# Cross-border acquisitions: Do labor regulations affect acquirer returns?

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**Abstract**
Do cross-country differences in labor regulations shape (1) acquiring firms' announcement returns and post-acquisition profits, costs, and revenues from cross-border deals, (2) the selection of cross-border targets, or (3) the success rates of cross-border offers? We discover that acquiring firms enjoy smaller abnormal returns and post-deal performance gains with targets in stronger labor protection countries; acquirers are more likely to purchase labor-dependent targets in weak labor regulation countries and more likely to use cross-border acquisitions to enter new markets when targets are in stronger labor regulation countries; and offer success rates fall when targets are in stronger labor regulation countries.

## INTRODUCTION

What factors shape cross-border mergers and acquisitions? This is not only a central question in academic research on international business decisions, it is also a central question for firms making investment decisions. Moreover, as some countries increasingly restrict international economic transactions and protect domestic labor from international influences, understanding the impact of national policies on the expected value of cross-border mergers and acquisitions is likely to become even more central to businesses. Our goal in this paper is to explore how labor regulations affect cross-border deals.

Extensive research demonstrates that labor regulations – regulations that affect the costs of hiring, firing, and adjusting employee hours and compensation – materially influence shareholder value and firm performance (e.g., Ruback & Zimmerman, 1984; Abowd, 1989; Atanassov & Kim, 2009). Yet, apart from the few notable exceptions discussed below (e.g., Alimov, 2015; Dessaint, Golubov, & Volpin, 2017), researchers have devoted little attention to evaluating the impact of labor regulations on cross-country mergers and acquisitions. This is surprising because international acquisitions have averaged almost $800 billion per annum since 2000. These acquisitions account for almost 40% of total acquisitions, and there

are large and varying differences in labor regulations across countries.

In this paper, we evaluate three questions concerning the effects of labor regulations on cross-border acquisitions: What is the impact of cross-country differences in labor regulations on (1) the reaction of acquiring firms' stock prices and post-acquisition profits, costs, and revenues to cross-border deals, (2) the selection of cross-border target firms, and (3) the offer prices and success rates of cross-border offers? We focus on cross-country differences in labor regulations as a primary consideration for many firms seeking to expand production, reduce costs, and exploit synergies through acquisitions is whether to make a domestic or international acquisition. Thus, the comparative appeal of acquisitions involving labor force restructurings depends on the comparative stringency of regulatory impediments to labor force adjustments.

To organize our empirical assessment of these questions, we build a conceptual framework based on the view that shareholders and employees have different interests (e.g., John, Knyazeva, & Knyazeva, 2015; Lin, Schmid, & Xuan, 2018). Shareholders seek to boost equity values, which might involve firing workers, reducing compensation, and restructuring production. Employees focus more on enhancing job security and compensation than on increasing equity values and profits per se. These employee–shareholder conflicts of interest in conjunction with cross-country differences in labor regulations can materially shape cross-border deals. For example, acquiring firms from other countries will find it more difficult to boost profits and valuations through labor force restructurings in a country with comparatively strong labor regulations. Furthermore, to the extent that labor regulations in countries influence the power of labor within firms and the scope for post-acquisition synergies, comparative labor regulations will shape acquirers' selection of target firms and the offer prices and success rates of cross-border offers.

To evaluate the first question of how labor regulations shape announcement returns and post-acquisition profits, revenues, and costs, we need detailed data on individual cross-border deals and comparative labor regulations. We use data from the Securities Data Company on more than 13,000 individual cross-border deals involving 1475 distinct acquirer–target country pairs across 50 countries and 305 industries (based on three-digit SIC codes), covering the period from 1991 through 2017. We construct measures of cumulative abnormal stock returns (CARs) and the change in the return on assets (ROAs). To compute the change in ROA, we use the difference between the post-merger and pre-merger ROA of the combined acquirer–target firm. For the pre-deal ROA, we calculate the ROA of the (artificially) combined acquirer–target firm based on the relative sizes of the two firms. For the post-merger ROA, we use the merged firm's ROA.

We use three measures of labor regulations. First, Botero, Djankov, La Porta, Lopez-De-Silanes, and Shleifer (2004) provide cross-country measures of the degree to which laws impede employers from firing workers, increasing work hours, or using part-time workers. Such interventions increase the costs to employers of adjusting their workforces. The Botero et al. (2004) data have the advantage of focusing on the flexibility of labor markets but the disadvantage of providing only cross-country data with no time variation. Second, the OECD provides panel measures of regulatory impediments to firing workers. Thus, we can exploit the time series dimension of the data to assess the impact of labor regulations on cross-border acquisitions. Third, Aleksynska and Schindler (2011) provide panel data on the proportion of the unemployed covered by unemployment benefits. More generous unemployment benefits might increase labor costs by boosting the reservation wages of the unemployed. Although this third measure does not directly measure the flexibility of labor markets, we include it for comparison purposes. For brevity, we use the phrases "stronger" and "weaker" labor regulations to describe the degree to which laws and policies protect the employed and aid the unemployed.

To identify the impact of labor regulations on announcement returns and post-acquisition profits, revenues, and costs, we use a triple difference-in-differences identification strategy. The strategy not only differentiates by country and time, it also differentiates by the target firm's industry. Specifically, if labor regulations influence the ability of acquirer firms to lower costs and boost

revenues through labor restructurings, the impact of labor regulations on acquirer performance should be especially pronounced when target firms depend heavily on labor, where "labor dependence" is positively related to both labor intensity and the degree to which intertemporal factors frequently incentivize firms to adjust their labor forces. We test this view by differentiating target firms by the degree to which they are in industries that, for technological reasons, depend heavily on labor.

To further enhance identification, we exploit the extraordinary heterogeneity of cross-border deals to address several additional identification concerns. As detailed below, we saturate the regression with fixed effects, deal-specific characteristics, and time-varying controls for acquirer, target, and country traits. Although we do not identify an exogenous shock to one firm acquiring another, we move beyond the standard difference-in-differences strategy to better isolate the relationship between labor regulations and cross-border acquisitions.

This identification strategy requires the differentiation of target firms by labor dependence. We construct two measures of labor dependence that build on the Rajan and Zingales (1998) approach for computing the financial dependence of industries. They use U.S. firms as benchmarks under the assumption that U.S. financial markets are comparatively frictionless such that the use of external finance in the U.S. primarily reflects the technological need for external finance and not regulatory or other frictions. Under the same assumptions, we use data from U.S. firms to create measures of labor dependence. The first measure, *Labor intensive*, focuses on labor intensity and equals 1 for an industry if labor and pension expenses relative to sales are greater than the median across U.S. industries and 0 otherwise.

The second measure of labor dependence, *High labor volatility*, equals 1 if the volatility of employment relative to assets over time is greater than the median across U.S. industries and 0 otherwise. We examine labor market volatility because firms that have high intertemporal volatility in the demand for labor will tend to find labor regulations that impede labor market flexibility more costly than firms that have more constant demand for labor. We then evaluate

whether the sensitivity of the acquiring firms' stock prices and profits to labor regulations is larger when the target firm is in a *Labor intensive* or *High labor volatility* industry.

With respect to the first question, we discover the following. Acquiring firms enjoy smaller abnormal stock returns and worse post-acquisition performance when targets are in countries with stronger labor protection regulations, that is, in countries where regulations increase the cost of adjusting firm workforces. Regarding the sources of these performance differences, we discover that changes in costs and revenues matter. Specifically, when targets are in comparatively strong labor regulation economies, post-acquisition cost reductions and sales growth are smaller. Moreover, and consistent with our identification strategy, all of these effects are especially pronounced when targets are in labor-dependent industries.

We next turn to the second question: Do labor regulations influence the selection of targets in other countries? Specifically, we expect that acquirers are more likely to select labor-intensive targets in countries with comparatively weak labor regulations, where there are greater opportunities to boost profits by economizing on labor costs. Similarly, in selecting a target firm in a country with strong labor regulations, the primary motivation is less likely to be cost savings and more likely to be other goals, such as entering a new market or purchasing a target with an already large share of the domestic market. Furthermore, the finding that acquirer announcement returns and post-acquisition performance tend to be weaker when targets are in comparatively strong labor regulation countries suggests that acquirers tend to select targets in comparatively weak labor regulation countries.

The results are consistent with these predictions. We discover that acquirers are more likely to purchase labor-intensive targets in weak labor regulation countries. The opposite is also true. Firms are less likely to purchase labor-intensive targets in strong labor regulation countries, where labor regulations limit labor restructuring. When acquirers purchase targets in comparatively strong labor regulation countries, we find that those deals generally involve acquirers entering new markets and purchasing targets that already have a large share of the domestic market. At the aggregate

level, we find that comparative labor regulations help account for country–pair differences in the frequency, size, and volume of cross-border deals. That is, a country's firms acquire more targets and spend more on each acquisition in weak labor regulation countries.

Turning to the third question, we examine how labor regulations affect the offer prices and success rates of cross-border offers. As noted above, employees and shareholders tend to have different perspectives, with shareholders seeking to boost profits and valuations and employees concerned about workforce reductions and compensation. This employee–shareholder conflicts of interest framework, therefore, makes the following prediction: When stronger labor regulations enhance the bargaining power of labor, this will tend to reduce the value of the firm to potential acquirers, and increase the likelihood that an offer fails if labor resists the completion of the deal.

Thus, we examine the relationship between comparative labor regulations in the target firm and (1) the "offer premia," which equals the premium over the target's stock price 4 weeks prior to the deal announcement, (2) "months to complete," which equals the number of months between the announcement and completion dates, conditional on acceptance of the offer, and (3) "deal completion," which equals 1 if the deal is completed and 0 if it fails.

We find that labor regulations materially influence deal prices and success rates. Specifically, when targets are in comparatively weak labor regulation countries, we discover that (1) offer premia are larger, (2) time gaps between announcement and completion dates are shorter, and (3) deals fail less frequently. Thus, our findings support a consistent view of how comparative labor regulations shape the announcement returns to, the post-acquisition performance of, the selection of, and the offer success rates of cross-border deals.

