How Do Foreign Labor Regulations Affect Firms' Operating Strategies?

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Abstract

We examine how changes in foreign labor regulations affect U.S. multinationals' operating strategies. We show that firms with integrated operations in countries where labor regulations become tighter tend to establish arm's-length relations with local business partners in that nation. The substitution between integrated and arm's-length operations is stronger toward joint ventures than suppliers and weaker in the presence of financial constraints. Our findings are consistent with the idea that when firms find it harder to terminate their workers in integrated operations, they change to an operating model where it is easier to replace or discontinue business partners instead of employees.

I.   Introduction

In recent decades, firms have increased their reliance on global production with the rise of information and communication technology and the deepening of trade liberalization (Alfaro, Antras, Chor, and Conconi (2019)). By sourcing inputs overseas, firms can take advantage of cheaper, more flexible, or specialized labor. However, this comes at the cost of being exposed to foreign labor regulations. U.S. multinationals have a third of their total employment through foreign affiliates, and their arm's-length imports are as large as their intrafirm transactions (Antras

(2016), Kovak, Oldenski, and Sly (2021)). Therefore, they are fairly susceptible to changes in overseas labor laws.[1]

In this article, we examine how changes in foreign labor regulations affect U.S. multinationals from a firm operation perspective. Prior work has shown that stricter local labor regulations reduce firms' operational flexibility, affecting their investment and financing policies (Simintzi, Vig, and Volpin (2015), Serfling (2016), and Bai, Fairhurst, and Serfling (2020)). Much less is known, however, about the effects on firms' overseas operational adjustments. In the case of U.S. multinationals operating in countries where labor regulations become tighter, they may resort to more flexible arm's-length relations with local firms. Intuitively, when firms find it harder to replace or terminate local workers, they may shift to an operating model through which it is easier to replace or terminate business partners instead of employees. Beyond this local effect, we also study whether foreign labor regulations motivate U.S. multinationals to relocate operations to different countries. Last, we examine whether financial constraints limit firms' ability to adjust their operations and whether such constraints are associated with weaker overall performance, when firms face more stringent foreign labor regulations.

We combine information from multiple data sources to conduct our analyses. We obtain data on foreign multinationals' business partners from FactSet Revere, data on textual mentions of U.S. firms' offshoring activities using the methodology by Hoberg and Moon (2017), (2019), and data on country-level labor regulations from the Cambridge Centre for Business Research (CBR). Our measure of labor protection is the Labour Regulation Index (LRI) from the CBR. This measure considers changes in legal rules based on statutory law or case law in the spirit of Botero, Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2004) but with the added benefit that it contains time series variations. The time series variations in labor protection laws within each foreign country help us identify the causal effects of labor regulations on firm-country level outcomes. Our final sample includes operations of more than 4,000 U.S. firms and 60,000 firm-country pairs for the sample period from 2003 to 2013.

Our main specification examines U.S. firms' business partners at the firm-foreign country-year level. The key explanatory variable is the country-year level LRI by the CBR. The specification includes firm-by-country and firm-by-year fixed effects, which allow us to focus on changes within firm-country pairs over time by controlling for all observable and unobservable variations common to a given firm and year. We also include country-year level controls commonly used in the multinational and international economics literature. By using this rich set of fixed effects and controls, we mitigate potential concerns regarding confounding factors that could bias the coefficient estimates for our variable of interest. Our results are also robust to other specifications with less-strict fixed effects, so our findings are not driven by oversaturating fixed effects.

We first validate that LRI changes are relevant to U.S. firms' overseas operations by examining whether such changes are associated with textual mentions of

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[1]See a recent article from *The New York Times* (June 30, 2007), "China Passes a Sweeping Labor Law" by Joseph Kahn and David Barboza, in Appendix A for an example of such susceptibility.

labor-related content in their financial statements regarding affected countries. We find that U.S. firms are more likely to mention words associated with labor off-shoring (employees) in a foreign country in their 10-Ks when labor protection increases in that country. This finding is consistent with firms discussing possible implications of the labor law changes for their operations in the country. By contrast, we do not find that offshore output or input mentions relate to the labor law changes in those nations. These findings suggest that the LRI measure is indeed associated with U.S. firms' labor market conditions in a foreign country and not with other generic economic factors, such as overall changes in demand or supply conditions of the country.

Our main analysis shows that the likelihood of a U.S. firm initiating business partnerships with local firms increases as labor regulations become tighter in that nation. A 1-standard-deviation increase in the LRI leads to a 16% increase in the likelihood of having business partners in that country. The rise in business partners occurs 1 year after the LRI increase, with no evidence of preexisting trends and no reversal. The effect is driven by U.S. firms' operations in multiple countries across different regions (e.g., Mexico, Germany, Korea, the U.K.) and not from a specific country alone. Within partnerships, the increase comes mainly from joint ventures and less so from suppliers, suggesting that U.S. multinationals intend to retain partial control of the new business relationships they form.

The increase in business partnerships we observe is likely driven by firms wanting to substitute integrated relationships with more flexible arm's-length relationships as labor protection increases. Previous work has shown that M&A or integrated operations decrease—or become less valuable—with stronger labor protection (e.g., Carluccio and Bas (2015), Dessaint, Golubov, and Volpin (2017), and Chatt, Gustafson, and Welker (2021)). We complement these results on the decrease in M&A by showing an offsetting increase in arm's-length partnership relations. We find that the increase in the likelihood of having business partners is present only among firms with integrated operations in the country and that the magnitude of the effect is up to 6 times larger for these firm-country pairs than for the overall sample.

To better understand the partnerships formed between U.S. multinationals and their foreign business partners as a response to LRI changes, we examine the characteristics of those foreign business partners. We find that foreign business partners tend to be large and diversified, but their revenue source is mostly local. Within the chosen business partners, joint ventures, which is the type of partnership that responds the most to labor regulations, are more diversified, are larger, and have a stronger presence in their home country than do other business partners. Being large and diversified grants local firms the flexibility to reallocate human capital internally (Tate and Yang (2015)). Accordingly, such local firms, relative to U.S. firms, can deal with employees more efficiently when facing idiosyncratic shocks in the presence of more stringent labor protection regulations. Moreover, local firms' competitiveness and bargaining position likely deteriorates vis-à-vis multinational firms when local protection increases in their home country. The lower cost of dealing with local labor regulations and the weaker bargaining power

of local firms can explain the new equilibrium of joint ventures where local firms deal with local employee relations.[2]

Next, we study whether firms' changes in operating strategies go beyond a local substitution effect between integrated and arm's-length relations in countries where labor regulations become tighter. Labor laws could have spillovers to other countries. Consistent with the spillover effect, we find that U.S. firms are more likely to acquire assets in other foreign countries with similar economic development or within the same geographic region. This finding indicates that U.S. firms also substitute integrated relationships across countries.

While the average response of U.S. multinationals to the increased LRI in our sample is to form more flexible arm's-length business relations or move integrated operations to other nations, we note that not all firms respond in the same way. We find that financially constrained firms are less likely to modify their operations. These findings are consistent with the notion that certain frictions may prevent some firms from making proper operational adjustments.

Finally, we examine the aggregate effects of foreign labor protection on firm-level performance. We first document that if the average firm in our sample were to experience a 1-standard-deviation increase in the LRI across all the countries where it operates (12 countries for the average firm), then sales growth would decline by 0.8 percentage points. This drop in sales growth represents a 10% reduction relative to its sample mean. Importantly, we find that the drop in sales growth is concentrated exclusively on financially constrained firms. These results suggest that U.S. multinationals' performance is susceptible to foreign labor regulations and that firms unable to adapt their operations overseas can suffer the most from stricter labor laws.

Our article contributes to several strands of literature. First, we contribute to the corporate finance and labor economics literature (see, e.g., Klasa, Maxwell, and Ortiz-Molina (2009), Matsa (2010), Bae, Kang, and Wang (2011), Chen, Kacperczyk, and Ortiz-Molina (2011), Agrawal and Matsa (2013), Cho (2017), Qiu (2019), Kim (2020), and Bena, Ortiz-Molina, and Simintzi (2022)). Previous studies have focused on how local regulations that increase labor rigidity—and thus operational leverage—affect firms' capital structure and investment decisions (Simintzi et al. (2015), Serfling (2016), Bai et al. (2020), and Kuzmina (2023)). We complement these studies by showing that foreign labor market rigidity can significantly affect how firms organize their operations overseas. Our results provide novel evidence that when labor rigidity shocks affect specific segments of a firm's operations (in this case, a given country), firms find it optimal to mitigate the effects of increased operational leverage through segment-specific operational adjustments.

We also contribute to the literature on hybrid organizational forms, such as strategic alliances and joint ventures (e.g., McConnell and Nantell (1985), Allen and Phillips (2000), Desai, Foley, and Hines (2004), Mathews (2006), and Robinson (2008)). Our results show that tighter labor market regulations in a foreign nation can foster international joint ventures in that country that partially offset the

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[2]It is also possible that U.S. multinationals target specific types of foreign labor forces after LRI changes. However, we do not find that a specific type of labor force (e.g., high-skilled workers) within business partners drives our results.

loss of integrated relationships (Dessaint et al. (2017)). To the best of our knowledge, this is the first article to link labor market regulations with the choice of hybrid organizational forms.

Last, our article relates to the literature on the organization of production (see, e.g., Henisz (2000), Autor (2003), Grossman and Helpman (2003), Antras and Helpman (2004), Antras (2014), Carluccio and Bas (2015), and Goldschmidt and Schmieder (2017)) and the literature on multinationals and corporate finance (see, e.g., Desai, Foley, and Hines (2008), Hoberg and Moon (2017), (2019), Faulkender, Hankins, and Petersen (2019), and Bena and Simintzi (2022)). We contribute to this literature by showing how foreign labor regulations affect multinationals' organizational forms and the types of business partnerships they form. We also document that foreign labor regulations can have significant effects on firms' overall performance and that financial constraints limit their ability to adapt to foreign labor regulations.

II.   Data and Descriptive Statistics

We create our sample by merging the global business relationship data compiled by FactSet Revere with textual mentions of offshore activities from Hoberg and Moon (2017), (2019) and the country-level labor protection index data from the CBR. We supplement the sample with M&A data from SDC, firm-level financial variables from Compustat, and country-level variables from various sources.

A.   Global Business Relationships

Our international business relationship data are from the FactSet Revere Relationship database. Starting in 2003, FactSet has been collecting comprehensive information on business relationships for more than 30,000 companies in 221 countries by processing corporate filings to regulatory agencies, press releases, corporate websites, and investor presentations as primary sources of information. The FactSet Revere Relationship database identifies not only the presence of business relationships in a country but also the types of business between partners.

Table IA.1 in the Supplementary Material shows an example of General Electric's 2012 snapshot of global business relationships from FactSet Revere and validates the in-depth quality of the data. Table IA.1 in the Supplementary Material shows that GE has various forms of partnership relations, including joint ventures, marketing, distribution, licensing, and supply chain. About half of those partnership relations are domestic, such as joint ventures with Boston Scientific and supplier agreements with Boeing. International partnerships are with firms in Brazil, China, France, Japan, India, Germany, and the U.K., among other nations. For instance, GE has a joint venture with GOL, a Brazilian airline, and a supplier agreement with Toshiba, a Japanese conglomerate.

The focus of our study is on multinational U.S. firms and their identified foreign business relations. Our analysis is at the firm-country-year level, where "country" refers to foreign countries in which U.S. firms in our sample have any business relations or operations. We first combine the FactSet Revere Relationship data with the textual offshore network data from Hoberg and Moon (2017), (2019),

which provide measures of U.S. firms' offshore activities. These measures are based on firm mentions of foreign countries in 10-K filings for the following categories: output, internal input, external input, and labor. For instance, words associated with offshoring labor include "employ," "employee," "worker," "hire," "recruit," "staff," "wage," and "salary." When these words are mentioned around a certain country name (and its variations) in a firm's 10-K filing, it indicates that the firm offshores its labor in the country through internal or external workers.[3] In Appendix B, we present the list of offshore words from Hoberg and Moon (2017), (2019).

Our sample covers firm-country pairs with at least one observation from either the FactSet Revere database or the textual offshoring database from Hoberg and Moon (2017), (2019) to focus on foreign countries where U.S. multinationals have a meaningful international presence in terms of business partnership and offshoring. We restrict our sample to the countries and the sample period covered by the CBR Labour Regulation Index (LRI) described in the following in detail. We discard firms with a Standard Industrial Classification (SIC) code in the range of 6,000 to 6,999 and 4,900 to 4,949 to exclude financials and regulated utilities, respectively. The final global business network data cover 4,974 unique firms in the U.S. that have business relations in 106 foreign countries from 2003 to 2013. Our primary dataset has 382,542 observations in total for more than 60,000 firm-country pairs.

