \frac{1}{2} \times \mathrm{E}\left[\sum_{i=1}^{N_{acq}} \left(Syn_{i,\tilde{i}_{com}} - Syn_{i,\tilde{i}_{acq}} \right) + \sum_{i=1}^{N_{tar}} \left(Syn_{i,\tilde{i}_{com}} - Syn_{i,\tilde{i}_{tar}} \right) \right] \\ &= -\frac{\mathrm{R}'}{8} \times \frac{N_{com}}{TP} \times \mathrm{E}\left(\overline{\Delta Syn} \right). \end{aligned} \tag{19}$$

Equation (19) suggests that the negative effect ($\frac{\partial CAR}{\partial D}$) is the product of a negative constant ($-\mathrm{R}'/8$), the labor intensity (N_{com}/TP) and the expected synergy increase per employee [$\mathrm{E}\left(\overline{\Delta Syn}\right)$].

H2a. Controlling for $\mathrm{E}\left(\overline{\Delta Syn}\right)$, the negative association in Hypothesis H1 is stronger in labor-intensive companies (high N_{com}/TP).

2.23 Hypothesis H2b

The total number of employees affects $\mathrm{E}\left(\overline{\Delta Syn}\right)$. As discussed above, the company gathers information about the synergy matrix in (3). As N increases, it becomes more difficult for the company to gather all the information in the synergy matrix, and ultimately the company can only get hold of part of the information. Hence,

$$\frac{\partial}{\partial N}\left[\frac{\partial \mathrm{E}\left(Syn_{i,\tilde{i}}\right)}{\partial N}\right] < 0, \tag{20}$$

and

$$\frac{\partial \mathrm{E}\left(\overline{\Delta Syn}\right)}{\partial N_{com}} < 0. \tag{21}$$

Therefore, holding N_{com}/TP and N_{acq}/N_{tar} fixed, we have

$$\frac{\partial}{\partial N_{com}}\left(\frac{\partial CAR}{\partial D}\right) > 0. \tag{22}$$

H2b. Holding N_{com}/TP and N_{acq}/N_{tar} fixed, the negative association in Hypothesis H1 is stronger if the combined company's number of employees N_{com} is small.

2.24 Hypothesis H2c

The labor distribution between the two combining companies affects $\mathrm{E}\left(\overline{\Delta Syn}\right)$. Suppose the acquirer's number of employees decreases by *n* and the target's increases by the same number. Because the total number of employees remains unchanged, we have:

$$\mathrm{E}\left(\sum_{i=1}^{N_{acq}} Syn_{i,\tilde{i}_{com}} + \sum_{i=1}^{N_{tar}} Syn_{i,\tilde{i}_{com}}\right) = \mathrm{E}\left(\sum_{i=1}^{N_{acq}-n} Syn_{i,\tilde{i}_{com}} + \sum_{i=1}^{N_{tar}+n} Syn_{i,\tilde{i}_{com}}\right). \qquad (23)$$

From (5) and (20) we have:

$$\begin{bmatrix} \mathrm{E}\left(\sum_{i=1}^{N_{acq}} Syn_{i,\tilde{i}_{acq}}\right) \\ -\mathrm{E}\left(\sum_{i=1}^{N_{acq}-n} Syn_{i,\tilde{i}_{acq}}\right) \end{bmatrix} - \begin{bmatrix} \mathrm{E}\left(\sum_{i=1}^{N_{tar}+n} Syn_{i,\tilde{i}_{tar}}\right) \\ -\mathrm{E}\left(\sum_{i=1}^{N_{tar}} Syn_{i,\tilde{i}_{tar}}\right) \end{bmatrix} \begin{cases} >0 \text{ if } N_{acq}-n \geq N_{tar}+n \\ <0 \text{ if } N_{acq} \leq N_{tar} \\ =0 \text{ if } N_{acq} = N_{tar}+n \end{cases}. \qquad (24)$$

Hence,

$$\mathrm{E}\left(\overline{\Delta Syn}^{*}\right) - \mathrm{E}\left(\overline{\Delta Syn}\right) \begin{cases} >0 \text{ if } N_{acq}-n \geq N_{tar}+n \\ <0 \text{ if } N_{acq} \leq N_{tar} \\ =0 \text{ if } N_{acq} = N_{tar}+n \end{cases}, \qquad (25)$$

where $\mathrm{E}\left(\overline{\Delta Syn}^{*}\right)$ represents the average increase in employee synergy in the combined company after the employee redistribution.

Equation (25) is equivalent to

$$\frac{\partial \mathrm{E}\left(\overline{\Delta Syn}\right)}{\partial\left[\min(N_{acq}, N_{tar})/N_{com}\right]} > 0. \qquad (26)$$

From (19), we have

$$\frac{\partial\left(\frac{\partial CAR}{\partial D}\right)}{\partial\left[\min(N_{acq}, N_{tar})/N_{com}\right]} < 0. \quad (27)$$

H2c. Controlling for N_{com}/TP and N_{com}, the negative association in Hypothesis H1 is stronger if $\min(N_{acq}, N_{tar})/N_{com}$ is large.

2.25 Hypothesis H2d

Employee cooperation in low-value-added industries is very different from that in high-tech industries. In low-value-added industries (e.g., agriculture, mining, and manufacturing), it is more often the case that employees are substitutes for, rather than complements to, each other. Hence, the expected synergy among employees is lower in low-value-added industries than in high-tech industries. Moreover, the cooperation synergy in low-value-added industries, if any, decreases drastically in the physical distance among workers. Therefore, I expect $\mathrm{E}\left(\overline{\Delta Syn}\right)$ to be larger in high-tech industries than in low-value-added industries.

H2d. The negative association in Hypothesis H1 is stronger if the combined company is in high-tech industries.

3. Data, sample and key variables

3.1 Data and sample

The M&A data are from the Security Data Company (SDC) Platinum database. The initial sample consists of all completed public M&A deals in the US from 1990 to 2016. The stock price and accounting data are from the Center for Research in Security Prices (CRSP) and Compustat database. Zip codes of company headquarters provided by SDC and Compustat are matched to their corresponding time zone, longitude, and latitude information.

The deals in the final sample satisfy all of the following criteria:

1. The stock price information is available for both the acquirer and the target.
2. The time zone, latitude, and longitude information are available for both the acquirer and the target.
3. The number of employees is available and is larger than 10 for both the acquirer and the target.
4. Both the acquirer and the target are headquartered in the contiguous US (i.e., Alaska and Hawaii are excluded).
5. The acquirer has not made any other acquisition within 6 months prior to the announcement of the deal.

The final sample consists of 3228 deals. Table 1 shows the sample composition. Panel A presents the sample composition and the means of combined CAR, TZD, and geographic distance by time period. Approximately 60% the deals in the sample are from 1995-2004, which is consistent with the merger wave documented in previous studies (e.g., Maksimovic, Phillips and Yang 2013; Ahern and Harford 2014). There is no obvious trend in TZD or geographic distance between acquirers and targets across time.

[Insert Table 1 here]

Panel B shows the sample composition by the time zones of acquirers and targets. In 1804 deals, the acquirer and the target are from the same time zone, and in 1040 cases both are from the Eastern Time Zone. About half of the merging companies are from the Eastern Time Zone. Most of the remaining companies are from either the Central or the Pacific Time Zone. Only 265 deals involve companies from the Mountain Time Zone.

Figures 1.1 and 1.2 present the geographic distributions of acquirers and targets. Most companies headquarter in or near metropolises, especially in the Pacific and Mountain Time Zones. In general, the geographic locations of acquirers and targets are dispersed both horizontally and vertically. The figures also show the intensiveness of cross-time-zone M&A activity. As can be observed, companies in the West coast are more likely to engage in cross-time-zone deals.

[Insert Figure 1 here]

3.2 Descriptive statistics

Table 2 reports the summary statistics. Panel A presents the statistics of the three-day (-1, +1) CAR around the deal announcements, calculated using the market model estimated with the return data for 200 trading days, ending 10 days before the announcement date. The combined CAR are the weighted-average CAR for the acquirer and the target. The weights are the market value six trading days before the announcement date. The targets' weights are adjusted for the acquirers' toeholds. During the three-day announcement period, combined firms on average have a CAR of

1.71%. Acquirers on average experience a small drop in stock price, leading to a mean CAR of −1.22%. Target companies earn significantly positive announcement CAR, with a mean of 21.63%. The statistics suggest that although the deals in the sample create shareholder value on average, the targets obtain most of the profits, whereas acquirers typically incur a loss.

[Insert Table 2 here]

Panel B reports statistics on the TZD and the geographic distance between the acquirer and the target. The mean TZD is 0.81 hour. The acquirer and the target are from different time zones in 1424 deals, which accounts for 44% of the sample. The mean and median of geographic distance between the acquirer and the target are 1287 km and 871 km, respectively.

Panel C presents statistics on firm financials. Tobin's Q and return on assets (ROA) are winsorized at the 1% level. Leverage is winsorized between 0 and 1. A median acquirer is approximately nine (seven) times the size of a median target in terms of both market value (total employees). Compared with acquirers, target companies have lower Tobin's Q and ROA but similar leverage.