Our work relates to two previous papers on labor regulations and international acquisitions. Alimov (2015) examines cross-country differences in labor protection laws and the CARs of targets around an announced acquisition, and the change in the ROAs of the combined firm from year $t + 1$ through year $t + 4$ following the acquisition in year $t$. Our

work is different in that we examine different questions. First, we do not examine the CARs of targets. Following most of the M&A literature (e.g., Harford, 1999; Masulis, Wang, & Xie, 2007, 2009), we examine how acquiring firms' stock prices react to the announcement of a cross-border acquisition. Second, we do not examine the change in the combined firm's ROAs from year $t + 1$ through $t + 4$, which only captures the post-merger period. Rather, we examine the change in the combined firm's ROAs from before the merger until after the merger, as we want to examine the impact of comparative labor regulations on the change in firm performance associated with a cross-border acquisition. Third, we examine the impact of labor regulations on firm costs and revenues, the selection of different types of target firms across countries, and the success rates of cross-border offers, which Alimov (2015) does not. There are also methodological and data differences. We use an enhanced identification strategy with a triple difference-in-differences methodology and have 13,605 observations, while Alimov (2015) has about 300.

Dessaint et al. (2017) show that strengthening employment protection reduces cross-border takeover activity and CARs in 21 developed countries. We expand the sample beyond OECD countries by using the labor regulation indicators from Botero et al. (2004) and Aleksynska and Schindler (2011). Adding these additional indicators is valuable because there is greater variability in labor protection laws outside of the OECD. Furthermore, as emphasized above, we (1) differentiate industries by labor to better identify the impact of labor regulations on foreign investment and (2) address questions concerning how cross-country differences in labor regulations shape (a) post-acquisition changes in costs and revenues, (b) the selection of target firms across countries, and (c) offer success rates.

Our work connects to the literature on comparative institutionalism and comparative corporate governance. For example, Hall and Soskice (2001) stress that "varieties of capitalism," including the nature of labor, shareholder, and manager relationships within firms, shape the operation of economic systems. We focus on one feature of cross-country differences in institutional arrangements –

comparative labor regulations – and assess the implications for cross-border mergers. Similarly, extensive research within the field of international business studies dissects the implications of differences in corporate governance systems, as exemplified by the work of Jackson and Deeg (2008), Aguilera and Jackson (2010), Witt and Jackson (2016), Ellis, Moeller, Schlingemann, and Stulz (2017), Aguilera and Grøgaard (2019), and Jackson and Deeg (2019). Given the connections between labor relations and corporate governance, our work on comparative labor regulations is relevant to this broader literature on comparative corporate governance systems.

Our work also relates to research on the determinants of foreign investment and the implications of cross-border investments. For example, Erel, Liao, and Weisbach (2012) and Erel, Jang, and Weisbach (2015) examine the roles of exchange rates, relative stock market valuations, and corporate governance systems in influencing cross-border acquisitions, and Bjorkman, Stahl, and Vaara (2007) and Morosini, Shane, and Singh (1998) examine the connections between cultural differences and cross-border acquisitions.

Furthermore, building on the seminal studies of international corporate diversification (e.g., Errunza & Senbet, 1981, 1984), researchers examine the impact of cross-border acquisitions on shareholder wealth (e.g., Markides & Ittner, 1994; Aybar & Ficici, 2009; Gande, Schenzler, & Senbet, 2009). We contribute to these lines of research by examining how labor regulations influence stock price reactions to cross-border acquisitions, and show that differences in the cross-border volume and incidence of corporate acquisitions are consistent with these stock price reactions.

The remainder of the paper is organized as follows. "Related Research and Hypothesis Development" section develops our hypotheses. We describe the data in "Data and Preliminary Analyses" section and present the empirical results on CARs and ROAs in "Empirical Results on CARs and Operating Performance" section. In "Sources of Performance Changes, Target Selection, Acquisition Volume, and Offer Success Rates" section, we examine how labor regulations influence the sources of changes in operating performance, the selection of target firms, and the completion rates of cross-border offers as well as the number, value, and deal size of cross-border deals. Our conclusions are presented in "Conclusion".

## RELATED RESEARCH AND HYPOTHESIS DEVELOPMENT

### Related Research on Labor Regulations and Firms
A growing body of research finds that labor regulations shape shareholder value and firm performance. Ruback and Zimmerman (1984) and Abowd (1989) show that labor union power materially lowers earnings and corporate valuations. Lee and Mas (2012) document that when a labor union wins an election, the firm's stock price, profits, and growth rate tend to decline. Atanassov and Kim (2009) show that strong union laws encourage the creation of strong worker–management alliances that protect underperforming managers and foster the interests of workers, with adverse effects on firm performance.

Research also shows that greater worker power within firms tends to alter investment decisions in ways that slow growth, productivity improvements, and innovation. For example, Faleye, Mehrotra, and Morck (2006) find that labor-controlled firms deviate more from value maximization, take fewer risks, and exhibit slower growth and productivity improvements than firms with less-powerful employee influence over firm decisions. Bradley, Kim, and Tian (2017) find that unionization leads to a decline in patent quantity, patent quality, and R&D expenditures. Given these employee–shareholder conflicts, firms naturally take strategic actions to enhance the shareholders' bargaining position within firms. Bronars and Deere (1991) find that shareholders use debt to protect their wealth from workers. That is, by increasing leverage, shareholders reduce the funds that are available to workers. Klasa, Maxwell, and Ortiz-Molina (2009) and Matsa (2010) provide evidence suggesting that firms alter their cash holdings and leverage to gain bargaining advantages over workers.

Furthermore, research results demonstrate that labor regulations influence the nature and success of firm acquisitions within the United States. Tian and Wang (2016) examine close unionization ballots and compare firms that narrowly pass

unionization votes with those that narrowly reject unionization. They find that firms that narrowly vote to unionize are less likely to receive takeover bids, experience smaller announcement returns when receiving offers, and have lower offer premia than similar firms that narrowly vote to reject unionization.

John et al. (2015) evaluate how cross-state differences in right-to-work laws – laws that limit the ability of established unions to require employee membership, payment of union dues, or fees as a condition of employment – shape acquirer returns. They argue that labor unions in states without right-to-work laws oppose both right-to-work laws in other states and acquisitions of firms in other states because such acquisitions may (a) weaken these unions' power and increase support for right-to-work laws in their own state and (b) create within-firm differences regarding unionization and labor relations, with adverse effects on the union.

Focusing on right-to-work laws in the acquirer's state and not on labor laws in the target's state, John et al. (2015) find empirical support for their view. They show that acquirer returns are greater when acquirers are in right-to-work states, suggesting that firms in those states face weaker constraints from their labor unions on cross-state acquisitions.

For the purposes of our evaluation of the impact of labor regulations on international acquisitions, the forces shaping the results in the John et al. (2015) study might be less pronounced. At a broad level, labor unions in the acquirer country might care less – and know less – about labor regulations in other countries than they do about those in their own country. Similarly, as compared to domestic acquisitions, labor unions in the acquirer country might be less concerned that cross-border acquisitions of targets in weaker labor regulation countries will intensify support among politicians in the acquirer country for weaker labor protection laws, or that foreign acquisitions will create within-firm differences in labor regulations that damage unity among the firm's workers.

Thus, labor unions in acquirer countries might express less resistance to cross-border acquisitions of targets in weaker labor regulation countries than the strong resistance that U.S. labor unions in non-right-to-work states express about acquisitions in right-to-work states. As a result, other forces emerging from the employee–shareholder conflicts of interest framework – to which we now turn – might dominate the concerns of acquirer-country unions.

We examine this empirical question in subsequent sections.

## Hypothesis Development and Testable Predictions

To organize our examination of how labor regulations shape cross-border acquisitions, we use a simple framework based on employee–shareholder conflicts of interests (John et al., 2015). This framework yields testable implications regarding (1) acquirer announcement returns and post-acquisition performance, (2) the selection of target firms, and (3) the offer price, duration of negotiations, and success rate of cross-border acquisition attempts. We evaluate these predictions in the remainder of the paper.

Employees and shareholders often have conflicting objectives with respect to post-acquisition reforms, such as labor force restructuring, incentive pay, and capital investments that demand different skills from employees. Furthermore, employees and shareholders often differ with respect to risk. Because salaried workers do not gain as much from firm success as shareholders, employees tend to be more risk averse about the potential changes in corporate investments following mergers. This framework suggests, therefore, that stronger labor regulations intensify the manifestation of employee–shareholder conflicts of interest on firm behavior. With stronger labor regulations in the target country, acquiring firms will find it more difficult to realize post-acquisition synergies through labor force restructurings, which in turn will impede the ability of firms to cut labor costs and reorganize production to lower prices, increase sales, and boost profits and valuations.

The first implications emerging from this employee–shareholder conflicts of interest framework focus on announcement returns and post-acquisition performance. Namely, stock price reactions to announced cross-border deals are likely to be smaller – and post-acquisition performance gains are likely to be weaker – when targets are in comparatively strong labor regulation countries because stronger labor regulations impede the realization of post-acquisition synergies. That is, acquiring firms face greater barriers to restructuring labor forces to cut costs and boost sales when targets are in economies with comparatively strong labor regulations. Moreover, these effects are likely to be greater when targets are more labor intensive. With more labor-intensive targets, the possibilities of boosting firm value through labor restructuring

tend to be greater than for capital-intensive targets. Therefore, if strong labor regulations limit labor restructuring, there will be an especially pronounced adverse effect on potential gains from purchasing labor-intensive targets.

Second, the employee–shareholder conflicts of interest framework provides insights into – and testable predictions regarding – the selection of target firms and target countries. When weak labor regulations increase the opportunities for boosting profits through labor restructurings, acquirers are more likely to select labor-intensive firms. This implies that acquirers are more likely to purchase labor-dependent targets in countries with comparatively weak labor regulations. Similarly, when strong labor regulations limit labor restructuring opportunities, acquirers are more likely to select capital-intensive firms and are more likely to select targets for reasons other than labor cost savings. This implies that when acquirers purchase targets in strong labor regulation countries, the primary motivation is less likely to be cost savings and more likely to be other goals, such as entering a new market or purchasing a target with an already large share of the domestic market. Thus, the interaction between employee–shareholder conflicts of interest and cross-country differences in labor protection laws might materially influence the differential selection of target firms across countries.

On the selection of target countries, this framework suggests the following. If stronger labor regulations tend to be associated with weaker acquirer announcement returns and post-acquisition performance, then this should be reflected in the choice of target countries. Namely, we would expect a country's firms to be more aggressive in acquiring targets in countries with comparatively weak labor regulations.

Third, the framework also suggests that labor regulations influence the price that an acquirer offers to a target and the duration – and likely success – of negotiations following such an offer. Stronger labor regulations tend to increase the power of labor within firms, making it easier for labor to block mergers by making the target less appealing to acquirers and making it more complex, time consuming, and costly to complete negotiations on a proposed cross-border acquisition. In strengthening the bargaining position of labor, stronger labor regulations tend to reduce the amount that acquirers offer to targets, increase the duration of negotiations, and decrease the likelihood that the offer ultimately succeeds.