We complement this dataset with M&A data including acquisitions of assets, acquisitions of ownership interests, and mergers, and divestitures from SDC.[4] We note that U.S. firms have offshoring or business partner relations in most countries but reported M&A transactions are significantly less frequent. For only about 4,000 of the approximately 60,000 firm-country pairs, we observe M&A activities during the sample period. The main purpose of using M&A data is to identify the footprint of foreign integrated operations and explore whether the effects of labor protection regulations are stronger with integrated operations.[5]

Table 1 presents descriptive statistics of global business relations from all 3 databases in detail. Panel A reports relations identified by the FactSet Revere Relationship database at the firm-country-year level. On average, U.S. firms report 0.2 business partners in a foreign country per year. Summing across countries, the average multinational firm has 3 foreign business partners in a year. As more than 95% of the firm-country-year observations correspond to either 0 or 1 business

[3]For example, Hoberg and Moon ((2017), (2019)) labor offshoring measure picks up the following 10-K paragraphs and identifies Deckers Outdoor Corp to have labor offshoring activities in China in 2004: "At December 31, 2004, we employed approximately 156 full-time employees in our U.S. facilities and 31 full-time employees located in China and Macau, none of whom is represented by a union. We believe our relationships with our employees are good" (Deckers Outdoor Corp's 10-K filing for the fiscal year 2004).

[4]We note that the divestiture data have the limitation that it only provides information on the buyer's nationality of a divested division or asset, not on the divested asset's location. However, to the extent that local buyers acquire the majority of the assets, consistent with a home bias in acquisitions (Kang and Kim (2008), Jiang, Qian, and Yonker (2019)), the number of divestitures to buyers in a foreign country can be a proxy for the number of assets divested in that country.

[5]Our sample selection does not require firms to have M&A activities in a given country because the primary focus of our article is on business partnerships and the unique number of foreign countries with M&A transactions by a U.S. firm is substantially smaller.

TABLE 1

Summary Statistics for Foreign Business Relations

Table 1 presents summary statistics for the numbers of business partners (aggregate and by type) in Panel A, offshore textual mentions in Panel B, and M&A transactions and divestitures in Panel C. Observations are at the firm-country-year level. Data for business partners are from the FactSet Revere Relationship database. Offshore textual mentions are from Hoberg & Moon (2017), (2019) offshore network database. Data for M&A transactions and divestitures are from the SDC Platinum database. Our main sample of 382,542 firm-country-year observations comprises firm-country pairs that have at least one observation from either the FactSet Revere database or Hoberg and Moon (2017), (2019) offshore network database. For the M&A analysis, we separately consider firm-country pairs where U.S. firms have reported at least one M&A activity during the entire sample period. The M&A active sample has 38,148 firm-country-year observations.

	Mean	P10	P25	P50	P75	P90	Std. Dev.	No. of Obs.
Panel A. FactSet Revere Relationship Data								
Business Partner	0.21	0.00	0.00	0.00	0.00	1.00	0.76	382,542
Partner Dummy	0.10	0.00	0.00	0.00	0.00	1.00	0.30	382,542
Joint Ventures	0.02	0.00	0.00	0.00	0.00	0.00	0.16	382,542
Suppliers	0.10	0.00	0.00	0.00	0.00	0.00	0.45	382,542
Others	0.10	0.00	0.00	0.00	0.00	0.00	0.46	382,542
Joint Venture Dummy	0.02	0.00	0.00	0.00	0.00	0.00	0.13	382,542
Supplier Dummy	0.07	0.00	0.00	0.00	0.00	0.00	0.25	382,542
Other Dummy	0.06	0.00	0.00	0.00	0.00	0.00	0.24	382,542
Panel B. Hoberg and Moon ((2017), (2019)) Offshore Network Data								
Output	1.57	0.00	0.00	0.00	2.00	4.00	4.16	382,542
Input	1.56	0.00	0.00	0.00	1.00	4.00	4.83	382,542
Internal Input	0.93	0.00	0.00	0.00	1.00	3.00	2.93	382,542
External Input	0.11	0.00	0.00	0.00	0.00	0.00	0.69	382,542
Employee	0.20	0.00	0.00	0.00	0.00	0.00	0.97	382,542
High Internal Input	0.10	0.00	0.00	0.00	0.00	1.00	0.30	382,542
High Internal Input (3Y)	0.10	0.00	0.00	0.00	0.00	0.00	0.30	382,542
High Internal Input (5Y)	0.09	0.00	0.00	0.00	0.00	0.00	0.29	382,542
Panel C. SDC Platinum M&A Data								
M&A Active	0.10	0.00	0.00	0.00	0.00	0.00	0.30	382,542
M&A Active (3Y)	0.02	0.00	0.00	0.00	0.00	0.00	0.14	382,542
M&A Active (5Y)	0.03	0.00	0.00	0.00	0.00	0.00	0.17	382,542
M&A	0.09	0.00	0.00	0.00	0.00	0.00	0.31	38,148
Divestitures	0.01	0.00	0.00	0.00	0.00	0.00	0.12	38,148
M&A Dummy	0.09	0.00	0.00	0.00	0.00	0.00	0.28	38,148
Divestiture Dummy	0.01	0.00	0.00	0.00	0.00	0.00	0.10	38,148

partnership, the relevant variation is mostly at the extensive margin. Partner Dummy reflects this variation. On average, a firm has a business partner for every 10 foreign-country-year pairs.

We classify partner relationships into three types: joint ventures, suppliers, and others. Joint ventures, which include partnerships to introduce new products, are less common than supplier relationships, which include technology and manufacturing partners. The others category includes all other types of partnerships, such as marketing, distribution, and equity investment relations. Within these categories, joint ventures are arguably the ones with a higher degree of joint ownership of assets, while suppliers have the least.

Panel B of Table 1 reports textual mentions of offshore activities. U.S. firms mention offshore output and input activities in a given country roughly 1.6 times per year during the sample period. Within offshore input activities, total mentions of internal input (i.e., through subsidiaries) are almost 9 times more common than mentions of external input (i.e., through supplier contracts). Offshore employee words are mentioned 0.2 times per year for a given foreign country.

We create a measure of intensive integrated operations at the firm-country pair level, using internal input mentions, named High Internal Input. This time-invariant

dummy variable takes the value of 1 if the firm's sourcing internal input in a country during the sample period is in the top 10% of its distribution, and 0 otherwise. We consider intensive integrated operations for the entire period for a firm-country pair because textual mentions reflect the importance of an issue, rather than on-and-off integrated assets in a given foreign country; that is, while mentions can fluctuate with importance, the underlying presence of integrated assets is likely more persistent. We also consider alternative measures of High Internal Input (3Y or 5Y) by using 3 or 5 years of data prior to the start of our sample period to mitigate any look-ahead bias.

Last, Panel C of Table 1 reports international M&A and divestiture activities from the SDC database. The M&A active sample, which consists of firm-country pairs with at least one M&A transaction during the entire sample period, represents only 10% of the observations. We use this indicator variable as the second proxy of integrated activities in a firm-country pair. We also consider alternative measures of M&A Active (3Y or 5Y) by using 3 or 5 years of data prior to the start of our sample period. Within the M&A active sample, on average, U.S. firms have 0.09 M&A transactions in a foreign country per year. The average number of divestitures is much lower at about one transaction per every 100 firm-country-year observations.

We note that the high internal input and M&A active indicators are just proxies for U.S. firms' active presence of integrated operations in a specific foreign nation. Some firms may still have integrated operations beyond what these proxies capture. Multinationals may have acquired plants or assets (Maksimovic, Phillips, and Yang (2013)) in a foreign country that are not captured by our textual mentions or SDC data.

Figure 1 presents the international breadth of U.S. firms' offshoring graphically. Graph A of Figure 1 shows that business partner relations are more common in Japan, the U.K., and Germany. As seen in Graph B of Figure 1, Canada, China, and the U.K. are in the top three countries for textual mentions. Graph C of Figure 1 shows that Germany rejoins the top 3 countries for M&A activities. Overall, these figures show the relative importance of foreign countries for U.S. firms across our key databases.

B.   Global Labor Protection Index

Our labor protection measure is from the LRI by the CBR.[6] The LRI codes provisions of labor law and relevant court decisions from 1970 to 2013 in over 100 countries that together represent more than 95% of world GDP.[7] The LRI covers the full range of labor law in each country, not just indicating the presence or absence of a specific labor regulation but estimating the extent to which a given legal protection affects workers in the country. The index contains 40 indicators under the following five categories: regulations of alternative employment contracts, working time, dismissal, employee representation, and industrial action (see Adams, Bastani, Bishop, and Deakin (2017) for details on the coding procedure).
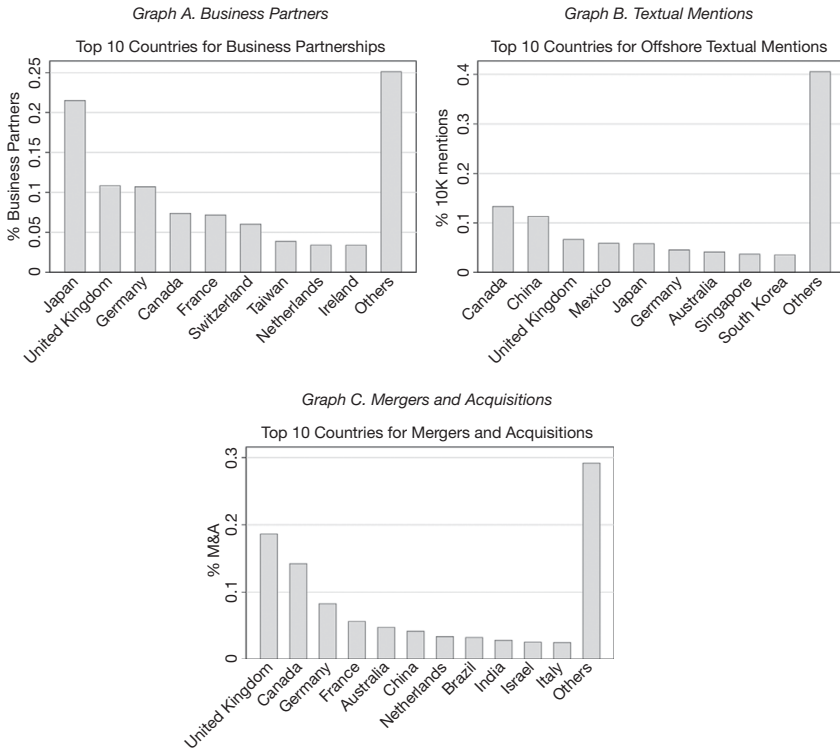
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[6]The CBR LRI data are available at https://www.cbr.cam.ac.uk/datasets/.

[7]Our sample starts in 2003 because not all country LRI data go as far back as 1970 and the FactSet Reserve data begin in 2003. Our sample ends in 2013 because the detailed LRI data are only available until 2013.

FIGURE 1

Relative Importance of Countries by Database

Figure 1 displays the fractions of each country's observations in our sample from 2003 to 2013 for the following types of U.S. firms' global business relations: Graph A: Business partners from FactSet Revere, Graph B: Offshoring textual mentions from Hoberg and Moon (2017), (2019), and Graph C: M&A activities from SDC Platinum.


Graph A. Business Partners

Top 10 Countries for Business Partnerships

Graph B. Textual Mentions

Top 10 Countries for Offshore Textual Mentions

Graph C. Mergers and Acquisitions

Top 10 Countries for Mergers and Acquisitions

We take the average of these 40 indicators at the country-year level and use this average as the main variable of interest in our analyses.

The LRI has several important advantages over other labor protection indices used in the previous literature. First, by considering changes in legal rules based on statutory law or case law, the LRI exhibits sizable time series variations, while other labor protection indices are mainly cross-sectional (e.g., the index compiled by Botero et al. (2004)). The index can be regarded as a compilation of labor regulation shocks that have occurred in foreign countries over time. Therefore, the shocks used in the previous studies (e.g., Simintzi et al. (2015), Dessaint et al. (2017), and Kuzmina (2023)) are reflected as changes in the index value.