Deal characteristics are presented in Panel D. On average, 38.7% of the consideration is paid in cash and 52.1% in stock. The acquirer and the target are from different industries in one-third of the deals. Tender offers comprise 16.7% of the deals and friendly deals make up 99.1%. Only 4.3% of the deals have more than one bidder, and 2.9% are mergers of equals. In 93% of the deals, the acquirer and the target are from different cities, and in 72.2% of the deals, they are from different states.

4. Empirical results of hypotheses tests

4.1 Results for Hypothesis H1

To test Hypothesis H1, I conduct the following regression test:

$$Combined\ CAR=\alpha+\beta_1 Time\ diff+\beta_2 \text{Log}(distance)+\beta_k Controls+Year\ FE+\varepsilon. \quad (28)$$

The logarithm of the great circle distance between the headquarters of the acquirer and that of the target is included in the regression to control for the distance effect. I expect the coefficient estimate on *Time diff* to be negative.

[Insert Table 3 here]

Table 3 presents the regression results. Throughout this paper, I include announcement year fixed-effects, and adjust the standard errors for clustering at the acquirer level. In column (1), I only include *Time diff*, Log(*distance*), firm size controls and year fixed-effects in the regression. In column (2), I add a set of deal-level control variables, including two geographic-proximity measures: *Cross-state* and *Cross-city*. I also control for the differences in social trust, individualism and hierarchy between acquirer and target states, because cultural differences are documented to affect synergy gains in M&A deals (Chakrabarti, Gupta-Mukherjee and Jayaraman 2009; Ahern, Daminelli and Fracassi 2012). In column (3), I additionally control for the acquirers' and targets' Tobin's Q, leverage, and ROA in the year prior to the deal. Consistent with previous studies, the coefficient estimates on control variables suggest that combined CAR are positively associated with target size, cash payment, tender offers, and acquirer ROA, and are negatively associated with acquirer size, stock payments, friendly deals, and targets' Tobin's Q. The coefficients of other control variables are not significant.

In all specifications, the coefficients on *Time diff* are negative and statistically significant. The estimates are also economically large. The coefficients suggest that a one-hour TZD is associated with a decline of approximately 0.52-0.62% in combined CAR. The impact is substantial, considering the average (median) three-day CAR in the sample is only 1.71% (1.00%).

Previous studies suggest that geographic proximity positively affects block acquisition probability and outcomes (Kang and Kim 2008), acquirer returns in domestic M&A in the US (Uysal, Kedia and Panchapagesan 2008) and the likelihood of cross-border M&A (Erel, Liao and Weisbach 2012). In Table 3, the coefficient estimates on Log(*distance*) are positive in all three columns. This is likely because I include *Time diff* in the regressions and the sample period starts from 1990. I confirm a significant negative association between geographic distance and combined announcement return in an extended sample period of 1980-2016. This is consistent with Carmel and Espinosa (2011)'s view that after the Internet came along, the negative effect of geographic distance decreases, whereas TZDs starts to play a more important role.

In general, the results in Table 3 support Hypothesis H1 that combined CAR are negatively associated with the TZD between the acquirer and the target.

4.2 Testing Hypotheses H2a through H2d

Some may argue that the negative association between combined CAR and TZDs is caused by hindered cooperation between the acquirer's management and that of the target, rather than between the two companies' rank and file employees. This alternative explanation is consistent with Hypothesis H1 but not Hypotheses H2a through H2d.

In this section, for each of the Hypotheses H2a through H2d, I identify deals in which the negative association is expected to amplify and construct a dummy variable *High_Impact*

(*Low_Impact*) that equals one (zero) for those deals and zero (one) otherwise. I test the following specification:

$$\begin{aligned} Combined\ CAR = a + b_1 Time\ diff' \ High\_Impact + b_2 Time\ diff' \ Low\_Impact \\ + b_3 High\_Impact + b_4 \text{Log}(distance) + b_k Controls + Year\ FE + e. \end{aligned} \quad (29)$$

4.21 Results for Hypothesis H2a

Hypothesis H2a suggests that the negative association in Hypothesis H1 is stronger when N_{com}/TP is high. Using total sales as a proxy for total productivity, I set *High_Impact* (*Low_Impact*) to one if the ratio of the total number of employees to total sales of the combined firm is above (below) the sample median and zero otherwise, and test specification (29).

The results are in column (1) of Table 4. The estimates of β_1 on *Time diff* × *High_Impact* and β_2 on *Time diff* × *Low_Impact* are both negative, but only β_1 is significant. The magnitude of β_1 is more than two times that of β_2. The results support Hypothesis H2a that the negative association in Hypothesis H1 is stronger when the combined company is labor intensive.

[Insert Table 4 here]

4.22 Results for Hypothesis H2b

Hypothesis H2b predicts the negative association in Hypothesis H1 to be stronger when the total number of employees is small. To test this hypothesis, I set *High_Impact* (*Low_Impact*) to one if the combined company's total number of employees is below (above) the sample median, and zero otherwise, and test specification (29).

The results are in column (2) of Table 4. The coefficient estimate of β_1 on *Time diff* × *High_Impact* is significantly negative, but β_2 on *Time diff* × *Low_Impact* is insignificant. The

results support Hypothesis H2b that the negative impact in H1 is stronger when the total number of employees is small.

An alternative explanation would be that the number of employees is a proxy for geographic diversification: Companies with large employee numbers are likely to have more geographic segments. In this case, the TZD between the headquarters of the acquirer and the target may not be a reliable estimate of the actual TZDs among all segments of the combining companies. The noise in TZD measurement may be the reason for the insignificant results. To test this alternative explanation, I use the number of geographic segments from Compustat Historical Segment as a proxy for geographic diversification. However, I find no evidence supporting this alternative explanation.[2]

4.23 Results for Hypothesis H2c

As proposed in Hypothesis H2c, the negative association in Hypothesis H1 is stronger when $\min(N_{acq}, N_{tar})/N_{com}$ is large, controlling for *TP* and N_{com}. To test this hypothesis, I set *High_Impact* (*Low_Impact*) to one if $\min(N_{acq}, N_{tar})/N_{com}$ is above (below) the sample median, and zero otherwise, and test specification (29).

The results are in column (3) of Table 4. The estimate of β_1 on *Time diff* × *High_Impact* is negative and significant, and the estimate of β_2 on *Time diff* × *Low_Impact* is negative but insignificant. The results support Hypothesis H2c that the negative impact of TZD on employee productivity is stronger if employees are distributed evenly between the acquirer and the target. The logic behind is straightforward: Most employees' best feasible coworker will be in the same

[2] The results are not tabulated but available upon request.

segment if the labor force is concentrated in one of the two merging companies, in which case the negative effect of TZD on employee productivity would be marginal.

4.24 Results for Hypothesis H2d

Masulis, Wang and Xie (2007) suggest that it is difficult for high-technology companies to integrate after M&A because human capital and intellectual property are often lost due to employee turnover after the takeover. Whereas Masulis, Wang and Xie (2007) argue that employee turnover causes value destruction in high-tech mergers, I conjecture that difficulties in employee cooperation due to TZDs have a similar effect. To test this hypothesis, I set *High_Impact* (*Low_Impact*) to one (zero) if either the acquirer or the target is from high-technology industries and zero (one) otherwise. Following John, Knyazeva and Knyazeva (2015), high technology industries are identified as those with two-digit SIC codes 28, 35, 36, 73, and 87.[3]

Again, I test the regression as in specification (29), and the results are in column (4) of Table 4. The estimate of β_1 on *Time diff* × *High_Impact* is negative and significant, and the estimate of β_2 on *Time diff* × *Low_Impact* is negative but insignificant. The results support Hypothesis H2d that the negative impact of TZDs on employee productivity is stronger if the acquirer or the target is from high-technology industries, in which employee cooperation is expected to generate higher synergy.

Collectively, I find supporting results for all five hypotheses. The results in Section 4.1 suggest a negative association between combined CAR and TZDs, which is not driven by the geographic distance effect. Section 4.2 additionally confirms that the negative association is

[3] The results are similar if I use the high-technology industries definition in Masulis, Wang and Xie (2007).

caused by lower realized synergy from cooperation between the two companies' rank and file employees, not their management.

5. Post-deal operating performance of combined companies

A natural question that arises is whether the negative market reactions to cross-time-zone M&A announcements are driven by shareholder overreactions or are reflections of expectations of future firm performance.

To answer this question, I analyze the post-deal operating performance of the combined company after deal completion. Operating performance is measured by industry-adjusted ROA, calculated as earnings before interest and tax (EBIT) over assets minus its industry (three-digit SIC) median.[4]

First, I compare the mean of post-deal operating performance by the TZD, and Figure 2 presents the results. In Figure 2, all ROA are net of the ROA of year 0, which is the deal completion year. The figure suggests that one year after deal completions, the firms that are combined in those deals and have two or three hours of TZDs experience significant decline in their ROA. The drop is as large as 2.5% for firms combined with a three-hour TZD (3-hr firms) and more than 1.5% for 2-hr firms. Then, in the following years, their performance rebounds. That recovery is faster for 3-hr firms, whose performances are already fully recovered in year +3. The recovery seems slower for 2-hr firms, which on average achieve full recovery in year +5.