# DATA AND PRELIMINARY ANALYSES[1]

## Labor Regulations
We use three measures of national protections of workers and the unemployed. First, *Employment law* measures the degree to which laws, regulations, and policies impede employers from firing workers, increasing work hours, or using part-time workers. *Employment law* was constructed by Botero et al. ([2004](#)) to reflect the incremental cost to employers of deviating from a hypothetical rigid contract in which the conditions of employment are specified for all employees and no employee can be fired. More specifically, *Employment law* is larger when it is more costly for employers to (1) use alternative employment contracts, such as part-time employment, to avoid limits on terminating workers or providing mandatory benefits; (2) increase the number of hours worked, either because of limits on hours worked or because of mandatory overtime premia; and (3) fire workers, where the costs reflect the notice period, severance pay, any mandatory penalties, and the costs associated with following the procedures in dismissing workers. Thus, besides providing information on the degree to which laws protect employees, *Employment law* is an index of the costs to firms of adjusting their labor forces.

Second, the *Employment protection law* index (*EPL*) measures the costs and impediments to dismissing workers. Compiled by the OECD, *EPL* incorporates three aspects of dismissal protection: (1) procedural impediments that employers face when starting to fire workers, such as notification procedures and consultation requirements; (2) the length of the notice period and the generosity of severance pay, which vary according to the workers' tenure; and (3) the difficulty of dismissal, as determined by the circumstances in which it is possible to fire workers and the compensation and reinstatement possibilities following unfair dismissal. The *EPL* index is measured annually, so it captures country-level changes in employment protection.

Third, *Unemployment coverage* equals the ratio of the number of recipients of unemployment benefits to the number of unemployed (Aleksynska & Schindler, [2011](#)). *Unemployment coverage* provides information on the generosity of unemployment benefits. To the extent that such benefits increase the reservation wages of unemployed workers and reduce the rate at which unemployed workers accept job offers, *Unemployment coverage* provides information on the costs to firms of hiring workers.

**Table 1** Summary statistics

| Variable | N | Mean | SD | P25 | Median | P75 |
|---|---|---|---|---|---|---|
| *Panel A: Deal-/firm-level variables* | | | | | | |
| CAR (− 2, + 2) (%) | 13,605 | 1.441 | 8.013 | − 2.256 | 0.648 | 4.284 |
| CAR (− 1, + 1) (%) | 13,605 | 1.331 | 6.568 | − 1.679 | 0.524 | 3.478 |
| Unemployment coverage_[t − a] | 13,139 | − 0.013 | 0.439 | − 0.19 | − 0.007 | 0.173 |
| Employment law_[t − a] | 13,495 | 0.033 | 0.264 | − 0.065 | 0.021 | 0.167 |
| EPL_[t − a] | 12,124 | 0.07 | 1.313 | − 0.775 | 0.023 | 0.941 |
| log [Total assets] | 13,605 | 6.5 | 2.287 | 4.967 | 6.528 | 8.072 |
| Cash flow | 13,605 | 0.078 | 0.155 | 0.06 | 0.098 | 0.14 |
| Tobin's Q | 13,605 | 2.43 | 2.354 | 1.296 | 1.731 | 2.582 |
| Leverage | 13,605 | 0.199 | 0.167 | 0.047 | 0.182 | 0.306 |
| Stock runup | 13,605 | 0.145 | 0.626 | − 0.147 | 0.033 | 0.251 |
| Relative size | 13,605 | 0.375 | 1.406 | 0.017 | 0.06 | 0.204 |
| Unrelated deal | 13,605 | 0.427 | 0.495 | 0 | 0 | 1 |
| Private target dummy | 13,605 | 0.496 | 0.5 | 0 | 0 | 1 |
| Subsidiary target dummy | 13,605 | 0.409 | 0.492 | 0 | 0 | 1 |
| Public target dummy | 13,605 | 0.096 | 0.294 | 0 | 0 | 0 |
| All cash deal | 13,605 | 0.319 | 0.466 | 0 | 0 | 1 |
| Friendly deal | 13,605 | 0.994 | 0.076 | 1 | 1 | 1 |
| Tender offer | 13,605 | 0.045 | 0.206 | 0 | 0 | 0 |
| *Panel B: Country–pair/country-level variables* | | | | | | |
| Unemployment coverage | 1342 | 0.379 | 0.416 | 0 | 0.343 | 0.592 |
| Employment law | 49 | 0.479 | 0.186 | 0.343 | 0.468 | 0.65 |
| EPL | 803 | 2.187 | 0.814 | 1.595 | 2.23 | 2.702 |
| log [GDP per capita] | 1342 | 9.216 | 1.337 | 8.192 | 9.521 | 10.309 |
| log [Population] | 1350 | 17.044 | 1.352 | 15.947 | 17.097 | 17.923 |
| WGI | 1350 | 3.991 | 5.236 | − 0.801 | 4.908 | 8.893 |
| log [Geographic distance] | 2450 | 8.611 | 0.96 | 7.95 | 8.989 | 9.266 |
| Same language | 2450 | 0.04 | 0.196 | 0 | 0 | 0 |
| Same religion | 2450 | 0.193 | 0.395 | 0 | 0 | 0 |
| GDP growth_[t − a] | 13,605 | − 0.001 | 2.037 | − 0.864 | − 0.009 | 0.788 |
| Unemployment rate_[t − a] | 13,605 | 0.284 | 3.961 | − 1.76 | 0.06 | 2.16 |
| Exchange rate return_[t − a] | 13,605 | − 0.002 | 0.087 | − 0.054 | 0 | 0.051 |
| Stock market return_[t − a] | 13,605 | 0.006 | 0.164 | − 0.084 | 0.005 | 0.093 |
| Control of corruption_[t − a] | 13,605 | − 0.141 | 0.853 | − 0.507 | − 0.102 | 0.366 |
| Polity_[t − a] | 13,605 | − 0.172 | 3.074 | 0 | 0 | 0 |

This table presents summary statistics for each variable. In Panel A, the sample contains all completed cross-border acquisitions from SDC between 1991 and 2017. In Panel B, the sample contains relevant country-level or country–pair level data. Appendix 1 provides variable definitions.

As *Unemployment coverage* is measured annually, we use this measure along with *EPL* to assess the time series relationship between labor protection policies and cross-border acquisitions. A disadvantage of *Unemployment coverage* is that it only measures the proportion of unemployed workers who receive benefits, it does not measure other factors that alter the costs to firms of changing labor contracts. Because it is not a direct measure of labor market flexibility, which is the conceptual focus of our analyses, we use *Unemployment coverage* as an additional indicator for comparison purposes.

Panel B of Table 1 presents summary statistics of country and country–pair characteristics. *Unemployment coverage* is 0.38, indicating that across all

country–year observations unemployment insurance recipients represent 38% of the unemployed. The average level of *Employment law* and *EPL* is 0.48 and 2.19, respectively. Online Appendix 2 provides the values across countries.

**Differentiating Industries by Labor Dependence**
A key component of our identification strategy is differentiating industries by labor dependence. To measure the degree to which an industry (three-digit SIC code) is labor dependent, we construct and use two benchmark indicators based on U.S. data. *Labor intensive* equals 1 for an industry if the average ratio of labor and pension expenses to sales is greater than the median across the sample and 0 otherwise.

Specifically, using U.S. firms, we first calculate the labor cost ratio (the ratio of labor and pension expenses to sales) for each firm in each year. Then we calculate the average labor cost ratio for every three-digit SIC industry, and call this figure the "labor intensity of an industry." Finally, we define the *Labor intensive* indicator as equal to 1 if the labor intensity of a target industry is greater than the sample median and 0 otherwise. Using this *Labor intensive* indicator from U.S. data to benchmark industries, we test whether acquirer stock returns and profits are more responsive to labor regulations when the target is in a *Labor intensive* industry.

*High labor volatility* equals 1 if the standard deviation of the number of employees relative to the value of plant, property, and equipment (PPE) assets over time for firms in an industry is greater than the sample median and 0 otherwise. Specifically, using U.S. firms, we first calculate the labor–capital ratio (the number of employees relative to the value of PPE assets) for each firm in each year. Next, we calculate the standard deviation of this labor–capital ratio for each firm during our sample period. Then, we compute the average standard deviation for every three-digit SIC industry and call this the "labor volatility of an industry." Finally, we set the *High labor volatility* indicator as 1 if the labor volatility of the target industry is greater than the sample median and 0 otherwise. That is, using the U.S. economy to benchmark industries, we construct this proxy of the degree to which firm performance in a particular industry depends heavily on labor market flexibility. We then test whether acquirer stock returns and profits are particularly responsive to labor regulations when the target is in a *High labor volatility* industry.

## Cross-Border Acquisitions
The Securities Data Company (SDC) database provides information on cross-border acquisitions. Cross-border acquisitions are deals both announced and completed from 1991 through 2017, in which the acquirer and the target firm are publicly listed, privately owned, or a subsidiary. Following Erel et al. (2012), we exclude leveraged buyouts, spin-offs, recapitalizations, repurchases, self-tenders, exchange offers, privatizations, and transactions that do not disclose the value of the deal.

After merging the SDC data with the other data discussed below, we have a maximum of 13,605 cross-border deals in our regression analyses. The data cover 50 countries over the period from 1991 through 2017.

In our sample period, there are 1475 country pairs with nonzero cross-border deals; 3431 acquirers make only one cross-border acquisition; 1976 acquirers make 2–4 cross-border deals; and 594 acquirers make five or more cross-border acquisitions.

## Acquirer CARs
We use deal-level data to assess the acquiring firms' cumulative abnormal returns (CARs) following cross-border acquisitions. Following Masulis et al. (2007) and Ishii and Xuan (2014), we further restrict our definition of a cross-border acquisition in four ways. First, the cross-border deal must involve a publicly listed acquirer. Second, we only examine cases in which the acquirer obtains full control (100% ownership of the target) and was not a majority stakeholder before the acquisition. Third, we eliminate small deals (less than $1 million) and financial firms, as there are intensive regulatory restrictions on cross-border acquisitions of financial firms. Nevertheless, the deal-level results are quite robust to using alternative definitions of cross-border acquisitions, such as defining an acquisition as obtaining a majority stake, rather than a 100% stake in the target, or including financial firms.