The fact that the LRI exhibits substantial time series variation in multiple countries is key to our identification strategy. We illustrate how the LRI changes in the time series using China as an example. In 2007, a labor law that implements an older provision on annual leave entitlements was passed in China. This change, although minor, maps to a change in one of the 40 LRI indicators ("annual leave entitlements"), changing from 0 before 2007 to 0.17 after 2007. This change translates into a moderate increase in our average LRI of 0.00425 (=0.17/40) in

FIGURE 2

Labor Regulation Index over Time by Country

Figure 2 displays time series variations of the LRI during the sample period from 2003 to 2013 for 12 offshoring counterparty nations across multiple regions and with different degrees of LRI variation.
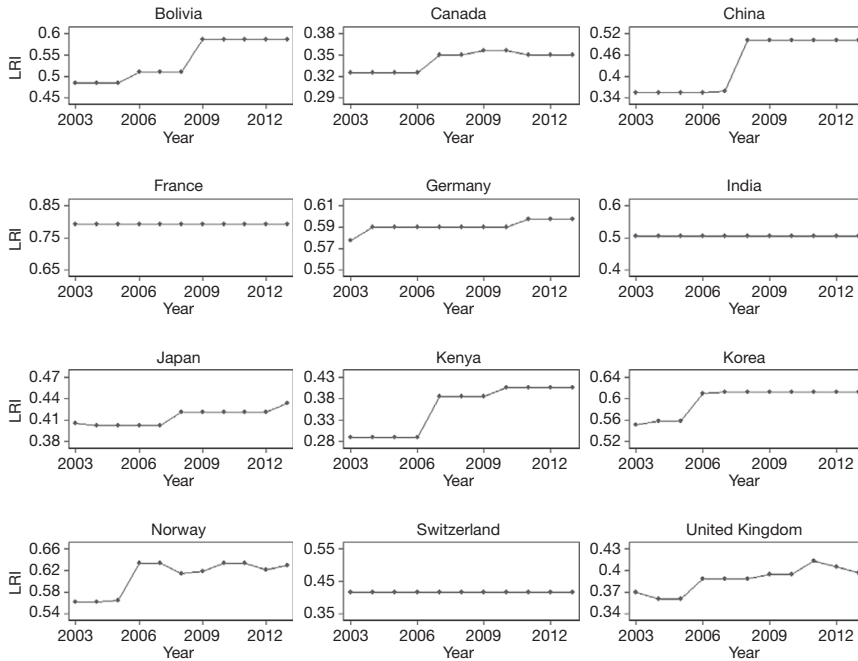
2007 when we consider all 40 indicators in the index. More importantly, in 2008, China's Labor Contract Law came into force.[8] This major reform of Chinese labor law significantly increased protection and rights for dispatched labor and agency workers, reduced the duration of regular working hours from 44 to 40, and imposed constraints on dismissals. The law further requires all employers, including foreign companies, to restrict the use of temporary workers and make those workers full-time employees with lifetime benefits if their short-term contracts are renewed more than twice. Around the introduction of the 2008 Labor Contract Law, the average LRI for China increased substantially from 0.35825 in 2007 to 0.50225 in 2008.

Figure 2 shows the rich variations of the average LRI during our sample period, both cross-sectionally and in time series, across 12 counterparty nations for U.S. offshoring activities from multiple geographic regions. We first note that the average LRIs for the 12 countries reflect significantly different labor protection regimes across countries. Second, we note that multiple countries experience significant changes in the LRI over our sample period (e.g., Bolivia, China, Kenya, Korea, and Norway). For China, as exemplified previously, we observe a minor increase in the index in 2007 and a significantly larger increase in 2008. In contrast, other countries (e.g., France, India, and Switzerland) have no change whatsoever in

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[8]See Remington and Cui (2015) for details about the 2008 Labor Contract Law in China.

the LRI during the sample period and thus serve as ideal control observations in our analysis. Finally, we note that for the U.S., the LRI is stable at 0.145 over the sample period and the lowest among all countries in the sample. Hence, increased labor protection regulations overseas are likely binding for U.S. multinationals.

C. Country Control and Firm-Level Variables

Besides the LRI, we consider other country characteristics known to be important macroeconomic factors as control variables to isolate the clean effect of the LRI. Those characteristics include levels and growth rates of GDP for market size and economic growth, respectively, inflation rates for price stability, corporate tax rates motivated by Faulkender et al. (2019), private credit-to-GDP to capture credit market development following Carluccio and Fally (2012), the economic freedom index for country-specific legal and trade environment following Antras, Desai, and Foley (2009), the political and business stability index following Desai et al. (2008), exchange rates following Erel, Liao, and Weisbach (2012), and the government integrity index from the Heritage Foundation for corporate political influence. The definition and data source for each variable are given in Appendix C.

Panel A of Table 2 reports summary statistics of these country-level variables, including the primary variable of interest, LRI. Observations are at the country-year level. The average LRI in our sample is 0.51. The LRI distribution confirms our previous conclusion from Figure 2 that there is sufficient variation in the labor protection measure: The interquartile range is 0.17 and the standard deviation is

TABLE 2

Summary Statistics for Country and Firm Variables

Table 2 presents summary statistics for country characteristics variables in Panel A and firm characteristics variables in Panel B. The detailed descriptions of variables are available in Appendix C.

	Mean	P10	P25	Median	P75	P90	Std. Dev.	No. of Obs.
Panel A. Country-Level Variables								
LRI	0.51	0.35	0.42	0.51	0.59	0.63	0.12	1,143
log(GDP)	25.44	23.21	24.05	25.57	26.68	27.88	1.73	1,132
GDP Growth %	0.04	−0.00	0.02	0.04	0.07	0.09	0.05	1,132
Inflation %	0.07	0.01	0.02	0.05	0.09	0.17	0.09	1,132
Corporate Tax Rate	0.26	0.16	0.20	0.26	0.30	0.35	0.08	1,143
Credit to GDP %	0.62	0.13	0.25	0.47	0.93	1.35	0.49	1,077
Economic Freedom	0.62	0.51	0.56	0.62	0.69	0.75	0.10	1,110
Political & Business Stability	0.65	0.47	0.52	0.63	0.77	0.91	0.17	1,078
log(Exchange Rate)	3.01	0.56	0.83	2.07	4.47	7.07	2.52	1,102
Government Integrity	0.46	0.22	0.27	0.39	0.63	0.87	0.23	1,112
Panel B. Firm-Level Variables								
Sales Growth	0.08	−0.20	−0.03	0.07	0.19	0.37	0.32	31,189
ROA	−0.05	−0.34	−0.06	0.03	0.08	0.12	0.24	31,829
Capex/Sales	0.11	0.01	0.02	0.03	0.07	0.18	0.32	31,349
R&D/Sales	0.37	0.00	0.00	0.01	0.10	0.28	1.72	31,349
Book Leverage	0.20	0.00	0.00	0.14	0.31	0.49	0.22	31,698
Cash/Assets	0.23	0.01	0.05	0.14	0.34	0.61	0.24	31,833
log(Assets)	5.98	3.31	4.48	5.93	7.38	8.68	2.05	31,835
Age	17.03	4.00	7.00	14.00	23.00	38.00	12.57	31,852
Tobin's q	2.11	0.96	1.19	1.59	2.39	3.80	1.60	31,813
Financial Constraints (WW)	−0.28	−0.43	−0.36	−0.27	−0.20	−0.13	0.12	31,061

0.12. The average GDP growth and inflation are 4% and 7%, respectively. The average top marginal corporate tax rate is 26%. The private credit-to-GDP ratio is, on average, 62%. The average economic freedom and political and business stability scores are 0.62 and 0.65, respectively, indicating that U.S. firms do business with more developed countries. The government integrity score is 0.46 on average with sufficient variation both within and across countries.

In part of our analysis, we study the effects of aggregate foreign labor protection on firms' financial performance and other policies. We use sales growth as our primary performance metric. The average firm's sales growth in our sample is 8% per year. We also examine ROA, capital expenditures, R&D expenditures, and financial leverage as other variables of interest for the firm-level analyses. We report the summary statistics of these variables in Panel B of Table 2, along with other meaningful variables such as firm age and size. The average firm in our sample of multinationals appears to be relatively larger and older than the average U.S. firm in the Compustat universe, with total assets of approximately $3 billion and 17 years.

III.   Empirical Methodology

We consider four sets of empirical models. First, our baseline specification examines the direct effects of labor protection changes in a foreign country on U.S. firms' operations in that country. Second, we extend the analysis to study the potential spillovers of changes in labor protection in a foreign country to other countries. Third, we study how financial constraints affect U.S. firms' operational adjustments. Fourth, we examine the effects of overall changes in foreign labor protection on U.S. firms' performance. Below, we discuss our baseline empirical strategy in detail, addressing potential identification threats. We describe the other specifications when presenting the corresponding analyses in later sections.

A.   Baseline Empirical Strategy

To analyze the impact of labor protection in a foreign country on U.S. firms' operations in the country, we estimate the following regression model:

$$(1) \qquad y_{ict} = \beta \text{LRI}_{ct} + \gamma W_{ct} + \psi_{ic} + \lambda_{it} + \varepsilon_{ict},$$

where i denotes a firm, c denotes a foreign country, and t denotes a year. Our main dependent variable, y_{ict}, is Partner Dummy, as the business partner variation is mainly at the extensive margin (see Panel A of Table 1).[9] We also use the dummy variables for the presence of specific types of business partners (e.g., joint ventures) that U.S. firms have in a given country and year.

Our primary variable of interest is LRI_{ct}. W_{ct} is a set of contemporaneous country-level control variables. Firm-by-country and firm-by-year fixed effects are

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[9]We use a linear model, as nonlinear models such as probit face the incidental parameter problem with high dimensional fixed effects. Other nonlinear models such as Poisson allow for high dimensional fixed effects but restrict the data used in the estimation only to the fixed-effect groups where at least one observation has a nonzero value for the dependent variable (Cohn, Liu, and Wardlaw (2022)). This makes it unsuitable for our context because it would drop many firm-country pairs that serve as controls in our DID setting.

ψ_{ic} and λ_{it}, respectively. By including firm-country pair fixed effects in our specification, we control for unobserved time-invariant heterogeneity at the firm-country level, such as cross-sectionally varying levels of relationship intensity. This allows us to focus on the time series variations in the LRI and business partners. The firm-by-year fixed effects absorb the time-varying firm-level heterogeneity and thus capture all common factors to a given firm operating in multiple foreign countries in a given year. Combined, our granular sets of fixed effects enable us to identify variations within a firm across firm-country pairs over time. Standard errors are 2-way clustered at the firm and country levels to account for noninde-pendent errors within firms and countries.

Equation (1) is akin to a staggered difference-in-differences (DID) estimation, where the treatment is a change to labor protection in a foreign country. It is worth noting that the LRI is a continuous variable that contains information on the extent of labor regulations in each country each year. Hence, our key parameter of interest, β, captures the effect of the time series differences in the intensity of the LRI over time for a given firm-country pair, controlling for all unobservable time-varying components common to a given firm. We expect β to be significantly positive for partnership relations, with the effect being driven by firms with integrated operations in the country. A positive β in the countries with integrated operations would suggest that firms replace integrated relations with more flexible arrangements in a country in response to an increase in the country's labor protection regulations.

B.   Identification Threats

There are two main threats to identifying causal effects in a difference-in-differences strategy. The first is the endogeneity of the treatment. We discuss this possibility in this section. The second is that the differences in posttreatment outcomes are potentially due to pre-trends. We examine this possibility in Section IV.A when presenting our main results.

The treatment can be endogenous due to reverse causality or omitted variables. In our setting, the possibility of reverse causality is limited, as foreign countries are unlikely to change their labor policies due to the pressure of a small set of U.S. firms. Moreover, even if U.S. firms had some influence over foreign countries' legislators, this influence motive predicts that both business partners and M&A activities should move in the same direction with such influence. While we find that business partnerships increase with an increase in LRI, we also find that M&A activities decrease. These opposing effects are difficult to explain with the influence motive. A second reverse causality explanation is that partnerships lead to productivity gains in foreign countries (Grossman and Rossi-Hasenberg (2008)) and that legislators are more likely to tighten labor regulations in the presence of productivity gains. Under this hypothesis, partnership increases would precede LRI increases. However, we show in Section IV.A that business partnerships increase only after labor regulations become tighter, which is inconsistent with this alternative explanation.

Omitted variables, however, pose a more significant threat to establishing causality, given that changes in labor protection policies may correlate with other changes in the economy. For instance, it is possible that a push to tighten labor laws is politically feasible only when the country is growing. Under this scenario, the

increase in partnerships could be explained by economic growth instead of labor regulations. Alternatively, tightening labor laws may coincide with lower economic freedom, government integrity, or political stability, and thus, business partnerships may be the preferred mode of operation under these conditions. Such concerns are the primary motivation to include in our regression specifications the rich set of country-level controls we mention in Section II.C.

In addition, we examine the correlations between LRI and other country-level variables to directly assess their potential as confounding factors. To that end, we present country-level panel regressions in Table IA.2 in the Supplementary Material, which shows that controlling for country fixed effects, the LRI has an insignificant correlation with each of the other country-level characteristics (Panel A). These results contrast with those from the pooled panel without the country fixed effects (Panel B), where some variables strongly correlate with the LRI. The main takeaway is that while some country-level characteristics strongly correlate with the LRI across countries (cross-sectional effects), the within-country variation of the LRI does not seem to confound with those macro-level variables that can also affect the formation of business partnerships. Hence, the potential concern for time-varying macro-level confounding factors is mitigated in our context, as our specification focuses on within-country variations.