[Insert Figure 2 here]

Then I conduct regression analyses in specification (28) but replace the dependent variable with the post-deal operating performance. The results are presented in Panel A of Table 5. In column (1), the dependent variable is the change in ROA from year 0 to +1. The coefficient

[4] The results are similar if ROA is calculated as operating income before depreciation over total assets.

estimate on *Time diff* is significantly negative, and its economic magnitude is also substantial: Each one-hour TZD is associated with a drop of 0.52% in ROA.

[Insert Table 5 here]

In columns (2) and (3) of Panel A in Table 5, the dependent variables are the one-year changes in ROA from year +1 to +2 and from year +2 to +3, respectively. The coefficient estimates on *Time diff* are both positive and significantly different from zero. The positive coefficients suggest that after a significant decline in year +1, the operating performance of companies combined in cross-time-zone deals rebounds quickly in years +2 and +3.

The results in Panel A of Table 5 are consistent with Figure 2, indicating that the firms combined in cross-time-zone deals experience substantial but transitory deterioration in their operating performance in the first year after deal completion, and that performance recovers in the second and third year.

Then I conduct similar tests as in Table 4 but replace the dependent variable with the change in ROA from year 0 to +1. The results are presented in Panel B of Table 5. In columns (1), (2) and (4), the coefficient estimates on *Time diff* × *High_Impact* are significantly negative, and those on *Time diff* × *Low_Impact* are negative but insignificant. In column (3), both coefficient estimates on *Time diff* × *High_Impact* and *Time diff* × *Low_Impact* are significantly negative. In general, the results in Panel B of Table 5 indicate that the cross-time-zone deals receiving stronger negative market reactions are also associated with larger operating performance deterioration for the combined firms in year +1. The results support the notion that the negative market reactions to

cross-time-zone M&A announcements are reflections of shareholders' expectations of firms' future performance deterioration.

6. Post-deal employee layoffs

As is discussed in the previous section, the operating performance of firms combined in cross-time-zone deals recovers quickly after an initial drop in the first year following deal completions. The quick recovery suggests that corresponding measures may have been taken by those firms to mitigate the employee inefficiency caused by TZDs.

To validate this conjecture, I investigate the layoffs conducted by the combined company after deal completions. Following Atanassov and Kim (2009), layoffs are measured with a dummy variable that equals one if the number of employees decreases by more than 20% in a given year and zero otherwise.[5]

First, I calculate the percentage of firms conducting layoffs after deal completions for each TZD group. Figure 3 shows the results for layoffs that occur in the first, second and third year after deal completions. As can be seen, for 0-hr and 1-hr firms, on average less than 6% of them undertake layoffs each year, whereas each year more than 7% of the 2-hr and 8% of 3-hr firms have layoffs. Specifically, in year +2, more than 10% of 3-hr firms have layoffs.

[Insert Figure 3 here]

Next, I conduct logit regression tests using layoffs as the dependent variable and independent variables in specification (28). Panel A of Table 6 presents the results. The dependent variables are layoffs occurring in year +1, +2 and +3, in columns (1) through (3), respectively. Deal characteristics control variables are included in the regressions, but their coefficient estimates are not presented for brevity. The coefficient estimates on *Time diff* are positive in all three columns

[5] The results are similar if I use 25% as the cutoff.

but are significantly different from zero only in column (1) and in column (2). The results suggest that firms combined across larger TZDs are more likely to undertake layoffs, especially in the second year after their deal completion.

Then I conduct similar tests as in Table 4 and Panel B of Table 5. The dependent variable equals one if the combined firm has a layoff during year +1 to +3, and zero otherwise. The results are presented in Panel B of Table 6. In columns (1) to (3), the coefficient estimates on *Time diff* × *High_Impact* are significantly positive, and those on *Time diff* × *Low_Impact* are positive but insignificant. The results indicate that combined firms that are expected to be strongly affected by TZDs are more likely to conduct layoffs after the deals. In column (4), the coefficient estimate on *Time diff* × *Low_Impact* is significantly positive and the one on *Time diff* × *High_Impact* is positive but insignificant. The results suggest that human capital are more valuable and less replaceable in high-technology firms, and that these firms are less likely to conduct layoffs even though they are expected to have more severe employee coordination problem after cross-time-zone M&A.

[Insert Table 6 here]

Results in Figure 3 and Table 6 provide evidence that cross-time-zone M&A lead to more frequent layoffs. To investigate whether post-deal layoffs effectively reverse the declining operating performance, I test the following specification:

$$\begin{aligned}\Delta ROA = \alpha + \beta_1 Time\ diff + \beta_2 Time\ diff \times Layoffs + \beta_3 Layoffs \\ + \beta_4 \mathrm{Log}(distance) + \beta_k Controls + Year\ FE + \varepsilon.\end{aligned} \tag{30}$$

In this specification, the coefficient on *Layoffs* indicates the average effect of layoffs on firm performance, whereas the coefficient on *Time diff* × *Layoffs* indicates the incremental effect of layoffs on firm performance for firms with TZDs.

Table 7 presents the results. In column (1), the dependent variable is the changes in industry-adjusted ROA of the combined firm from year +1 to year +2, and *Layoffs* equals one if the combined firm conducts a layoff in either year +1 or +2 and zero otherwise. Firm size and deal characteristics control variables are included in the regressions, but their coefficient estimates are not presented for brevity. The coefficient estimates on *Time diff* × *Layoffs* and *Time diff* are both positive and significant, whereas the coefficient estimate on *Layoffs* is significant. The coefficient estimate on *Time diff* × *Layoffs* is about three times the size of that on *Time diff*, indicating that a firm's operating performance recovers much faster in year +2 if the firm conducts a layoff in year +1 or +2. In column (2), the dependent variable is the changes in industry-adjusted ROA of the combined firm from year +1 to year +3. *Layoffs* equals one if the combined firm conducts a layoff in year +1, +2, or +3, and zero otherwise. The results are similar to those in column (1), suggesting that layoffs are associated with faster operating performance recovery after cross-time-zone deals.

[Insert Table 7 here]

The results in this section, combined with those in Section 6, provide the following insights: 1. Combined firms with large TZDs experience significant deterioration in their operating performance in the first year after deal completions; 2. Such firms undertake post-deal employee layoffs more frequently than do firms with no TZD; and 3. The layoffs are associated with larger performance recovery for the firms.

7. Additional analysis: Who bears the costs?

The results in Section 4 indicate that the market reacts negatively to mergers of two companies in different time zones, suggesting that there are labor inefficiency costs caused by difficulties in cross-time-zone cooperation. In this section, I investigate how the costs are shared by the acquirer and the target by examining their announcement returns separately.

First, I examine the association between acquirer announcement returns and TZDs. I use the three-day CAR of the acquiring companies as the dependent variable and test specification (28).

The results are presented in Panel A of Table 8. I use the same control variables as in Table 3 but for brevity, the coefficient estimates of firm and deal level controls are not presented. The coefficient estimates on *Time diff* are all negative and significant, suggesting that TZDs also have a negative effect on the acquirers' CAR.

[Insert Table 8 here]

Next, I test the same specification as in (28) but replace the dependent variable with the target firms' three-day CAR. The results are shown in Panel B of Table 8. The coefficient estimates on *Time diff* are negative but not significant in all three columns.

Then I repeat the tests using offer premiums as the dependent variable. Offer premium is calculated as the offer price divided by the target's share price 42 trading days before the announcement of the deal. The results are in Panel C. As is the case with those in Panel B, the coefficient estimates on *Time diff* are negative but not significant in all three columns.

Taken together, the results in Table 8 suggest that the costs of labor inefficiency caused by TZDs are borne mainly by the acquirers. The targets' shareholders do not seem to suffer negative

market reactions in cross-time-zone mergers. The results suggest that acquirers do not lower their offering price in cross-time-zone acquisitions, thereby causing negative market returns on the acquiring firms' stocks but not on the target firm stocks.

One explanation for acquirers' overpayment is that they either overlook the labor inefficiency caused by TZDs or they overestimate their ability to overcome such inefficiency. Another explanation would be that cross-time-zone M&A are often made by acquirers with entrenched management, who understand the low synergy associated with TZDs but pursue such deals regardless. This explanation is consistent with the findings of Harford, Humphery-Jenner and Powell (2012) that entrenched managers choose low-synergy deals and cause value destruction.

8. Robustness tests: alternative time window for the calculation of announcement returns

I use the five days (-2, +2) around the deal announcements as an alternative time window to calculate the CAR, and I use it as the dependent variable to test the specifications in Table 3 and Table 4. The results are presented in Table 9.

[Insert Table 9 here]

In Panel A, the coefficient estimates on *Time diff* are all negative. The estimates are significant in columns (1) and (2) but insignificant in column (3). In Panel B, the coefficient estimates on *Time diff* × *High_Impact* are significantly negative in all four columns, and those on *Time diff* × *Low_Impact* are negative but not significant. In general, the results in Table 3 and 4 remain robust to the alternative time window.

9. Conclusions

In this paper, I investigate the impact of time zone differences (TZDs) between labor segments on firm productivity. By exploiting mergers and acquisitions (M&A) as a quasi-experiment, I provide the first empirical evidence that TZDs among labor segments has a substantial economic impact on employee productivity.

TZDs hinders real-time cooperation among employees. The employee productivity of a company suffers when it has labor segments located in different time zones. A simple model predicts that the TZD between the acquirers and the targets is negatively associated with combined announcement returns of M&A deals. Using a sample of 3228 deals in the US, I find empirical results that are consistent with the model's prediction. Multiple controls and subsample analyses suggest that the negative effect is driven neither by the geographic distance between the acquirer and the target, nor by hindered management cooperation across time zones.