To calculate acquirer CARs around the acquisition announcement dates, we start with stock price data from Datastream for non-U.S. firms and from CRSP for U.S. firms. We use international exchange rates from Datastream to compute all returns in U.S. dollars. Thus, the dollar-denominated daily return for firm $i$ in country $j$ on day $t$ is

$$R_{i,j,t} = \frac{\left[ P_{i,j,t} X\left(\frac{\$}{j}\right)_t \right]}{\left[ P_{i,j,t-1} X\left(\frac{\$}{j}\right)_{t-1} \right]} - 1, \qquad (1)$$

where $P_{i,j,t}$ is the local currency stock price of firm $i$ in country $j$ on day $t$, and $X(\$/j)_t$ is the spot exchange rate (dollars per local currency) on day $t$. As shown in Online Appendix 3, the results are robust to using local currency, instead of dollar-denominated, returns.

We then estimate CARs using the two-factor international market model, as in Bris and Cabolis (2008). The two factors are the local market return and the world market return, both computed in U.S. dollars. We use the broadest equity market index for each country's local market returns and the MSCI world index for world market returns. Thus, we run the regression

$$R_{ijt} = \alpha_i + \beta_i^m R_{mjt} + \beta_i^w R_{wt} + \varepsilon_{it}, \qquad (2)$$

where $R_{ijt}$ is the dollar-denominated daily stock return for firm $i$ in country $j$, $R_{mjt}$ is the local market return in country $j$, and $R_{wt}$ is the world market return. The estimation uses 200 trading days from event day $-210$ to event day $-11$, and computes 5-day CARs and 3-day CARs from $\varepsilon$ during the event window $(-2, +2)$ and $(-1, +1)$ respectively, where day 0 is the acquisition announcement date, with one CAR per deal.

## Change of ROA, Costs, and Revenues

We use deal-level data to measure the change in a firm's operating performance, costs, and revenues when it acquires another firm. To measure the change in operating performance, we use the change in the firm's return on assets ($\Delta ROA$). Specifically, we calculate the difference between the post-acquisition merged firm's ROA ($ROA_{firm}$) and the pre-acquisition combined acquirer–target firm's ROA, where the pre-acquisition combined acquirer–target firm's ROA is equal to the weighted average of the acquirer's $ROA_a$ and the target's $ROA_t$ before the cross-border deal (year $-1$). The weights are based on the total assets of each firm in the year before the acquisition (year $-1$). Post-acquisition ROA is equal to the merged firm's 3-year average ROA in the post-merger years (years $+1$, $+2$, and $+3$).

Formally,

$$\Delta ROA = ROA_{firm} - (ROA_a * w_a + ROA_t * w_t), \quad (3)$$

where $w_a$ is the ratio of the acquirer's assets to the total assets of the combined acquirer–target in the year before the acquisition (year $-1$), and $w_t$ is defined analogously as the ratio of the target's assets to the total assets of the combined acquirer–target in year $-1$. As (a) we only have ROA for publicly traded acquirers and targets and (b) the analyses of the change in ROAs require 3 years of data following the acquisition, the sample size drops appreciably from that in the CAR analyses.

We construct measures of changes in firm costs and revenues in a similar manner. Following Lee, Mauer, and Xu (2018), we use selling, general, and administrative costs (SG&A) as a proxy for labor expenses. We then examine the change in the ratio of SG&A to sales (*Change_SGA*), which is the difference between post- and pre-acquisition SG&A to sales ratio. Pre-acquisition SG&A/sales is equal to the weighted average of the acquirer and target's SG&A/sales before the cross-border merger (year $-1$). Using the same weighting scheme as with the ROAs, the weights are based on the total assets of each firm in the year before the acquisition (year $-1$). Post-acquisition SG&A/sales is equal to the merged firm's 2-year average SG&A/sales in the post-merger years (years $+1$, $+2$). When examining revenues, we study the growth rate in sales (*Change_sales*), which equals (Post-merger sales $-$ Pre-merger sales)/Pre-merger sales. Pre-merger sales is the combined sales of the acquirer–target before the cross-border merger (year $-1$), and post-merger sales is the merged firm's 2-year average sales following the merger (years $+1$, $+2$).

## Deal-Level and Firm-Level Characteristics

The deal-level analyses control for characteristics that past researchers have used to explain firm performance and CARs (e.g., Masulis et al., 2007). First, we control for (1) acquiring firm traits, such as firm size, cash flow, Tobin's Q, and leverage, obtained from Worldscope and Compustat, and (2) acquiring firm's pre-announcement stock price run-up, which is measured as the acquirer's market-adjusted buy-and-hold return during the 200-day window from 210 days before the acquisition through 11 days before the acquisition $[-210, -11]$.

Furthermore, we control for deal-level traits provided by SDC: relative deal size equals the ratio of the transaction value to the acquirer's book value of total assets in the fiscal year prior to the announcement date; industry relatedness equals one if the acquirer and the target share a two-digit SIC industry classification [Moeller and Schlingemann (2005) find that globally diversifying deals are associated with lower CARs]; public target dummy, private target dummy, and subsidiary target dummy equal one if the target is respectively a publicly traded parent company, privately owned parent company, or a subsidiary firm; and, similarly, all cash deal, friendly deal, and tender deal equal one if respectively the purchase is an all-cash deal, if the target company's board recommends the offer, or if the takeover bid is a public offer to acquire a public firm's shares made to equity holders during a specified time.

Panel A of Table 1 presents summary statistics for the 13,605 cross-border deals. The 5-day CAR is 1.44% across all cross-border acquisitions. The average transaction value is 37.5% of the acquiring firm's total assets (*Relative size*). The acquirer and target have different two-digit SIC industry codes in

42.7% of the deals, which is reflected in the dummy variable *Unrelated deal* and which is about the same ratio as in domestic acquisitions. Publicly traded target firms account for about 10% of deals; thus, 90% of targets are privately held firms or subsidiaries of firms. We winsorize continuous variables at the 1st and 99th percentiles. Furthermore, when we restrict the sample to firms that do not conduct cross-border and domestic acquisitions within 10 days of each other, the results hold.

### Cross-Border Acquisition Activity and Country and Country–Pair Control Variables
In extensions of our deal-level analyses, we examine three indicators of cross-border acquisition activity. Cross-border dollar volume measures the dollar value of transactions and equals log(1+ *Value* (*a*,*t*)), where *Value* (*a*,*t*) is the total dollar value of all cross-border mergers during the sample period for acquirer firm *a*, with a target from country *t*. Cross-border number is the number of transactions and equals log(1+ *Number* (*a*,*t*)), where *Number* (*a*,*t*) is the total number of all cross-border mergers during the sample period for acquirer firm *a*, with a target from country *t*. Cross-border deal size is the average size of transactions and equals log(1+ *Deal size* (*a*,*t*)), where *Deal size* (*a*,*t*) is the average dollar value of all cross-border deals during the sample period for acquirer firm *a*, with a target from country *t*.

Cross-border acquisitions are large and growing, representing an increasing proportion of the value of all mergers and acquisitions. During the early part of the sample period (1991–1997), cross-border acquisitions were typically less than $300 billion per annum. This figure rose to about $800 billion per annum after the early 2000s. The value of cross-border deals rose from about 25% of all acquisitions during the 1991–1997 period to around 35% since then.[2]

We also include data on other country traits. First, research indicates that geographic proximity and cultural similarities facilitate communication, deal-making, and hence cross-border acquisitions, as shown in Erel et al. (2012). We include three variables to capture these traits: (a) the natural logarithm of the distance between the capitals of the acquirer and target countries, log[*Geographic distance*]; (b) an indicator variable that equals one if the acquirer and the target have the same primary language (*Same language*); and (c) an indicator variable that equals one if they have the same primary religion (*Same religion*).

Second, macroeconomic characteristics and differences between the acquirer and target countries might influence the success of cross-border deals. Thus, we control for the level of economic development (log[*GDP per capita*]), the population size of each country (log[*Population*]), and the differences between the target and acquirer countries' growth rates (*GDP growth*), unemployment rates (*Unemployment rate*), currency exchange rates (*Exchange rate return*), and stock market valuations (*Stock market return*).

Third, differences in political governance systems between the acquirer and target countries might influence cross-border acquisitions. We therefore use several time-varying, country-level governance measures. From the World Governance Indicators (WGI), we use a measure of the degree to which the political governance system limits corruption (*Control of corruption*). From the Polity IV database, we use the polity index in which the governance spectrum ranges from pure democracy to pure autocracy (*Polity*). In the regressions, we control for differences between the acquirer and target countries' measures of *Control of corruption* and *Polity*. When we include acquirer–target fixed effects, all of the time-invariant differences between countries are conditioned out.

### Preliminaries: Do Cross-Border Acquisitions Predict Changes in Labor Regulations?
We address the concern that cross-border deals shape the timing of reforms to labor regulations, which might potentially confound our ability to identify the impact of differences in labor regulations on the success and incidence of cross-border acquisitions. In particular, we assess whether cross-border acquisitions predict changes in labor regulations. We regress changes in *Unemployment coverage* (Δ*Unemployment coverage*) and changes in *EPL* (Δ*EPL*) between period $t-1$ and $t$ on the average value of cross-border acquisitions between period $t-4$ and $t-1$ (*Cross-border dollar volume_3y*). We also control for lagged values of *Unemployment coverage* (*EPL*), measures of economic and institutional development, and year fixed effects. Data permitting, the regressions include 50 countries over the period from 1993 to 2017. As shown in Table 2, there is no evidence that cross-border acquisition activity accounts for changes in labor regulations. Indeed, the *t*-statistics on cross-border volume during the previous 3 years are less than one. This finding is robust to omitting the lagged labor regulation regressors and GDP growth.

**Table 2** The validity test: Impact of historical cross-border acquisition volume on labor regulation change

| Dependent variable | ΔUnemployment coverage | | | ΔEPL | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Cross-border dollar volume_3y | 0.001 | − 0.0003 | − 0.001 | 0.002 | 0.001 | 0.001 |
| | [0.001] | [0.001] | [0.001] | [0.003] | [0.003] | [0.004] |
| | (0.125) | (0.867) | (0.641) | (0.604) | (0.694) | (0.845) |
| Lagged unemployment coverage | − 0.015 | − 0.017 | − 0.017 | | | |
| | [0.004] | [0.006] | [0.006] | | | |
| | (0.001) | (0.004) | (0.004) | | | |
| Lagged EPL | | | | − 0.014 | − 0.015 | − 0.015 |
| | | | | [0.006] | [0.006] | [0.006] |
| | | | | (0.022) | (0.016) | (0.015) |
| log [GDP per capita] | | 0.003 | 0.003 | | − 0.002 | − 0.0002 |
| | | [0.003] | [0.004] | | [0.005] | [0.007] |
| | | (0.277) | (0.448) | | (0.666) | (0.976) |
| log [Population] | | 0.001 | 0.002 | | 0.001 | 0.002 |
| | | [0.002] | [0.002] | | [0.004] | [0.005] |
| | | (0.489) | (0.314) | | (0.681) | (0.642) |
| GDP growth | | | 0.001 | | | 0.004 |
| | | | [0.001] | | | [0.002] |
| | | | (0.290) | | | (0.078) |
| WGI | | | 0.0004 | | | 0.001 |
| | | | [0.001] | | | [0.002] |
| | | | (0.531) | | | (0.656) |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1185 | 1185 | 1185 | 712 | 712 | 712 |
| R-squared | 0.032 | 0.034 | 0.035 | 0.055 | 0.056 | 0.065 |

This table reports the OLS regression results of the change in labor regulation on the volume of cross-border acquisitions. The dependent variable is either the change in the unemployment benefits coverage (ΔUnemployment coverage) in Columns (1)–(3) or the change in the EPL index (ΔEPL) in Columns (4)–(6). Cross-border dollar volume_3y is the annual average dollar volume of cross-border acquisitions that occurred in the target country during the past 3 years. Online Appendix 1 provides variable definitions and Table 1 gives summary statistics. Heteroskedasticity-consistent standard errors clustered at the country level are reported in brackets. $p$ values are reported in parentheses. The coefficient on the constant is suppressed for brevity.