C. Validation Test

Although the rich set of country-year level controls and the stringent set of fixed effects in our specifications help mitigate omitted variable concerns, other factors unrelated to labor regulations could still confound with the LRI. For instance, an unobserved time-varying country-level factor could correlate with the LRI and partnerships at the same time, biasing the coefficient estimates of interest. We further address this concern with a validation test. Our goal is to show that changes in the LRI correlate with firm mentions of employee-related words in 10-Ks, but not with mentions of other forms of offshore activities, such as input and output. If our results are driven by other economic factors that are unrelated to labor regulations but coincide with them (e.g., changes in demand), we would observe that firm textual mentions of input or output offshore activities also change.

Table 3 presents results from estimating equation (1), where the dependent variables are offshore textual mentions. We use the log of 1 plus the number of textual mentions, as the variation in textual mentions is generally sticky at the extensive margins. In column 1, we consider employee-related textual mentions to capture the extent to which a firm discusses offshore labor along with a given nation word in a year. We find that labor protection in a country is positively associated with firm mentions of offshore employment in that country. This result confirms that changes in employment protection in foreign countries are relevant to the businesses of U.S. firms so that they significantly increase labor-related discussions in their financial statements.

By means of comparison, in columns 2 and 3, we examine mentions of offshore output and input. We find that the coefficient estimates of the LRI are

TABLE 3

Relevance of Foreign Labor Protection

Table 3 presents results from the estimation of equation (1) where dependent variables are Hoberg and Moon (2017), (2019) textual mentions of different types of offshore activities. Country control variables include log of GDP, GDP growth, inflation, corporate tax rate, private credit-to-GDP ratio, economic freedom index, political and business stability index, log of the exchange rate, and government integrity. All variables are defined in Appendix C. Standard errors (within parentheses) are adjusted for heteroscedasticity and 2-way clustered at the firm and country levels. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Variables	log(Employee) 1	log(Output) 2	log(Input) 3
LRI	0.086**	0.029	−0.009
	(0.042)	(0.153)	(0.147)
No. of obs.	349,607	349,607	349,607
R^2	0.736	0.815	0.831
Sample		Firm-country-year level	
Firm-year FE	Yes	Yes	Yes
Firm-country FE	Yes	Yes	Yes
Country controls	Yes	Yes	Yes

smaller and statistically insignificant for offshore output and input. The lack of significant response in mentions of offshore activities other than the employee words provides compelling validation that labor protection laws are associated with firms' labor-related concerns. These findings further mitigate the concern that unobserved confounding economic factors drive our results.

IV.   Results

A.   Operating Adjustments: Arm's-Length Business Relations

The main focus of our article is to examine whether the types of business relations that U.S. multinationals build in foreign countries change after the countries' labor regulations become stricter. Our hypothesis is that when multinationals with operations in a foreign nation find it harder to replace or terminate local workers, they may shift to an operating model where it is easier to replace or terminate business partners instead of employees.

We begin our analysis by examining the standalone effect of the LRI on the likelihood that a firm initiates arm's-length business partnerships, regardless of whether it has integrated operations in the nation. In the next section, we examine whether integrated operations decrease in response to LRI increases. More importantly, we look for a substitution pattern by examining whether the increase in partnerships is preeminent when multinationals have an integrated presence in foreign countries.

Table 4 presents results from the regressions of Partner Dummy on the LRI following equation (1). In column 1, we first consider business partners in any form. We find that an increase in labor protection in a foreign country positively impacts U.S. firms' arm's-length relations in that country. The coefficient estimate in column 1 implies that a 1-standard-deviation increase in the LRI raises the likelihood of U.S. firms having business partners in that country by 1.6 percentage points (0.135 × 0.12). This effect represents a 16% increase from the sample mean.

TABLE 4

LRI and Business Partners

Table 4 presents results from the estimation of equation (1), where the dependent variable is an indicator of whether a firm has a business partnership in a country and year. Column 1 considers business partners in any form. Columns 2–4 consider joint ventures, suppliers, and other types of partners, respectively. Country control variables include the log of GDP, GDP growth, inflation, corporate tax rate, private credit-to-GDP ratio, economic freedom index, political and business stability index, log of the exchange rate, and government integrity. All variables are defined in Appendix C. Standard errors (within parentheses) are adjusted for heteroscedasticity and 2-way clustered at the firm and country levels. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Variables	Partner Dummy 1	Joint Venture Dummy 2	Supplier Dummy 3	Others Dummy 4
LRI	0.135**	0.079***	0.049	0.042
	(0.063)	(0.025)	(0.047)	(0.037)
GDP Growth %	−0.066*	−0.025	−0.035	−0.024
	(0.037)	(0.021)	(0.026)	(0.024)
Credit to GDP %	0.005	−0.002	0.002	0.003
	(0.006)	(0.003)	(0.005)	(0.004)
log(GDP)	0.124***	0.052***	0.064***	0.054***
	(0.022)	(0.013)	(0.014)	(0.011)
log(Exchange Rate)	0.006	0.000	−0.003	0.006
	(0.009)	(0.005)	(0.005)	(0.005)
Political & Business Stability	0.021	−0.011	0.033	0.027
	(0.050)	(0.026)	(0.039)	(0.027)
Corporate Tax Rate	−0.011	−0.010	0.006	−0.004
	(0.035)	(0.017)	(0.027)	(0.020)
Inflation %	−0.038*	−0.015*	−0.024	−0.017
	(0.021)	(0.008)	(0.016)	(0.013)
Economic Freedom	0.051	−0.006	−0.003	0.008
	(0.056)	(0.028)	(0.044)	(0.038)
Government Integrity	−0.030	0.002	−0.015	−0.009
	(0.037)	(0.013)	(0.034)	(0.027)
No. of obs.	349,607	349,607	349,607	349,607
R^2	0.658	0.614	0.651	0.660
Sample		Firm-country-year level		
Firm-year FE	Yes	Yes	Yes	Yes
Firm-country FE	Yes	Yes	Yes	Yes
Country controls	Shown	Shown	Shown	Shown

We further examine which forms of partnerships primarily increase in response to stricter labor regulations in foreign countries. We consider three categories of business partnerships: joint ventures; suppliers; and others. Here, we view supplier relations as a complete separation of ownership and joint ventures as a hybrid organizational form, where U.S. firms retain some control over assets. The "others" category includes marketing partners, distribution partners, and equity investments. It is not entirely clear how to categorize this group in terms of the degree of integration because these categories are arm's-length relations of different ownership degrees governed by contracts. In contrast to business partners, acquisitions of controlling stakes via M&A represent full integration.

In columns 2–4, we find that joint ventures are the most pronounced form of arm's-length relations that significantly increase. Although the coefficient estimates for suppliers and others categories of business relations are positive, they are statistically insignificant and smaller in magnitude relative to their sample means. In Section IV.C, we dig deeper into the characteristics of these three types of business partners and examine the unique attributes of joint ventures, which are

the most dominant form of business partnerships that U.S. firms seek to build in response to stricter local labor regulations.[10]

Next, we examine the dynamic effects of the LRI on business partners. By doing this, we can show whether the increase in business partners is due to preexisting trends or occurs only after labor protection increases in a given country. If we do not find a pre-trend in business partners before an increase in the LRI, it is more likely that the parallel trend assumption holds in our setting.

Studying dynamic effects in our setting is not as straightforward as in other contexts where regulations change in a discrete way at one specific time. As our previous example for China portrays, changes in the LRI can be preceded by other changes in the LRI, making it difficult to exhibit the dynamics around LRI shifts. To alleviate the issue of multiple events in a country muddling our analysis of dynamic effects, we restrict our data to cases resembling event studies. Specifically, we consider only the 25 countries that experienced a single LRI change during the sample period as treated and the 16 countries that experienced no change in the LRI as controls. While these sample restrictions leave us with less than one-fourth of the observations from our main sample, it gives us further credence that we can estimate the dynamic effects more accurately. To show comparability between our main and the restricted samples, we present summary statistics analogous to Tables 1 and 2 using the restricted sample in Table IA.6 in the Supplementary Material. We find that in the restricted sample, our key dependent variable, Partner Dummy, is 0.09 (vs. 0.10 in the main sample) and our key independent variable, LRI, is 0.49 (vs. 0.51 in the main sample).[11] Although the size of this restricted sample is only one-fourth, it appears to be closely representative of the main sample. Nevertheless, we highlight that the use of this restricted sample is solely limited to showing the dynamic effects of the LRI and that we rely on the main sample for all remaining tests.

To study the dynamic effects of the LRI using this more restricted sample, we estimate the following equation:

$$(2) \quad y_{ict} = \sum_{h=-4}^{h=4} \beta_h \, D_{ch} + \delta_{h>4} \, D_{ch>4} + \delta_{h<-4} \, D_{ch<-4} + \gamma W_{ct} + \psi_{ic} + \lambda_{it} + \varepsilon_{ict},$$

where h denotes years relative to the LRI change (i.e., event year). D_{ch} takes the value of $+(-)1$ for LRI increases (decreases) in the year $h \in [-4, 4]$ around the event for country c, and 0 otherwise. $D_{ch>4}$ takes the value of $+(-)1$ for LRI increases (decreases) in the years $h > 4$ after the event for country c, and zero otherwise, and

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[10]In Table IA.3 in the Supplementary Material, we consider the analogous tests that include additive firm, country, and year fixed effects to address a potential concern that our model may be overidentified with granular fixed effects. Results are robust to the inclusions of different fixed effects. In Table IA.4 in the Supplementary Material, we examine whether our findings are driven by potential changes in firm boundaries due to the financial crisis. We find that our results are robust to excluding the entire crisis period. We also examine which LRI components have more significant effects on initiating business partners. Table IA.5 in the Supplementary Material shows that employment contracts, restrictions on working time, and employee dismissal are the most important contributors to our results.

[11]The t-statistics from the t-tests for the mean differences between the 2 samples are 0.35 and 0.69 for Partner Dummy and LRI, respectively, indicating these variables are not statistically different between the 2 samples. Furthermore, in unreported results, we estimate equation (1) as in column 1 of Table 4 using only the restricted sample. We find that the coefficient estimate for LRI is almost identical at 0.155 (vs. 0.135) although the statistical significance is much weaker due to the reduced sample size.

FIGURE 3

Timing of Labor Protection Effects on Business Partner Initiations

Figure 3 displays the dynamic effects of the LRI on local business relations around the changes in the LRI in a given year t. We restrict our data to country-year episodes that resemble event studies. Treated countries are those that experienced a single change in the LRI (25 countries): 20 experienced an LRI increase and 5 an LRI decrease. Control countries are those with no change in the LRI (16 countries). For Graph A, we estimate $y_{ict} = \sum \beta_h D_{ch} + \delta_{h>4} D_{ch>4} + \delta_{h<-4} D_{ch<-4} + \gamma W_{ct} + \psi_{ic} + \lambda_{it} + \varepsilon_{ict}$, where i denotes a firm, c denotes a foreign country, t denotes a year, and h denotes years relative to the LRI change (i.e., event year). D_{ch} takes the value of $+(-)1$ for LRI increases (decreases) in the year $h \in [-4,4]$ around the event for country c, and 0 otherwise. $D_{ch>4}$ takes the value of $+(-)1$ for LRI increases (decreases) in the years $h > 4$ after the event for country c, and 0 otherwise. $D_{ch<-4}$ takes the value of $+(-)1$ for LRI increases (decreases) in the years $h < -4$ before the event for country c, and 0 otherwise. All other terms are the same as in equation (1) of the article. We present the coefficients for each event year, except the coefficients for the periods before $h = -4$ ($D_{ch<-4}$) and after $h = 4$ ($D_{ch>4}$), which are omitted for visual clarity. Graph B plots the coefficient estimates using de Chaisemartin and D'Haultfoeuille's (2020) methodology for staggered difference-in-differences. In both graphs, the shaded area represents the 90% confidence interval.