In addition, I find that newly combined firms that have large TZDs experience significant operating performance declines after the deal. Such firms are more likely to conduct layoffs, which are associated with performance recovery.

The paper offers a caveat regarding corporate expansion across time zones. As empirical results suggest, in cross-time-zone M&A, acquirers overpay their targets for the synergy that cannot be fully realized because of the TZD, and in so doing they destroy shareholder value.

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Appendix I. Variable definition

Variables	Definitions	Data sources
Cumulative abnormal return (CAR)	Cumulative abnormal return using the market model estimated using the return data for 200 trading days ending 10 days before the announcement date.	CRSP
Combined CAR	Weighted average CAR for the acquirer and the target. The weights are the market value six trading days before the announcement date. The target's weight is adjusted for the acquirer's toehold.	CRSP
Offer premium	Offer price divided by target's share price 42 days before the announcement date.	SDC, CRSP
Return on assets (ROA)	Earnings before interest and tax over book value of assets.	Compustat
Layoffs	Dummy variable: one if the number of employees decreases by more than 20%, zero otherwise.	Compustat
Time zone difference	The absolute value of time zone difference between the headquarters of the acquirer and the target.	SDC, Compustat
Geographic distance	The great circle distance between the headquarters of the acquirer and the target.	SDC, Compustat
Employee number	Number of employees (Compustat data item 29 × 1000)	Compustat
Market value (MV)	Number of shares outstanding × market price six trading days before the announcement date	CRSP
Total assets	Book value of total assets.	Compustat
Tobin's Q	Market value of assets over book value of assets.	Compustat
Leverage	Book value of debt over book value of assets.	Compustat
% paid in cash	The percentage of consideration paid in cash.	SDC
% paid in stock	The percentage of consideration paid in stock.	SDC
Cross-industry	Dummy variable: one if the acquirer and the target have different two-digit SIC codes.	SDC
Tender offer	Dummy variable: one for tender offers, zero otherwise.	SDC
Friendly deal	Dummy variable: one for friendly deals, zero otherwise.	SDC
Competing deal	Dummy variable: one if there are competing bidders, zero otherwise.	SDC
Merger of equals	Dummy variable: one for merger of equals, zero otherwise.	SDC
Cross-state	Dummy variable: one if the acquirer and the target are in the same state, zero otherwise.	SDC
Cross-city	Dummy variable: one if the acquirer and the target are in the same city, zero otherwise.	SDC

|Trust|	The absolute value of the difference in trust between the states in which the acquirer and the target are located.	World Value Survey
|Hierarchy|	The absolute value of the difference in hierarchy between the states in which the acquirer and the target are located.	World Value Survey
|Individualism|	The absolute value of the difference in individualism between the states in which the acquirer and the target are located.	World Value Survey

Figure 1. Geographic locations of acquirers and targets

This figure presents the geographic locations of acquirers and targets' headquarters. The marker size indicates the activeness of M&A deals in the city. Large circles indicate more M&A deals in the city. The marker color indicates the level of average time zone difference of deals associated with the city. Red, orange and yellow correspond to high, medium and low levels, respectively.

Figure 1.1. Acquirer headquarter locations

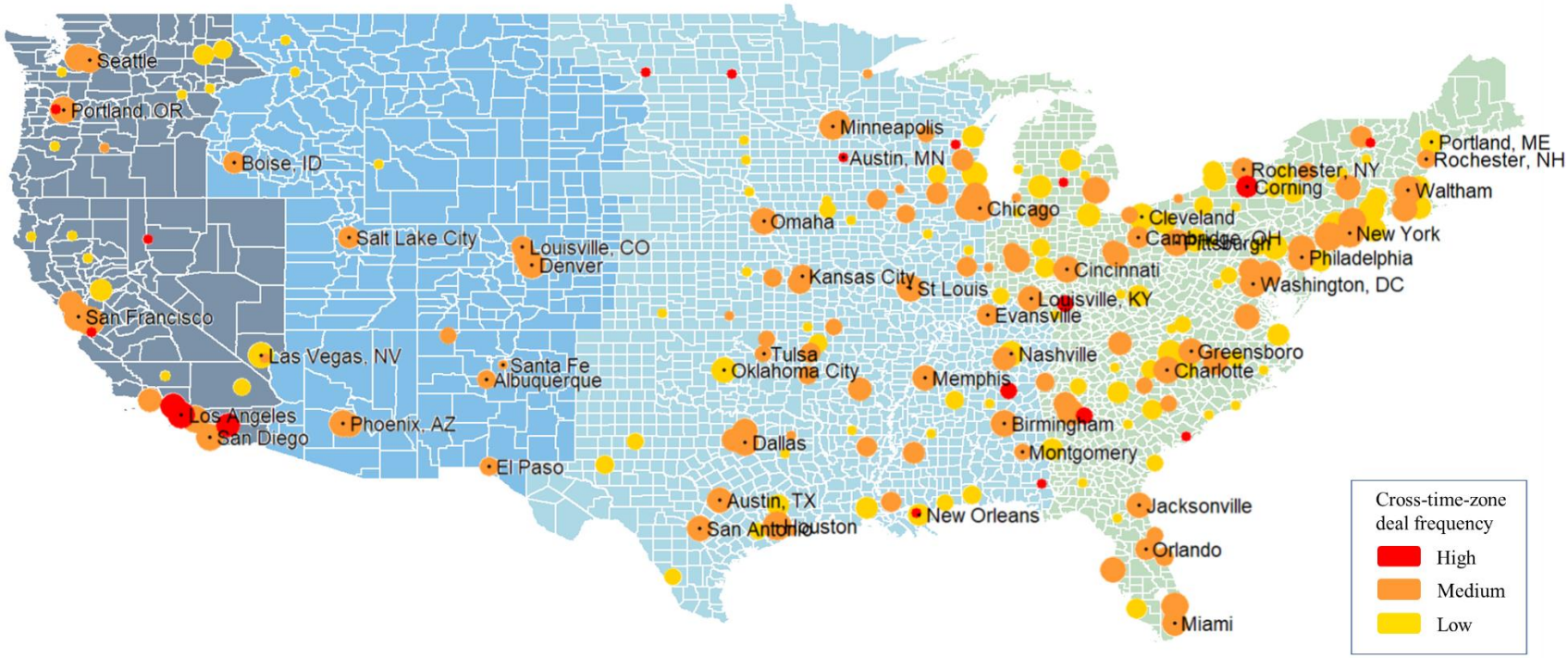

Figure 1.2. Target headquarter locations

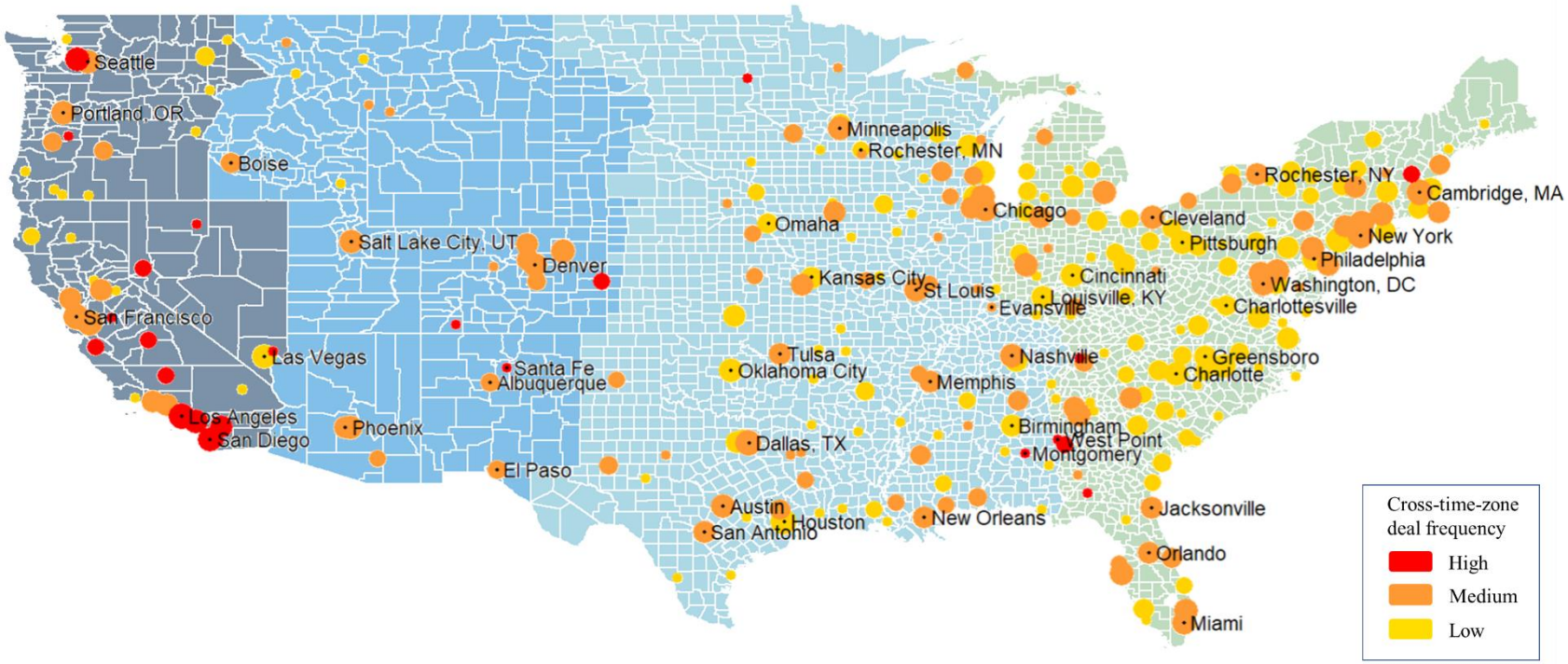

Figure 2. Combined firm return on assets after deal completions, by time zone differences

This figure presents the mean of industry-adjusted return on assets (net of year 0) of the combined company from deal completion to six years after the deal, by the time zone difference between the headquarters of the acquirer and the target.