## EMPIRICAL RESULTS ON CARS AND OPERATING PERFORMANCE

### CARs: Empirical Strategy
To evaluate whether cross-country differences in labor regulations influence the CARs and operating performance of the acquiring firms, we use the following regression specification:

$$CAR_d = b_0 + b_1 Labor\ regulation[t - a]_d$$
$$+ b_2 Labor\ regulation[t - a]_d$$
$$* Labor\ dependence[t]_d + b_3 D_d \quad (4)$$
$$+ b_4 A_d + b_5 C_d + d_y + d_i + d_{at} + u_d.$$

$CAR_d$ is, for deal $d$, the acquirer's cumulative abnormal returns surrounding the cross-border acquisition announcement. *Labor regulation*$[t - a]_d$

is the difference in labor regulations, as measured by *Unemployment coverage*, *Employment law*, or *EPL*, between the countries of the target and acquiring firms respectively. *Labor dependence*$[t]_d$ is a measure of the degree to which the target firm's industry relies heavily on labor market flexibility for its success, where *Labor intensive* and *High labor volatility* are measures of industry labor dependence. $D_d$, $A_d$, and $C_d$ are the deal, acquiring firm, and country characteristics of both the acquiring and target firms – characteristics that help explain acquisition announcement returns, as shown by past researchers (e.g., Fuller, Netter, & Stegemoller, 2002; Masulis et al., 2007). The regression also includes year fixed effects ($d_y$), fixed effects for the industry of the acquiring firm ($d_i$), and acquirer–target country fixed effects ($d_{at}$). $u_d$ is the error term for deal $d$. We report both heteroskedasticity-

**Table 3** The effect of labor protection on acquirer announcement returns

| Labor regulation variable | Dependent variable: CAR(− 1, + 1) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Unemployment coverage | | | Employment law | | | EPL | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Labor regulation_[t − a] | − 0.773 | − 0.613 | − 0.326 | 0.034 | | | − 0.790 | − 0.878 | − 0.849 |
| | [0.291] | [0.347] | [0.333] | [0.196] | | | [0.371] | [0.427] | [0.398] |
| | (0.011) | (0.085) | (0.333) | (0.863) | | | (0.041) | (0.048) | (0.041) |
| Labor regulation_[t − a] * Labor intensive | | − 0.222 | | | − 1.067 | | | − 0.221 | |
| | | [0.328] | | | [0.358] | | | [0.075] | |
| | | (0.503) | | | (0.005) | | | (0.006) | |
| Labor regulation_[t − a] * High labor volatility | | | − 0.654 | | | − 0.834 | | | − 0.189 |
| | | | [0.240] | | | [0.396] | | | [0.076] |
| | | | (0.010) | | | (0.042) | | | (0.018) |
| Acquirer controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Deal controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Acquirer country dummies | No | No | No | Yes | No | No | No | No | No |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country–pair dummies | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes | Yes |
| Observations | 13,139 | 11,628 | 12,347 | 13,495 | 11,624 | 12,343 | 11,932 | 10,593 | 11,239 |
| Adjusted $R^2$ | 0.0456 | 0.0479 | 0.0464 | 0.0513 | 0.0483 | 0.0462 | 0.0434 | 0.0504 | 0.0484 |

This table reports the OLS regression results of acquirer abnormal announcement returns on labor regulations. The dependent variable is the acquirer's 3-day CAR (− 1, + 1). Unemployment coverage is unemployment benefits coverage, which is calculated as the ratio of the number of UI (unemployment insurance) benefit recipients to the number of unemployed. Unemployment coverage_[t − a] is the difference between the unemployment benefits coverage for the target and acquirer countries. Employment law is the employment law index, which measures the protection of the individual employment contract (Botero et al., 2004). Employment law_[t − a] is the difference between the employment law index for the target and acquirer countries. EPL is employment protection law index, which measures the strictness of employment protection against individual dismissal (compiled by the OECD). EPL_[t − a] is the difference between the OECD employment protection index for the target and acquirer countries. Labor intensive is an indicator variable that equals one if the target industry's average labor intensity is above the sample median. We calculate labor intensity as the ratio of labor and pension expenses to sales. Labor volatility is defined as the standard deviation of the number of employees scaled by PPE (plant, property, and equipment). High labor volatility is an indicator variable that equals one if target industry's average labor volatility is above the sample median. Heteroskedasticity-consistent standard errors clustered at the acquirer country level are reported in brackets. *p* values are reported in parentheses. The coefficient on the constant is suppressed for brevity.

consistent standard errors clustered at the acquirer country level and *p* values.

To address identification concerns, we implement the following three strategies. First, we evaluate whether cross-border acquisitions help predict changes in labor regulations. As demonstrated in Table 2, we find no empirical evidence that cross-border deals predict the timing of reforms to labor regulations. This finding is consistent with our identification assumption that time-varying differences in comparative labor regulations do not reflect the influences of cross-border mergers and acquisitions. Rather, changes in the strength of labor between countries precede changes in cross-border investment activity.

Second, a crucial component of our identification strategy involves differentiating target firms by

their degree of labor dependence. That is, we use a triple difference-in-differences econometric design. If labor regulations influence the CARs of acquiring firms by affecting the ability of the acquiring firm to restructure the labor force of the target firm, then the impact of labor regulations on CARs should be especially pronounced when the target firm depends heavily on labor and labor flexibility for its profitability. In turn, if labor flexibility is relatively unimportant for a target firm's success, then labor regulations should be comparatively less important in shaping the acquiring firm's CARs. By testing this prediction, we can draw sharper inferences about whether labor regulations affect the success of cross-border deals through their effect on labor markets and the restructuring of target firms.[3]

Third, to limit omitted variable concerns, we control for many potentially confounding

influences. Besides controlling for the specific features of each deal, the time-varying characteristics of acquirer and target firms, and the time-varying traits of acquirer and target countries, our analyses include acquirer–target country effects to condition out all time-invariant country–pair influences, year effects to control for time-varying factors shaping the performance of cross-border acquisitions, and industry effects. The results hold, with little change in the point estimates or the standard errors on the key coefficient, $b_2$.

### CARs: Findings

Table 3 reports nine regressions in which the dependent variable is the acquirer's 3-day CAR $(-1, +1)$.[4] There are three regressions for each labor regulation measure – *Unemployment coverage*, *Employment law*, and *EPL*. The three regressions involve estimating Eq. (4) (a) without the interaction term *Labor regulation*$[t-a]_d$ * *Labor dependence*$[t]_d$, (b) with *Labor intensive* as the proxy for labor dependence, and (c) with *High labor volatility* as the proxy for labor dependence. All of the regressions control for acquirer–target fixed effects, except for *Employment law*, which does not vary over time. In this case, we include acquirer country fixed effects.

The results reported in Table 3 demonstrate that, on average, the CARs of acquirers are much smaller when the targets are in labor-dependent industries in countries with comparatively strong labor regulations. For example, consider the employment protection law index (*EPL*) analyses, where *EPL* varies over time and measures the degree to which the law protects individuals from being dismissed from their jobs. As shown in regressions (8) and (9), the interaction terms – *EPL*$[t-a]$ * *Labor intensive*$[t]$ and *EPL*$[t-a]$ * *High labor volatility*$[t]$ – each

**Table 4** The effect of labor protection on acquirer ROA

| Labor regulation variable | Dependent variable: Change_ROA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Unemployment coverage | | | Employment law | | | EPL | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Labor regulation_$[t-a]$ | − 5.233 | − 3.672 | − 3.759 | − 9.646 | − 7.689 | − 4.910 | − 2.826 | − 2.999 | − 2.045 |
| | [2.073] | [2.125] | [2.413] | [3.611] | [3.601] | [3.922] | [0.688] | [0.651] | [0.743] |
| | (0.016) | (0.094) | (0.129) | (0.011) | (0.040) | (0.219) | (0.0003) | (0.0001) | (0.010) |
| Labor regulation_$[t-a]$ * Labor intensive | | − 3.652 | | | − 5.232 | | | − 0.624 | |
| | | [1.550] | | | [2.874] | | | [0.447] | |
| | | (0.025) | | | (0.078) | | | (0.174) | |
| Labor regulation_$[t-a]$ * High labor volatility | | | − 1.235 | | | − 7.557 | | | − 1.383 |
| | | | [1.728] | | | [3.541] | | | [0.590] |
| | | | (0.480) | | | (0.040) | | | (0.027) |
| Acquirer controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Deal controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Acquirer country dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 869 | 775 | 813 | 875 | 781 | 819 | 815 | 728 | 765 |
| Adjusted $R^2$ | 0.0408 | 0.0344 | 0.0392 | 0.0451 | 0.0391 | 0.0489 | 0.0516 | 0.0520 | 0.0606 |

This table reports the OLS regression results of acquirer ROA performance on labor regulations. The dependent variable is the change in ROA. We use the difference between the acquirer firm's post-merger 3-year average ROA and the combined acquirer–target pre-merger ROA (in year − 1) to measure the change. Unemployment coverage is unemployment benefits coverage, which is calculated as the ratio of the number of UI (unemployment insurance) benefit recipients to the number of unemployed. Unemployment coverage_$[t-a]$ is the difference between the unemployment benefits coverage for the target and acquirer countries. Employment law is the employment law index, which measures the protection of the individual employment contract (Botero et al., 2004). Employment law_$[t-a]$ is the difference between the employment law index for the target and acquirer countries. EPL is employment protection law index, which measures the strictness of employment protection against individual dismissal (compiled by the OECD). EPL_$[t-a]$ is the difference between the OECD employment protection index for the target and acquirer countries. Labor intensive is an indicator variable that equals one if the target industry's average labor intensity is above the sample median. We calculate labor intensity as the ratio of labor and pension expenses to sales. Labor volatility is defined as the standard deviation of the number of employees scaled by PPE (plant, property, and equipment). High labor volatility is an indicator variable that equals one if target industry's average labor volatility is above the sample median. Heteroskedasticity-consistent standard errors clustered at the acquirer country level are reported in brackets. *p* values are reported in parentheses. The coefficient on the constant is suppressed for brevity.

enter the CARs regressions negatively and with $p$ values of 0.006 and 0.018 respectively.