Graph A. Standard Approach

Graph B. de Chaisemartin and D'Haultfoeuille (2020)'s Staggered DiD Methodology
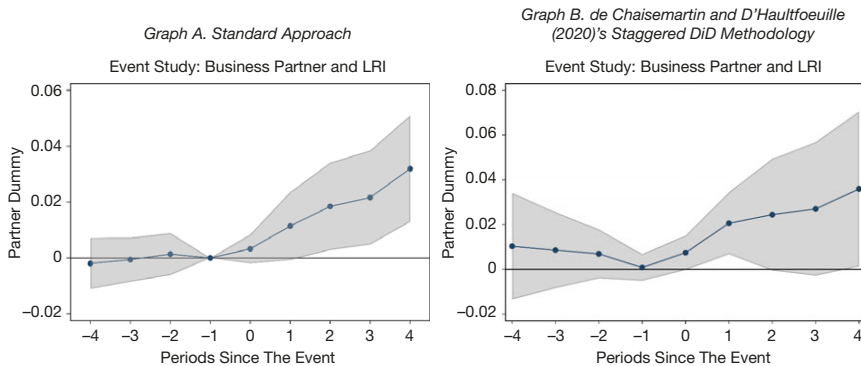
$D_{ch<-4}$ takes the value of $+(-)1$ for LRI increases (decreases) in the years $h < -4$ before the event, and 0 otherwise. All other terms are the same as in equation (1). We present the estimation results of equation (2) for business partners in Graph A of Figure 3. The coefficients for $D_{ch<-4}$ and $D_{ch>4}$ are estimated jointly but not shown in the figure for visual clarity.

As the figure shows, we find no evidence of an upward trend in Partner Dummy in the years leading to the change in the LRI. This is consistent with the parallel trend assumption being satisfied in the data. We also observe that the likelihood of having business partners goes up significantly 1 year after the LRI increase, and the upward trend continues for at least 4 years.[12] This evidence on the timing of the effect is inconsistent with a reverse causality argument where partnerships lead to local firms' productivity gains, and regulators respond to the high productivity gains by tightening labor laws.[13]

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[12]The short-term economic effect of LRI in this dynamic analysis using the restricted sample is comparable to the main LRI effect (i.e., the slope coefficient of 0.135) in column 1 of Table 4. We make the effect of the discrete changes in LRI in Graph A of Figure 3 comparable to its continuous change by considering the average absolute change in LRI of 0.024 in the event-study sample. The estimated slope coefficient for $t = 0$ in Graph A of Figure 3 is 0.0033, and this translates into a $d(\text{Partner Dummy})/d(\text{LRI})$ of 0.1375 (=0.0033/0.024).

[13]The effect of LRI on wages is ambiguous. On the one hand, labor protection can come with higher wages. On the other hand, higher labor protection could increase the cost of hiring, leading to lower wages and higher informality. We do not have broadly available data on country-level salaries or wages to examine this prediction. However, we can indirectly explore the effect on wages using data from the World Bank on compensation as a fraction of total expenses. These data are only available for a subset of

A related concern with staggered DID methodologies is that the posttreatment periods of the first treated units are used as control observations for later-treated units, possibly biasing dynamic estimates (Baker, Larcker, and Wang (2022)). To address this potential concern, we follow the methodology proposed by de Chaisemartin and D'Haultfoeuille (2020) who developed a new estimator that dynamically compares switchers to observations that remain untreated. We present the results in Graph B of Figure 3. The figure shows similar estimates as those presented in Graph A of Figure 3. Overall, both graphs in Figure 3 exhibit no evidence of preexisting trends, that our results are not driven by the problems with the staggered nature of LRI changes, and that the increase in business partners after an LRI increase is gradual with no reversal.[14]

B.   Substitutions Between Integrated and Arm's-Length Relations

The previous literature has shown that with stronger labor protection, M&A activities decrease or become less valuable (John, Knyazeva, and Knyazeva (2015), Dessaint et al. (2017), and Chatt et al. (2021)). Therefore, we also examine in our own context of multinational firms whether stricter foreign labor regulations indeed lead to a reduction in more integrated types of operations. We confirm this prediction in columns 1 and 2 of Table IA.7 in the Supplementary Material, where we regress the indicators for M&A transactions and divestitures, respectively, on the LRI for the M&A active sample. The M&A active sample consists of firm-country-year observations for only countries with at least one M&A transaction during the entire sample period. The coefficient estimate for the LRI is negative (positive) and statistically significant for the likelihood of M&A (divestitures). For example, in column 2, the likelihood of divestitures in a foreign country increases by 1.1 percentage points when a firm experiences a 1-standard-deviation increase in the LRI in that country. This effect represents a 100% increase relative to the sample mean. These results are consistent with U.S. multinational firms being less likely to commence and maintain fully integrated operations in foreign countries when local labor regulations become stricter.

In columns 3 and 4 of Table IA.7 in the Supplementary Material, we present results based on our full sample without any sample restriction. We find that the directions of the LRI effects (negative for M&As and positive for divestitures) are consistent with the results in columns 1 and 2 based on the M&A active sample. However, the magnitudes and statistical significance of the estimated coefficients drop notably. By using the full sample versus the M&A active sample, we essentially add numerous uninformative data (almost 90% of the sample size) with no M&A transaction both before and after LRI changes to the M&A active sample.

country-year observations in our sample. In a country fixed-effect panel regression, we find that higher LRI is negatively associated with compensation as a fraction of expenses. Hence, the effects of wage increases are unlikely to be of first-order relevance in explaining our results.

[14]We note that LRI-increasing events are substantially more frequent than LRI-decreasing events in our data. In the refined single-event sample, 20 countries have LRI-increasing events while only five countries have LRI-decreasing events. Furthermore, those five countries with LRI-decreasing events are Afghanistan, Algeria, Gabon, Honduras, and Qatar, which are not the most representative among countries where U.S. firms generally have operations. Hence, a fair interpretation of our results should be that the LRI effect on business partnerships is primarily from LRI-increasing events.

Therefore, those "no M&A activity" observations throughout the sample period dwarf the estimated LRI effects. Although we show these results, we call for caution when interpreting these findings.

More crucially, we investigate whether the LRI effects on business partners become stronger for the subsets of firm-country pairs with local footprint of integrated operations. We consider both M&A activities and internal input off-shoring as measures that are indicative of more integrated operations in a country. To the extent that there is a substitution between integrated operations and arm's-length operations, we expect to find that the increase in business partners is more pronounced in those firm-country pairs. To examine this possibility, we extend the main specification to include the interaction term between the LRI and an indicator for active M&A or intense internal input offshoring. The M&A active indicator is time-invariant and takes the value of 1 for firm-country pairs with any M&A activities during the sample period, and 0 otherwise. The high internal input indicator is also time-invariant and takes the value of 1 for firm-country pairs in the top 10% of internal input textual mentions, and 0 otherwise.[15] Table 5 presents the results.

Panel A of Table 5 is for business partners in any form; Panels B–D show results for joint ventures, suppliers, and other business partners, respectively. We find in Panel A that the interaction terms between the LRI and indicators for the M&A activeness and intense internal input offshoring are positive and significant at the 1% level. Based on the results in column 3, we find that firms without any integrated operations experience no increase in the likelihood of initiating business partnerships. In contrast, if a firm has an active M&A footprint (intense internal input) in the country, a 2-standard-deviation increase in the LRI leads to an increase in the likelihood of establishing a business partner of 5.7 (3.5) percentage points. Hence, the combined effect of both measures of integrated operations (5.7 plus 3.5 percentage points) is a 92% increase in the likelihood of having a business partner from the sample mean of the business partner frequency (10 percentage points). This effect is about 6 times larger for these firm-country pairs than for the standa-lone effect from Table 4. These findings further reinforce the interpretation that tighter foreign labor market regulations lead to the substitution between fully integrated operations and arm's-length relations. To mitigate a potential concern that our measures for the local footprint of integrated operations are subject to the look-ahead bias, we use alternative measures of M&A Active and High Internal Input using 3 or 5 years of data prior to the start of our sample period and present results in Table IA.8 in the Supplementary Material. We find robust results using the alternative measures.

When we separately estimate the effect of the LRI for joint ventures, suppliers, and other business partners, we find consistent results for joint ventures in Panel B of Table 5. In contrast, we find insignificant differential effects of the LRI on suppliers in the countries with M&A transactions or intense internal input off-shoring in Panel C and somewhat contradictory results for other types of business partners in Panel D. Overall, the evidence in Table 5 is strongly supportive of the

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[15]We choose the cutoff at the top 10% of its distribution to be consistent with the M&A active sample, which represents 10% of the full sample.

TABLE 5

LRI and Business Partners in Countries with Integrated Operations

Table 5 presents results from an extended version of equation (1) that includes the interaction between the LRI and proxies for integrated operations in a nation. Panel A is for business partners of any form. Panels B–D consider joint ventures, suppliers, and other partners separately. The M&A active indicator is time-invariant and takes the value of 1 for firm-country pairs with any M&A activity during the sample period, and 0 otherwise. The high internal input indicator is time-invariant and takes the value of 1 for firm-country pairs in the top 10% of internal input textual mentions. All variables are defined in Appendix C. Standard errors (within parentheses) are adjusted for heteroscedasticity and 2-way clustered at the firm and country levels. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Partner Dummy		
Variable	1	2	3
Panel A. Business Partners			
LRI	0.075	0.063	0.016
	(0.066)	(0.071)	(0.074)
LRI × M&A Active	0.515***		0.475***
	(0.093)		(0.086)
LRI × High Internal Input		0.333***	0.294***
		(0.071)	(0.069)
No. of obs.	349,607	349,607	349,607
R^2	0.658	0.658	0.658
Panel B. Business Partners: Joint Ventures			
LRI	0.054*	−0.008	−0.024
	(0.028)	(0.030)	(0.034)
LRI × M&A Active	0.215**		0.161**
	(0.085)		(0.077)
LRI × High Internal Input		0.404***	0.391***
		(0.042)	(0.040)
No. of obs.	349,607	349,607	349,607
R^2	0.615	0.615	0.615
Panel C. Business Partners: Suppliers			
LRI	0.038	0.056	0.047
	(0.046)	(0.051)	(0.050)
LRI × M&A Active	0.091		0.097
	(0.070)		(0.073)
LRI × High Internal Input		−0.035	−0.043
		(0.047)	(0.050)
No. of obs.	349,607	349,607	349,607
R^2	0.651	0.651	0.651
Panel D. Business Partners: Others			
LRI	0.006	0.058	0.026
	(0.038)	(0.037)	(0.037)
LRI × M&A Active	0.308***		0.322***
	(0.050)		(0.050)
LRI × High Internal Input		−0.076*	−0.102**
		(0.045)	(0.045)
No. of obs.	349,607	349,607	349,607
R^2	0.660	0.660	0.660
Sample		Firm-country-year level	
Firm-year FE	Yes	Yes	Yes
Firm-country FE	Yes	Yes	Yes
Country controls	Yes	Yes	Yes

prediction that the LRI has a substitution effect between fully integrated foreign operations and arm's-length operations, especially toward hybrid organizational forms.

Our interpretation of these findings is as follows: Favorable labor market conditions in foreign nations motivated U.S. firms to have operations in those

nations in the first place. The potential for counterparties' opportunistic behavior with arm's-length relations likely led multinational firms to prefer having integrated relations overseas, to begin with (e.g., Williamson (1975), Klein, Crawford, and Alchian (1978)). However, when foreign labor markets become more rigid, U.S. firms lose operational flexibility. In response, U.S. firms turn to an operational form that restores their operational flexibility but also preserves some of the control benefits of integrated relations, gravitating toward joint ventures. Consistent with this view, Hennart (1991) shows that in the context of multinational firms, joint ventures are particularly sustainable when the markets of both trading parties are "failing." In our context, foreign market failure refers to foreign labor becoming more rigid, whereas U.S. market failure is related to expensive labor.

The aforementioned conceptual framework, however, lacks explanations for local firms' incentives to do business with U.S. multinationals when local labor protection increases. To better understand why the new equilibrium of establishing business partnerships under such a situation is mutually beneficial for both parties, we further examine the characteristics of local firms in the next section.

C. Business Partner Characteristics

Table 6 presents descriptive statistics of business partner firms. For this analysis, we only consider firms with data availability in FactSet RBICS focus and FactSet geographic revenue exposure databases. FactSet segment classifications are expressed as paths that can go to level 11. On average, the path level of a firm's industry is 5. We primarily report industry classifications at the path level of 3, which appears similar to the 2- or 3-digit SIC code level, while we obtain qualitatively similar conclusions based on other levels of industry paths.

Panel A of Table 6 compares characteristics between business partners chosen by U.S. firms in our sample and unchosen local firms. We first find that chosen business partners are generally larger and more diversified than unchosen local firms. They are even larger in terms of total revenues and also more diversified than their U.S. counterparties. Second, chosen local partners have a higher industrial overlap with U.S. firms than unchosen local firms.[16] Third, based on the geographic distribution of revenue, we note that local firms rely heavily on local sales, with more than 50% of their revenues coming from their home country on average. The local revenue concentration is lower for chosen partners than for unchosen firms, possibly due to their larger size.

Panel B of Table 6 compares firm characteristics across joint ventures, suppliers, and other types of business partners.[17] The big picture that emerges from the results in Panel B is that joint venture partners, which is the type of partnership that

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[16]In unreported results, we find that local partners that increase with LRI are primarily in the same industries with their U.S. counterparties, inconsistent with an alternative explanation that U.S. firms' motivation of creating business partnership is mainly industrial diversification.