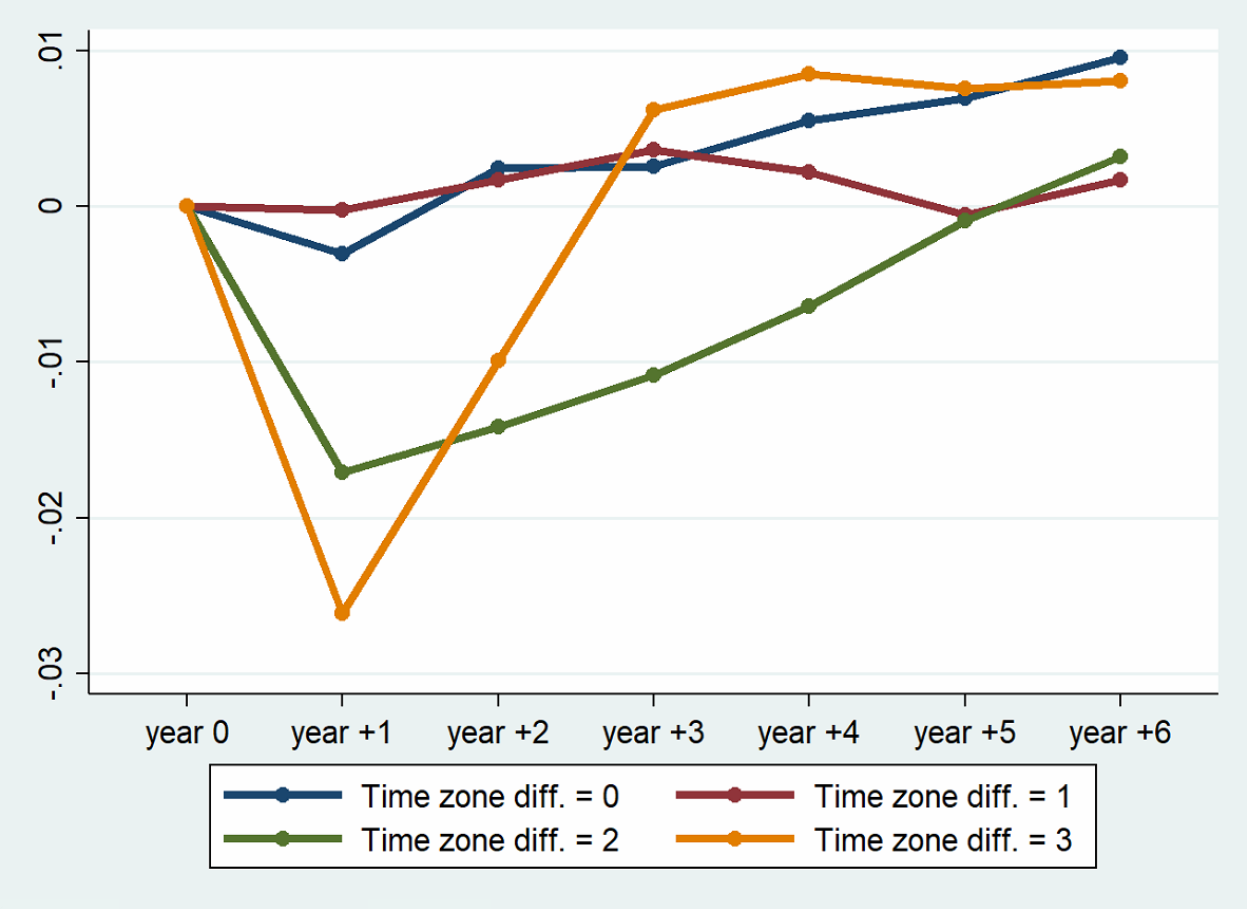

Figure 3. Layoffs after deal completions, by time zone differences

This figure presents the percentage of layoffs that happened during the first, second and third year after deal completions, by the time zone difference between the headquarters of the acquirer and the target.

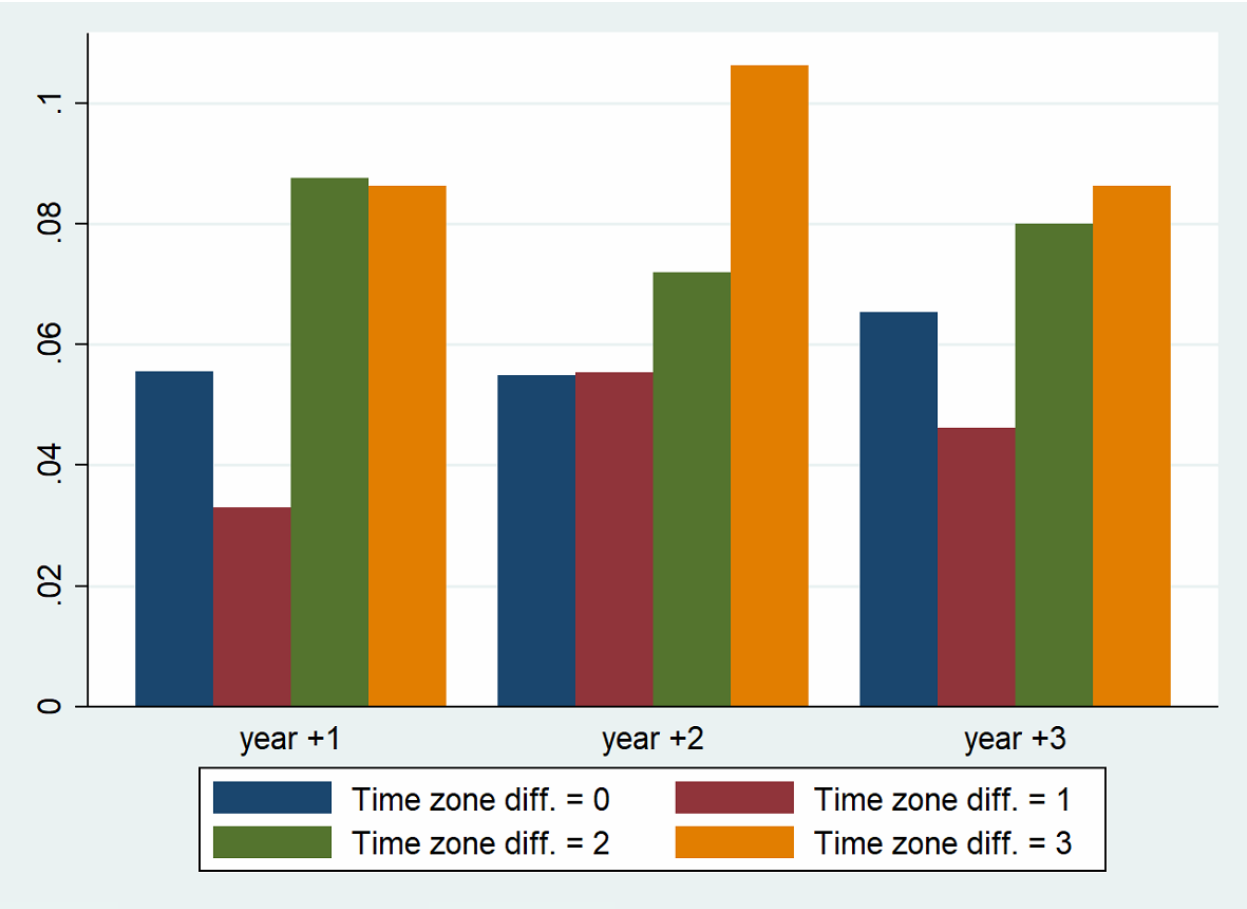

Table 1. Sample composition

Panel A. Number of deals, and the means of time zone differences, geographic distance and combined cumulative abnormal returns for each period

Cumulative abnormal returns (CAR) are from the market model, estimated using the return data for 200 trading days ending 10 days before the announcement date. Combined CAR is the weighted average CAR for the acquirer and the target. The weights are the market value six trading days before the announcement date. Targets' weights are adjusted for the acquirers' toehold. Time zone difference is the absolute value of the time zone difference between the headquarters of the acquirer and the target. Log(distance) is the logarithm of the great circle distance between the headquarters of the acquirer and the target.