These results indicate that when corporations acquire target firms in labor-dependent industries – industries that rely heavily on labor or labor flexibility for success – and in countries with laws that make it comparatively expensive for firms to fire workers, stock prices react more negatively than (a) when corporations acquire target firms in the same country but in less labor-dependent industries or (b) when corporations acquire target firms in the same industry but in countries where the law does not make it expensive to fire workers.[5]

The estimated economic effects are large. For example, consider an acquiring firm from Germany, which has strong labor regulations (*Employment law* equals 0.702), purchasing a target firm in a *Labor intensive* industry. Our estimates indicate that the 3-day CARs of this German acquirer increase by 0.59% more if the target country has weak labor regulations, such as those in Malaysia (*Employment law* equals 0.189), than if the acquiring firm purchases an identical firm in France, which has strong labor regulations (*Employment law* equals 0.744) (i.e., $0.59 = (0.744 - 0.189) * 1.067$). This 0.59% difference is large, as the average 3-day CAR in the sample is 0.524%. As a second example, again consider a firm in Germany acquiring a target in Malaysia. The estimates suggest that the acquirer's CARs increase by 0.55% ($= (0.702 - 0.189) * 1.067$) more if the target firm is in a *Labor-intensive* industry than if the same acquirer purchases a target in Malaysia that is not in a *Labor-intensive* industry.[6]

### ROAs: Findings
To assess changes in operating performance following cross-border mergers, we examine changes in *ROAs*, as defined in "Change of ROA, Costs, and Revenues" section. We use the same regression specification as in the CAR analyses and report the results in Table 4.

There are two key results. First, acquirers that purchase targets in countries with stronger labor regulations than their own country's labor regulations tend to experience worse performance following the deal than acquirers purchasing firms in countries with weaker labor regulations. As shown, the estimated coefficients on *Labor regulation_[t − a]* are all negative and enter with $p$ values of 0.016, 0.011, and 0.0003 in columns 1, 4, and 7, respectively.[7]

Second, the interaction term regression results show that when labor regulations are stronger in the target than in the acquirer country, the acquirer's ROAs are smaller when the target is in either a labor intensive industry or a high labor volatility industry. This result is consistent with the view that labor regulations affect the profitability of cross-border acquisitions when restructuring the target is especially important for the acquiring firm's profitability, that is, when the target is in a labor-dependent industry or an industry with a volatile demand for labor.

Taken together, the results in Table 4 show the importance of comparative labor regulations in shaping the profitability of cross-border acquisitions. Acquirer ROAs tend to fall when (a) the target firm is in a country with strong labor protection policies and (b) the target is in a labor-intensive or high labor volatility industry. Put differently, the positive synergies from the cross-border acquisition of a firm in a country with weaker labor protection laws and less expansive unemployment benefits are largely due to the purchase of target firms in industries that rely heavily on flexible labor markets, such as labor-intensive industries and industries in which labor fluctuates relatively severely.

## SOURCES OF PERFORMANCE CHANGES, TARGET SELECTION, ACQUISITION VOLUME, AND OFFER SUCCESS RATES
Given these findings on labor regulations, CARs, and ROAs, we dig deeper into (1) the sources of the changes in performance, (2) the selection of target firms in different countries, (3) the incidence and volume of cross-border deals between country pairs, and (4) the success rates of cross-border offers.

As emphasized, the employee–shareholder conflicts of interest framework provides predictions regarding the answers to these questions. On the sources of changes in performance following cross-border acquisitions, the conflicts of interest framework stresses that acquiring firms will find it more difficult to cut labor costs and boost efficiency and thus sales when labor regulations empower employees. On the selection of targets, the employee–shareholder framework predicts that acquirers are more likely to purchase labor-intensive targets when weak labor regulations facilitate post-acquisition synergies through labor restructurings, and acquirers will have motivations other than cost cutting when targeting firms in strong

**Table 5** The effect of labor protection on acquirer costs and revenues

| | Dependent variable | | | | | |
| | Panel A: Change_SGA | | | Panel B: Change_sales | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Unemployment coverage_$[t-a]$ | 0.035 [0.015] (0.024) | | | − 0.165 [0.066] (0.018) | | |
| Employment law_$[t-a]$ | | 0.107 [0.036] (0.005) | | | − 0.517 [0.111] (0.00005) | |
| EPL_$[t-a]$ | | | 0.028 [0.008] (0.002) | | | − 0.121 [0.028] (0.0001) |
| Acquirer controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Deal controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Country controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Acquirer country dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 483 | 483 | 450 | 850 | 856 | 795 |
| $R^2$ | 0.216 | 0.229 | 0.231 | 0.210 | 0.230 | 0.215 |

This table reports the OLS regression results of acquirer SG&A costs and sales on labor regulations. In Panel A, the dependent variable is the change in SG&A/sales. We use the difference between the acquirer firm's SG&A/sales after the merger and the combined acquirer–target SG&A/sales before the merger to measure the change. In Panel B, the dependent variable is the change in sales. Change in sales = (Post-merger acquirer's sales − Pre-merger combined acquirer–target sales)/Pre-merger combined acquirer–target sales. Unemployment coverage is unemployment benefits coverage, which is calculated as the ratio of the number of UI (unemployment insurance) benefit recipients to the number of unemployed. Unemployment coverage_$[t-a]$ is the difference between the unemployment benefits coverage for the target and acquirer countries. Employment law is the employment law index, which measures the protection of the individual employment contract (Botero et al., 2004). Employment law_$[t-a]$ is the difference between the employment law index for the target and acquirer countries. EPL is the employment protection law index, which measures the strictness of employment protection against individual dismissal (compiled by the OECD). EPL_$[t-a]$ is the difference between the OECD employment protection index for the target and acquirer countries. Heteroskedasticity-consistent standard errors clustered at the acquirer country level are reported in brackets. $p$ values are reported in parentheses. The coefficient on the constant is suppressed for brevity.

labor regulation countries. On the incidence and volume of cross-border transactions between countries, the framework developed in "Related Research and Hypothesis Development" section notes that firms will make fewer cross-border acquisitions in stronger labor regulation countries because the regulations limit post-acquisition synergies. Finally, on offer success rates, the employee–shareholder framework predicts that labor can more effectively impede an acquisition when strong labor regulations empower employees within firms.

## Changes in Costs and Revenues Following Cross-Border Deals: The Role of Labor Regulations
We begin by assessing two potential sources – firm costs and firm revenues – of the finding that firm performance (ROAs) increases more when cross-border acquisitions involve targets in comparatively weak labor regulation economies. With respect to costs, if a firm acquires a target in a country with comparatively strong labor regulations, tighter labor regulations might limit cost

cutting options. As defined in "Change of ROA, Costs, and Revenues" section, we use SG&A (selling, general, and administrative costs) as a proxy for labor expenses.[8] The dependent variable is the change of SG&A/sales (*Change_SGA*), computed as the difference between post-acquisition SG&A/sales and pre-acquisition SG&A/sales.

As reported in Panel A of Table 5, we find that cross-border deals in which the target is in a comparatively strong labor regulation country are associated with cost increases. Specifically, with *Change_SGA* as the dependent variable, *Unemployment coverage*, *Employment law*, and *EPL* enter positively and with $p$ values of 0.024, 0.005, and 0.002 in regressions 1, 2, and 3, respectively.

These findings are consistent with the view that cross-border acquisitions of targets in countries with comparatively strong regulations impede post-deal cost reductions and might boost post-deal costs relative to otherwise similar acquisitions in countries with less restrictive labor regulations. These findings are consistent with the earlier

findings on CARs and ROAs, which show that CARs and ROAs respond less positively to a merger when the target is in a country with stronger labor protection laws.

Next, we evaluate revenues. We examine what happens to firm revenue as a function of differences in labor regulations following a cross-border acquisition. As stated, stronger labor regulations make it more difficult for acquirers to adjust workforces, hindering the ability of firms to reorganize production facilities, adopt larger-scale production technologies, and efficiently substitute capital for labor. Such impediments limit the ability of firms to realize economies of scale and efficiently grow sales and profits. To evaluate this view, we examine changes in sales (*Change_sales*), defined as (Post-merger sales − Pre-merger sales)/Pre-merger sales.

We discover that sales growth tends to be slower following cross-border mergers when targets are located in countries with comparatively strong labor regulations, as shown in Panel B of Table 5. *Unemployment coverage*, *Employment law*, and *EPL* enter negatively and with $p$ values below 0.02 in the regressions where *Change_sales* is the dependent variable. These findings are consistent with the view that an acquiring firm faces greater difficulties in reorganizing and adapting to boost sales when targets are in countries with comparatively strong regulations. These findings complement the findings on costs (Panel A) and help to account for the earlier findings in Tables 3 and 4 that show that post-merger CARs and ROAs perform more poorly when the target is in a country with relatively stronger labor protection law.