[17]The sum of observations across different types of partners in Panel B of Table 6 is greater than the number of observations in Panel A because one local firm can be a joint venture partner of a U.S. firm and serve as a supplier or the "others" type of partner to another U.S. firm at the same time.

TABLE 6

Business Partner Characteristics

Table 6 presents descriptive statistics of business partners relative to local non-partner firms and across selected business partners. Foreign firm characteristics, including revenues and industry and geographic segments, are from the FactSet RBICS focus and FactSet geographic revenue exposure data. Panel A compares business partners chosen by the U.S. firms in our sample and unchosen local firms. Unchosen local firms are all firms with FactSet RBICS focus and FactSet geographic revenue exposure data in each country after excluding firms that are identified as business partners of U.S. firms. Panel B compares different types of chosen business partners. The sum of the observations for the three categories of chosen business partners in Panel B is greater than the number of chosen business partner observations in Panel A because a given foreign firm can operate with multiple U.S. firms under different types of partnerships. Panel C presents summary statistics for partnership duration between U.S. firms and foreign firms in years. All variables are defined in Appendix C. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Business Partner Characteristics Relative to Local Non-Partner Firms

	Business Partner	Local Non-partner Firms	Mean Diff.
	1	2	3
Number of Industries	2.121	1.469	0.652***
Number of Industries/ Number of Industries of U.S. Firms	1.468	0.941	0.527***
Diversified Dummy	0.537	0.303	0.234***
Diversified Dummy – Diversified Dummy of U.S. Firms	0.025	−0.271	0.296***
Main Industry Overlap with U.S. Firms	0.022	0.016	0.005***
Any Industry Overlap with U.S. Firms	0.057	0.036	0.022***
log(1 + Revenues)	22.035	19.820	2.215***
log(Revenue/Revenues of U.S. Firms)	2.610	0.395	2.215***
Number of Regions	9.469	4.273	5.196***
Local Revenue Percentage	49.641	72.530	−22.889***
U.S. Revenue Percentage	12.829	3.552	9.277***
No. of obs.	3,539	20,305	

Panel B. Characteristics of Different Types of Business Partners

	Joint Ventures	Suppliers	Others	Col. 1 − Col. 2	Col. 1 − Col. 3	Col. 2 − Col. 3
	1	2	3	4	5	6
Number of Industries	2.608	2.221	2.340	0.387***	0.268**	−0.119
Number of Industries/ Number of Industries of U.S. Firms	1.797	1.537	1.618	0.260***	0.178**	−0.081
Diversified Dummy	0.662	0.568	0.592	0.095***	0.070***	−0.024
Diversified Dummy – Diversified Dummy of U.S. Firms	0.143	0.057	0.078	0.087***	0.065**	−0.021
Main Industy Overlap with U.S. Firms	0.022	0.022	0.020	0.000	0.003	0.002
Any Industry Overlap with U.S. Firms	0.071	0.060	0.057	0.011***	0.013***	0.002
log(1 + Revenues)	22.966	22.201	22.272	0.765***	0.694***	−0.071
log(Revenues/Revenues of U.S. Firms)	3.541	2.776	2.847	0.765***	0.694***	−0.071
Number of Regions	9.769	10.497	9.537	−0.728***	0.232	0.960***
Local Revenue Percentage	49.656	45.221	49.341	4.436***	0.316	−4.120***
U.S. Revenue Percentage	11.759	14.539	13.847	−2.781***	−2.088***	0.692
No. of obs.	1,117	2,707	1,976			

Panel C. Durations of Business Partnership

Duration (Years)	Mean	P10	P25	P50	P75	P90	Std. Dev.
Business partners	3.00	2.00	2.00	2.00	4.00	5.00	1.59
Joint ventures	2.44	1.00	1.00	2.00	3.00	5.00	1.65
Suppliers	2.66	1.00	2.00	2.00	3.00	5.00	1.62
Others	2.56	1.00	1.50	2.00	3.00	5.00	1.59

responds the most to labor regulations, are larger, are more diversified in terms of operating industries, have a greater industry overlap with U.S. multinationals, but still maintain a strong presence in their home countries.[18]

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[18]We also examine whether U.S. firms target specific types of foreign labor forces after LRI changes by comparing detailed types of partnership between chosen versus unchosen partners. We do not find any significant difference between the two groups for R&D and technology partnership (high-skilled foreign labor), manufacturing partnership (low-skilled workers), and other types (marketing/distribution workers).

We argue that being large and diversified grants local firms the flexibility to reallocate human capital internally (Tate and Yang (2015)). Such local firms, relative to U.S. firms, can deal with employees more efficiently when facing idiosyncratic shocks in the presence of more stringent labor protection regulations. Moreover, local firms are likely better at navigating strict local labor laws than U.S. multinational firms; as such, the associated costs of dealing with such regulations are lower for them than for multinationals. Beyond these identified efficiency reasons, local firms' competitiveness and thus bargaining position vis-à-vis multinational firms likely deteriorate when labor protection becomes more stringent in their home country. Hence, local firms are open to establishing partnership agreements with multinationals under which they deal with local employees themselves.

Last, in Panel C of Table 6, we examine the duration of business partnerships in general. We find that the typical length of a business partnership is 3 years on average, with a median of 2 years. The duration of joint venture relations is slightly shorter at 2.44 years on average, with a median of 2 years. These results suggest that business partnerships do not necessarily entail a long-term commitment. We note that the typical length of the business partner relationship is shorter than the effects we observe in Figure 3. This suggests that U.S. firms maintain partner relations longer than usual or engage with multiple partners consecutively when local labor regulations become tighter.

Overall, when foreign labor regulations make it difficult for U.S. firms to renegotiate or terminate local employment contracts, creating business partnerships can help them restore operating flexibility relative to dealing with local workers directly through integrated relations. Local firms are also willing to accept such partnerships to deal with local workers themselves because of their greater efficiency in navigating more stringent local labor laws and weakened bargaining power relative to U.S. firms. Although we cannot observe partnership contract terms due to the data limitation, we expect those contract terms not to be simply pass-through of local firms' costs of dealing with local workers directly.

D.   Cross-Country Heterogeneity

In this section, we examine the cross-country heterogeneity of the main results with two goals in mind. The first is to mitigate the potential concern that a single country drives our findings. For example, China's unique policy of foreign ownership restriction may solely drive our results. If we show that the results come from multiple nations in different regions, our results are more generalizable. The second is to understand whether specific country-level characteristics enable or hinder U.S. firms' establishment of business partnerships overseas when labor protection increases. For instance, hybrid-form relations may substitute for integrated relations only in countries with low government integrity to gain corporate political influence. If that is the case, local corruption would explain the increase in business partnerships we find, not U.S. firms' demand for local business partners for the operational flexibility reason.

We first examine country-level heterogeneity by estimating the country-specific effects of the LRI on business partners for important counterparty nations. To that end, we modify equation (1) by replacing the standalone LRI term with its interaction terms with mutually exclusive country-specific dummies for individual major counterparty nations and a separate category for all other nations. We select large counterparty nations that i) have the variability of LRI to be at least 0.02, ii) are not in the bottom decile of corporate tax rates, and iii) have more than 10,000 observations in the data.[19] We present the coefficients with confidence intervals in Figure 4 with countries being sorted by the number of observations in the data.

The results in Graph A of Figure 4 indicate that the likelihood of establishing business partners when labor regulations become tighter increases for many countries across different geographic regions. The U.K., Canada, Germany, China, Korea, and Mexico significantly contribute to the overall positive effect shown in Table 4. In Graph B of Figure 4, we present the coefficients from an extended specification that includes country-specific interactions of the LRI with either the M&A active or the high internal input indicator. We further find that other important counterparty nations, except Japan, join the group of positive LRI effects (e.g., Australia and Sweden) and contribute to the evidence for the substitution effects shown in Table 5. The main message from Figure 4 is that the impact of the LRI on business partners is not driven by a particular country or countries from a single region.

We next analyze whether country-level characteristics facilitate or hinder business partnerships when labor regulations become tighter. To that end, we reestimate equation (1) but now include the interaction terms between LRI and indicators for the above-the-sample-mean country characteristics. We present the results in Table IA.9 in the Supplementary Material. The only country-level feature significantly related to the likelihood of establishing business partners in a consistent way is the level of GDP. This indicates that the increase in business partnerships in response to stringent labor market regulations is less likely to appear in countries with large economies. However, the economic magnitude of the effect is small as the coefficient for LRI × High GDP is one-tenth of the primary LRI effect. The overall message from Table IA.9 in the Supplementary Material is that country characteristics do not play a first-order role in establishing business partnerships. The business partnership results are more likely driven by U.S. multinationals' demand for partners, as the effects are stronger with the integrated presence of U.S. firms in those nations (Table 5).

E.   Other Margins of Adjustments

We now examine other aspects of operational adjustments beyond substituting arm's-length business relations for integrated operations. We predict that firms are also likely to relocate their integrated operations to other

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[19]The condition i) is to be able to estimate individual coefficients for the country-specific effects of LRI, ii) is to rule out the potential tax haven effect, and iii) is to have at least 10 separate estimates, given the restrictions in i) and ii).

FIGURE 4

Labor Protection Effects by Country

Figure 4 displays country-specific LRI effects for large counterparty nations that i) have the variability of the LRI to be at least 0.02, ii) are not in the bottom decile of corporate tax rates, and iii) have more than 10,000 observations in the data. All other countries are grouped in the "others" category. We estimate equation (1) additionally interacting the LRI with mutually exclusive indicators for each country and the "others" group. Graph A presents the coefficient estimates for the interaction terms. Graph B presents the coefficient estimates for the interactions between the LRI and indicators for each country with either the M&A active or high internal input indicator after controlling for the standalone effects. Each bar represents the magnitude of the coefficient with a capped spike showing the 90% confidence interval.

Graph A. LRI Effects on Business Partners
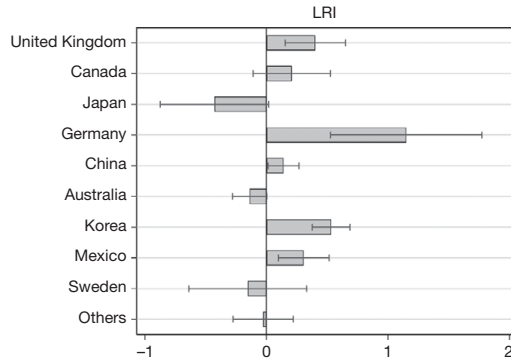
Graph B. LRI Effects with the M&A Active or High Internal Input Indicators
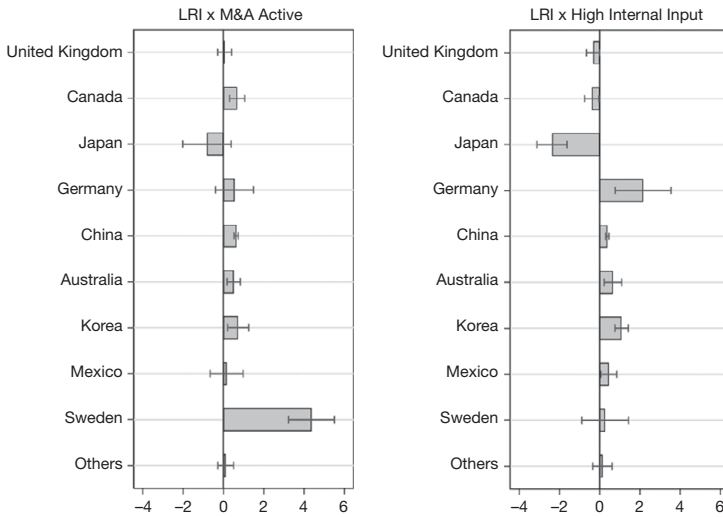
foreign countries when labor laws become tighter in the country where they initially operate. To test this prediction, we consider an indicator for initiating integrated operations, specifically M&A transactions, in groups of other foreign countries. We consider the following two country characteristics groups. The first group considers other foreign countries that are on the same continent. The second group considers other foreign countries in the same income group, following the income group categories of the World

TABLE 7

Other Margins of Operating Adjustments

Table 7 presents results from the estimation of equation (3). We also estimate an extended version of equation (3) that includes the interaction between the LRI and an indicator for M&A activeness or intense internal input offshoring. The dependent variable is M&A Dummy that is 1 if the firm is involved in any M&A transactions in other foreign countries in the same continent or income group excluding the focal country. The income group categories are obtained from the World Bank (high, upper-middle, lower-middle, and low). Country control variables include the log of GDP, GDP growth, inflation, corporate tax rate, private credit-to-GDP ratio, economic freedom index, political and business stability index, log of the exchange rate, and government integrity. All variables are defined in Appendix C. The estimation method is GLS. A country's weight in the estimation is the number of offshore mentions of that country in the firm's financial statements during the sample period divided by the total offshore mentions of any country by the firm during the same period. The number of observations is smaller because we cannot assign weights to countries with no offshore mentions. Standard errors (within parentheses) are adjusted for heteroscedasticity and 2-way clustered at the firm and country levels. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	M&A Dummy							
Country Group	Same Continent				Similar Income Group			
Variable	1	2	3	4	5	6	7	8
LRI	0.121***	0.099***	0.106***	0.089***	0.097**	0.079*	0.041	0.027
	(0.027)	(0.029)	(0.027)	(0.029)	(0.044)	(0.046)	(0.047)	(0.049)
LRI × M&A Active		0.164**		0.161*		0.143		0.126
		(0.082)		(0.082)		(0.105)		(0.104)
LRI × High Internal Input			0.037	0.027			0.140***	0.132***
			(0.034)	(0.034)			(0.041)	(0.040)
No. of obs.	214,116	214,116	214,116	214,116	214,116	214,116	214,116	214,116
R^2	0.597	0.597	0.597	0.597	0.765	0.765	0.765	0.765
Sample	Firm-country-year level							
Firm-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Bank: high, upper-middle, lower-middle, and low. Specifically, we estimate the following regression model:

$$(3) \qquad y_{ictg-c} = \beta \mathrm{LRI}_{ct} + \gamma W_{ct} + \psi_{ic} + \lambda_{it} + \varepsilon_{ict},$$

where the dependent variable y_{ictg-c} is M&A Dummy, which is 1 if firm i is involved in any M&A transactions in year t in the group of countries g excluding the focal country c. The main variable of interest is still the labor regulation index of the focal country c (i.e., LRI_{ct}).