Period	Number of deals	Percentage in sample	Time zone difference (hours)	Geographic distance (km)	Combined CAR (-1, +1) (%)
1990-1994	316	9.79%	0.79	1282.13	1.73
1995-1999	1100	34.08%	0.84	1331.39	1.56
2000-2004	795	24.63%	0.83	1287.62	0.44
2005-2009	505	15.64%	0.77	1229.40	1.95
2010-2016	512	15.86%	0.78	1247.36	3.76
Total/Mean	3228	100.00%	0.81	1285.50	1.71

Panel B. Number of deals by time zones of the acquirer and the target

Acquirer time zone	Target time zone				Total
	Eastern (UTC-5)	Central (UTC-6)	Mountain (UTC-7)	Pacific (UTC-8)	
Eastern (UTC-5)	1040	239	61	266	1606
Central (UTC-6)	289	376	46	125	836
Mountain (UTC-7)	34	29	25	37	125
Pacific (UTC-8)	182	83	33	363	661
Total	1545	727	165	791	3228

Table 2. Descriptive statistics

This table presents observations the numbers, means, medians and standard deviations of variables. Cumulative abnormal returns (CAR) are from the market model estimated using the return data for 200 trading days ending 10 days before the announcement date. Combined CAR is the weighted average CAR for the acquirer and the target. The weights are the market value six trading days before the announcement date. Targets' weights are adjusted for the acquirers' toehold. The offer premium is the offer price divided by the target's share price 42 days before the announcement date. Time zone difference is the absolute value of the time zone difference between the headquarters of the acquirer and the target. Log(distance) is the logarithm of the great circle distance between the headquarters of the acquirer and the target. Other variables are defined in Appendix I.

Panel A. Cumulative abnormal return (CAR) and offer premium (%)	N	Mean	Median	Std. dev.
Combined CAR (-1, 1)	3228	1.711	1.001	8.010
Acquirer CAR (-1, 1)	3228	-1.217	-0.877	8.784
Target CAR (-1, 1)	3228	22.626	18.041	27.548
Offer premium	3083	44.004	36.924	43.870
Panel B. Time zone differences and distance	N	Mean	Median	Std. dev.
Time zone difference (hour)	3228	0.813	0	1.083
Geographic distance (in thousands km)	3228	1.287	0.871	1.319
Panel C. Company financials[7]	N	Mean	Median	Std. dev.
Acquirer market value (in millions)	3228	13145.8	1784.6	37440.8
Target market value (in millions)	3228	1275.9	194.1	4507.0
Acquirer employee number (in thousands)	3228	20.428	3.700	46.141
Target employee number (in thousands)	3228	3.625	0.575	11.385
Acquirer Tobin's Q	3178	2.667	1.588	5.060
Target Tobin's Q	3106	2.032	1.358	2.557
Acquirer leverage	3178	0.588	0.586	0.250
Target leverage	3106	0.564	0.574	0.272
Acquirer ROA	3089	0.070	0.076	0.116
Target ROA	2865	0.005	0.048	0.199
Panel D. Deal characteristics	N	Mean	Median	Std. dev.
% paid in cash	3228	38.736	10.023	43.763
% paid in stock	3228	52.104	58.782	44.517
High-tech	3228	0.413	0	0.492
Cross-industry	3228	0.333	0	0.471
Tender offer	3228	0.167	0	0.373
Friendly deal	3228	0.991	1	0.096

[7] Company financials are from the year before deal announcements.

Competing deal	3228	0.043	0	0.202
Merger of equals	3228	0.029	0	0.168
Cross-state	3228	0.722	1	0.448
Cross-city	3228	0.930	1	0.256
|Trust|	3228	0.049	0.027	0.058
|Hierarchy|	3228	0.029	0.021	0.037
|Individualism|	3228	0.033	0.015	0.045

Table 3. Combined firm announcement returns and time zone differences

The sample consists of 3228 public mergers and acquisitions (M&A) in the US completed between 1990 and 2016 (from SDC). The dependent variable is the three-day (-1, +1) cumulative abnormal return (%) of the combined company around the M&A announcement. Cumulative abnormal returns (CAR) are from the market model estimated using the return data 200 trading days ending 10 days before the announcement date. Combined CAR is the weighted average CAR for the acquirer and the target. The weights are the market value six trading days before the announcement date. Targets' weights are adjusted for the acquirers' toehold. *Time diff* is the absolute value of the time zone difference between the headquarters of the acquirer and the target. Log(*distance*) is the logarithm of the great circle distance between the headquarters of the acquirer and the target. Other variables are defined in Appendix I. Announcement year fixed effects are included. Standard errors are adjusted for clustering on acquirers, and *t*-statistics are presented in parentheses. Statistical significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

Variable	(1)	(2)	(3)
Time diff	-0.619***	-0.591***	-0.522**
	(-3.477)	(-3.097)	(-2.546)
Log(distance)	0.215**	0.155	0.123
	(2.456)	(1.176)	(0.830)
Log(acquirer MV)	-0.900***	-1.192***	-1.176***
	(-8.319)	(-10.483)	(-8.886)
Log(target MV)	0.341***	0.619***	0.616***
	(3.369)	(5.828)	(4.550)
% paid in cash		0.020***	0.024***
		(3.366)	(3.593)
% paid in stock		-0.022***	-0.017***
		(-3.689)	(-2.646)
Cross-industry		0.103	0.132
		(0.360)	(0.426)
Tender offer		0.625	0.782*
		(1.590)	(1.879)
Friendly deal		-2.024	-1.969
		(-1.553)	(-1.435)
Competing deal		-0.069	-0.005
		(-0.109)	(-0.008)
Merger of equals		0.689	0.310
		(0.630)	(0.245)
Cross-state		0.310	0.387
		(0.668)	(0.706)
Cross-city		-0.831	-0.799
		(-1.168)	(-1.000)
|Trust|		-3.400	-1.701
		(-0.843)	(-0.391)
|Hierarchy|		-2.080	-2.653

		(-0.399)	(-0.469)
|Individualism|		5.654 (1.205)	4.038 (0.823)
Acquirer Tobin's Q			-0.353 (-0.846)
Target Tobin's Q			-0.563 (-1.510)
Acquirer leverage			0.031 (1.410)
Target leverage			-0.005 (-0.447)
Acquirer ROA			1.673* (1.845)
Target ROA			-0.282 (-0.389)
Constant	4.362*** (3.508)	8.454*** (4.621)	7.302*** (3.533)
Observations	3228	3228	2800
Adjusted R^2	0.060	0.110	0.116
Year FE	Yes	Yes	Yes

Table 4. Combined firm announcement returns and time zone differences interacted with dummy variables

The sample consists of 3228 public mergers and acquisitions (M&A) in the US completed between 1990 and 2016 (from SDC). The dependent variable is the three-day (-1, +1) cumulative abnormal return (%) of the combined company around the M&A announcement. *Time diff* is the absolute value of the time zone difference between the headquarters of the acquirer and the target. In column (1), *High_Impact* equals one if the ratio of total employee number to total sales of the combined firm is above the sample median, and zero otherwise. In column (2), *High_Impact* equals one if the total number of employees of the combined company is below the sample median, and zero otherwise. In column (3), *High_Impact* equals one if $\min(N_{acq}, N_{tar})/N_{com}$ is above the sample median, and zero otherwise. In column (4), *High_Impact* equals one if the acquirer or the target is from high-technology industries (two-digit SIC codes 28, 35, 36, 73, and 87), and zero otherwise. *Low_Impact* equals one minus *High_Impact*. Log(*distance*) is the logarithm of the great circle distance between the headquarters of the acquirer and the target. Other variables are defined in Appendix I. Announcement year fixed effects are included. Standard errors are adjusted for clustering on acquirers, and *t*-statistics are presented in parentheses. Statistical significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

	(1)	(2)	(3)	(4)
	High_Impact=			
Variable	High labor intensity	Small employee number	High labor balance	High-tech industries
Time diff×High_Impact	-0.829***	-0.945***	-1.005***	-0.821***
	(-3.364)	(-3.488)	(-3.542)	(-3.231)
Time diff×Low_Impact	-0.329	-0.161	-0.244	-0.250
	(-1.534)	(-0.837)	(-1.311)	(-1.192)
High_Impact	0.145	0.148	0.154	0.155
	(1.098)	(1.122)	(1.169)	(1.178)
Log(distance)	0.232	-0.810*	1.282***	-0.441
	(0.657)	(-1.903)	(3.394)	(-1.147)
Log(acquirer MV)	-1.208***	-1.397***	-1.080***	-1.171***
	(-10.496)	(-10.484)	(-8.054)	(-10.072)
Log(target MV)	0.621***	0.597***	0.521***	0.577***
	(5.792)	(5.542)	(4.354)	(5.321)
% paid in cash	0.020***	0.022***	0.021***	0.022***
	(3.250)	(3.577)	(3.519)	(3.664)
% paid in stock	-0.023***	-0.018***	-0.022***	-0.020***
	(-3.761)	(-2.945)	(-3.678)	(-3.315)
Cross-industry	0.083	-0.013	0.095	0.277
	(0.288)	(-0.046)	(0.332)	(0.940)
Tender offer	0.673*	0.642	0.605	0.715*
	(1.714)	(1.642)	(1.541)	(1.808)
Friendly deal	-1.991	-1.931	-2.022	-2.250*
	(-1.520)	(-1.487)	(-1.594)	(-1.745)
Competing deal	-0.126	-0.169	-0.154	-0.173
	(-0.198)	(-0.271)	(-0.242)	(-0.275)
Merger of equals	0.666	0.467	0.521	0.680