## The Selection of Target Firms in Cross-Border Acquisitions: The Role of Labor Regulations
Firms choose to make cross-border acquisitions for several reasons, such as reducing labor costs, entering new markets, or boosting market share. Under the assumption that comparative labor regulations influence the appeal of acquiring targets to economize on labor expenditures, two predictions regarding cross-border strategies emerge. First, acquiring firms are less likely to purchase labor-dependent targets in strong labor regulation

**Table 6** Target selection: Labor protections and cost savings

| | Dependent variable | | | | | | | | |
| | Labor intensive | | | High labor volatility | | | High SGA cost | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Unemployment coverage_$[t − a]$ | − 0.034 [0.011] (0.004) | | | − 0.013 [0.011] (0.281) | | | − 0.209 [0.065] (0.003) | | |
| Employment law_$[t − a]$ | | − 0.085 [0.036] (0.023) | | | − 0.047 [0.024] (0.057) | | | − 0.462 [0.081] (0.000003) | |
| EPL_$[t − a]$ | | | − 0.021 [0.006] (0.002) | | | − 0.011 [0.003] (0.001) | | | − 0.094 [0.026] (0.001) |
| Acquirer controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Acquirer country dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 11,628 | 11,957 | 10,774 | 12,347 | 12,687 | 11,424 | 704 | 708 | 663 |
| Adjusted $R^2$ | 0.294 | 0.296 | 0.285 | 0.337 | 0.339 | 0.327 | 0.223 | 0.227 | 0.239 |

This table reports the OLS regression results of target selection. The dependent variables are the labor intensive, high labor volatility, and high SGA cost indicators in Columns (1)–(3), (4)–(6), and (7)–(9), respectively. Labor intensive is an indicator variable that equals one if the target industry's average labor intensity is above the sample median. High labor volatility is an indicator variable that equals one if the target industry's average labor volatility is above the sample median. High SGA cost is an indicator variable that equals one if the target firm's SG&A/sales is in the top tercile. Unemployment coverage is unemployment benefits coverage, which is calculated as the ratio of the number of UI (unemployment insurance) benefit recipients to the number of unemployed. Unemployment coverage_$[t − a]$ is the difference between the unemployment benefits coverage for the target and acquirer countries. Employment law is the employment law index, which measures the protection of the individual employment contract (Botero et al., 2004). Employment law_$[t − a]$ is the difference between the employment law index for the target and acquirer countries. EPL is the employment protection law index, which measures the strictness of employment protection against individual dismissal (compiled by the OECD). EPL_$[t − a]$ is the difference between the OECD employment protection index for the target and acquirer countries. Heteroskedasticity-consistent standard errors clustered at the acquirer country level are reported in brackets. $p$ values are reported in parentheses. The coefficient on the constant is suppressed for brevity.

countries because the strong regulations make it difficult to economize on labor costs. Rather, if the main motivation is to economize on labor costs, acquiring firms are more likely to purchase labor-dependent firms in comparatively weak labor regulation countries. Second, when acquirers select targets in strong labor regulation countries, the primary motivation is less likely to be labor cost savings and more likely to be other goals, such as entering new markets or boosting market share in a country.

To evaluate these two predictions, we first examine whether acquiring firms are less likely to purchase labor-intensive targets in strong labor regulation countries. The dependent variable is (1) *Labor intensive*, which equals 1 if the target firm is in a labor-intensive industry as defined above and 0 otherwise; (2) *High labor volatility*, which equals 1 if the target firm is in a high labor volatility industry as defined above and 0 otherwise; or (3) *High SGA cost*, which equals one if the target is a high labor cost firm (target firm's SG&A/sales is in the top

tercile). The regressions include the same controls and fixed effects as in earlier tables.

Consistent with our prediction, acquirers are less likely to purchase labor-dependent targets in countries with comparatively strong labor regulations. Rather, when making an acquisition in a strong labor regulation country, the acquirer is more likely to select less labor-intensive targets as shown in Table 6. For example, *EPL* enters negatively and with a *p* value below 0.01 when the dependent variable is *Labor intensive*, *High labor volatility*, or *High SGA cost*.

These findings are consistent with the cost saving motive of target selection: When firms engage in a cross-border acquisition to economize on labor costs, they are more likely to select targets in weaker labor regulation countries. The economic magnitudes are large. Consider an acquiring firm selecting targets in countries with strong labor regulations (e.g., France, where *Employment law* equals 0.744) and in countries with weak labor regulations (e.g., the U.S., where *Employment law* equals 0.218). Our estimates indicate that the

**Table 7** Target selection: Deals motivated by other forms of synergies

| | Dependent variable | | | | | |
|---|---|---|---|---|---|---|
| | New market | | | Target market share | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Unemployment coverage_[$t - a$] | 0.210 [0.034] (0.000000) | | | 0.319 [0.044] (0.000000) | | |
| Employment law_[$t - a$] | | 0.451 [0.055] (0.000000) | | | 0.548 [0.061] (0.000000) | |
| EPL_[$t - a$] | | | 0.124 [0.014] (0.000000) | | | 0.132 [0.014] (0.000000) |
| Acquirer controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Country controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Acquirer country dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 12,798 | 13,154 | 11,783 | 889 | 895 | 846 |
| Adjusted $R^2$ | 0.183 | 0.196 | 0.214 | 0.257 | 0.268 | 0.283 |

This table reports the OLS regression results of target and deal characteristics. The dependent variables are the new market and target market share indicators in Columns (1)–(3) and (4)–(6), respectively. New market is an indicator variable that equals one if the acquirer firm is making its first cross-border deal in the target country. Target market share is the target firm's share of industry sales in the domestic market. Unemployment coverage is unemployment benefits coverage, which is calculated as the ratio of the number of UI (unemployment insurance) benefit recipients to the number of unemployed. Unemployment coverage_[$t - a$] is the difference between the unemployment benefits coverage for the target and acquirer countries. Employment law is the employment law index, which measures the protection of the individual employment contract (Botero et al., 2004). Employment law_[$t - a$] is the difference between the employment law index for the target and acquirer countries. EPL is the employment protection law index, which measures the strictness of employment protection against individual dismissal (compiled by the OECD). EPL_[$t - a$] is the difference between the OECD employment protection index for the target and acquirer countries. Heteroskedasticity-consistent standard errors clustered at the acquirer country level are reported in brackets. *p* values are reported in parentheses. The coefficient on the constant is suppressed for brevity.

probability of the acquiring firm purchasing a *High SGA cost* target is 24% lower when the target is in France than when an equivalent target is in the U.S.

Next, we turn to the second prediction: When firms acquire targets in strong labor regulation countries, the primary motivation is less likely to be labor savings; rather, the motivation is more likely to be to enter a new market or to boost market share. To evaluate this prediction, we examine two dependent variables. *New market* is an indicator variable that equals one if the acquiring firm is making its first cross-border acquisition in the target country. *Target market share* is the target firm's share of industry sales in the domestic market. Thus, our prediction stresses that the comparative strength of the target country's labor regulations will be positively associated with *New market* and *Target market share*.

Consistent with this prediction, the results in Table 7 show that the labor regulation measures – *Unemployment coverage*, *Employment law*, and *EPL* – enter positively and with *p* values below 0.01 when the dependent variable is either *New market* or *Target market share*. Thus, the combined results in Tables 6 and 7 support the view that comparative labor regulations shape the selection of cross-border targets: we find that when firms acquire targets in strong labor regulation countries, acquirers are less likely to purchase labor-intensive firms (Table 6) and are more likely to be entering a market for the first time or purchasing a target with a large share of the domestic market (Table 7). The estimated effects are substantial. Consider a target country that has a one standard deviation higher *Employment law* index than the acquirer country (0.186). The estimates indicate that if an acquiring firm purchases a firm in this strong labor regulation country, there is an 8.4% greater probability that this is a new market for the acquiring firm than when the same acquirer purchases a target in a country with the same labor protection laws as its home economy.

## Labor Regulations and the Number, Value, and Size of Cross-Border Deals

We now check whether our findings on CARs and ROAs are consistent with a firm's decisions regarding whether and where to engage in cross-border acquisitions. If labor regulations shape the stock price reaction to cross-border acquisitions and the profitability of such deals, then this effect should be reflected in the incidence and size of cross-border acquisitions when differentiating country pairs by labor regulations. To check this prediction, we regress the number, value, and deal size of cross-border acquisitions on the difference between labor regulations in the target and acquirer countries.

We augment the standard gravity model of cross-border mergers and acquisition activity to assess the relationship between labor market regulations and the number, volume, and size of cross-border acquisitions. Our sample consists of public acquirers that consummate at least five cross-border deals during our sample period. We consider every possible target country in which these acquiring firms might choose to make an acquisition. Thus, the unit of analysis is an acquiring firm ($a$) and its (potential) acquisition of firms in each target country ($t$). We estimate the following equation:

$$y_{at} = b_0 + b_1 Labor\ regulation[t - a]_{at} + b_3 D_{at} + b_4 A_a + d_a + d_i + e_{at},$$
(5)

where the dependent variable, $y_{at}$, is either log(1+ *Number* $(a,t)$), log(1+ *Value* $(a,t)$), or log(1+ *Deal* $(a,t)$); *Number* $(a,t)$, *Value* $(a,t)$, and *Deal* $(a,t)$ equal the total number, the total dollar value, and the average deal size of cross-border deals between acquiring firm $a$ and firms in a target country ($t$); *Labor regulation*$[t - a]_{at}$ is the difference in labor regulations between the countries of the target and acquiring firms (*Unemployment coverage*, *Employment law*, and *EPL*); $D_{at}$ represents country–pair characteristics, such as geographic distance and economic development; $A_a$ represents information about the acquiring firms, such as firm size; and $d_a$ and $d_i$ are fixed effects for the acquiring country and the industry of the acquiring firm respectively. For each acquiring firm, we use the average annual values for the full sample period (1991–2017).

As shown in Table 8, a country's firms acquire more firms in a country, spend more on acquisitions in a country, and engage in larger acquisitions in a country if the target country's labor regulations are relatively less protective of labor. Across all specifications, the estimated coefficients on labor market regulation differences are negative and enter with *p* values below 0.02. The number, volume, and size of cross-border acquisitions are lower when targets are in countries with stronger labor protections.

Consistent with our findings that stock returns and profits rise more when the acquiring firm's country has more protective labor regulations than

**Table 8** The determinants of cross-border mergers: firm-level analysis

| | Dependent variable | | | | | | | | |
| | log(1 + *Number* (a,t)) | | | log(1 + *Value* (a,t)) | | | log(1 + *Deal size* (a,t)) | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Unemployment coverage_[t − a] | − 0.104 | | | − 0.403 | | | − 0.324 | | |
| | [0.017] | | | [0.056] | | | [0.045] | | |
| | (0.000000) | | | (0.000000) | | | (0.000000) | | |
| Employment law_[t − a] | | − 0.135 | | | − 0.543 | | | − 0.412 | |
| | | [0.041] | | | [0.181] | | | [0.153] | |
| | | (0.002) | | | (0.005) | | | (0.011) | |
| EPL_[t − a] | | | − 0.071 | | | − 0.305 | | | − 0.244 |
| | | | [0.016] | | | [0.070] | | | [0.059] |
| | | | (0.0001) | | | (0.0001) | | | (0.0003) |
| Acquirer controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Acquirer country dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 32,144 | 31,880 | 23,220 | 32,144 | 31,880 | 23,220 | 32,144 | 31,880 | 23,220 |
| Adjusted $R^2$ | 0.214 | 0.214 | 0.231 | 0.185 | 0.186 | 0.201 | 0.169 | 0.169 | 0.181 |

This table reports the OLS regression results analysis of the determinants of cross-border mergers and acquisitions. The sample includes public acquirer firms that consummate at least five cross-border deals during our sample period (1991–2017). The dependent variables are log(1 + *Number* (a,t)) in Columns (1)–(3), log(1 + *Value* (a,t)) in Columns (4)–(6), and log(1 + *Deal size* (a,t)) in Columns (7)–(9). *Number* (a,t) is the total number of all cross-border mergers during the sample period for acquirer firm a, with the target from country t. *Value* (a,t) is the total dollar value of all cross-border mergers during the sample period for acquirer firm a, with the target from country t. *Deal size* (a,t) is the average dollar value of all cross-border deals during the sample period for acquirer firm a, with the target from country t. Unemployment coverage is unemployment benefits coverage, which is calculated as the ratio of the number of UI (unemployment insurance) benefit recipients to the number of unemployed. Unemployment coverage_[t − a] is the difference between the unemployment benefits coverage for the target and acquirer countries. Employment law is the employment law index, which measures the protection of the individual employment contract (Botero et al., 2004). Employment law_[t − a] is the difference between the employment law index for the target and acquirer countries. EPL is the employment protection law index, which measures the strictness of employment protection against individual dismissal (compiled by the OECD). EPL_[t − a] is the difference between the OECD employment protection index for the target and acquirer countries. Heteroskedasticity-consistent standard errors clustered at the acquirer country level are reported in brackets. p values are reported in parentheses. The coefficient on the constant is suppressed for brevity.

the target's country, we find that comparative labor regulations are closely linked with cross-border acquisition activity. Furthermore, these findings indicate that differences in labor regulations operate on the intensive margin. As shown in Table 8, the average deal size of cross-border acquisitions tends to be smaller when targets are in countries with comparatively strong labor protection laws.

The relationship between differences in labor regulations and cross-border acquisition flows is economically large. Two examples illustrate the economic magnitudes from estimates in Table 8. First, consider a target country that has a one standard deviation lower value of *Employment law* than the acquirer (0.186). The estimates indicate

that *Value* (a,t) will be about 10% (= 0.186 * 0.543) larger than when the two economies have the same labor protection laws. Second, consider France, which is in the 90th percentile of the *Employment law* distribution (France's *Employment law* index equals 0.744). From the regression estimates in Table 8, we can compute a drop in foreign firm acquisitions of French companies due to France's comparatively strong labor protection laws, as the average country has an *Employment law* index of 0.479. The estimates suggest that relative to an average country, France is associated with 14.4% (= (0.744 − 0.479) * 0.543) lower foreign capital inflows from cross-border acquisitions due to its comparatively strong labor regulations.

**Table 9** The effect of labor protection on other deal outcomes

| | Dependent variable | | | | | | | | |
| | Offer premia | | | Months to complete | | | Deal completion | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Unemployment coverage_[t − a] | − 10.362 [5.856] (0.086) | | | 1.121 [0.446] (0.017) | | | − 0.009 [0.010] (0.361) | | |
| Employment law_[t − a] | | − 26.535 [11.066] (0.022) | | | 2.137 [0.517] (0.0002) | | | − 0.057 [0.020] (0.007) | |
| EPL_[t − a] | | | − 7.220 [2.144] (0.002) | | | 0.450 [0.101] (0.0001) | | | − 0.018 [0.005] (0.001) |
| Acquirer controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Deal controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Acquirer country dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1071 | 1079 | 1002 | 1288 | 1301 | 1198 | 20,748 | 21,405 | 18,883 |
| Adjusted $R^2$ | 0.0258 | 0.0225 | 0.0405 | 0.194 | 0.195 | 0.208 | 0.130 | 0.135 | 0.108 |

This table reports the OLS regression results of other deal characteristics and outcomes on labor regulations. The dependent variables are the offer premia, months to complete, and deal completion indicators in Columns (1)–(3), (4)–(6), and (7)–(9), respectively. Offer premia is defined as ((Offer price/Target stock price 4 weeks before announcement) − 1) * 100. We measure months to complete using the number of months between the announcement and the completion dates. Deal completion is an indicator variable equal to one if the deal is completed. Unemployment coverage is unemployment benefits coverage, which is calculated as the ratio of the number of UI (unemployment insurance) benefit recipients to the number of unemployed. Unemployment coverage_[t − a] is the difference between the unemployment benefits coverage for the target and acquirer countries. Employment law is the employment law index, which measures the protection of the individual employment contract (Botero et al., 2004). Employment law_[t − a] is the difference between the employment law index for the target and acquirer countries. EPL is the employment protection law index, which measures the strictness of employment protection against individual dismissal (compiled by the OECD). EPL_[t − a] is the difference between the OECD employment protection index for the target and acquirer countries. Heteroskedasticity-consistent standard errors clustered at the acquirer country level are reported in brackets. $p$ values are reported in parentheses. The coefficient on the constant is suppressed for brevity.

## Labor Regulations and Offer Premia, Negotiation Period, and Offer Success

Finally, we examine the relationship between cross-country differences in labor regulations and three specific features of cross-border deals (e.g., Golubov, Petmezas, & Travlos, 2012). The first feature is the *Offer premia*, which equals the premium over the target's stock price four weeks prior to the deal announcement. From the analyses above, our hypothesis is that the offer premium will tend to be lower if the target country has comparatively strong labor regulations, as the restrictive regulations limit labor restructuring. The second feature is *Months to complete*, which equals the number of months between the announcement and completion dates (conditional on acceptance of the offer), and the third feature is *Deal completion*, which equals 1 if the deal is completed and 0 if it fails. Our hypothesis is that the gap between the announcement and completion dates will be shorter – and the probability that the deal succeeds greater – when the target is in a weak labor regulation country and labor has less voice in negotiating and potentially impeding the deal.

As shown in Table 9, the analyses confirm these predictions. First, in the *Offer premia* regressions, we find that each of the labor regulation measures enters negatively. This finding is consistent with the view that, holding other features of the deal constant, acquirer firms tend to bid more for targets in countries with relatively weak labor regulations where there are greater opportunities to boost profits by reducing labor costs. Second, in the *Months to complete* regressions, we find that each labor regulation measure enters positively and with a p-value below 0.02. This finding is consistent with the hypothesis that, ceteris paribus, it takes a longer time to negotiate a deal when the target is in a strong labor regulation country. Finally, in the *Deal completion* regressions, we find that each of the three labor regulation measures enters negatively, where *Employment Law* and *EPL* enter with p values of 0.007 and 0.001 respectively. These results further emphasize that negotiating and finalizing

cross-border deals is more complicated when labor has greater bargaining power within firms.

# CONCLUSION

Our analyses have key implications for international business decisions. First, comparative labor regulations shape the returns to cross-border acquisitions. Specifically, acquiring firms experience smaller announcement returns and smaller post-acquisition improvements in profits, sales, and cost reductions when targets are in comparatively strong labor regulation countries. Moreover, the effects of labor regulations on announcement returns and post-acquisition performance are larger when the target is in a labor-intensive industry, where post-merger labor restructuring is likely to be relatively more important for boosting valuations than when the target is in a capital-intensive industry.

Second, labor regulations influence the selection of target firms in other countries. Consistent with the view that there are greater opportunities to boost profits through post-acquisition labor restructuring when (a) there are weaker labor regulations and (b) the target firm is labor intensive, we find that acquirers are more likely to select labor-intensive targets in countries with comparatively weak labor regulations. Furthermore, we discover that when acquirers select target firms in strong labor regulation economies, the primary motivation is not economizing on labor costs. Rather, acquirers tend to use cross-border acquisitions to enter new markets, or they purchase firms that already have a large share of the domestic market.

Third, labor regulations shape whether firms succeed in their efforts to purchase targets in other countries. As emphasized throughout the paper, employees and shareholders generally have differing perspectives on acquisitions, with shareholders focusing on increasing equity valuations and employees focusing on job security and compensation. From this perspective, stronger labor regulations enhance the bargaining power of labor, reduce the opportunities for boosting valuations through labor restructurings, and increase the chances that labor resists cross-border acquisitions. Consistent with this view, we discover that offer premia are smaller, months between the announcement and completion dates are greater, and deals

fail more frequently when target firms are in strong labor regulation countries.

# NOTES

[1]For detailed variable definitions and sources, see Online Appendix 1.

[2]These patterns are illustrated in Online Appendix Figures 1–4.

[3]For an omitted variable to bias our findings, it is not enough that it is correlated with changes in labor regulations and announcement returns. Rather, the omitted variable must vary systematically with changes in national labor regulations and vary differentially with the announcement returns on labor-intensive and capital-intensive acquisitions.

[4]As shown in Online Appendix 6, the results are robust to using $CAR(-2, +2)$ as the dependent variable.

[5]The control variables enter the CARs regressions in a manner that is consistent with previous studies of cross-border acquisitions. For example, we find that large acquirers have lower abnormal returns, and acquisitions involving large targets (relative deal size) have higher abnormal returns. We also confirm that announcement returns are lower for acquirers that experience a rapid pre-announcement rise in stock prices (stock runup). In addition, we find that acquisitions of private or subsidiary

targets are associated with higher announcement returns, while acquisitions of public targets are associated with lower announcement returns.

[6]We evaluate the sensitivity of the Table 3 findings by using alternative measures of whether an industry is labor intensive or has high labor volatility and present these robustness checks in Online Appendix 4. First, we construct labor cost share for each industry, which equals labor cost divided by the value of production. We use data from the Bureau of Labor Statistics (BLS), which includes the universe of public and private firms. We then define an industry as *Labor intensive* if the industry's average labor cost share is in the top tercile over the whole sample (Panel A). Second, we measure the labor volatility of each firm as the standard deviation of the number of employees divided by the total sales. We then define an industry as a *High labor volatility* industry if the industry's average labor volatility is in the top tercile (Panel A). Third, we exclude multi-segment

Compustat firms and recalculate the labor intensity measures (Panel B). Fourth, we exclude merger wave years and recalculate the labor volatility measures (Panel B). As shown, when using these alternative measures, we confirm all of the findings in Table 3.

[7]In robustness test, we use long-run stock returns (Loughran & Vijh, 1997) to analyze post-merger performance. We find that the acquirer's market-adjusted buy-and-hold stock returns for a 1-year holding period and 3-year holding period are negative when labor regulations are stronger in the target country than those in the acquirer country. This finding that uses long-run stock returns is consistent with the ROA tests. We report the results in Online Appendix 5.

[8]Lee et al. (2018) show that the Pearson (Spearman rank) correlation coefficient between SG&A and labor expenses is 0.82 (0.95).

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