For this analysis, we take into account the heterogeneous importance of each country to a firm. Intuitively, changes in labor regulations in a highly relevant country for a firm will have stronger spillovers than changes in less relevant countries. Specifically, we perform a generalized least square (GLS) estimation using a time-invariant measure of each country's relevance to each firm as weights. A country's weight is the number of offshore mentions of that country in the firm's financial statements during the sample period divided by the total offshore mentions of any country by the firm during the same period.[20] Table 7 presents the results.

[20]To better understand the weighting scheme, suppose that a firm operates in two foreign countries, A and B, which represent 99% and 1% of the firm's international operations, respectively. In this scenario, the LRI effect from A's labor market to the firm's activities in B should be substantially more important than the effect in the reverse direction. This importance-weighting scheme helps avoid the implicit assumption that the spillover effects in both directions are equally important, as would be the case under an equal weighting scheme. However, our results are robust to simple equal weighting as shown in Table IA.10 in the Supplementary Material.

In columns 1–4, we first consider other foreign countries in the same continent. We find that the coefficient estimates for the LRI of a focal country are positive and statistically significant in all 4 columns. These results suggest that firms move their integrated operations to other geographically close countries in response to labor protection changes in the focal country. Furthermore, these effects become stronger when the focal country is deemed to have integrated operations according to the significantly positive interaction term between the LRI and the indicator for M&A activeness. However, we do not find significant incremental effects with intense internal input offshoring in columns 3 and 4. In the last 4 columns, we consider other foreign countries in the same income group as the focal country. The results in these columns also show that firms move their integrated operations from one country to countries that are similar in terms of economic characteristics in response to labor protection changes in the focal country. This time, the coefficient estimates for the interaction of the LRI with the indicator for intense internal input offshoring are significantly positive, while those with the M&A active indicator are insignificant.

Overall, the results in Table 7 support the international spillover effect and complement our main findings for the within-country adjustments of organizational types. Both sets of results point toward U.S. firms reorganizing their boundaries to mitigate the increase in operational inflexibility that they would have to face if their operations remained unaltered.

F.   Feasibility of Adjustments

Our results thus far support the conclusion that U.S. firms alter their integrated operations within or beyond a foreign country when the country's labor regulations become stricter. However, this optimal response can be limited by a lack of resources. Arguably, financially constrained firms may lack the means to make such adjustments.

To shed light on this prediction, we examine whether firms' operational adjustments vary with financial constraint measures. To do so, we compute individual firms' elasticities between the changes in the LRI in the countries where they operate and the corresponding changes in business partners in those countries. We define an indicator, partner beta > 0, based on the elasticity. It takes the value of 1 if a firm is, on average, more likely to establish business partnerships abroad in response to increased labor protection overseas across all countries and years, and 0 otherwise. In Panel A of Table 8, we present results from the firm-level regressions using this indicator as the dependent variable and multiple proxies for financial constraints as explanatory variables. We use firm size, age (Hadlock and Pierce (2010)), and the Whited and Wu (2006) financial constraint index as such proxies. To ease the interpretation, we use indicators for high levels of financial constraints, that is, whether the firm is small (below the median in assets), is young (below the median in age), or has a high WW value (above the median in the Whited and Wu (2006) index). All regressions include industry fixed effects.

The results in Table 8 clearly show that financial constraints play an important role in firms' operational responses. Throughout columns 1–4, we find that all financial constraint proxies show a significantly negative effect on firms'

TABLE 8

Operating Adjustments and Financial Constraints

Table 8 presents results from the regressions where the dependent variables are time-invariant indicators for operational adjustments. Observations are at the firm level. To obtain partner beta in Panel A, we estimate each firm's individual beta by running a regression of Partner Dummy on the LRI using firm-country-year level observations with firm-by-country fixed effects. We follow a similar procedure using M&A Dummy in the same continent or income group to obtain other country betas in Panels B and C. For financial constraints measures, we use size and age following the Hadlock and Pierce (2010) and the Whited and Wu (2006) index. Firms are small when assets are below the sample median. Firms are young when their age is below the sample median. Firms have a high WW value when the index is above the sample median. M&A Exposure is the firm-level average of the M&A active indicator. Internal Input Exposure is the firm-level average of the high internal input indicator. All columns include industry fixed effects. All variables are defined in Appendix C. Standard errors (within parentheses) are adjusted for heteroscedasticity and clustered at the 3-digit SIC code industry level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Within-Country Business Partner Adjustments

	Indicator (Partner Beta > 0)				
Variable	1	2	3	4	5
Small	−0.114*** (0.014)			−0.073*** (0.019)	−0.063*** (0.019)
Young		−0.127*** (0.017)		−0.090*** (0.017)	−0.076*** (0.016)
High WW			−0.106*** (0.014)	−0.034* (0.019)	−0.014 (0.019)
M&A Exposure					0.307*** (0.067)
Internal Input Exposure					0.178** (0.071)
No. of obs.	4,681	4,951	4,952	4,681	4,681
R^2	0.079	0.075	0.079	0.089	0.097

Panel B. Across-Country M&A Activities (Same Continent)

	Indicator (Other Country Beta > 0)				
Variable	1	2	3	4	5
Small	−0.158*** (0.013)			−0.082*** (0.014)	−0.051*** (0.013)
Young		−0.098*** (0.011)		−0.075*** (0.009)	−0.045*** (0.009)
High WW			−0.168*** (0.014)	−0.091*** (0.015)	−0.040*** (0.013)
M&A Exposure					0.989*** (0.077)
Internal Input Exposure					0.091** (0.038)
No. of obs.	4,951	4,952	4,681	4,681	4,681
R^2	0.126	0.095	0.131	0.147	0.274

Panel C. Across-Country M&A Activities (Same Income Group)

Small	−0.180*** (0.014)			−0.091*** (0.018)	−0.059*** (0.015)
Young		−0.102*** (0.008)		−0.075*** (0.009)	−0.042*** (0.009)
High WW			−0.189*** (0.015)	−0.105*** (0.020)	−0.050*** (0.018)
M&A Exposure					1.046*** (0.085)
Internal Input Exposure					0.130*** (0.048)
No. of obs.	4,951	4,952	4,681	4,681	4,681
R^2	0.138	0.100	0.144	0.159	0.285
Sample			Firm level		
Industry FE	Yes	Yes	Yes	Yes	Yes

operational adjustment responses. However, it is possible that small and young firms are simply less exposed to foreign labor regulations, potentially explaining the negative coefficients. To mitigate this concern, in column 5, we additionally control for each firm's exposure to foreign labor regulations by adding the firm-level averages of both M&A active and high internal input indicators. The coefficients for these additional controls are positive, as expected; firms with greater exposure are more likely to adjust their operations. Crucially, the coefficients for small and young remain significantly negative after these inclusions indicating that differential exposures are not driving the results.

In Panels B and C of Table 8, we find similar and even stronger results when examining the relationship between financial constraints and across-country adjustments based on new M&A activities. Overall, the evidence presented in Table 8 shows that when firms are financially constrained, they are unable to adjust their operations optimally in response to changing labor regulations in foreign operating sites. In the next section, we further examine whether there are consequences of such constraints on firms' aggregate performance.

G.   Firm Performance

We now examine the aggregate effects of stricter foreign labor regulations on the performance of U.S. multinationals. We predict that increases in the LRI will negatively affect a firm's financial performance, particularly for those unable to adjust their operations. Our main measure of performance is sales growth. Given that this measure is at the firm-year level, we cannot use equation (1) for this analysis, as it contains firm-year fixed effects. Hence, we replace those fixed effects with industry-by-year fixed effects based on the 3-digit SIC code, still preserving the firm-by-country fixed effects. Because we cluster standard errors by firm and country, we take into account that there are repeated observations per firm-year for the dependent variable. This allows us to examine the effects of the LRI without collapsing the data into the firm-year level based on a weighting scheme and thus losing further granularity in the fixed effects; however, our results also hold when using specifications at the firm-year level. The main explanatory variables are the LRI and the interactions between the LRI and measures for financial constraints used in the previous section. Table 9 presents the results.

In column 1, we find that the coefficient estimate for the LRI is negative and statistically significant. The magnitude of the effect would translate into a 0.8 percentage-point decline in sales growth if the average firm in our sample were to experience a 1-standard-deviation increase in the LRI across all the countries where it operates (12 countries for the average firm). This decline in sales growth represents a 10% reduction relative to the sample mean. Moreover, in columns 2–5, we find that the decrease in sales growth is concentrated exclusively on financially constrained firms. The coefficient estimates for the interaction terms between the LRI and those constraint measures are 3 to 10 times larger in magnitude and are individually statistically significant at the 1% level. These results suggest the following two conclusions: First, the sales performance of U.S. multinationals is significantly influenced by changes in foreign labor laws. Second, firms that are unable to adapt their operations overseas due to financial

TABLE 9

Firm Sales Growth and Financial Constraints

Table 9 presents results from the regressions where the dependent variable is firm sales growth. The specification in column 1 follows equation (1) but replaces the firm-year fixed effects with the industry-year fixed effects. Industry is defined at the 3-digit SIC code. In columns 2–5, the LRI is interacted with financial constraint measures. Firms are small when assets are below the sample median. Firms are young when their age is below the sample median. Firms have a high WW value when the index is above the sample median. All variables are defined in Appendix C. Standard errors (within parentheses) are adjusted for heteroscedasticity and 2-way clustered at the firm and country levels. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Variable	Sales Growth				
	1	2	3	4	5
LRI	−0.067***	0.025	0.104*	0.002	0.157***
	(0.012)	(0.026)	(0.062)	(0.026)	(0.055)
LRI × Small		−0.314***			−0.470***
		(0.084)			(0.172)
LRI × Young			−0.697***		−0.682***
			(0.233)		(0.243)
LRI × High WW				−0.231***	0.272
				(0.081)	(0.178)
No. of obs.	333,731	333,731	333,731	333,711	333,711
R^2	0.313	0.313	0.313	0.313	0.313
Sample			Firm-country-year level		
Ind-year FE	Yes	Yes	Yes	Yes	Yes
Firm-country FE	Yes	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes	Yes

frictions suffer the most from stricter foreign labor regulations. In contrast, firms that are able to adapt their operations properly can capture the lost market shares by financially constrained firms based on the positive effect of the standalone LRI on sales growth for financially unconstrained firms. The coefficient estimates on the LRI in columns 2–5 for unconstrained firms are all positive and also statistically significant in columns 3 and 5. These results support the idea that the increase in sales from capturing the market share lost by constrained firms appears to be greater than any direct loss that the unconstrained firms bear from LRI increases.

In our last analysis, we examine other firm-level financial policies, including profitability, capital expenditures, R&D expenditures, and financial leverage. Previous work has shown that firms respond to increased home-based labor protection regulations by reducing their financial leverage (Simintzi et al. (2015), Serfling (2016), and Kuzmina (2023)) or by cutting their capital investment (Bai et al. (2020)). In our context of multinational firms, changes in foreign labor regulations in one country affect only a part of the firms' operations at a time and thus are localized shocks. Therefore, previous findings may not apply to our international setting introducing an additional layer of potential direct local operational adjustments. Table 10 presents results from the regressions where the dependent variables are the return on assets (ROA), both capital and R&D expenditures scaled by sales, and book leverage.[21]

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[21]The regression specifications in Tables 9 and 10 are the firm-country-year level with proper standard-error clustering at the firm and country level. We also show results from robustness tests where we aggregate all variables at the firm-year level using the country importance-weighting scheme and the equal-weighting scheme in Table IA.11 in the Supplementary Material. We find that the results are consistent.