	(0.608)	(0.426)	(0.474)	(0.622)
Cross-state	0.332 (0.714)	0.304 (0.656)	0.360 (0.773)	0.302 (0.649)
Cross-city	-0.812 (-1.141)	-0.788 (-1.114)	-0.814 (-1.146)	-0.824 (-1.158)
|Trust|	-3.695 (-0.915)	-3.958 (-0.979)	-3.576 (-0.888)	-3.674 (-0.911)
|Hierarchy|	-1.601 (-0.306)	-1.838 (-0.354)	-1.803 (-0.346)	-1.528 (-0.295)
|Individualism|	5.885 (1.252)	5.831 (1.246)	5.965 (1.275)	5.248 (1.123)
Constant	8.568*** (4.549)	10.008*** (5.151)	7.374*** (4.014)	8.477*** (4.669)
Observations	3225	3228	3228	3228
Adjusted R^2	0.111	0.117	0.114	0.114
Year FE	Yes	Yes	Yes	Yes

Table 5. Post-deal operating performance of the combined company and time zone differences

The sample consists of 3228 public mergers and acquisitions (M&A) in the US completed between 1990 and 2016 (from SDC). The dependent variable is the change in industry-adjusted (three-digit SIC) return on assets (ROA) of the combined company. Year 0 is the deal completion year. ROA is calculated as earnings before interest and tax over assets. *Time diff* is the absolute value of the time zone difference between the headquarters of the acquirer and the target. In column (1) of Panel B, *High_Impact* equals one if the ratio of total employee number to total sales of the combined firm is above the sample median, and zero otherwise. In column (2) of Panel B, *High_Impact* equals one if the total number of employees of the combined company is below the sample median, and zero otherwise. In column (3) of Panel B, *High_Impact* equals one if $\min(N_{acq}, N_{tar})/N_{com}$ is above the sample median, and zero otherwise. In column (4) of Panel B, *High_Impact* equals one if the acquirer or the target is from high-technology industries (two-digit SIC codes 28, 35, 36, 73, and 87), and zero otherwise. *Low_Impact* equals one minus *High_Impact*. Log(*distance*) is the logarithm of the great circle distance between the headquarters of the acquirer and the target. Other variables are defined in Appendix I. In Panel B, deal characteristics control variables are included but their coefficient estimates are not presented for brevity. Announcement year fixed effects are included. Standard errors are adjusted for clustering on acquirers, and *t*-statistics are presented in parentheses. Statistical significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

Panel A. Change in return on assets and time zone differences

	(1)	(2)	(3)
		ΔROA (%)	
Variable	From year 0 to +1	From year +1 to +2	From year +2 to +3
Time diff	-0.524***	0.477***	0.404***
	(-2.681)	(2.784)	(2.706)
Log(distance)	-0.035	-0.131	0.092
	(-0.276)	(-1.077)	(0.906)
Log(acquirer MV)	0.097	-0.334***	-0.080
	(1.129)	(-4.226)	(-1.250)
Log(target MV)	0.098	0.279***	0.109
	(1.064)	(3.231)	(1.577)
% paid in cash	-0.005	0.007	-0.001
	(-0.935)	(1.401)	(-0.156)
% paid in stock	-0.019***	0.008	0.000
	(-3.434)	(1.455)	(0.072)
Cross-industry	0.068	0.041	-0.020
	(0.238)	(0.157)	(-0.089)
Tender offer	-0.359	-0.809**	0.346
	(-1.117)	(-2.488)	(1.205)
Friendly deal	1.415	-1.427**	-0.943
	(0.948)	(-2.094)	(-0.992)
Competing deal	0.770	-0.505	-0.757*
	(1.452)	(-1.009)	(-1.709)
Merger of equals	1.023	-0.672	0.941
	(1.561)	(-0.877)	(1.416)
Cross-state	-0.053	0.125	-0.178

	(-0.119)	(0.290)	(-0.498)
Cross-city	1.152*	0.421	0.349
	(1.735)	(0.654)	(0.592)
|Trust|	0.665	-0.294	1.208
	(0.168)	(-0.083)	(0.340)
|Hierarchy|	4.753	-4.747	-3.093
	(0.967)	(-1.027)	(-0.715)
|Individualism|	2.030	-0.447	-2.733
	(0.464)	(-0.115)	(-0.725)
Constant	-5.161**	2.426**	0.711
	(-2.404)	(1.976)	(0.437)
Observations	2887	2632	2402
Adjusted R^2	0.030	0.013	0.018
Year FE	Yes	Yes	Yes

Panel B. Changes in return on assets from year 0 to +1 and time zone differences interacted with dummy variables

	(1)	(2)	(3)	(4)
	ΔROA (%) from year 0 to +1			
	High_Impact=			
Variable	High labor intensity	Small employee number	High labor balance	High-tech industries
Time diff×High_Impact	-0.745***	-0.698**	-0.518*	-0.620**
	(-2.872)	(-2.403)	(-1.842)	(-2.252)
Time diff×Low_Impact	-0.282	-0.289	-0.519**	-0.273
	(-1.310)	(-1.579)	(-2.529)	(-1.415)
High_Impact	-0.028	-0.045	-0.036	-0.043
	(-0.226)	(-0.359)	(-0.284)	(-0.346)
Log(distance)	0.019	-0.767*	-0.551	-1.189***
	(0.055)	(-1.851)	(-1.590)	(-3.144)
Log(acquirer MV)	0.063	-0.056	0.000	0.139
	(0.701)	(-0.558)	(0.003)	(1.588)
Log(target MV)	0.110	0.077	0.180*	0.032
	(1.192)	(0.812)	(1.709)	(0.340)
Constant	-4.912**	-3.918*	-4.542**	-5.033**
	(-2.163)	(-1.799)	(-2.114)	(-2.369)
Observations	2884	2887	2887	2887
Adjusted R^2	0.031	0.034	0.030	0.040
Deal characteristics	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table 6. Post-deal layoffs, and time zone differences

The sample consists of 3228 public mergers and acquisitions (M&A) in the US completed between 1990 and 2016 (from SDC). The logistic regression model is used in this table. In Panel A, the dependent variable is the layoffs in the combined company in years +1, +2 and +3, in columns (1), (2) and (3), respectively. Year 0 is the deal completion year. *Layoffs* is an indicator variable that equals one if the number of employees decreases by more than 20% during the year and zero otherwise. In Panel B, the dependent variable equals one if the combined firm has a layoff during year +1 to +3 and zero otherwise. *Time diff* is the absolute value of the time zone difference between the headquarters of the acquirer and the target. In column (1) of Panel B, *High_Impact* equals one if the ratio of total employee number to total sales of the combined firm is above the sample median, and zero otherwise. In column (2) of Panel B, *High_Impact* equals one if the total number of employees of the combined company is below the sample median, and zero otherwise. In column (3) of Panel B, *High_Impact* equals one if $\min(N_{acq}, N_{tar})/N_{com}$ is above the sample median, and zero otherwise. In column (4) of Panel B, *High_Impact* equals one if the acquirer or the target is from high-technology industries (two-digit SIC codes 28, 35, 36, 73, and 87), and zero otherwise. *Low_Impact* equals one minus *High_Impact*. Log(*distance*) is the logarithm of the great circle distance between the headquarters of the acquirer and the target. Deal characteristics control variables are included but their coefficient estimates are not presented for brevity. Announcement year fixed effects are included. Standard errors are adjusted for clustering on acquirers, and *t*-statistics are presented in parentheses. Statistical significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

Panel A.

	(1)	(2)	(3)
		Layoffs	
Variable	Year +1	Year +2	Year +3
Time diff	0.208*	0.265**	0.121
	(1.706)	(2.329)	(1.009)
Log(distance)	0.006	-0.023	0.042
	(0.066)	(-0.254)	(0.428)
Log(acquirer MV)	-0.210***	-0.183***	-0.321***
	(-3.934)	(-3.308)	(-5.217)
Log(target MV)	0.021	0.093	0.162**
	(0.316)	(1.472)	(2.338)
Constant	-2.767**	-2.833***	-2.794
	(-2.089)	(-3.289)	(-1.620)
Observations	2755	2591	2351
Pseudo R^2	0.081	0.072	0.070
Deal characteristics	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Panel B. Layoffs and time zone differences interacted with dummy variables

	(1)	(2)	(3)	(4)
	Layoffs in year +1 to +3			
	High_Impact=			
Variable	High labor intensity	Small employee number	High labor balance	High-tech industries
Time diff×High_Impact	0.227***	0.192**	0.181*	0.039

	(2.615)	(2.088)	(1.946)	(0.440)
Time diff×Low_Impact	0.054	0.098	0.123	0.250***
	(0.508)	(1.004)	(1.328)	(2.633)
High_Impact	0.014	0.019	0.019	0.021
	(0.220)	(0.301)	(0.298)	(0.342)
Log(distance)	-0.023	-0.011	-0.110	0.655***
	(-0.147)	(-0.057)	(-0.659)	(4.112)
Log(acquirer MV)	-0.227***	-0.223***	-0.245***	-0.249***
	(-5.220)	(-4.957)	(-4.856)	(-5.983)
Log(target MV)	0.087*	0.082*	0.091*	0.100**
	(1.821)	(1.685)	(1.656)	(2.081)
Constant	-1.959**	-1.919**	-1.773*	-1.999**
	(-2.043)	(-1.987)	(-1.849)	(-2.057)
Observations	2914	2916	2916	2916
Pseudo R^2	0.068	0.066	0.066	0.074
Deal characteristics	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table 7. Post-deal layoffs and operating performance recovery