TABLE 10

Other Firm-Level Outcomes

Table 10 presents results from the regressions where the dependent variable is firm profitability, investment, or financial leverage. All variables are defined in Appendix C. Standard errors (within parentheses) are adjusted for heteroscedasticity and 2-way clustered at the firm and country levels. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Variable	ROA 1	Capex/Sales 2	R&D/Sales 3	Book Leverage 4
LRI	−0.039***	−0.006	−0.008	−0.005
	(0.012)	(0.009)	(0.049)	(0.017)
No. of obs.	338,435	334,881	334,881	336,822
R^2	0.710	0.664	0.753	0.799
Sample		Firm-country-year level		
Ind-year FE	Yes	Yes	Yes	Yes
Firm-country FE	Yes	Yes	Yes	Yes
Country controls	Yes	Yes	Yes	Yes

First, in column 1, we find that firm financial performance measured by ROA declines when the firms face stricter labor regulations in foreign operating countries. This finding resonates with the decline in performance measured by sales growth in Table 9. In columns 2 and 3, we do not find significant effects of the LRI on capital and R&D investments, although the signs of the coefficient estimates are negative. However, the aggregate firm-year level result in Panel A of Table IA.11 in the Supplementary Material shows that firms in our sample reduce their capital expenditure following an increase in foreign labor protection, consistent with Bai et al. (2020). Last, when the dependent variable is leverage in column 4, we find that the coefficient estimate is close to zero and statistically insignificant, which is different from the findings of Simintzi et al. (2015), Serfling (2016), and Kuzmina (2023). This result indicates that multinational firms affected by localized labor regulation changes do not adjust their capital structure, likely because, for them, direct local adjustments to operational leverage are possible.

V.   Conclusions

This article's key contribution is to provide new evidence on how firms actively manage their operational flexibility in response to changes in global labor market conditions. We document two ways in which U.S. firms directly adapt their operating strategies. First, firms modify their business relationship types within countries following increases in labor protection, from integrated relations to more-flexible arm's-length relations. Second, firms adjust their operating boundaries across foreign nations by shrinking integrated operations in countries with increases in labor protection and entering into other countries with more favorable labor market conditions.

We highlight the importance of hybrid organizational forms, such as joint ventures, by showing that tighter labor market regulations in a foreign country can encourage such hybrid organizational forms that can offset, to some extent, the loss of integrated relationships. Moreover, we examine detailed firm characteristics

of foreign business partners and U.S. counterparties to further shed light on the optimality of those hybrid organizational forms from both counterparties' perspectives. We also examine how financial constraints prevent firms from making direct operational adjustments in the first place and the consequence of such constraints to aggregate firm performance.

Overall, our findings have two key takeaways: First, we provide novel evidence that U.S. multinationals are fairly susceptible to foreign labor regulations. Firms highly exposed to foreign labor laws experience a significant decline in their overall performance due to increased labor protection overseas if they cannot adapt their operating strategies. Second, we show that when multinationals find it harder to replace or terminate local workers in some countries, they do not just drop their operations in those nations but also shift to an operating model that relies more on business partnerships to regain flexibility, which offers a new insight to the literature.

Appendix A. Excerpt of *the New York Times* Article

All employees will have to have written employment contracts that comply with minimum wage and safety regulations. It also moves China closer to European-style labor regulations that emphasize fixed- and open-term employment contracts enforceable by law. It requires that employees with short-term contracts become full-time employees with lifetime benefits after a short-term contract is renewed twice. Perhaps most significantly, it gives the state-run union and other employee representative groups the power to bargain with employers. […] Companies argued that the rules would substantially increase labor costs and reduce flexibility, and some foreign businesses warned that they would have little choice but to move their operations out of China if the provisions were enacted unchanged.

The New York Times (June 30, 2007), "China Passes a Sweeping Labor Law" by Joseph Kahn and David Barboza.

Appendix B. Hoberg and Moon ((2017), (2019)) Offshore Words

Offshoring output words: SALES, REVENUE, REVENUES, CUSTOMER, CUSTOMERS, CONSUMER, CONSUMERS, MARKET, MARKETS, MARKETED, MARKETING, MARKETPLACE, DISTRIBUTE, DISTRIBUTES, DISTRIBUTED, DISTRIBUTING, DISTRIBUTION, DISTRIBUTIONS, DISTRIBUTOR, DISTRIBUTORS, DISTRIBUTORSHIP, DEALER, DEALERS, CLIENT, CLIENTS, EXPORT, EXPORTS, EXPORTED, EXPORTING, SHIPMENTS, DEMAND, DEMANDS, STORE, STORES, WHOLESALE, WHOLESALERS, RECEIVABLE, RECEIVABLES.

Offshoring external input words: SUPPLIER, SUPPLIERS, IMPORT, IMPORTS, IMPORTED, IMPORTING, IMPORTATION, SUBCONTRACT, SUBCONTRACTS, SUBCONTRACTED, SUBCONTRACTING, SUBCONTRACTOR, SUBCONTRACTORS, VENDOR, VENDORS, PURCHASE & FROM, PURCHASES & FROM, PURCHASED & FROM.

Offshoring internal input words: SUBSIDIARY, SUBSIDIARIES, FACILITY, FACILITIES, PLANT, PLANTS, FACTORY, FACTORIES, VENTURE, VENTURES, EXPLORATION, STORAGE, WAREHOUSE, WAREHOUSES, WAREHOUSING.

Offshoring indeterminate input words: MANUFACTURE, MANUFACTURES, MANUFACTURED, MANUFACTURING, PRODUCE, PRODUCES, PRODUCED, PRODUCING, PRODUCTION, PRODUCTIONS.

Offshoring employee words: EMPLOY, EMPLOYS, EMPLOYED, EMPLOYING, EMPLOYEE, EMPLOYEES, WORKER, WORKERS, PERSONNEL, HIRE, HIRES, HIRED, HIRING, RECRUIT, RECRUITS, RECRUITED, RECRUITMENT, RECRUITING, STAFF, STAFFED, STAFFING, WAGE, WAGES, SALARY, SALARIES.

Appendix C. Variable Description

LRI: The average of the 40 indicators from the labor regulation index by the CBR for a given country in a given year under the following five categories: regulations of alternative employment contracts, working time, dismissal, employee representation, and industrial action.

Foreign LRI: The weighted average of LRI across countries where a firm operates. We use two firm-country time-invariant weights criteria. One is based on the fraction of total textual mentions of each country by a firm in its 10-Ks throughout the sample period. The other is an equal-weight approach.

log(GDP): The log of a given country's gross domestic product from the World Bank.

GDP Growth: The percentage GDP growth rate for a given country.

Inflation (%): The inflation rate of a country from the World Bank.

Corporate Tax Rate (%): The top marginal corporate tax rate for a given country from https://tradingeconomics.com/.

Credit to GDP: The ratio of available private credit-to-GDP for a given country.

Economic Freedom: The economic freedom index from the Heritage Foundation for a given country based on legal and trade environments.

Political & Business Stability: The political and business stability index for a given country from the International Country Risk Guide (ICRG).

Government Integrity: The government integrity index based on Transparency International's Corruption Perceptions Index (CPI) for a given country-year from the Heritage Foundation.

log(Exchange Rate): The log of a given country's exchange rate.

Sales Growth: The log of sales minus the log of sales in the previous year.

ROA: Net income divided by total assets.

Capex/Sales: Capital expenditures divided by sales.

R&D/Sales: Research and development expenditures divided by sales.

Book Leverage: The ratio of total debt to the book value of assets.

Capex/Assets: Capital expenditures divided by assets.

log(Assets): The log of total assets (book value of common equity plus book value of preferred stock, long-term and short-term debts, and minority interest).

Age: Firm age based on the first appearance in Compustat.

Tobin's q: Market value of assets divided by the book value of assets.

Financial Constraints (WW): The financial constraints index from Whited and Wu (2006).

Partner Dummy: An indicator that is 1 if the number of business partners that a U.S. firm has in a given country in a given year is greater than 0, and 0 otherwise.

Joint Venture Dummy: An indicator that is 1 if the number of joint ventures that a U.S. firm has in a given country in a given year is greater than 0, and 0 otherwise.

Suppler Dummy: An indicator that is 1 if the number of suppliers that a U.S. firm has in a given country in a given year is greater than 0, and 0 otherwise.

Others Dummy: An indicator that is 1 if the number of other types of business partners that a U.S. firm has in a given country in a given year is greater than 0, and 0 otherwise.

M&A Dummy: An indicator that is 1 if the number of M&A transactions that a U.S. firm has in a given country in a given year is greater than 0, and 0 otherwise.

Divestiture Dummy: An indicator that is 1 if the number of divestitures that a U.S. firm has in a given country in a given year is greater than 0, and 0 otherwise.

log(Employee): The log of 1 plus the total mentions of employee offshoring words in a given country in a given year.

log(Output): The log of 1 plus the total mentions of output offshoring words in a given country in a given year.

log(Input): The log of 1 plus the total mentions of input offshoring words in a given country in a given year.

M&A Active: A time-invariant indicator that is 1 for firm-country pairs with any M&A activities during the sample period, and 0 otherwise.

High Internal Input: A time-invariant indicator that is 1 for firm-country pairs with mentions of internal input offshoring during the sample period is in the top 10% of its distribution, and 0 otherwise.

M&A Active (3Y/5Y): A time-invariant indicator that is 1 for a firm-country pair with any M&A activities 3 years/5 years prior to the start of the sample period for the firm-country pair.

High Internal Input (3Y/5Y): A time-invariant indicator that is 1 for a firm-country pair with mentions of internal input offshoring in the top 10% of its distribution during the 3 years/5 years prior to the start of the sample period for the firm-country pair.

Number of Industries: The total number of the third-layer industries identified by the FactSet RBICS focus database. The third-layer industry classifications in FactSet RBICS focus are similar to 3-digit SIC code industry classifications.

Diversified Dummy: An indicator that is 1 if the firm operates in more than one third-layer industries identified by the FactSet RBICS focus database, and 0 otherwise.

Main Industry Overlap with U.S. Firms: An indicator that is 1 if a local firm's main third-layer industry (identified by the FactSet RBICS focus database) is the same as

the main third-layer industry of any U.S. firm that has a presence in the firm's country, and 0 otherwise.

Any Industry Overlap with U.S. Firms: An indicator that is 1 if any of a local firm's third-layer industries (identified by the FactSet RBICS focus database) is the same as any of the third-layer industries of any U.S. firm that has a presence in the firm's country, and 0 otherwise.

log(1 + Revenues): The log of 1 plus the total revenues of the local firm.

log(1 + Revenues/Revenues of U.S. Firms): The log of 1 plus the total revenues of a local firm divided by the annual average revenue of U.S. multinationals in our sample. The revenue data for foreign firms are from the FactSet geographic revenue exposure database. The revenue data for U.S. multinationals are from the Compustat database.

Number of Regions: The total number of geographic segments identified by the FactSet geographic revenue exposure database.

Local Revenue Percentage: The percentage of a local firm's revenues in its home country. The revenue data for foreign firms are from the FactSet geographic revenue exposure database.

U.S. Revenue Percentage: The percentage of a local firm's revenues in the U.S. market. The revenue data for foreign firms are from the FactSet geographic revenue exposure database.

INDICATOR_(Partner Beta > 0): An indicator that is 1 if a firm's individual beta is positive, and 0 otherwise. A firm's individual beta is the coefficient estimate for LRI in a regression of Partner Dummy using firm-country-year observations with firm-by-country fixed effects.

INDICATOR_(Other Country Beta > 0): An indicator that is 1 if a firm's spillover beta is positive, and 0 otherwise. A firm's spillover beta is the coefficient estimate for LRI in a regression of M&A activities in countries either in the same continent or income group using firm-country-year level observations with firm-by-country fixed effects.

Small: An indicator that is 1 if a firm's (sample average) asset is below the sample median, and 0 otherwise.

Young: An indicator that is 1 if a firm's (sample average) age is below the sample median, and 0 otherwise.

High WW: An indicator that is 1 if a firm's (sample average) Whited Wu (2006) financial constraint index is above the sample median, and 0 otherwise.

M&A Exposure: Firm sample average of the M&A active indicator.

Internal Input Exposure: Firm sample average of the high internal input indicator.

Supplementary material

To view supplementary material for this article, please visit http://doi.org/10.1017/S0022109023001497.

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