The sample consists of 3228 public mergers and acquisitions (M&A) in the US completed between 1990 and 2016 (from SDC). In column (1) the dependent variable is the change in industry-adjusted (three-digit SIC) return on assets (ROA) (%) of the combined company from year +1 to year +2, where year 0 is the deal completion year. In column (2) the dependent variable is the change in industry-adjusted ROA of the combined company from year +1 to year +3. ROA is calculated as earnings before interest and tax over assets. *Time diff* is the absolute value of the time zone difference between the headquarters of the acquirer and the target. *Layoffs* is an indicator variable that equals one if the combined company experiences a layoff (decreases in employee number by more than 20%) in either year +1 or +2 in column (1), and in year +1, +2 or +3 in column (2), and zero otherwise. Log(*distance*) is the logarithm of the great circle distance between the headquarters of the acquirer and the target. Deal characteristics control variables are included but their coefficient estimates are not presented for brevity. Announcement year fixed effects are included. Standard errors are adjusted for clustering on acquirers, and *t*-statistics are presented in parentheses. Statistical significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

	(1)	(2)
	ΔROA (%)	
Variable	From year +1 to +2	From year +1 to +3
Time diff	0.330*	0.628***
	(1.921)	(2.633)
Time diff×Layoffs	1.103**	1.701**
	(1.984)	(2.278)
Layoffs	0.899	0.359
	(1.168)	(0.415)
Log(distance)	-0.143	-0.068
	(-1.170)	(-0.401)
Log(acquirer MV)	-0.289***	-0.338***
	(-3.635)	(-2.912)
Log(target MV)	0.251***	0.401***
	(2.919)	(3.207)
Constant	2.373*	3.011
	(1.955)	(1.285)
Observations	2591	2377
Adjusted R^2	0.026	0.032
Deal characteristics	Yes	Yes
Year FE	Yes	Yes

Table 8. Acquirer and target announcement return, offer premium and time zone difference

The sample consists of 3228 public mergers and acquisitions (M&A) in the US completed between 1990 and 2016 (from SDC). The dependent variable in Panel A is the three-day (-1, +1) cumulative abnormal return (%) of the acquiring firms around the M&A announcement. The dependent variable in Panel B is the three-day (-1, +1) cumulative abnormal return (%) of the target firms around the M&A announcement. The dependent variable in Panel C is the offer premium (%), calculated as the offer price divided by the target's share price 42 trading days before deal announcement. *Time diff* is the absolute value of the time zone difference between the headquarters of the acquirer and the target. Log(*distance*) is the logarithm of the great circle distance between the headquarters of the acquirer and the target. Other variables are defined in Appendix I. Control variables included are presented at the bottom. Announcement year fixed effects are included. Standard errors are adjusted for clustering on acquirers, and *t*-statistics are presented in parentheses. Statistical significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

Panel A. Acquirer announcement returns and time zone differences

	(1)	(2)	(3)
Variable	Acquirer CAR (-1, +1) (%)		
Time diff	-0.586***	-0.542**	-0.447**
	(-2.800)	(-2.447)	(-2.066)
Log(distance)	0.202**	0.202	0.214
	(1.967)	(1.384)	(1.343)
Log(acquirer MV)	0.065	-0.102	-0.098
	(0.481)	(-0.752)	(-0.714)
Log(target MV)	-0.591***	-0.459***	-0.370***
	(-5.871)	(-4.355)	(-2.692)
Constant	-0.644	1.649	-0.577
	(-0.430)	(0.886)	(-0.277)
Observations	3228	3228	2800
Adjusted R^2	0.029	0.063	0.082
Deal characteristics	No	Yes	Yes
Firm financials	No	No	Yes
Year FE	Yes	Yes	Yes

Panel B. Target announcement returns and time zone differences

Variable	(1)	(2)	(3)
	Target CAR (-1, +1) (%)		
Time diff	-0.891	-0.737	-0.668
	(-1.571)	(-1.138)	(-0.923)
Log(distance)	0.480*	0.342	0.068
	(1.785)	(0.768)	(0.132)
Log(acquirer MV)	4.539***	3.763***	3.907***
	(11.650)	(9.494)	(8.728)

Log(target MV)	-6.240*** (-14.168)	-5.466*** (-11.740)	-5.733*** (-11.605)
Constant	18.442*** (3.773)	28.597*** (4.784)	32.122*** (4.918)
Observations	3228	3228	2800
Adjusted R^2	0.136	0.164	0.166
Deal characteristics	No	Yes	Yes
Firm financials	No	No	Yes
Year FE	Yes	Yes	Yes

Panel C. Offer premium and time zone differences

Variable	(1)	(2)	(3)
		Offer premium (%)	
Time diff	-0.056 (-0.057)	0.262 (0.240)	-0.376 (-0.319)
Log(distance)	0.290 (0.672)	0.627 (0.856)	0.409 (0.502)
Log(acquirer MV)	4.661*** (8.252)	4.104*** (7.082)	3.595*** (5.096)
Log(target MV)	-7.305*** (-12.193)	-6.588*** (-10.446)	-6.410*** (-8.675)
Constant	48.379*** (5.263)	54.549*** (4.979)	57.191*** (4.748)
Observations	3083	3083	2667
Adjusted R^2	0.083	0.098	0.104
Deal characteristics	No	Yes	Yes
Firm financials	No	No	Yes
Year FE	Yes	Yes	Yes

Table 9. Alternative time window for announcement return calculation

The sample consists of 3228 public mergers and acquisitions (M&A) in the US completed between 1990 and 2016 (from SDC). The dependent variable is the five-day (-2, +2) cumulative abnormal return (%) of the combined company around the M&A announcement. *Time diff* is the absolute value of the time zone difference between the headquarters of the acquirer and the target. In column (1) of panel B, *High_Impact* equals one if the ratio of total number of employees to total sales of the combined firm is above the sample median, and zero otherwise. In column (2) of panel B, *High_Impact* equals one if the total number of employees of the combined company is below the sample median and zero otherwise. In column (3) of panel B, *High_Impact* equals one if $\min(N_{acq}, N_{tar})/N_{com}$ is above the sample median and zero otherwise. In column (4) of panel B, *High_Impact* equals one if the acquirer or target is from high high-technology industries (two-digit SIC codes 28, 35, 36, 73, and 87) and zero otherwise. *Low_Impact* equals one minus *High_Impact*. Log(*distance*) is the logarithm of the great circle distance between the headquarters of the acquirer and the target. Other variables are defined in Appendix I. Control variables included are presented at the bottom. Announcement year fixed effects are included. Standard errors are adjusted for clustering on acquirers, and *t*-statistics are presented in parentheses. Statistical significance at the 1%, 5%, and 10% levels is indicated by ***, **, and *, respectively.

Panel A. Combined announcement returns (-2, +2) and time zone differences

Variable	(1)	(2)	(3)
Time diff	-0.558***	-0.492**	-0.360
	(-2.805)	(-2.270)	(-1.552)
Log(distance)	0.165*	-0.001	-0.123
	(1.676)	(-0.008)	(-0.736)
Log(acquirer MV)	-0.949***	-1.248***	-1.257***
	(-7.839)	(-9.867)	(-8.596)
Log(target MV)	0.344***	0.623***	0.585***
	(3.048)	(5.238)	(3.852)
Constant	5.011***	9.210***	8.352***
	(3.549)	(4.593)	(3.652)
Observations	3228	3228	2800
Adjusted R^2	0.052	0.092	0.096
Deal characteristics	No	Yes	Yes
Firm financials	No	No	Yes
Year FE	Yes	Yes	Yes

Panel B. Combined announcement returns (-2, +2) and time zone differences interacted with dummy variables

	(1)	(2)	(3)	(4)
	High_Impact=			
Variable	High labor intensity	Small employee number	High labor balance	High-tech industries
Time diff×High_Impact	-0.859***	-0.809***	-0.833***	-0.671**
	(-3.103)	(-2.631)	(-2.616)	(-2.297)
Time diff×Low_Impact	-0.115	-0.067	-0.209	-0.191
	(-0.469)	(-0.306)	(-0.981)	(-0.816)
High_Impact	-0.001	-0.013	-0.002	-0.002

	(-0.010)	(-0.087)	(-0.011)	(-0.016)
Log(distance)	0.047 (0.120)	-1.298*** (-2.779)	1.186*** (2.746)	-0.638 (-1.467)
Log(acquirer MV)	-1.289*** (-10.071)	-1.511*** (-10.314)	-1.132*** (-7.397)	-1.222*** (-9.430)
Log(target MV)	0.619*** (5.173)	0.585*** (4.867)	0.522*** (3.828)	0.577*** (4.765)
Constant	9.726*** (4.728)	11.354*** (5.265)	8.171*** (4.001)	9.275*** (4.644)
Observations	3225	3228	3228	3228
Adjusted R^2	0.095	0.100	0.094	0.095
Deal characteristics	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes