Responsible Sourcing? Evidence from Costa Rica*

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Abstract

Multinational enterprises (MNEs) increasingly impose "Responsible Sourcing" (RS) standards on their suppliers, including requirements on worker compensation, benefits and working conditions. Are these policies just "hot air" or do they impact suppliers and their workers? What is the welfare incidence of RS in sourcing countries? To answer these questions, we combine the near-universe of RS rollouts by MNEs with subsidiaries in Costa Rica with firm-to-firm transactions and matched employer-employee microdata. We find that RS rollouts lead to reductions in sales and employment at exposed suppliers, salary increases for their low-wage workers and a decrease in their low-wage employment share. To rationalize these effects and study their implications in general equilibrium, we develop a simple open-economy model of RS. We show that the welfare effect of RS is ambiguous, depending on the interplay between an export tax (+) and a consumption tax (−), and that RS has distributional implications within worker types. Combining model and evidence for counterfactual analysis, we find that RS has delivered significant gains for low-wage workers at exposed suppliers, but led to adverse indirect effects on wages and the price index for the broader low-wage workforce.

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1 Introduction

In response to calls by policymakers and the general public for multinational enterprises (MNEs) to adopt more equitable production practices in low- and middle-income countries, MNEs increasingly impose “Responsible Sourcing" (RS) requirements on their suppliers worldwide (e.g., ILO, 2016). RS requirements mainly take the form of “Supplier Codes of Conduct” and include compulsory standards on working conditions (such as wage floors, guaranteed benefits, maximum working hours, paid leave and safety standards), other production practices (such as worker representation and environmental standards) and enforcement provisions (such as third-party auditing). Despite MNEs’ growing adoption of RS policies, there is relatively limited theoretical work or empirical evidence on the economic incidence of these policies and their effectiveness in improving worker welfare in sourcing countries. In this paper, we combine data and theory to shed light on these questions. Our analysis focuses on an empirical setting where RS policies primarily affect working conditions, leaving other potential impacts of RS—such as those on the environment—for future research.

We build a unique new database that allows us to track the rollout of RS requirements by MNEs and trace their effects on suppliers and workers in a sourcing country. Our empirical context is Costa Rica (CR), a middle-income country that hosts hundreds of foreign MNE subsidiaries sourcing inputs locally across a diverse range of industries. We merge several administrative datasets covering the 2008-2019 period, including firm-to-firm transactions, matched employer-employee relationships, exports and imports, corporate tax returns, and foreign ownership, in addition to ORBIS data on the global outcomes of MNEs with subsidiaries in CR. We combine these data with a novel dataset constructed through a comprehensive double-blind search of all RS rollouts among 481 MNEs with subsidiaries sourcing in CR. We identify 238 RS rollouts by 169 MNEs targeted at improving working conditions at their suppliers over the period 2000-2019. The data confirm the growing reach of RS: by the end of our sample in 2019, 43% of all sales by private domestic firms in CR were made by suppliers to MNE subsidiaries subject to active RS codes.

For each RS policy, we perform quantitative and qualitative text analyses of the RS policy documents. We document that labor-related requirements on compensation, working conditions and safety are the primary focus of RS policies in our sample, that the requirements are generally mandatory for suppliers, and that provisions on enforcement include continuous monitoring (reporting of data and compliance) and third-party auditing. We also find that a typical minimum requirement, included in all of the RS codes in our database, is to comply with all existing local labor laws and regulations. In a context where local laws and regulations may be only weakly or partially enforced by public regulators, even the least ambitious RS codes can have meaningful

implications for suppliers when subjected to private enforcement by MNE buyers.

To provide evidence on the implications of RS, we then use this database to implement an event-study design that tracks the evolution of outcomes for MNE suppliers and their workers before and after their first exposure to RS. The estimation compares changes in outcomes among suppliers that were selling to the MNE in the year before its first RS code was rolled out to those of suppliers to other MNEs without RS rollouts over the same period. We find that RS policies lead to a reduction in total sales and employment at exposed suppliers. Four years after the RS rollout, their sales decline by about 7.5% and employment by 6%. These declines are larger among smaller suppliers, those with a higher initial share of workers earning near the minimum wage, and those exposed to RS policies with a greater emphasis on worker compensation, health and safety standards, and enforcement provisions. Sales and input demand of the MNE —both at the local subsidiary level and globally— do not display discernible pre-trends and remain largely unaffected by RS. Using the firm-to-firm transactions data, we find that exposed suppliers experience sales declines to both non-RS buyers and the RS-MNE.

Using the matched employer-employee data, we find that RS rollouts lead to a roughly 2% increase in the average monthly earnings of exposed workers, driven by a 5.5% increase among those in the bottom quartile of initial earnings. The employment of low-wage workers declines at exposed suppliers, both in absolute and relative terms. We also find suggestive evidence that some workplace amenities increase, including a reduction in time spent on accident leave and an increase in the duration of maternity leave. Taken together, these findings suggest that RS requirements are, on average, not just "hot air", with effects on exposed suppliers and workers that align with increases in labor-related costs concentrated among initially low-wage workers. By design, however, this reduced-form evidence would be insufficient to assess the implications of RS for domestic workers, as it only captures relative effects on exposed suppliers and workers in the wake of individual RS rollout events.

We then develop a parsimonious open-economy model to rationalize these effects and derive welfare implications in general equilibrium (GE). Heterogeneous firms in the sourcing country produce final goods for the domestic market and intermediate inputs for foreign-owned MNE subsidiaries in the country. Suppliers to RS-active MNEs face an increase in labor costs for low-wage workers but not for high-wage workers whose working conditions are unlikely to change under RS. The RS standards apply at the firm level, to all of a supplier's production, including sales to non-RS buyers. We allow these cost increases to be only partially passed through to the MNE. A lower pass-through reflects greater buyer market power of the MNE. Since MNEs may adopt RS policies in response to consumer pressure, we allow MNEs to experience a demand increase after implementing RS practices.

In this setting, we show that the adoption of RS has an *a priori* ambiguous impact on workers' welfare in the sourcing country. If all the output from RS-affected suppliers is exported and RS costs are fully borne by the RS-MNEs, RS policies function like an export tax, improving welfare through a classic terms-of-trade effect. However, if MNEs have buyer market power over their suppliers, RS costs are in part borne by the suppliers rather than acting as an export tax for foreigners, thereby limiting the welfare gain. Furthermore, as suppliers produce for both the export and domestic market, RS policies "leak" into the domestic price index. This reduces welfare, as RS then acts akin to a consumption tax. Finally, when RS is accompanied by a positive demand shock for the MNE's output, its welfare effect becomes more favorable. In terms of distributional implications, RS generates symmetric welfare effects in GE for low- and high-wage workers. However, there are meaningful distributional effects within worker groups. Low-wage workers at exposed suppliers directly benefit from improved working conditions under RS, while non-exposed low-wage workers experience only indirect GE adjustments to their wages and price index.

In the final part, we confront the model's comparative statics with the empirical evidence to quantify the model and conduct counterfactual analyses of the welfare implications of RS in the aggregate and across worker types. Combining model with evidence, we find that RS rollouts on average led to a labor-cost increase of approximately 12.5% among low-wage workers, which was mostly passed through to the MNE (about 85%). We find no discernible demand boost for MNE output due to RS rollouts. Armed with the quantified model, we compare a counterfactual equilibrium without RS to one featuring the extent of RS policies observed at the end of our sample in 2019. We estimate that RS policies had positive but modest effects on aggregate welfare (+0.1%). These aggregate effects mask significant heterogeneity within worker groups: the 40% of low-wage workers employed *ex-ante* at exposed MNE suppliers experience significant welfare gains (+6.5%), while the majority of low-wage workers at non-exposed firms face welfare losses (-6%) due to adverse GE effects on their wages and the leakage of RS into the domestic price index. These findings underscore a trade-off involved in RS policies. On one hand, RS can bring meaningful benefits to workers at targeted suppliers. On the other hand, it imposes additional costs on suppliers, and its widespread adoption by MNEs can generate indirect adverse effects on non-targeted workers.

Our analysis contributes to a small but growing empirical literature on the effects of MNE sourcing policies on supplier and worker outcomes. Harrison and Scorse (2010) study the effect of anti-sweatshop campaigns against MNE contractors in Indonesia's textile, footwear, and apparel sectors. Using a difference-in-differences design across sectors and regions, they find that campaigns led to higher wages, lower profits and firm exits. More recently, Boudreau (2024)

uses a randomized control trial to study the impact of occupational safety and health committees at apparel producers in Bangladesh, and Amengual and Distelhorst (2020) study compliance with Gap Inc's labor code of conduct. Both studies find that RS requirements improve compliance with the law as well as workers' health and safety.[1] We contribute to this literature by providing new evidence that covers the near-universe of RS rollouts traced to suppliers and workers in Costa Rica, and combining this evidence with a simple open-economy model of RS to study its welfare implications in GE.

The paper also relates to the literature on the implications of "fair trade" certification (e.g., Dragusanu et al., 2022, De Janvry et al., 2015, Podhorsky, 2013, 2015). This literature has emphasized the role of fair trade in redistributing agricultural profits from imperfectly competitive intermediary wholesalers to farmers in developing countries (e.g., Dragusanu et al., 2022, Podhorsky, 2015). In contrast, in our setting, RS requirements are chosen and implemented by the MNEs within their own supply chains. More recently, Macchiavello and Miquel-Florensa (2019) study a "buyer-driven" quality and sustainability upgrading program among coffee farmers in Colombia. Using a spatial regression discontinuity design, they find that eligible farmers improved the quality of their coffee and the program led to significant income gains.

Our analysis also relates to the minimum wage literature, as in our model RS is akin to a targeted wage premium applied only to firms supplying RS-MNEs. One focus of this literature has been to measure (often elusive) employment effects (recent studies and reviews include Cengiz et al., 2019, Harasztosi and Lindner, 2019, Dube, 2019, Manning, 2021). In our context, we find that RS rollouts lead to significant negative employment effects among exposed workers. Theoretically, there are two distinct features of our setup. First, RS policies only apply to a selected set of firms, leading to excess labor supply among RS suppliers under a rationing equilibrium in the labor market. This leads to an increase in wage inequality (while a uniform minimum wage typically compresses the wage distribution, see Lee, 1999, Autor et al., 2016) and gives rise to potential misallocation across firms. Second, we study RS in an open economy, while the focus of the minimum wage literature is typically on closed-economy settings. A key finding in our setup is that RS may yield positive welfare gains through GE terms-of-trade effects that are specific to

[1] Bossavie et al. (2023) study the effects of improvements in Bangladeshi labor regulations after the 2013 Rana Plaza factory collapse. They find that working conditions improved and, contrary to predictions of the compensating differentials theory, wages also increased. Using Myanmar's opening to trade, Tanaka (2020) finds that exporting has positive effects on working conditions, such as health and safety and freedom of negotiation. On the theory side, Koenig et al. (2025) study the geography of NGO campaigns against unethical practices in a model of international trade. Herkenhoff and Krautheim (2022) introduce cost savings from unsafe practices in a model of global sourcing with incomplete contracts. Im and McLaren (2023a,b) propose a model of how globalization affects host country's incentives to set labor standards. Datta and Machin (2024) examine the effects of UK local governments' procurement policies requiring suppliers to pay workers "living wages." They find that the supplier fully absorbed the wage cost shock through employment reorganization and pay policy reform.

the open-economy context. This also connects to insights from an earlier literature on countries' labor standards and international trade: Brown et al. (1993) show that labor standards imposed on all firms may increase the welfare of exporting countries through a terms-of-trade effect.

The paper proceeds as follows. Section 2 presents the data and policy context, Section 3 the empirical evidence, Section 4 the theory and Section 5 the quantitative analysis. Section 6 concludes.

2 Data and context

Our analysis builds on three main databases. First, we integrate several administrative datasets that track all formal firm-, firm-to-firm-, and worker-by-firm-level outcomes in Costa Rica (CR). In these datasets, we are able to identify MNE subsidiaries in CR and trace their linkages to domestic suppliers and their workers. Second, we link them with external datasets that provide information about the global operations of these MNEs and events that may influence RS policies, such as NGO campaigns and leadership changes. Third, we build a new dataset that tracks RS policy rollouts and policy contents of MNEs with subsidiaries in CR. We discuss each of these building blocks in turn and then describe the policy context of the empirical analysis.

2.1 Administrative data from Costa Rica

Firm-to-firm transaction data The dataset tracks the near-universe of formal firm-to-firm relationships in CR from 2008 to 2019.[2] This information is collected by the Ministry of Finance through the D-151 tax form. Each year, firms must report the tax identifiers of all their suppliers and buyers with whom they conduct transactions of at least 2.5 million Costa Rican colones (around 5,000 U.S. dollars), along with the total transaction amounts. We use this data to identify the suppliers exposed to a new RS policy of an MNE subsidiary in CR and to estimate its effects on various types of sales and sale transactions.

Matched employer-employee data Based on data from the Social Security Administration, we construct a panel of employment records for all formal workers in CR between 2006 and 2019. For each of the 1.9 million workers observed at least once, the data includes the employer identifier (consistent across firm-level datasets), monthly labor earnings, employment status (full-time or part-time), gender, occupation, and records of leave due to workplace accidents and maternity.

Other firm-level data We then incorporate yearly corporate income tax returns from the Ministry of Finance for all taxpaying firms in CR from 2008 to 2019. These returns include typical balance sheet variables such as total sales and employment, as well as the firm's primary 4-digit sector (out of a total of 375 4-digit sectors in CR). Additionally, we incorporate data from CR customs

[2] See Alfaro-Ureña et al. (2022) and Alfaro-Ureña et al. (2021) for additional description of the administrative datasets.

declarations on yearly firm-level imports and exports.

MNE sample The analysis sample of MNEs consists of the 481 foreign-owned firms in CR that have average annual domestic input purchases exceeding 1 million U.S. dollars and average annual employment of more than 50 workers (averaged across all years the subsidiary has operated in CR).[3] These 481 subsidiaries account for 73% of the domestic input purchases and 79% of the employment by foreign-owned firms in the country (Appendix Table A1).

2.2 Global data on MNEs

Orbis data We link MNE subsidiaries in CR to historical Orbis panel data for their MNE groups. To measure global MNE sales, we use the consolidated turnover of the global ultimate owner of the subsidiaries in CR, as reported in Orbis' ownership module. This approach allows us to observe the global sales of 203 out of the 481 MNEs of interest from 2008 to 2019.[4]

Sigwatch data The consultancy firm Sigwatch collects comprehensive data on international consumer-facing NGO campaigns targeting MNE production practices, including their sourcing practices (Hatte and Koenig, 2020).[5] Between 2010 and 2020, Sigwatch recorded an average of over 10,000 NGO campaigns annually. After matching MNEs using their names and ISIN identifiers, we found that 190 out of the 481 MNEs of interest were targeted by these campaigns. We use this data to explore whether negative NGO campaigns against MNEs tend to precede their RS rollouts.

BoardEx data We combine data from BoardEx and Orbis to track leadership changes at the MNE group level. Both datasets provide information on the identity of all current and former executives in key leadership positions within the MNEs of interest, along with their appointment and resignation dates. From these combined datasets, we identify that 144 of the 481 MNEs of interest underwent leadership changes. We leverage this data to examine whether RS rollouts are systematically associated with prior leadership changes at the MNE level.

2.3 Responsible Sourcing (RS) policies

Data construction and analysis sample We built a database that tracks the RS policies implemented by the 481 MNEs with subsidiaries in CR we describe above. To do so, we employed a double-blind search process conducted by two independent research teams. Their findings were then cross-checked and consolidated into a single comprehensive database. For each MNE, we collected information on corporate social responsibility and supplier requirements (typically called a "Supplier Code of Conduct") by analyzing all publicly available company reports, press

[3] We consider an MNE subsidiary as a firm with positive MNE ownership. Most subsidiaries are fully owned by the MNE (median ownership share is 95%).

[4] The matching rate with Orbis sales data is limited by its varying geographical coverage, which tends to be lower outside of Europe and North America.

[5] We thank Pamina Koenig for making the Sigwatch data available to us.

releases (both in CR and internationally), and corporate filings. This information was primarily found on the websites of the MNE groups. For each policy, we recorded the year of implementation and noted whether it applied to suppliers worldwide or was specific to CR or the Central American region. We searched for RS rollout events without date restrictions, with the earliest event found in 2000. In our analysis, we focus specifically on RS codes that include provisions related to labor conditions, broadly defined.[6] The full search yielded 238 RS policy rollouts related to labor conditions, implemented by 169 distinct MNEs. Of these 169 MNEs, 104 triggered a first-time RS exposure event to domestic suppliers in CR over the period of our estimation sample 2009-2019, as we discuss in more detail in Section 3. 89% of these 104 RS rollouts apply to all MNE suppliers globally.[7]

By combining the firm-to-firm transaction data with the data on RS rollouts by MNEs, we can measure the fraction of total production by domestic (non-MNE) firms in CR that is subject to active RS supplier codes with labor provisions.[8] This fraction rose from 30% in 2008 to 43% in 2019. The growing reach of RS in domestic production indicates that its effects could extend to firms and workers not directly affected. This motivates our analysis that combines partial-equilibrium comparative statics of exposed vs. non-exposed firms with a model to investigate implications in GE.

Looking at descriptive statistics about MNEs implementing RS policies and their suppliers in CR, we see that subsidiaries of MNEs with RS policies are larger than MNE subsidiaries without RS and are more likely to be headquartered in the U.S. or Europe (Appendix Table A3). Exposed suppliers –defined as those supplying to MNE subsidiaries in the year before their first RS rollout– employ, on average, 18 workers. These suppliers span all sectors in the economy: 13% operate in manufacturing, 48% in services, 28% in retail (including repair and maintenance), and 11% in agriculture (Appendix Table A4).

Content of the RS policies For each RS policy in our analysis sample, there is a corresponding document (code of conduct) outlining the requirements that MNEs impose on suppliers. We analyze the text of these documents using two approaches: qualitative analyses that capture

[6] In practice, 68% of all RS policies we identified fall into this category. When we focus, as in our estimation below, on first-time RS rollouts by MNEs, 81% include labor provisions. To further investigate the role of labor provisions, we also compare the effects of RS codes without labor requirements in our analysis below.

[7] Appendix Table A2 includes the full list of 169 MNEs with an RS rollout, with an asterisk (*) indicating the 104 MNE rollouts that trigger first-time RS exposure in our sample. Of these 104 RS rollouts, 103 involved the introduction of a new supplier code of conduct, while one involved launching a recurring workshop for suppliers. Of the remaining 65 MNEs excluded from the analysis sample (together with their suppliers), 56 implemented RS policies before 2009 (the first year when we can compute exposure of suppliers using the firm-to-firm transaction data), while 9 had only suppliers that had experienced prior RS rollouts.

[8] The numerator is the sum of the total sales of all domestic firms that supply to an MNE subsidiary with an active RS code in a given year. The denominator is the sum of the total sales of all domestic firms in the same year.

themes, stringency and context (specifically, by querying ChatGPT-3.5 to grade each document on various dimensions) and quantitative analyses (total word extraction and frequency counts).

Based on the extent of labor-related content in RS policy documents, labor standards emerge as the primary focus of the typical RS policy in our sample.[9] Using a 1-to-10 scale (with 1 meaning no reference to labor standards and 10 meaning exclusive focus on them), ChatGPT scores the average document as 5.5 (see column 4 of Appendix Table A5 for policy-specific scores).[10] Next, we examine the most commonly included labor requirements. Panel A in Figure 1 presents a frequency cloud of words associated with labor standards. Words such as *fair*, *wage*, *safety*, *compliance*, and *child* appear most frequently. Panel B displays a histogram of the frequency of four broad labor standard topics across RS documents (based on the frequency of words associated with each labor topic). In decreasing order of frequency, these labor topics are: *wages and working conditions*, *child and forced labor*, *workplace safety*, and *human rights*. The non-labor policy content of RS policy documents typically covers diverse topics such as environmental responsibility, ethical business practices, and intellectual property protection (see column 8 in Appendix Table A5). We return to the potential role that such additional provisions –particularly environmental standards– may play in shaping the effects of RS rollouts in our estimation sample in Section 3.

A natural question is whether the RS documents merely offer a set of values and aspirations or actually impose mandatory standards on suppliers. Panel C in Figure 1 shows a histogram of responses across all policy documents to the ChatGPT query: "Categorize the PDF tone in terms of the mandatory nature of the labor and wage requirements. Use a score from 1 to 10, where 1 means that the requirements are optional and 10 means absolutely mandatory". Nearly all policy documents score 8 or higher, indicating that the codes of conduct are generally prescriptive. Panel D in Figure 1 is a histogram summarizing whether the policy documents explicitly mention penalties faced by suppliers who fail to comply with the RS labor rules and, if they do, what those penalties are. 47% of the policies explicitly state that failure to comply with the RS rules will lead to contract termination, and another 13% mention other disciplinary actions.

A typical RS event in our sample is Ericsson's initial rollout of a Supplier Code of Conduct in 2009.[11] Based on its 4,193 words, ChatGPT scores Ericsson's supplier code as 5/10 in focus on

[9] A survey by The Economist Intelligence Unit of 800 MNEs (The Economist, 2017) finds that the most frequent set of requirements included in their RS policies relate to labor conditions and compensation (notably workplace safety, working hour limits, living wages, compensation for injury/sickness, and maternity/paternity and sick leave). The second most common set of requirements concerns environmental practices, such as waste reduction and recycling, pollution and climate change.

[10] For comparison, the equivalent score for environmental provisions is 3.

[11] See Ericsson's RS policy document here: https://www.ericsson.com/4982d3/assets/local/about-ericsson/sustainability-and-corporate-responsibility/documents/supplier-code-of-conduct/ericsson-code-of-conduct-for-business-partners_english.pdf.

labor conditions. Ericsson's RS code outlines comprehensive requirements for suppliers regarding their workers, including pay (minimum compliance with applicable laws or industry standards, whichever is higher), premium overtime pay, a maximum 48-hour regular workweek, freedom of association (e.g., union membership), and a mandatory Occupational Health and Safety (OHS) management system. The code is a mandatory component of all Ericsson supplier agreements. Verification of compliance includes regular supplier reporting and on-site visits by third-party auditors. Significant or recurring breaches, failure to take corrective actions, lack of remedies, or non-cooperation constitute right for termination of the contract by Ericsson.

2.4 Policy context

The typical minimum requirement of RS codes of conduct, included in all RS policies in our sample, is that MNE suppliers must comply with all existing local labor laws and regulations. If local laws are well-enforced with high compliance, RS rollouts may be redundant. Conversely, if local laws and regulations are not well-enforced, then even the least ambitious RS codes can have meaningful implications for suppliers if the private enforcement of RS improves the previous oversight by public regulators. Our empirical context resembles this latter scenario, as we outline below. Limited compliance with existing regulations in a context of weak state enforcement is not unique to CR, but has been found to be prevalent among low- and middle-income countries (e.g., Harrison et al., 2003, Ronconi, 2019).

On paper, CR's labor standards are high. The statutory minimum wage for low-skill occupations is approximately 70% of the median wage, a higher ratio than any OECD country (OECD, 2017). Moreover, Social Security contributions, at 36.5% of gross salaries, exceed the OECD average of 27.2%. Employer contributions are particularly high at 26.3%, compared to the OECD average of 17.7% (OECD, 2016). This pattern aligns with the observation that low- and middle-income countries frequently have stricter employment laws and regulations than high-income economies (World Bank, 2020).

In practice, state enforcement of labor standards in CR has been weak. Inspectors employed by the Ministry of Labor are responsible for investigating violations related to minimum wages, Social Security contributions, occupational safety standards, insurance payments, maternity leave, holidays, overtime pay, working-time regulations, and health and safety standards. In 2015, CR employed 92 such labor inspectors (0.4 per 10,000 employees), reportedly operating with limited resources (Gindling et al., 2015). According to the Ministry of Labor, staffing levels are insufficient to inspect even 10% of firms, leaving especially small and medium enterprises largely unregulated (La Nación, 2009). For instance, household survey data from 2017 show that a quarter of formal private-sector employees earned less than the legal minimum wage (OECD,

2017).

Enforcement of RS requirements by MNEs is likely to be, on average, significantly more effective than the *status quo* of state regulators; due to both MNE resources and their incentives not to be caught misrepresenting sourcing practices. In line with the content analysis of the RS codes related to enforcement and auditing discussed above,[12] a survey by The Economist Intelligence Unit of 800 MNEs (The Economist, 2017) documents that MNEs combine quarterly supplier reports with regular on-site inspections to ensure compliance, mostly contracted to third-party auditors. The survey also reveals that over one-third of MNE RS policies are more demanding than government laws and regulations, with this proportion being higher among larger MNEs.

The many detailed assessment and compliance provisions included in RS codes could still, in principle, just be "hot air". Next, we provide empirical evidence on the average and heterogeneous effects of RS rollouts to investigate these questions.

3 Effects of RS rollouts on suppliers and workers

We use the data described above to provide evidence on the effects of RS rollouts by MNEs with subsidiaries in CR on domestic suppliers and their workers.

3.1 Empirical strategy

Supplier-level specifications We estimate event-study specifications of the following form:

$$y_{ist} = \alpha_i + \gamma_{st} + \sum_{\eta=k_l}^{\eta=k_u} \beta_\eta I(\text{Years since RS}_{it} = \eta) + \epsilon_{ist}\,, \tag{1}$$

where y_{ist} is an outcome (e.g., log firm sales or log employment) of firm i from the sample of firms that are suppliers to MNE subsidiaries in CR at some point during the period 2008-2019. The subscript s indexes the 375 4-digit sectors in CR and t indexes years. α_i are firm fixed effects and γ_{st} are sector-by-year fixed effects. The term $\sum_{\eta=k_l}^{\eta=k_u} \beta_\eta I(\text{Years since RS}_{it} = \eta)$ represents the event-study design for first-time RS exposure: $I(\cdot)$ is an indicator function and η indexes the number of years before or after the rollout of an RS policy by the MNE that firm i is exposed to.

In line with the model we develop in Section 4, exposed (or "treated") suppliers are those selling to an MNE in the year before the first RS policy rollout of that MNE (at $\eta = -1$). Given our sample period (2008-2019), treated suppliers must be exposed to an RS rollout that occurred

[12] E.g., Walmart's "Responsible Sourcing Audit and Assessment Expectations and Guidance" requires suppliers to take responsibility for "choosing an appropriate third-party audit program from the list of Walmart-approved programs, arranging, paying for, obtaining and cooperating in the audit, submitting the valid audit report to Walmart within the specified timelines" (Walmart, 2024).

between 2009 and 2019.[13] Moreover, treated suppliers are restricted to those that have never sold to an RS-active MNE before the rollout event. The baseline estimation sample thus includes first-time treated MNE suppliers and never-treated MNE suppliers (firms that are not exposed between 2009 and 2019 and have never sold to an RS-active MNE). To adjust for firm-level autocorrelation across years, we cluster standard errors (ϵ_{ist}) at the supplier level. In the results below, we estimate and report the event studies both before and after pooling the point estimate for $\eta \geq 4$ and $\eta \leq -4$ side-by-side (i.e., showing the point estimates for $\eta = 4$ and $\eta = -4$ in a specification without pooling, and the point estimates for $\eta \geq 4$ and $\eta \leq -4$ in a separate specification with pooling to capture longer-run effects, with everything else unchanged).[14]

The primary identification concern for estimating the β_η coefficients is that the timing of the RS rollouts may not be as good as random from the perspective of CR suppliers. For instance, MNEs may have rolled out their RS policies during periods when CR suppliers faced other contemporaneous productivity shocks. We address this concern in several ways. First, to mitigate concerns about different time trends across firm types, we restrict the estimation sample to CR firms that we observe supplying MNE subsidiaries in CR at least once between 2008 and 2019. Second, we assess the likelihood of potential confounding shocks that may have preceded the MNE's RS rollout decision using the event-study design to estimate the β_η coefficients both before and after the rollout. A related concern could be that firms exposed to RS earlier (e.g., around 2010) may experience systematically different dynamic effects (timelines of treatment effects) compared to firms exposed in later years (e.g., 2015-2019). Next to the standard two-way fixed effects event-study estimates, we thus report estimates from the procedure developed by Sun and Abraham (2020), estimating the weighted average timeline of treatment effects across treatment cohorts, with weights equal to each cohort's sample size.

Third, we present the event-study estimates using only global RS rollouts (decided by the MNE headquarters to apply to all suppliers globally) as instruments for rollouts affecting CR suppliers. Employing global RS rollout decisions as an IV addresses the concern that rollouts may have been timed to coincide with contemporaneous shocks to the CR suppliers (not captured by differential pre-trends). Finally, supplier sales to MNEs can fluctuate for various reasons, such that defining exposure to RS based on a positive MNE sales event in year $\eta = -1$ may, on average, capture particularly successful ("lucky") periods for the exposed suppliers. This lumpy nature of sales could create positive pre-trends and negative post-trends, even without any actual impacts of RS. To address this concern, we estimate the specification in equation (1) both before and after

[13] 85% of treated suppliers experience a single exposure to one of the RS policies rolled out between 2009 and 2019. Below, we also report very similar results after excluding suppliers with multiple treatments.

[14] We include all periods η observed during the sample period (i.e., $k_l = -11$ and $k_u = 10$), except for the omitted period at $\eta = -1$. Appendix Figure B1 provides the fraction of treated suppliers covered across the η timeline.

including an additional set of event-study indicators, $\sum_{\eta=-4}^{\eta=4} \delta_\eta I(\text{Years since MNE}_{it} = \eta)$, where the η years are identical to the RS event-study years above, and MNE_{it} switches to 1 for all CR suppliers with positive sales to any MNE subsidiary in CR in event year $\eta = -1$ (one year before the RS policy was rolled out). When including these additional event-study terms in equation (1), we thus estimate the event-study effects of RS rollouts among exposed CR suppliers, while controlling for the full timeline of potential effects that may stem from having had positive sales to any MNE in event time $\eta = -1$.

Worker-level specifications To estimate the effects of RS rollouts at the worker level, we use the matched employer-employee data to estimate event-study specifications of the following form:

$$y_{ijst} = \alpha_{ij} + \gamma_{st} + \sum_{\eta=k_l}^{\eta=k_u} \beta_\eta I(\text{Years since RS}_{jt} = \eta) + \epsilon_{ijst}\,, \tag{2}$$

where α_{ij} now indicate fixed effects for worker (i)-by-firm (j) pairs. γ_{st} and $\sum_{\eta=k_l}^{\eta=k_u} \beta_\eta I(\text{Years since RS}_{jt} = \eta)$ remain defined as the sector-by-year fixed effects of the employing firm j and the firm j-level RS event-study terms. As above, we estimate this specification before and after including the full timeline of effects of having sold to any MNE, using the IV specification and the estimation procedure by Sun and Abraham (2020). We continue to cluster the standard errors at the firm level (denoted by j here). For outcome y_{ijst}, we focus on log monthly earnings, calculated as annual labor earnings divided by months of employment. The estimation sample includes all workers who have ever worked at suppliers of MNEs. Given the α_{ij} fixed effects, the β_η estimates capture potential changes in the labor earnings of continuing workers at exposed suppliers, relative to continuing workers at non-exposed suppliers.[15]

MNE-level specifications To investigate the MNE-level context of RS rollout decisions, which matters for the interpretation of the supplier effects, we estimate event studies with MNE outcomes as the dependent variable in equation (1). Firm i is now a subsidiary in CR of an MNE rolling out RS for the first time, and the event-study timeline $I(\text{Years since RS}_{it} = \eta)$ tracks MNE subsidiary outcomes in the years before and after this initial RS rollout. The estimation sample includes all 481 MNEs. The MNE-level specifications allow us to determine whether RS rollouts are preceded by positive or negative MNE-level trends or followed by significant effects on MNE output and input demand. We also match the MNE subsidiaries in our sample to panel data from Orbis on the global outcomes of their parent MNE groups. This allows us to check if the total sales of the MNE subsidiary in CR respond differently relative to global MNE sales, shedding light on potential substitution across sourcing countries.

[15] We do not separately observe monthly hours worked, but we only include full-time employees.

To investigate whether RS rollout decisions could be correlated with other MNE-level shocks that may not be apparent in the estimated pre-trends, we use the BoardEx database to test whether RS rollouts occur after changes in various leadership positions within the MNE. Finally, we assess a remaining concern that RS rollout decisions may coincide with shocks to the likelihood of negative publicity events, which could violate the (post-treatment) parallel trends assumption between RS-MNEs and MNEs sourcing from suppliers in the control group. To this end, we make use of the matched Sigwatch database on NGO campaigns targeting MNEs. We also revisit and evaluate the implications of violations of the MNE-level parallel trends assumption as part of the theory and counterfactual analysis.

Transaction-level specifications To estimate the effect of RS on the intensive margin of sales to the MNE, we estimate event-study specifications at the firm-to-firm transaction level. We estimate the same specification as in equation (2), where y_{ijst} is the log transaction amount sold by supplier i to buyer j. α_{ij} is thus supplier-by-buyer fixed effects. Given the bilateral nature of the transaction data, we also include both supplier i's sector-by-year and buyer j's sector-by-year fixed effects. Our estimation sample includes sales transactions for the same sample of suppliers described above. For exposed suppliers, we include only transactions with the MNEs that later become RS-active (the MNE triggering their event) to avoid capturing the effects of RS on the sales to other non-RS buyers. For non-exposed suppliers, we keep all sales transactions. All other aspects of the regression remain the same as in the analogous worker-level specifications. We also use the transaction-level database to compute suppliers' total sales to non-RS-active buyers in each period, and estimate specification (1) with this outcome on the left-hand side.

3.2 Results

Suppliers We first investigate the effect of RS on total supplier sales and employment. For each outcome, columns 1 and 5 of Table 1 present the two-way fixed effect specification with firm and sector-by-year fixed effects. Columns 2 and 6 add the flexible controls for having sold to any MNE in event period $\eta = -1$. Columns 3 and 7 present the same specification as in column 2, but are estimated using the method proposed by Sun and Abraham (2020). Columns 4 and 8 present the same specification as in columns 2 and 6, but with the treatment event dummies instrumented using only RS rollouts that were global in nature. Each specification reports both the baseline event-study point estimates without pooling effects at $\eta = -4$ or $\eta = 4$, as well as the point estimates for $\eta \leq -4$ and $\eta \geq 4$ from a separate event-study regression where we pool the longer-term effects (while keeping all else unchanged).[16] Panels A and B of Figure 2 plot the respective point estimates for the IV specification, corresponding to columns 4 and 8 in Table 1.

[16] Appendix Figure B1 includes point estimates across wider event-study timelines.

In the remainder of the analysis, we focus on event-study figures with point estimates from the IV specifications, but we present the companion tables with all specifications in Appendix C.

According to the IV specification, the total sales of exposed suppliers decrease by, on average, 7.4% 4 years after the first exposure to an RS rollout and by 10% when pooling 4 years or more after the event. This is accompanied by a fall in employment of 5.8% 4 years after and 9.6% after 4 years or more. For both outcomes, the two-way fixed effects, Sun-and-Abraham and IV specifications in columns 2-4 (6-8) yield similar point estimates. This suggests that the heterogeneity in dynamic adjustments across treatment cohorts or the MNEs targeting the timing of RS rollouts to CR-specific shocks are unlikely confounders in our empirical setting.[17] The concern of mechanical positive pre-trends and negative post-trends is apparent in column 1, where we do not control for having sold to any MNE in event year $\eta = -1$. After we include the event timeline for having sold to any MNE in $\eta = -1$, pre-trends disappear (see Figure 2 and Table 1 columns 2-4 and 6-8).

Heterogeneity To further explore these effects, we study the heterogeneity in the supplier sales response by characteristics of the supplier, RS policy and MNE rolling out the policy. In Panels A-F of Figure 3, we find that the average negative effect of RS exposure on supplier sales is larger among suppliers with initially higher shares of the workforce near the minimum wage (Panel A), smaller suppliers (Panel B), suppliers exposed to RS policies that are more focused on labor standards (using ChatGPT scores in Panel C), RS policies with higher compensation-related word counts (Panel D), RS policies with higher counts of workforce health and labor safety standards-related words (Panel E), and RS policies with higher counts of compliance and enforcement-related words (Panel F). We also find that the negative sales effects are concentrated among suppliers in services (Appendix Figure B2), and that effects are more pronounced from MNEs headquartered in countries with higher GDP per capita and higher average firm management scores (Appendix Figure B3). In line with the policy context we describe in Section 2, these findings suggest a setting in which RS policies by MNEs affect domestic suppliers through labor-related provisions and standards, are subject to varying degrees of stringency and enforcement, and affect suppliers in less regulated segments of the domestic economy more strongly.

Workers We use specification (2) to estimate the worker-level effects of RS rollouts at exposed suppliers. Figure 4 plots the event-study coefficients from the IV specification. Panel A of Figure 4 presents the results including all workers who, at some point during the sample period, were employed by a supplier to an MNE. Panel B of Figure 4 breaks up the average effect on all workers

[17] Two additional robustness checks are worth highlighting. First, we examine whether some of the negative effects could be attributed to exposed suppliers splitting their production into separate entities to avoid the costs of RS compliance for output sold to non-RS buyers. Appendix Figure B4 shows that groups of workers from exposed suppliers are not more likely to move jointly to new entities. Second, Appendix Figure B5 presents very similar results to the baseline ones after excluding suppliers with more than one RS exposure event.

into three worker groups: those in the bottom quartile of monthly earnings, the top quartile of monthly earnings and the middle group comprising workers between these two quartiles.[18]

As shown in Panel A of Figure 4, workers' earnings increase, on average, following RS rollouts: by 1.7% 4 years after the rollout and 1.9% 4 years or more post-rollout. In Panel B of Figure 4, we find that the effect is concentrated among the initially low-earning workers, whose monthly earnings increase by, on average, 5.4% 4 years after the rollout (and by 5.3% 4 years or more post-rollout). We find an insignificant and close to zero point estimates for the effect of RS on the initially high-earning workers and a weaker effect on workers in the middle group.

In line with these effects, we find a significant decline in the relative employment share of workers in the bottom quartile of initial earnings compared to those in the top quartile.[19] Panels C and D of Figure 4 show these supplier-level event-study estimates in employment levels by worker type and in relative terms, respectively. We find that the relative employment of initially low- vs. high-earning workers decreases by about 11% 4 years after the rollout (8% for $\eta \geq 4$). Given the possibility of employing zero workers classified in the low-wage group, we also use PPML estimation to account for the extensive margin. The reduction in relative employment grows to -16.9% 4 years after the rollout and -14.1% 4 years or more post-rollout (column 5 in Table C8). Finally, Panel C of Figure 4 shows that these relative employment effects are primarily driven by a reduction in initially low-wage employment, while changes in initially high-wage employment are insignificant and economically small.

MNEs Next, we study the effect of RS rollouts on the MNEs themselves. Figure 5 presents the MNE-level event-study results, showing the impact of RS on the sales and employment of the MNE subsidiary in CR (Panel A) and the subsidiary's share of global MNE sales or employment (Panel B).[20] We find no discernible effect on the total sales or employment of the MNE subsidiary in CR, nor on its sales and employment as a share of global MNE sales and employment.[21] Moreover, we find no evidence of significant pre-trends at the MNE level. In Panel C, we investigate whether RS rollout decisions by MNEs are preceded or coincide with changes in MNE leadership positions, as they could potentially cause a break in trends even if pre-trends are parallel in the data. Using the BoardEx and Orbis data described in Section 2, we find no evidence to support this concern across different types of leadership positions.

[18] To categorize workers, we use their average monthly earnings during the first year they appear in the data (starting in 2006). For workers observed for the first time after 2006, we adjust their initial monthly earnings for inflation using the annual consumer price index in CR.

[19] This effect is not mechanical, as quartile assignment is based on a worker's average earnings in their first year of appearance in the matched employer-employee data and is thus time-invariant.

[20] Given concerns about transfer pricing by MNEs, effects on employment serve as a useful comparison.

[21] While the point estimates in Panels A and B are close to zero 4 years post-rollout and beyond, the confidence intervals are relatively large. We will also address the possibility of positive MNE-level sales effects as part of both the theory and the quantitative analysis.

The results in Panels A-C of Figure 5 suggest that RS rollout decisions may be motivated by longer-term considerations, such as insurance against rare tail events due to negative publicity campaigns by prominent NGOs in the future. Since the timing of such forward-looking investments by the MNE is plausibly unrelated to the short- to medium-term shocks to MNE sales within the roughly 4-year post-rollout timeframe that we are able to capture in our event studies, this scenario would not violate the parallel trends assumption in our setting. But a plausible remaining concern is that RS rollout decisions may coincide with an unexpected increase in the probability of negative publicity events in the short-term (relative to MNEs in the control group). This would imply that, in the absence of RS rollouts, treated MNEs could have faced, on average, more negative changes in output and input demand compared to the control group –introducing a negative bias in the statistically insignificant results from Panel A of Figure 5.

We address this concern in three ways. First, we use the Sigwatch data to investigate whether RS rollouts by MNEs are preceded by, or coincide with, negative NGO campaigns. Panel D presents estimation results of an event study with the indicator for RS rollout decisions on the left-hand side and an event-study timeline for negative NGO campaigns targeted at the MNE on the right. We find no evidence that NGO campaigns precede or coincide with RS rollout decisions. Second, we verify the extent to which negative publicity campaigns appear to be rare ("tail") events in the data. We use the Sigwatch data to compute the incidence of negative campaigns by prominent NGOs across MNE-year observations in our database. The fraction of all MNE-year observations in our database with such adverse campaigns is about 3%. Since not every NGO campaign meaningfully affects MNE outcomes, this is likely an upper bound for the arrival rate of negative RS-related events. The rarity of such publicity shocks adds some further reassurance on the *ex ante* likelihood of confounding negative MNE sales shocks in the immediate aftermath of RS rollouts.

Third, we revisit this concern as part of both the theory and quantification. As part of the counterfactual analysis, we verify the robustness of our results to this potentially remaining negative MNE-level bias. Specifically, such bias would mean that RS has additional positive effects on MNE sales that the empirical evidence in Figure 5 may have missed. Through the lens of our model, such positive effects of RS on MNE sales and input demand are rationalized by positive shocks to MNE demand from consumers due to MNEs' RS announcements. We can thus explore the sensitivity of the counterfactual analysis to this concern by allowing for larger RS-induced MNE demand shocks relative to our baseline estimation in Section 5, which is based on our estimation in Figure 5.

Transactions The transaction-level version of the specification in equation (2) estimates the effects of RS rollouts by MNEs j on the average transaction sales amount among their continuing suppliers i. Panel A of Figure 6 plots the event-study coefficients from the IV specification. We find that, on average, the compliers' sales to the RS-MNE decline by 5.4% 4 years post-rollout and by 7.6% 4 years or more post-rollout. Panel B of Figure 6 uses the transaction data to estimate the effect of RS exposure on supplier sales to other (non-RS) buyers. Sales to other buyers decline significantly, falling, on average, by 6.0% 4 years post-exposure and 9.7% 4 years or more. These findings are consistent with the text-based analysis of RS codes of conduct described above, where RS standards are set at the firm level, affecting all of supplier production.

Workplace amenities, non-discrimination and environmental practices While workplace amenities are typically hard to measure, our data also allow us to explore the effects of RS rollouts on some of them. Panels A and B of Figure 7 present event-study results suggesting that RS exposure reduces workers' time on accident leave, which could be due to fewer workplace accidents and less severe ones. We also find that RS increases the average time of maternity leave, though this becomes significant at conventional levels only after pooling the post-rollout period.[22] Panel C of Figure 7 indicates positive but insignificant effects on suppliers' purchases of health services.[23] Finally, Panel D presents suggestive evidence of positive effects of RS rollouts on the share of female workers, which could reflect commonly included RS clauses on non-discrimination in hiring practices. Together, these findings suggest that RS policies not only increase worker earnings but may also improve some dimensions of workplace amenities. Both our theory and quantification will speak to this possibility.

While the RS policies in our sample primarily focus on labor standards, they also include environmental provisions such as waste reduction and recycling, pollution control, and climate change mitigation. A natural question is to what extent such non-labor-related provisions may be driving the effects of RS on suppliers that we estimate above. To assess this, we can first note from the results above that the adverse effect of RS on supplier sales is concentrated in the service sector. Given services' generally low environmental impact (relative to manufacturing, agriculture or mineral extraction), this suggests that environmental standards are unlikely to be the primary constraints imposed by RS policies in our context. Second, according to the International Energy Agency, CR has one of the highest shares of energy supplied from renewable sources worldwide (e.g., geothermal, hydro, and biofuels). As a result, more than 99% of total CO_2 emissions in CR stem from fuel combustion, with 75% coming from the transportation

[22] Appendix Figure B6 provides suggestive evidence that both effects are concentrated among low-earning workers.

[23] We find no evidence of effects on supplier spending on inpatient or outpatient medical services. We find positive but insignificant effects on the likelihood of employing an occupational safety and health professional. We find no evidence of changes in supplier spending on educational and recreational services.

sector. In this context, we can use our sales transaction data to test whether RS rollouts affect the suppliers' expenditures on transportation services, sewage and waste management services, electricity, or gas. We find no evidence for such effects, with point estimates close to zero (Appendix Figure B7). Finally, we can examine whether supplier exposure to "placebo" RS rollouts —those without labor-related provisions that we exclude in our estimation, focused on other areas such as environmental practices— impact supplier outcomes in CR in similar ways as in our estimation sample. Implementing the same supplier-level event-study design as above, we find no significant treatment effects of RS codes without labor standards, with point estimates close to zero (see Appendix Figure B8). Together, these findings suggest that the effects of RS rollouts in our context are primarily driven by the labor-related provisions that are the main focus of RS codes in our estimation sample. We also return to these questions as part of both the model and counterfactual analysis, where we consider alternative assumptions about the nature of the RS-induced increase in supplier costs.

4 A simple open-economy model of Responsible Sourcing

The empirical analysis suggests that MNE rollouts of RS codes are, on average, not just "hot air." Instead, the effects on exposed suppliers and workers are qualitatively consistent with an increase in labor-related costs that are concentrated among initially low-wage workers. To rationalize these effects and shed light on their welfare implications in a setting where RS affects a large share of domestic production, this section develops a parsimonious open-economy model of RS. There are two countries: Home (Costa Rica in our analysis) and Foreign (the rest of the world). MNEs are headquartered in Foreign. Heterogeneous local firms in Home can supply intermediate inputs to an MNE, as well as produce final goods for their domestic market. MNEs may implement RS policies – potentially in response to demand from Foreign consumers – that raise labor costs for their suppliers. Appendix D provides more detailed model derivations.

4.1 Setup

The final demand by consumers in country $i \in \{H, F\}$ (for Home, Foreign) is CES across goods ω with elasticity of substitution $\sigma \geq 1$:

$$U_i = \left(\int_{\Omega_i} d_{\omega,i}^{\frac{1}{\sigma}} q_{\omega,i}^{\frac{\sigma-1}{\sigma}} d\omega \right)^{\frac{\sigma}{\sigma-1}}, \tag{3}$$

where Ω_i is the set of goods for final consumption in country i, $q_{\omega,i}$ denotes consumption of ω and $d_{\omega,i}$ is a demand shifter for ω. Final goods are produced by either "MNEs" or "firms."

Firms A fixed mass of local firms in country i can produce final goods for the domestic market, and firms in Home can produce intermediate inputs for Foreign MNEs. Firms have heterogeneous

productivities z following a Pareto distribution with parameter $\theta \geq (\sigma - 1)$ and minimum $\underline{z}_i$.[24] They use labor as the sole factor of production, combining the output of two types of workers (low- and high-wage workers, indexed by $t \in \{l, h\}$) as follows:

$$\ell = \left[\alpha_i^l \ell^{l\,\frac{\rho-1}{\rho}} + \alpha_i^h \ell^{h\,\frac{\rho-1}{\rho}}\right]^{\frac{\rho}{\rho-1}}, \tag{4}$$

with the corresponding labor cost index denoted as W. In equation (4), ℓ^t denotes type-t labor and α_i^t its relative demand in country i. Firms pay a fixed cost to produce and then have constant marginal costs. The labor required to produce q_ω units of final variety and m_ω units of intermediate inputs for MNE x are, respectively:

$$\ell_\omega = \frac{q_\omega}{z} + f_{ii} \text{ for } \omega \in \Omega_i \quad \text{and} \quad \ell_\omega = \frac{m_\omega}{z} + f_M \text{ for } \omega \in \Omega_x, \tag{5}$$

where f_{ii} (f_M, respectively) is the fixed cost to produce a final variety in country i (an MNE-specific intermediate input, respectively). Fixed costs in production lead to firm selection, à la Melitz (2003). We assume that fixed costs are ordered such that Home firms supplying MNEs are more productive than firms only serving the domestic market, as in the data.

MNEs There is a fixed mass of (homogeneous) foreign MNEs. Each MNE x produces through a subsidiary at Home that combines local labor ℓ (as in equation (4)) with local intermediate inputs. The CES production function of each MNE is:

$$M = \left(\alpha^\ell \ell^{\frac{\sigma-1}{\sigma}} + \alpha^m \int_{\Omega_x} m_\omega^{\frac{\sigma-1}{\sigma}}\, d\omega\right)^{\frac{\sigma}{\sigma-1}}, \tag{6}$$

where m_ω measures the use of intermediate input $\omega \in \Omega_x$ and α^ℓ, α^m are input shifters. The corresponding CES cost index is denoted R. Output M is then imported by the headquarters, subject to an iceberg trade cost ϱ.

Trade and market structure Trade patterns are simple: only MNE subsidiaries export from Home to Foreign, while only non-MNE firms export from Foreign to Home. Product markets are monopolistically competitive in the baseline. Workers collectively own domestic firms, with profits distributed proportionally to labor income.

4.2 Responsible Sourcing (RS)

An MNE may decide to implement RS, imposing higher labor standards on its suppliers.

[24] The productivity distribution in country i is $G_i(z) = 1 - (z/\underline{z}_i)^{-\theta}$.

RS wage premium We model the RS standards as higher monetary wages for workers: suppliers to MNEs with RS policies must pay their workers at a premium compared to non-RS firms. In line with Sections 2 and 3, we assume these wage increases are binding only for low-wage workers and they apply to all firm production. Formally, the wage $w^t_{H,r}$ offered to type-t workers by RS vs. non-RS firms (indicated by $r = R, N$) is:

$$w^t_{H,R} = \tau^t_R w^t_{H,N} \quad \text{for } t = h, l, \tag{7}$$

where $\tau^l_R > 1$ for low-wage workers and $\tau^h_R = 1$ for high-wage workers. In the model, RS is thus akin to a targeted minimum wage, applied only in firms that sell intermediate inputs to RS MNEs. As RS firms pay a higher wage than the prevailing market wage at non-RS firms, there is excess labor supply for RS firms, and the labor market is under a rationing equilibrium. RS suppliers hire along their labor demand curve. Workers not hired by RS firms are employed by non-RS firms at a wage $w^t_{H,N}$, which adjusts in general equilibrium to ensure labor market clearing.

RS demand shock One may wonder why MNEs would implement policies that increase their suppliers' costs. The literature on Corporate Social Responsibility (CSR) (e.g., Bénabou and Tirole, 2010) typically considers two views on why firms engage in costly CSR activities.[25] These activities could reflect the preferences of altruistic managers. Alternatively, they could be a profit-enhancing response to demands from consumers, employees, or investors. Our model incorporates this latter possibility in a reduced-form way, by allowing MNE demand to depend positively on RS implementation. Concretely, we assume that demand d_x for MNE x in (3) is shifted by $d_R \geq 1$ for RS MNEs, while $d_N = 1$ for non-RS MNEs. In this scenario, MNEs implementing RS face a trade-off between the negative profit impact of higher production costs and the RS-induced increase in demand for their output.

Pass-through of RS costs to MNE input prices Another important question is who ultimately bears the cost of RS: the supplier or the MNE? Under monopolistic competition, prices would be set at a constant markup over marginal costs, so any labor cost increase for the supplier would be fully passed through to the MNE. In contrast, if the MNE has buyer power, it may be that little or none of this cost increase is passed through to the MNE. We capture a range of possible pass-through rates with a reduced-form parameter $\beta \in [0, 1]$, assumed to be constant across MNEs. When $\beta = 0$, Home suppliers bear the full cost increase from RS policies; when $\beta = 1$, RS cost increases are fully passed through to the input price paid by MNE.

[25] See also Besley and Ghatak (2007), Campbell (2007), Hart and Zingales (2017), Eichholtz et al. (2010), Fioretti (2020), Kotchen (2006).

4.3 Comparative statics: effects of RS

How do RS rollouts impact supplier-level outcomes? As in the data, we assume that some MNEs implement RS while others do not. Using hat notation, $\hat{y} = d\log y$, to denote log changes, we compute the first-order effect of an RS policy summarized by $\left(\hat{\tau}_R^l, \hat{d}_R, \beta\right)$. In line with the empirical analysis in Section 3, we compare changes in outcomes of firms "exposed" to RS through their MNE buyer—i.e., firms that sell to the MNE before it implements RS– against changes in outcomes of *ex-ante* similar firms that sell to MNEs that do not adopt RS. The expressions below show that this comparison differences out any GE effects of RS on wages at control firms, to which we turn as part of the GE welfare expressions below and quantify in the counterfactual analysis in Section 5.

Effect of RS on suppliers and workers We start by computing the theoretical effect of RS policies on wages and relative employment of exposed suppliers, corresponding to the estimates in Figure 4. The wage of low-wage workers at RS-firms increases relative to those at non-RS firms by:

$$\hat{w}_{H,R}^l - \hat{w}_{H,N}^l = \hat{\tau}_R^l. \tag{8}$$

The relative impact of RS on the marginal cost of suppliers is thus:

$$\hat{W}_{H,R} - \hat{W}_{H,N} = \chi_H^l \hat{\tau}_R^l, \tag{9}$$

where χ_H^l denotes the share of low-wage workers in the supplier wage bill before RS.[26] The change in relative labor costs at RS suppliers induces a reallocation of workers (Panel D of Figure 4), subject to the elasticity of substitution (ρ) between worker types: $\hat{\ell}_{H,R}^l - \hat{\ell}_{H,R}^h - \left(\hat{\ell}_{H,N}^l - \hat{\ell}_{H,N}^h\right) = -\rho\hat{\tau}_R^l$.

Next, the effect of RS on the total sales of exposed suppliers – corresponding to the estimates in Panel A of Figure 2 – is:

$$\hat{Y}_{Htot,R} - \hat{Y}_{Htot,N} = \underbrace{\left[1 - \sigma - \zeta\sigma\frac{\theta - \sigma + 1}{\sigma - 1} + (1-\beta)\,\zeta\,(\sigma - 1)\right]}_{<0}\chi_H^l\hat{\tau}_R^l + \underbrace{\zeta\frac{\theta}{\sigma - 1}\hat{d}_R}_{>0}, \tag{10}$$

where $\zeta \equiv \frac{Y_{HM}}{Y_{Htot}}$ is the share of supplier sales that correspond to sales to the MNE prior to RS. This expression combines the effect on sales in both the domestic final goods market and the intermediate input market, which we now detail. The final goods market is monopolistically competitive so that firms price at a constant markup over marginal costs and the RS cost increase, $\chi_H^l\hat{\tau}_R^l$ from (9), is fully passed through to domestic prices. Given CES demand (3), the first-order

[26] Specifically, $\chi_H^l = \frac{w_{H,N}^l \ell_{H,N}^l}{w_{H,N}^l \ell_{H,N}^l + w_{H,N}^h \ell_{H,N}^h}$.

effect of RS on the domestic sales of exposed suppliers – corresponding to estimates in Panel B of Figure 6 – is thus:

$$\hat{y}_{HH,R} - \hat{y}_{HH,N} = (1-\sigma)\,\chi_H^l \hat{\tau}_R^l < 0. \tag{11}$$

Changes in sales of intermediate inputs to the MNE following RS are different from final goods sales for three reasons. RS-MNEs may benefit from a demand boost, $\hat{d}_R$, due to RS, which increases their demand for inputs. MNEs may also exert buyer power, so that the cost of RS to their suppliers is only partially passed to the input price paid by the MNEs, by a factor $\beta \in (0,1)$. Combining these two channels, the intensive-margin impact of RS on suppliers' sales to the MNE – corresponding to estimates in Panel A of Figure 6 – is thus muted compared to the impact on domestic sales in (11):

$$\hat{y}_{HM,R} - \hat{y}_{HM,N} = (1-\sigma)\,\beta \chi_H^l \hat{\tau}_R^l + \hat{d}_R. \tag{12}$$

The third effect of RS on sales to the MNE operates on the extensive margin.[27] Only firms above a certain productivity level z^* select into the MNE market before RS. RS raises this threshold by increasing costs, although this effect may be offset if RS also stimulates demand. Specifically:

$$\hat{z}^*_{HM,R} - \hat{z}^*_{HM,N} = \frac{\sigma}{\sigma-1}\chi_H^l \hat{\tau}_R^l - \frac{1}{\sigma-1}\hat{d}_R. \tag{13}$$

Combining the intensive and extensive-margin responses from equations (12) and (13) yields the following relative change in sales of exposed suppliers to the MNE:

$$\hat{Y}_{HM,R} - \hat{Y}_{HM,N} = \Big[\underbrace{\beta\,(1-\sigma)}_{\text{intensive}<0} + \underbrace{\frac{\sigma\,(\sigma-1-\theta)}{\sigma-1}}_{\text{extensive}<0}\Big]\,\chi_H^l \hat{\tau}_R^l \;+\; \underbrace{\frac{\theta}{\sigma-1}}_{\text{int+ext}>0}\;\hat{d}_R. \tag{14}$$

The extensive-margin response is mediated by the shape parameter θ of the Pareto firm productivity distribution, which determines how a shift in the selection threshold (13) translates into a change in the mass of suppliers to the RS-MNEs. The effect of RS on total supplier sales ($Y_{Htot} = Y_{HH} + Y_{HM}$) that we started with in (10) combines (11) and (14), appropriately weighted.

Effect of RS on the sales of the MNE Finally, we examine the effect of RS on the MNE subsidiary sales, estimated in Panel A of Figure 5. RS increases the production cost of the MNE by increasing its intermediate input costs (each supplier becomes more expensive, and there may be less suppliers, through the extensive-margin effect). This cost increase is proportional to the cost

[27] Extensive-margin effects enter to the first order in the effect on exposed firms' sales to the MNE and the effect on sales of the MNE (see below). They become second order in the effects on exposed firms' wages, relative employment and domestic sales.

share of intermediate inputs, Ξ. While this cost increase reduces MNE sales, it may be partially offset by the direct demand boost from RS. On net, the MNE subsidiary sales change as follows:

$$\widehat{R_R M_R} - \widehat{R_N M_N} = \Big[\underbrace{\beta(1-\sigma)}_{\text{supplier int.}<0} \underbrace{-\frac{\sigma(\theta-\sigma+1)}{\sigma-1}}_{\text{supplier ext.}<0} \Big] \Xi \chi_H^l \hat{\tau}_R^l + \Big[1 + \Xi \frac{\theta-\sigma+1}{\sigma-1}\Big] \hat{d}_R. \tag{15}$$

In Section 5, we quantify the model by confronting these comparative statics with the empirical evidence.

4.4 Welfare implications of RS

The overall desirability of RS policies from the perspective of Home workers is a priori unclear. On one hand, RS policies have a mechanical positive effect, as some Home workers experience wage increases, paid for –at least in part– by Foreign MNEs. On the other hand, RS policies impose increases in production costs that may leak into domestic prices, and GE effects on all workers may offset the direct gains. To investigate this interplay of forces at work in GE, we derive the first-order effect on Home's welfare of all MNEs implementing an RS policy $\left(\hat{\tau}_R^l, \hat{d}_R, \beta\right)$. To derive closed-form expressions and gain intuition, we assume here that MNE subsidiaries at Home do not directly employ local labor, i.e., $\Xi = 1$, and take the limit $\theta \to (\sigma - 1)$ (as in Burstein and Vogel, 2017). In Section 5, we also quantify more general versions of the model.

We first analyze the welfare impact of RS policies at Home on average over both worker types. Given utility (3), average welfare is: $U_H = \frac{X_H}{P_H}$, where X_H is total expenditure and P_H is the ideal price index. The first-order effect of RS on U_H can be expressed as:

$$\hat{U}_H \;=\; W^{tax} \beta \chi_H^l \hat{\tau}_R^l \;-\; W^{tax} \Lambda \chi_H^l \hat{\tau}_R^l \;+\; W^d \lambda_{FH} \hat{d}_R, \tag{16}$$

with strictly positive sufficient statistics $W^{tax} = \frac{\lambda_{HH}\lambda_{FH}\sigma}{1+(\lambda_{FF}+\lambda_{HH})(\sigma-1)}$ and $W^d = \frac{\lambda_{FF}}{1+(\lambda_{FF}+\lambda_{HH})(\sigma-1)}$. In these expressions, $\lambda_{kk'}$ denote trade shares as is standard in the literature on international trade (with λ_{kk} denoting the share of trade with country $k \in \{H, F\}$ itself), while Λ represents the share of expenditure on domestic goods that is spent on goods produced by RS-compliant firms.[28] Λ thus measures the degree of "leakage" of RS policies into the domestic price index.

Readers familiar with the trade policy literature will recognize that the sufficient statistic W^{tax} is equivalent to the first-order effect of a unilateral export tax on Home exports. If RS policies did not leak into the domestic market ($\Lambda = 0$) and had no demand benefit ($\hat{d}_R = 0$), they would be equivalent to an export tax from an efficiency perspective. The term $\beta \chi_H^l \hat{\tau}_R^l$ represents the size

[28] Specifically, we define $\lambda_{ii} = \int_{\Omega_{ii}} \left(\frac{\sigma}{\sigma-1}\frac{W_i}{z}\right)^{1-\sigma} dG_i(z) / P_i^{1-\sigma}$ and $\lambda_{ji} = 1 - \lambda_{ii}$ for $i \neq j$, where $\Omega_{ii'}$ denotes the set of varieties produced in i and marketed in i'.$\Lambda = \int_{\Omega_{HH,R}} \left(\frac{\sigma}{\sigma-1}\frac{W_H}{z}\right)^{1-\sigma} dG_H(z) / \int_{\Omega_{HH}} \left(\frac{\sigma}{\sigma-1}\frac{W_H}{z}\right)^{1-\sigma} dG_H(z)$, where $\Omega_{HH,R}$ represents the subset of final varieties produced by firms impacted by RS.

of this pseudo-export tax. In our setting, rather than being an actual tax, it measures the price premium imposed by RS on exports of intermediate inputs. The mechanism mirrors that of an export tax: by raising the price of exports, RS gives rise to a classic GE terms-of-trade effect that increases Home welfare. Since the price premium of exports increases with β, the corresponding welfare gains do too. In the limit where $\beta = 0$, there is no increase in export costs and no change in export quantity, causing the first term in (16) to disappear.

The second term in expression (16) also has a simple interpretation in terms of taxes. Through its leakage into the domestic market, RS inflates domestic good prices, effectively acting, from an efficiency perspective, as a consumption tax $\chi_H^l \hat{\tau}_R^l$ imposed on a share Λ of domestic consumption. With RS, as with a consumption tax, the cost of these goods is inflated by a premium, with the proceeds of this premium rebated to Home. Since a consumption tax is equivalent to an export subsidy, it has a negative welfare impact of $-\Lambda W^{tax} \chi_H^l \hat{\tau}_R^l$ on Home workers. This term dampens the welfare-enhancing export tax effect of RS from the first term and reverses it if $\Lambda > \beta$.

Finally, the third term in expression (16) is unambiguously positive. The sufficient statistic W^d measures the effect of a positive demand shock impacting all of Home's production. Since this demand boost applies only to output sold to MNEs implementing RS, the resulting welfare gains are scaled by the share of Home production affected by it (λ_{FH}).

Distributional implications The model also allows us to investigate the heterogeneous effects of RS policies across workers. First, we show that in GE, low- and high-wage workers experience on average from the same welfare gains (or losses) in this simple setup ($\hat{U}_H^l = \hat{U}_H^h$). Intuitively, GE forces adjust the wages for low-wage workers at non-RS firms to restore the labor market equilibrium after RS. Since the relative supply of high- and low-wage workers remains unchanged after RS, their relative labor payments also remain unchanged. As both worker types face the same change in consumption prices, they experience the same welfare change.

Next, we examine the effect of RS on exposed and non-exposed workers within the low-wage worker group. Similar to our definition of exposed firms, exposed workers are those employed at MNE suppliers before the MNE rolls out an RS policy. We denote $\hat{U}_H^{l,E}$ (resp. $\hat{U}_H^{l,NE}$) the per-capita welfare gains of exposed (resp. non-exposed) low-wage workers. The policy has stark distributional effects within worker types in GE. We find that there is a positive gap in welfare effects between exposed and non-exposed low-wage workers, corresponding to the direct benefit of the policy for exposed low-wage workers i.e., the RS wage premium $\hat{\tau}_R^l$ (17). We also find a typically negative welfare effect of RS for non-exposed low-wage workers (18):

$$\hat{U}_H^{l,E} - \hat{U}_H^{l,NE} = \hat{\tau}_R^l > 0, \tag{17}$$

$$\hat{U}_H^{l,NE} = \left[\underbrace{(\beta - \Lambda) W^{tax} \chi_H^l - (\lambda_{FH} + \Lambda \lambda_{HH})}_{<0}\right] \hat{\tau}_R^l + \lambda_{FH} W^d \hat{d}_R. \tag{18}$$

On net, exposed low-wage workers may benefit from RS even with limited pass-through (β) and leakage into the local price index (Λ) – and they always do when aggregate welfare gains in (16) are positive. In contrast, RS typically has negative overall labor market consequences for non-exposed low-wage workers due to (i) negative GE effects on wages, as aggregate demand for low-wage workers declines, and (ii) rising consumer prices, due to leakage of RS costs into the domestic price index. The only source of welfare gains for non-exposed low-wage workers is the demand shock which, through GE effects, raises wages for all Home workers.

4.5 Alternative mechanisms and model extensions

RS as providing amenities or creating red tape Our model treats RS-related costs incurred by suppliers as directly paid to their workers. While this assumption provides transparency in the model, it may lack realism. First, as shown in Figure 7, RS suppliers may incur additional costs to improve workplace safety and other amenities, which benefit workers but are not directly paid to them. Second, some RS expenses may be "red tape" costs that do not provide any direct benefit to workers.

In the first case, one can show that, under fairly weak assumptions, the welfare effects of RS in the sourcing country are identical to those in equations (16)-(18). To start, the welfare equivalence is straightforward if we assume that an improvement in amenities that costs a dollar to the firm is valued a dollar by the worker. But this holds also more generally: whenever firms choose a mix of direct wage payments and costly amenities to attract workers, they minimize costs by equating the marginal benefit of a dollar spent on each. Therefore, workers value a marginal dollar spent on amenities the same as an additional dollar in earnings.[29]

In the second case, some of the RS costs may not benefit workers (such that the equivalence above does not hold). To capture this possibility, we assume that firms' labor costs remain as in equation (7), but only part $\tilde{\tau}_R^l < \tau_R^l$ of the premium is actually passed on to workers. The remainder of the RS premium is an iceberg-type wedge, effectively lost to the economy. In this case, the overall welfare impact of RS (omitting here the demand shock, $\hat{d}_R$, in (16) for simplicity) becomes:

$$\hat{U}_H = W^{tax} (\beta - \Lambda) \chi_H^l \hat{\tilde{\tau}}_R^l - W^{wedge} \chi_H^l (\hat{\tau}_R^l - \hat{\tilde{\tau}}_R^l). \tag{19}$$

[29] Formally, assume that a firm can hire a worker if $U(w,a) \geq \bar{u}$, where $U(w,a)$ represents the worker's utility over direct labor payments w and amenities a, with $U_w, U_a > 0$, and $\bar{u}$ captures the worker's outside option. Normalize amenities such that providing a units of amenities costs the firm a per worker. Then, by cost minimization, the firm optimally chooses a compensation schedule (w,a) satisfying $U_w = U_a$.

The first term mirrors the first two terms in the baseline welfare effect (16), but it is scaled down to reflect only the portion of the cost rebated to workers ($\hat{\tilde{\tau}}_R^l < \hat{\tau}_R^l$). The new term corresponds to the pure wedge, which is negative.[30] Unsurprisingly, pure "red tape" costs reduce welfare. The overall welfare effect of RS is strictly lower than in the baseline case (16). We will quantify this alternative scenario for different values of $\tilde{\tau}_R^l < \tau_R^l$ in Section 5.

Full model and extensions Our baseline setup is intentionally parsimonious to highlight the key forces at play and yield closed-form, interpretable expressions for the welfare effects of RS. However, some realistic features omitted above may matter for the quantitative analysis that follows. We develop a less stylized version of the model in Appendix D, which incorporates realistic trade patterns (not restricting exporting solely to MNE subsidiaries) and allows to compute welfare when MNE subsidiaries use domestic labor in production and the extensive margin due to Melitz-type selection is left unrestricted (allowing θ to differ from $\sigma - 1$). The augmented model requires numerical analysis. In Section 5, we compare the quantitative results from the simple baseline model in (16) and the augmented version. In Appendix D, we also derive the effect of RS under several model extensions. Some of these extensions expand the scope of RS—considering that RS might enhance the productivity of impacted suppliers or apply to workers at the MNE subsidiary itself alongside those at suppliers. Other extensions concern the model environment. Specifically, we consider a labor market with unemployment and one with monopsony power among suppliers, as well as a more flexible demand system and a multi-country extension of the two-country setup described above. We show how our baseline results extend to these cases.

5 Model quantification and counterfactuals

In this section, we rationalize the effects of RS policies on firms and workers measured in Section 3 through the lens of our model and quantify the corresponding welfare implications. We first estimate the model's key parameters using the event-study estimates. Armed with the quantified model, we then proceed to the counterfactual analysis.

5.1 Scope and limitations

Quantifying counterfactuals in GE requires assumptions. While the model of Section 4 makes these assumptions transparent, some –though standard– are arguably strong in our context. In this light, we view the quantitative analysis as a first exploration of the aggregate and distributional implications posed by the widespread adoption of RS standards by MNEs; while fully acknowledging that our quantification does not provide definitive answers. Here, we discuss briefly several potentially important features that our analysis abstracts from, highlighting promising avenues

[30] Specifically, $W^{wedge} = \left[\frac{(1-\lambda_{HH})(\sigma-1)\lambda_{FF}\beta+\Lambda\lambda_{HH}(\sigma+\lambda_{FF}(\sigma-1))}{1+(\lambda_{FF}+\lambda_{HH})(\sigma-1)}\right]$.

for future research on these topics.

Our model is static, while RS can operate in a dynamic context characterized by repeated supplier relationships (e.g., Boudreau et al., 2023). These relationships may involve potential rent-sharing and relationship-specific investments that the model abstracts from.[31] Longer-term effects of RS may also come through the additional margin of firm entry and exit. In addition, the model abstracts from labor market distortions, which are often central to minimum-wage policies and could potentially serve as a policy motivation for RS. Although Appendix D discusses extensions of the analysis with unemployment and monopsony power of suppliers, a systematic investigation of how labor market distortions (e.g., search and matching frictions) may interact with RS is left for future research.

Moreover, in the model, RS impacts both fixed and variable costs proportionately through a labor cost increase. In reality, RS may impose additional fixed costs beyond those we consider. For instance, given the focus on labor-related RS provisions in our empirical context in Sections 2 and 3, the model does not examine the costs (and benefits) of stricter environmental standards that often accompany RS and could impact suppliers and welfare in other contexts. Finally, our calibration below relies on the average estimated treatment effects on suppliers and workers, thereby abstracting from the significant heterogeneity documented in Sections 2 and 3 across different types of suppliers, MNEs and RS codes of conduct.

5.2 Model quantification

We confront the model's comparative statics with the event-study estimates to quantify the average characteristics of the RS policies in our sample. Specifically, we estimate the extent of the RS-induced cost increase $\left(\hat{\tau}_R^l\right)$, the fraction of this cost increase passed through to the MNE (β), and the RS-induced demand shock $\left(\hat{d}_R\right)$. We also estimate the shape parameter of the firm productivity distribution (θ), which governs supplier responses on the extensive margin.

There are two natural approaches to estimate the size of the RS cost shock $\hat{\tau}_R^l$. Using the first-order effect in equation (8), we could directly measure the effect of RS on the labor earnings of initially low-wage workers. Using the estimate for $\eta \geq 4$ in Panel B of Figure 4, we would obtain $\hat{\tau}_R^l = 0.053$. Alternatively, we can infer the size of the cost shock from the sales responses of suppliers. Specifically, from equation (11), $\chi_H^l \hat{\tau}_R^l$ is revealed by the decline in the sales to domestic (non-RS) buyers of exposed suppliers following RS, conditional on a value of the elasticity of substitution σ. This second approach has advantages. As discussed above, direct payments to workers likely represent only part of the RS-imposed cost to suppliers, due to improved work

[31] In reference to Antràs (2020), our model follows a "broad/traditional" approach to MNE-supplier relationships and stops short of modeling the "narrow/relational" aspects.

amenities or costly red tape.[32] While an earnings-based estimate may underestimate the RS cost shock, the sales responses of exposed vs. non-exposed suppliers capture all RS cost increases combined. We adopt this second approach and compare it with the one based on worker earnings. Combining the event-study estimate corresponding to equation (11) (-0.097 at $\eta \geq 4$, s.e. 0.036 from Panel B of Figure 6) with the average cost share of low-wage workers at suppliers in the data $\left(\chi_H^l = 0.19\right)$ and $\sigma = 5.03$ (from Alfaro-Ureña et al., 2022),[33] we infer the average cost shock on low-wage workers to be $\hat{\tau}_R^l = 12.5\%$. Comparing this estimate to the 5.3% increase in the monthly earnings of exposed low-wage workers suggests that, indeed, not all RS-induced labor cost increases at suppliers are reflected in worker earnings.[34]

The remaining parameters must be estimated jointly using additional event-study moments that directly map to our theory. The change in compliers' sales to the RS-MNE in equation (12), compared to the decline in sales to other (non-RS) buyers of exposed suppliers in equation (11), informs us about β and $\hat{d}_R$.[35] The sales response to the RS-MNE (-0.076 at $\eta \geq 4$, s.e. 0.035 in Panel A of Figure 6) is slightly less negative than the sales response to other (non-RS) buyers (-0.097, s.e. 0.036), suggesting a mitigating role for $\beta < 1$ and $\hat{d}_R > 1$. We need another moment to disentangle β and $\hat{d}_R$. We use the effect of RS on the sales of the MNE subsidiary in equation (15), which we estimate to be statistically zero (Panel A of Figure 5).[36] Finally, comparing the total sales response of exposed suppliers in equation (10) (-0.100 at $\eta \geq 4$, s.e. 0.028, see Panel A of Figure 2) to the intensive margin effect sheds light on the extensive margin response governed by θ.

Formally, to estimate $\left(\hat{d}_R, \beta, \theta\right)$, we invert this system of three equations on supplier and MNE sales, (10), (12) and (15), in the three unknowns.[37] We find that the cost pass-through is not complete, but high ($\beta = 0.85$). We find little evidence of a discernible positive demand shift for the MNE output ($\hat{d}_R = 0.006$). Intuitively, given the relatively small cost shock that RS policies represent for the MNEs (see Footnote 36), the negligible effect on MNE subsidiary sales can be rationalized without much of a positive shift in MNE output demand. Finally, we estimate a shape

[32] If suppliers formalize (previously unobserved) informal work relationships to comply with RS codes, our earnings regressions based on formal employer-employee microdata and worker-by-firm fixed effects would also not fully capture the cost increase.

[33] Alfaro-Ureña et al. (2022) estimate σ in a way consistent with our model and with the same firm-level CR microdata. Their 5.03 estimate is in the mid-range of existing estimates in the literature (for a review, see Hottman et al., 2016).

[34] Cost increases due to amenities could, in principle, be larger than this difference, if higher salaries reflect RS-induced productivity gains. See Appendix D for related model extensions.

[35] A more direct estimation of the extent of cost pass-through (β) could be based on additional information on product prices (or unit values) alongside sales values. Unfortunately, the CR firm-to-firm transaction data do not include prices (or unit values) during our sample period.

[36] Our model suggests three forces that attenuate the effect of RS on the MNEs: (i) MNE subsidiaries are affected by RS costs only in proportion to their cost share spent on local suppliers ($\Xi = 0.14$); (ii) cost increases at suppliers may not be fully passed through to the MNEs ($\beta < 1$); and (iii) MNEs may experience demand increases due to RS ($\hat{d}_R > 1$).

[37] We also need to calibrate the average sales share to the RS-MNE by exposed firms before RS, which we measure in the transaction data ($\xi = 0.25$).

parameter of the domestic productivity distribution of $\theta = 5.16$, which lies in the mid-range of existing estimates in international trade and macroeconomics (e.g., Melitz and Redding, 2014).

Additional moments The welfare expressions in (16)-(18) require three additional data moments. The first is Λ, which measures the share of domestically sold output affected by RS. As discussed in Section 2, we measure this to be 43% in the 2019 transaction data. Second, we need to quantify the share of RS-affected exports relative to total production in CR, $\lambda_{FH} = 1 - \lambda_{HH}$. To do so, we link the customs microdata using firm identifiers to our other firm-level microdata. We find that the share of CR's exports sold by RS-active CR firms and MNE affiliates relative to total domestic production in 2019 is $\lambda_{FH} = 0.075$.[38] Finally, for the share of Foreign expenditure on RS-affected exports from CR, $\lambda_{HF} = 1 - \lambda_{FF}$, we use a value close to zero.[39]

5.3 Counterfactual analysis

Armed with the quantified model, we proceed to investigate the welfare implications of RS policies. We consider a counterfactual that compares an equilibrium without RS to one corresponding to the extent of RS rollouts that we observe in CR at the end of the sample in 2019.

Welfare impact of RS in CR We quantify the aggregate and distributional implications in equations (16)-(18). The quantification suggests that RS in CR has had a positive, but minor, aggregate impact on welfare, both for initially low-wage and high-wage workers (+0.1%). The welfare expression (16) provides intuition as to why this occurs in our context. First, we find no evidence of discernible demand boosts from RS, so the last (positive) term of the welfare expression is close to zero. We can therefore focus on the first two terms driven by the export vs. consumption tax effects. The export tax effect is mitigated by the extent of cost pass-through from suppliers to prices paid by the MNE (β) and the extent of leakage of RS to the domestic market (Λ). If pass-through was complete ($\beta = 1$) and all the RS-affected production was exported ($\Lambda = 0$), then the representative worker in CR would fully benefit from the RS-induced improvement in CR's terms of trade. In our context, however, we find that the pass-through is incomplete ($\beta = 0.85$) and the leakage is significant ($\Lambda = 0.43$). Therefore, while the gains from the RS export tax remain positive (since $\beta > \Lambda$), they are more than halved. In addition, the terms-of-trade effect is scaled down by the average cost share of the affected low-wage workers in suppliers' production ($\chi^l = 0.19$) and their estimated RS-induced increase in labor cost ($\hat{\tau}_R^l = 0.125$). These estimates imply a relatively small aggregate export-tax equivalent of about 2.4% (that is mitigated

[38] Our calibration corrects for the fact that our baseline model features trade patterns that are simpler than reality. Specifically, our measurement of Λ and λ_{FH} recognizes that not all MNEs in CR implement RS, not all exports in CR are done by MNEs, and not all MNE output is exported.

[39] We use 0.00001, and verify that none of the counterfactuals are sensitive to the precise value (e.g., scaling this value up or down by a factor of 100).

by both β and Λ).

These aggregate effects, however, mask significant heterogeneity within worker types. About 40% of all CR low-wage workers are "exposed" to RS in our counterfactual, i.e., in the initial equilibrium, they are employed at suppliers selling inputs to MNEs that end up adopting RS policies in the counterfactual. The quantification in (17) and (18) suggests these exposed low-wage workers, as a group, experience sizable welfare gains (+6.5%), while the remaining majority of low-wage workers in CR experience significant real income losses (-6%) due to adverse GE effects on their wages and an increase of the domestic price index. To assess the variability of these results, we also bootstrap the counterfactual analysis. We randomly draw, with replacement, individual suppliers from the estimation sample for the event-study estimates that we use to quantify the model above. We thus create 500 estimation samples, record the event-study estimates, quantify the model and perform the counterfactual analysis. The resulting 95% confidence intervals of the welfare effects indicate gains of 4.9 to 11.7% among exposed low-wage workers (compared to +6.5% above), and losses of -10.3 to -4.2% among the non-exposed low-wage workers (-6% above).

Additional counterfactual results We presented above the welfare estimates based on the sufficient statistics in expressions (16)-(18), which we derived in a very stylized model – trade patterns are simple, parameters are such that the extensive margin is muted, and MNEs do not use domestic labor in production. We were careful, however, to measure moments like the leakage of RS to the domestic market (Λ) and the share of RS-affected exports in Home production (λ_{FH}) to prevent overstating the importance of RS. To get a more complete picture, we also compute (numerically) the welfare gains from RS in the "full model" described in Section 4.5 and Appendix D. We find that both the aggregate (0.1%) and distributional implications of RS are similar to the baseline findings, with exposed (non-exposed) low-wage workers experiencing 7.9% (4.1%) welfare gains (losses). This similarity suggests that the careful measurement of moments in the stylized model largely compensates for its simplifying assumptions.[40]

We also revisit the empirical concern that the estimated effects of RS on MNE output demand (explored in Figure 5) may be subject to negative bias due to violations of the parallel trends assumption (post-RS rollout in absence of RS). In the model, such violations could be rationalized through an underestimation of the change in MNE output demand due to announcing RS practices ($\hat{d}_R$ in equation (15)). To account for this potential downward bias, we quantify the aggregate and distributional welfare implications of RS after assuming a range of higher RS-induced MNE demand effects relative to the close to zero estimate in our baseline model quantification above. This analysis reveals two implications of a more pronounced positive demand effect: the aggre-

[40] We also find that the estimated θ is not far from the value imposed in the baseline model that restricts the extensive margin ($\theta \to (\sigma - 1)$).

gate welfare gain increases (from 0.1 to 0.5%, as $\hat{d}_R$ increases from 0 to 50%), and the distributional implications within low-wage workers remain similar (with a 7% gain among exposed workers and a 5.5% loss among non-exposed, see Appendix Figure E1).

Finally, Appendix E presents counterfactual analyses of the welfare implications of RS in CR under alternative parameter values and model extensions. These include allowing for elastic labor supply and unemployment and attributing part of the RS cost increase to "red tape" (following the discussion in Section 4.5). Unsurprisingly, following insights from equation (19), the baseline aggregate and distributional effects of RS in (16)-(18) decrease roughly proportionately with the fraction of the RS cost increase that is captured –through direct pay or workplace amenities– by domestic workers (Appendix Figure E2). We also present the quantified welfare effects across ranges of alternative parameter values for σ, β, $\hat{\tau}_R^l$ and Λ. For compactness, we do not discuss these additional counterfactuals here and instead refer the reader to Appendix E. These additional results serve as a reference to assess the sensitivity of our findings in the current setting of CR, and to explore how the impacts of RS may vary across different empirical settings.

6 Conclusion

Our analysis combines a new collection of microdata with a simple model to study the effects of MNE RS policies on sourcing countries. Empirically, we find that RS policies are, on average, not just "hot air": the sales and employment of RS-exposed MNE suppliers decline, while the labor earnings of their initially low-wage workers increase. This evidence is consistent with RS policies raising labor-related production costs, particularly for workers at the bottom of the initial earnings distribution. On its own, however, this reduced-form evidence would be insufficient to evaluate the welfare implications of RS.

The model highlights that the welfare implications of widespread adoption of RS policies are *a priori* ambiguous in sourcing countries, and that RS gives rise to distributional effects within worker types. Akin to an export tax, RS policies applied to production destined for export can improve the terms of trade of the sourcing country and generate welfare gains. However, these gains can be dampened or even reversed in environments where the RS cost pass-through to MNE buyers is incomplete and where RS-related cost increases leak into domestic production. Additional gains arise when RS increases demand for the MNE's output due to consumer preferences in favor of RS. In the quantification, we find that RS led to positive, but minor, aggregate welfare gains in CR. These aggregate implications, however, conceal meaningful distributional effects: low-wage workers at exposed suppliers experience sizable welfare gains, while the (non-exposed) majority of low-wage workers face losses due to adverse equilibrium effects on wages and prices.

Overall, our findings highlight a trade-off involved in RS policies. On one hand, RS can

meaningfully benefit workers at targeted suppliers. On the other hand, RS imposes additional costs on suppliers, and its widespread adoption by MNEs may give rise to unintended indirect effects on the non-targeted workforce. This counterfactual analysis is based on a simple and stylized framework that emphasizes the basic supply-and-demand forces at work. And while we formalize several model extensions and sensitivity analyses, it is clear that there is ample space for additional work on quantifying the aggregate implications of RS across sourcing countries. Important dimensions for future contributions that we abstract from in this paper include richer analyses of the labor markets, dynamic firm responses including new entrants adapting to RS and relational contracts between MNEs and suppliers. In addition, as our evidence and model highlight, the effects of RS are likely to vary across countries depending on labor market institutions, enforcement capacity, and which RS provisions are most binding locally, including environmental provisions. Understanding how these factors mediate the effects of RS remains an important avenue for future research.

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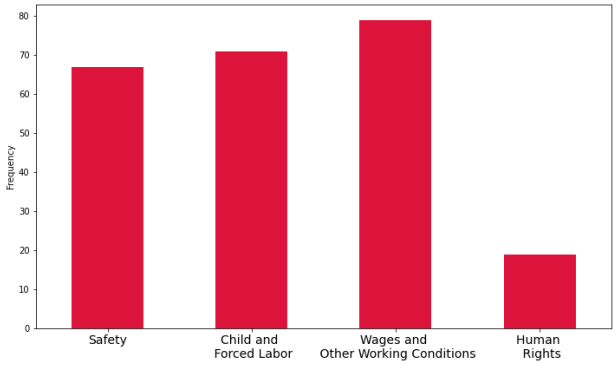
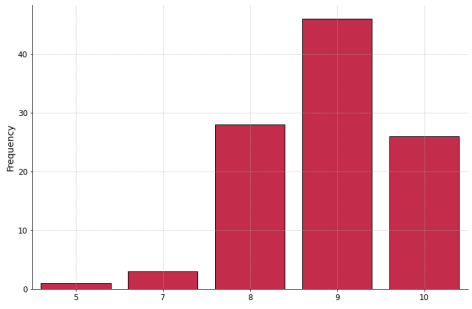
Figures

Figure 1: Descriptive Analysis of the RS Policy Documents

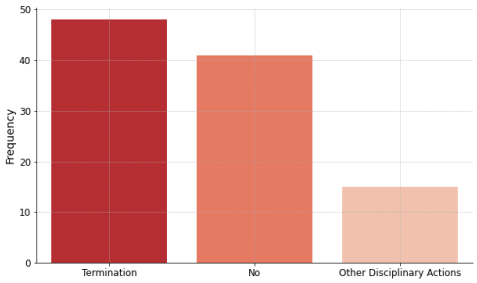
(A) Word Cloud About Labor Standards



(B) Main Labor Standards Topics



(C) Score of Mandatory Nature of RS Labor Standards

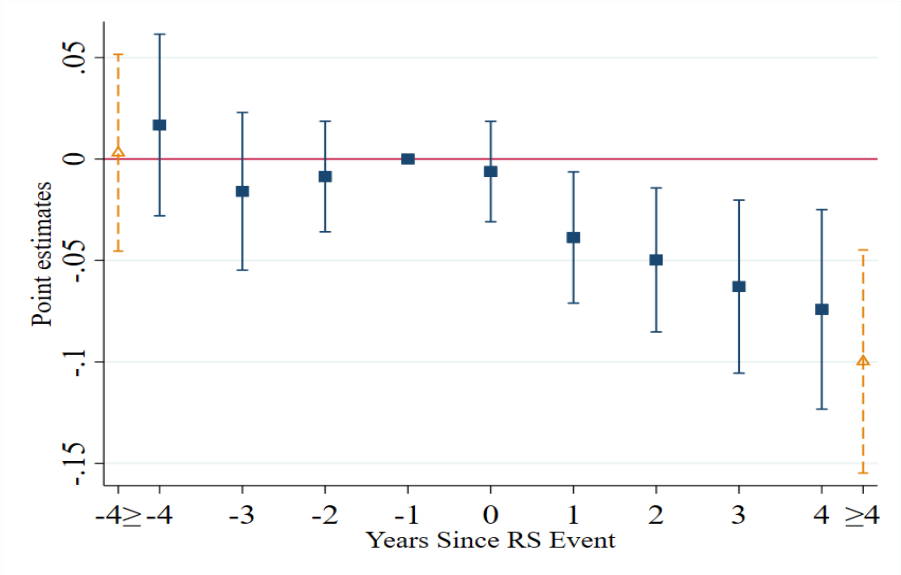


(D) Explicit Penalties for Labor Non-Compliance

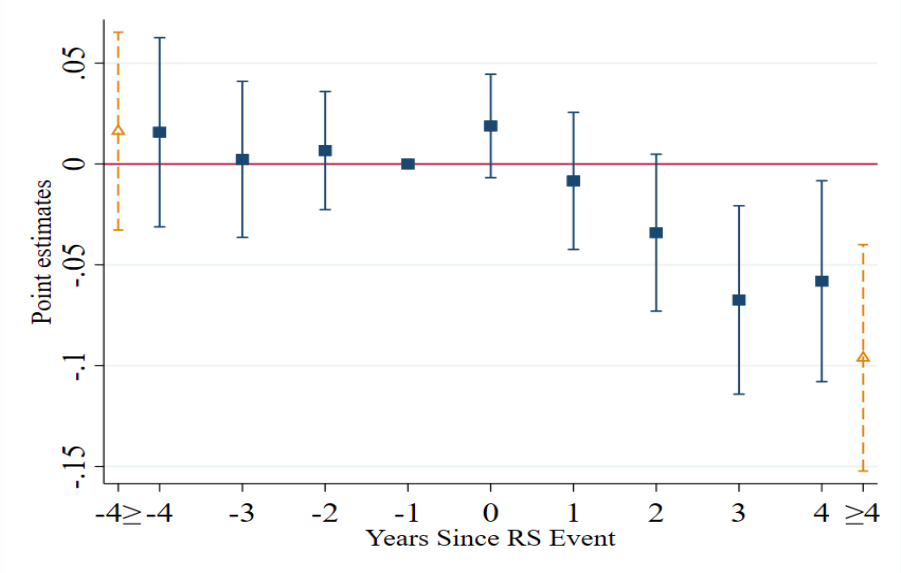
Notes: Figure summarizes the descriptive text analysis of the labor standard requirements in the RS policy documents in our analysis sample. Appendix Table A5 provides additional information on each policy. Panel 1A shows a word frequency cloud of the main labor protection standards and wage requirements that emerge from the text, while Panel 1B displays a histogram of the frequency of four broad labor standard topics, based on the frequency of words in Panel 1A associated with each topic. Column 5 of Table A5 provides related ChatGPT-3.5 query results. Panel 1C shows a histogram of the answers to the ChatGPT-3.5 query: “Categorize the PDF tone in terms of the mandatory nature of the labor and wage requirements. Use a score from 1 to 10, where 1 means that the requirements are optional and 10 means absolutely mandatory." Panel 1D shows a histogram of the answers to the ChatGPT-3.5 query: “Does the text mention explicit consequences in case of failure to adhere to the stated labor practices? If yes, mention the most important one in the text." Consequences were categorized as either (contract) termination or other disciplinary actions. Columns 6 and 7 of Table A5 provide answers to the questions posed in Panels 1C and 1D for each RS policy in our sample.

Figure 2: Supplier-Level Effects of RS Rollouts on Annual Sales and Employment

Panel A: Supplier Annual Sales



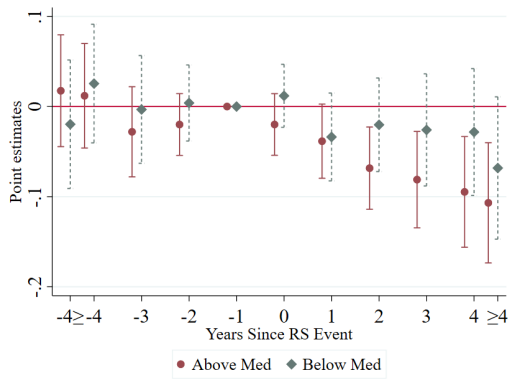
Panel B: Supplier Employment



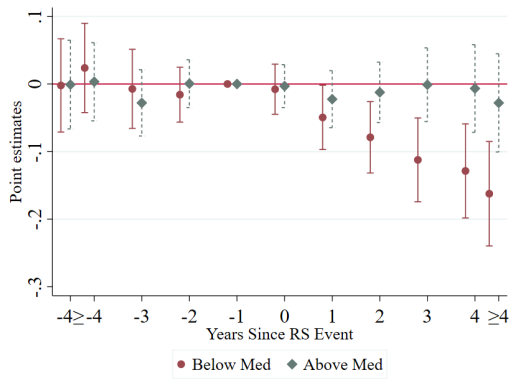
Notes: Panels A and B plot estimates from the supplier-level IV event-study specification in equation (1) and correspond to columns 4 and 8 of Table 1. The outcomes in Panels A and B are log total sales and log number of employees, respectively. Both panels show 95 percent confidence intervals based on standard errors clustered at the firm level.

Figure 3: Heterogeneity of Supplier-Level Effects of RS Rollouts on Annual Sales

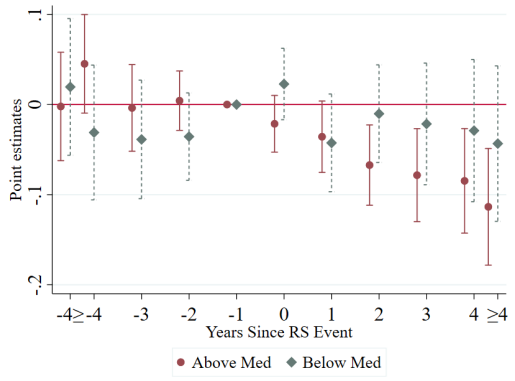
(A) Supplier Minimum Wage Compliance



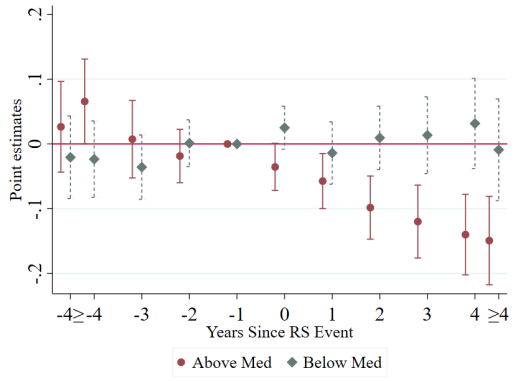
(B) Supplier Sector with Small vs. Large Firms



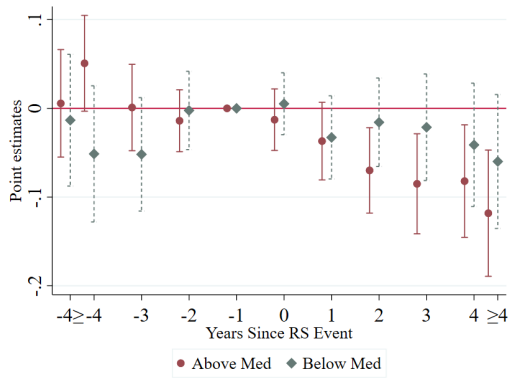
(C) RS Policy ChatGPT Overall Labor Score



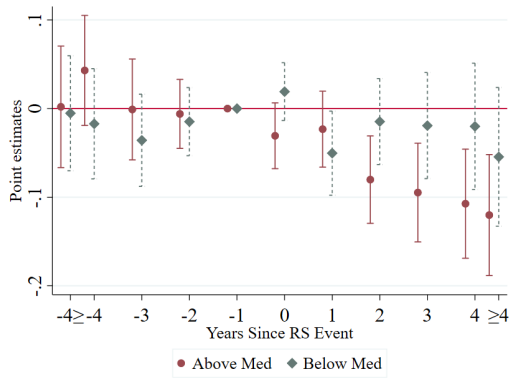
(D) RS Policy Compensation-Related Word Count



(E) RS Policy Health & Safety Word Count

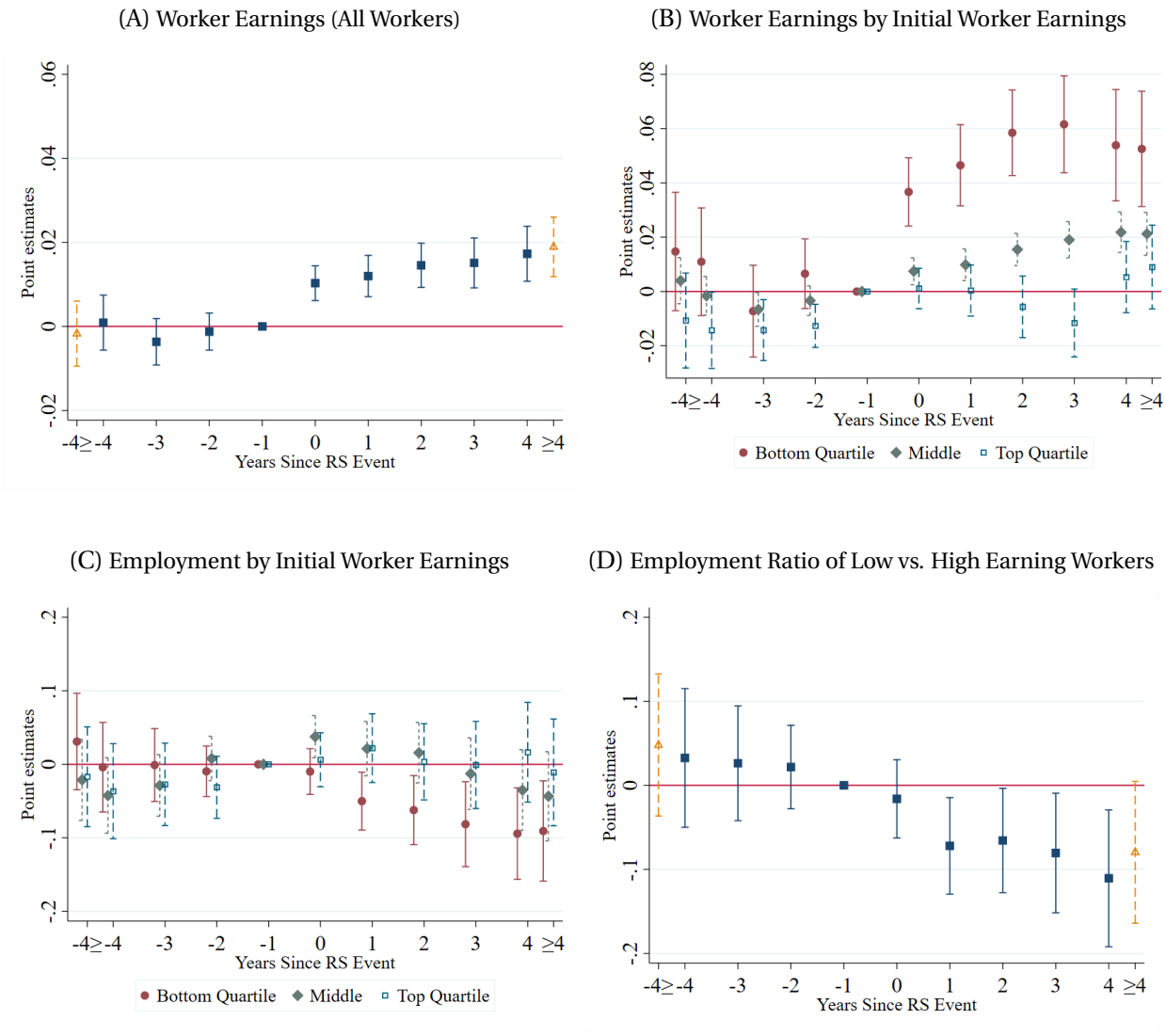


(F) RS Policy Enforcement & Compliance Word Count



Notes: Figure explores the heterogeneity of the supplier-level average sales effect of RS rollouts from Panel A in Figure 2. This figure plots estimates from the supplier-level IV event-study specification in equation (1), with the outcome variable in all panels being the log total sales. All plots split suppliers into two groups: those above and below the median for the variable in the title of each panel. Panel 3A uses the share of workers at the supplier paid at or below the minimum wage. Panel 3B uses the average firm size in the supplier's sector. Panels 3C-3F split suppliers based on characteristics of their treatment RS policy document. Panel 3C uses the labor score assigned by ChatGPT-3.5 to each policy document, as shown in column 4 of Appendix Table A5. Panel 3D uses the number of compensation-related words in the RS policy document. Panel 3E uses the number of health and security-related words in the RS policy document. Panel 3F uses the number of enforcement and compliance-related words in the RS policy document. All panels show 95 percent confidence intervals based on standard errors clustered at the firm level.

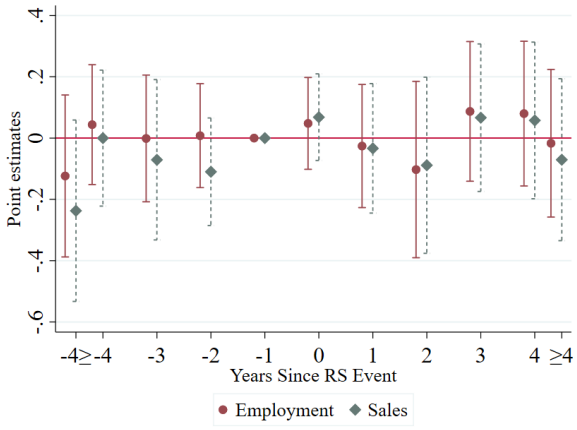
Figure 4: Effects of RS Rollouts on Worker-Level Earnings and Supplier-Level Employment



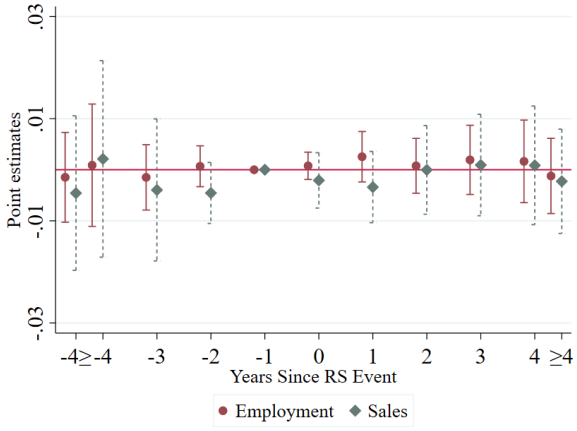
Notes: Panels 4A and 4B plot estimates from the worker-level IV event-study specification in equation (2). The outcome in both panels is the log of labor earnings. The point estimates are displayed in Appendix Tables C1-C4. Panels 4C and 4D plot IV estimates from the supplier-level event-study specification in equation (1). The outcome in Panel 4C is log total employment by worker category based on initial monthly earnings. The point estimates are displayed in Appendix Tables C5-C7. The outcome in Panel 4D is the log employment ratio of the top and bottom quartiles of workers, again based on initial monthly earnings. The point estimates are displayed in Appendix Table C8. Panel 4A includes all workers employed by the suppliers, whereas Panels 4B and 4C display estimates from separate regressions by quartile of initial worker earnings. All panels show 95 percent confidence intervals based on standard errors clustered at the firm level.

Figure 5: Effects of RS Rollouts on MNE-Level Outcomes and of NGO Campaigns on RS Probability

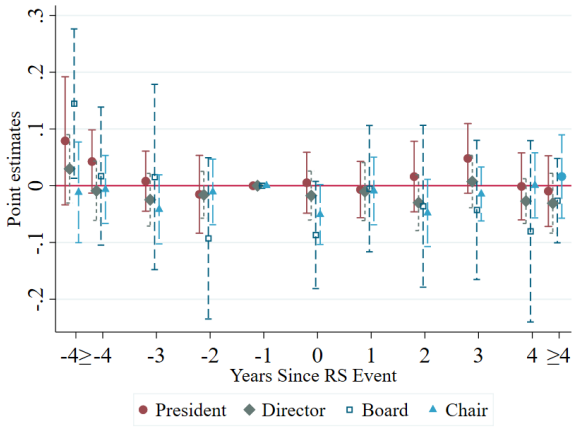
(A) Sales and Employment of the MNE subsidiary in CR



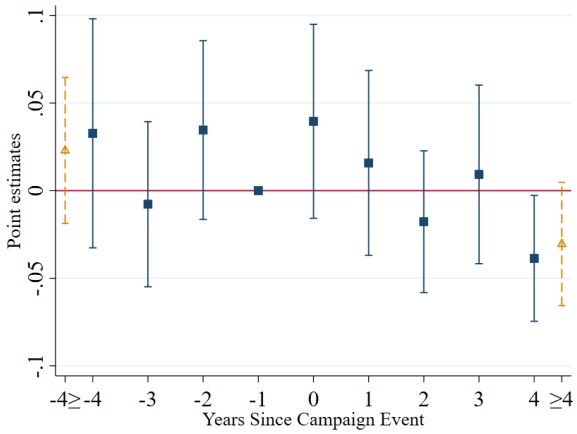
(B) Ratio of MNE Sales and Employment in CR vs. Global



(C) MNE Changes of Key MNE Employees



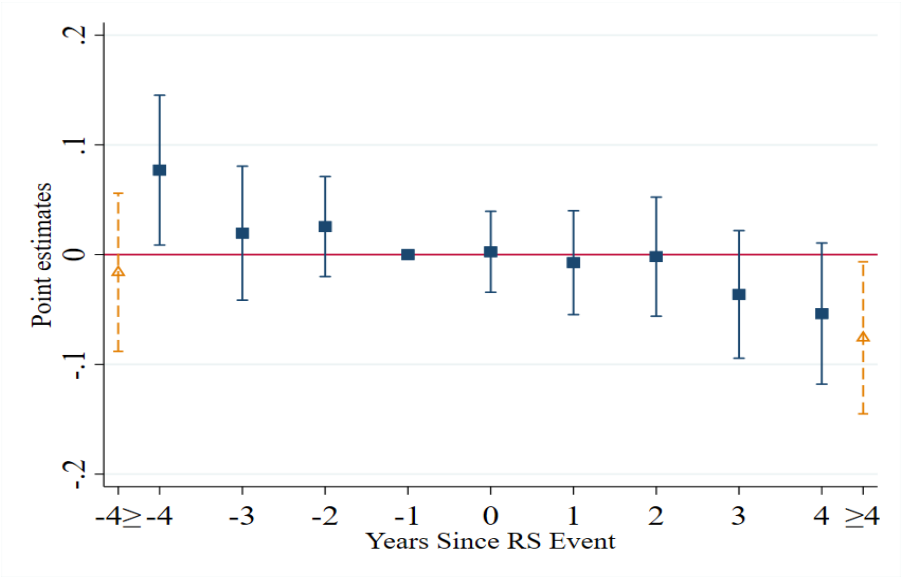
(D) RS Rollout Probability on Negative NGO Campaigns



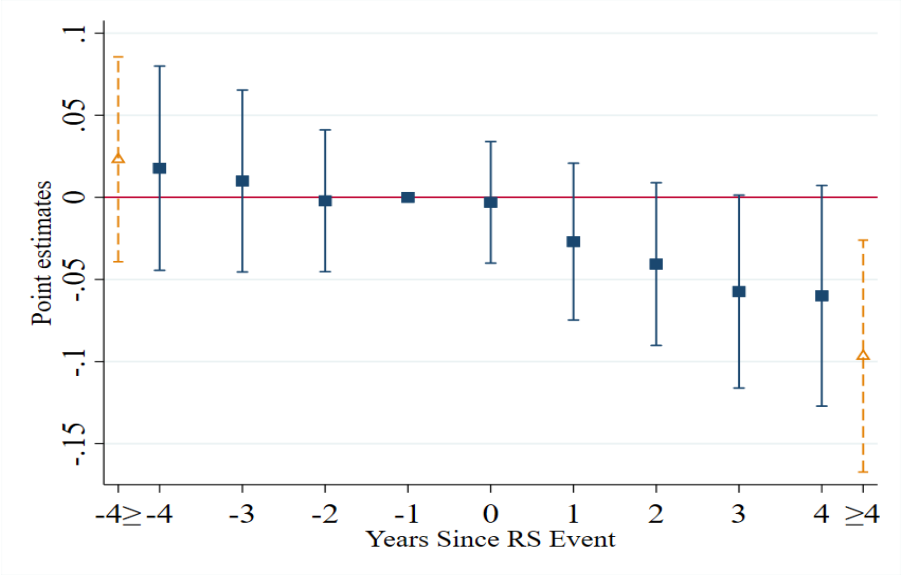
Notes: Panels 5A-5C display event-study estimates of the effects of RS rollouts on MNE-level outcomes. Panel 5A plots estimates from MNE-level regressions, where the outcomes are the log sales and log employment of the MNE subsidiary in CR. Panel 5B plots estimates from MNE-level regressions, where the outcomes are the ratios of subsidiary sales and employment to the global sales and employment of the MNE. The point estimates for Panels 5A and 5B are displayed in Appendix Tables C9 and C10. Panel 5C plots estimates from MNE-level regressions, where the outcomes are dummy variables indicating different types of leadership changes within MNEs. This panel uses the BoardEx and Orbis data, as described in Section 2. These data provide the start and end dates of employment for individuals in key positions at each MNE. Given the variation in job titles across MNEs, we focus on leadership changes involving positions with titles that include “president”, “director” (including “MD” for managing director), “board”, or "chair". Panel 5D implements MNE-level event studies with a dummy for RS rollout decisions as an outcome. The event timeline is based on NGO campaigns against the MNE. Panel 5D uses the Sigwatch database described in Section 2, which provides comprehensive coverage of NGO-led campaigns against MNEs. We assess whether negative NGO campaigns about MNE production practices increase the likelihood of the MNE rolling out an RS policy. All panels show 95 percent confidence intervals based on standard errors clustered at the MNE level.

Figure 6: Effects on Sales to the MNE Buyer and Supplier Sales to Other Buyers

Panel A: Intensive Margin of MNE Transaction Sales among Continuing Suppliers



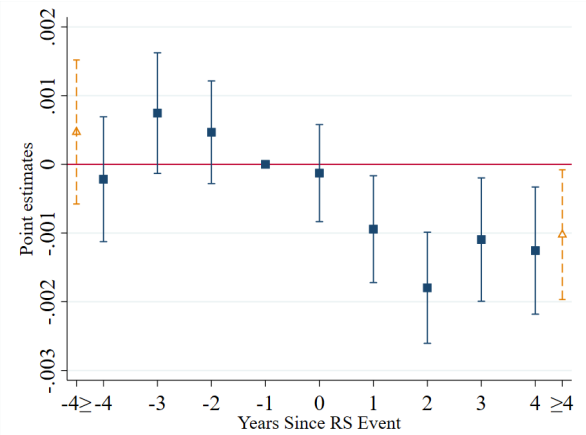
Panel B: Supplier Sales to Other (Non-RS) Buyers



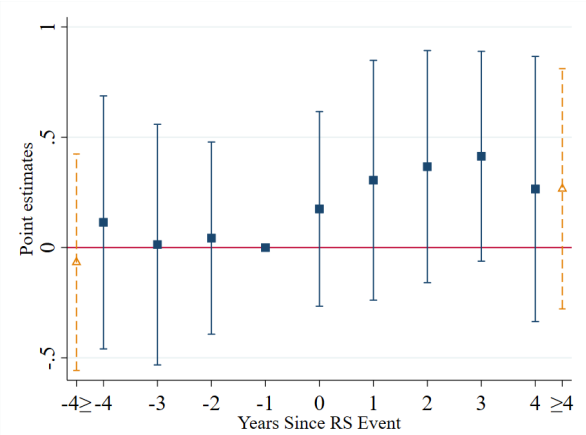
Notes: Panel A plots estimates from the transaction-level IV event-study specification in equation (2). The outcome is the log annual transaction value of sales made by domestic suppliers to their MNE buyers. The sample includes transactions with RS MNE buyers for treated suppliers (note that these buyers had not rolled out RS before event time 0) and transactions with any MNE for non-treated suppliers. The point estimates are displayed in Appendix Table C11. Panel B plots estimates from the supplier-level IV event-study specification in equation (1). The outcome is the log total sales to domestic (non-RS) buyers. The point estimates are displayed in Appendix Table C12. Both panels show 95 percent confidence intervals based on standard errors clustered at the firm level.

Figure 7: Effects of RS Rollouts on Workplace Amenities and Non-Discrimination

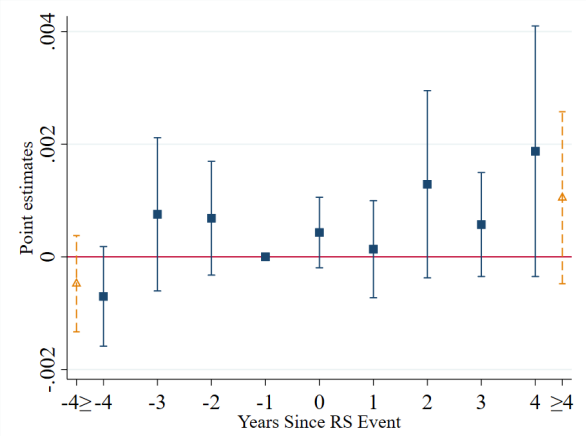
(A) Accident Leave Among All Employees



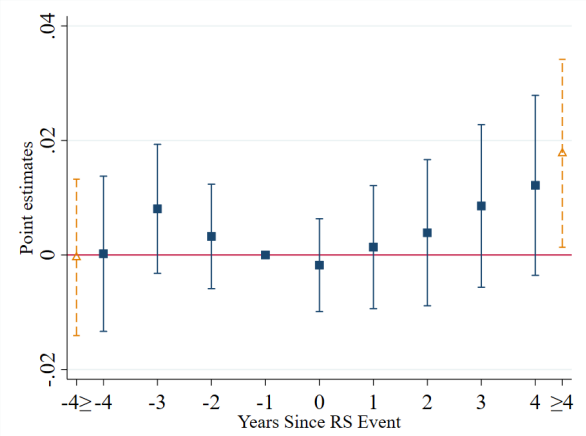
(B) Maternity Leave Duration Among Women



(C) Supplier Purchases of Health Services



(D) Female Share Among All Employees



Notes: Panel 7A shows worker-level event-study estimates for the share of months a worker was on leave due to a work-related accident. All other panels show estimates from supplier-level regressions. In Panel 7B, the outcome is the average number of months of paid maternity leave among women who take such leave. In Panel 7C, the outcome is the share of total input purchases from suppliers in ISIC Rev. 4 sector 8690 (Other human health activities), which encompasses services such as physiotherapy, vision testing (optometry), medical therapeutic massage, occupational therapy, chiropractic, homeopathy, spinal massage, and acupuncture. In Panel 7D, the outcome is the share of female workers among all employees. All panels show IV estimates and their 95 percent confidence intervals based on standard errors clustered at the firm level.

Tables

Table 1: Supplier-Level Effects of Exposure to MNE RS Rollouts on Sales and Employment

	Panel A: Log Supplier Sales				Panel B: Log Supplier Employment			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	TWFE	TWFE	SA	IV	TWFE	TWFE	SA	IV
$\eta \leq -4$	-0.216***	0.010	0.042*	0.003	-0.175***	0.013	0.038	0.016
	(0.024)	(0.024)	(0.025)	(0.025)	(0.024)	(0.024)	(0.025)	(0.025)
$\eta = -4$	-0.139***	0.010	0.035	0.017	-0.111***	0.009	0.032	0.016
	(0.023)	(0.023)	(0.023)	(0.023)	(0.024)	(0.023)	(0.023)	(0.024)
$\eta = -3$	-0.121***	-0.021	0.001	-0.016	-0.076***	-0.003	0.017	0.002
	(0.020)	(0.019)	(0.019)	(0.020)	(0.020)	(0.019)	(0.019)	(0.020)
$\eta = -2$	-0.058***	-0.005	0.008	-0.009	-0.029**	0.003	0.014	0.007
	(0.014)	(0.013)	(0.013)	(0.014)	(0.015)	(0.014)	(0.014)	(0.015)
$\eta = 0$	-0.026**	-0.015	-0.019	-0.006	0.019	0.016	0.014	0.019
	(0.012)	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
$\eta = 1$	-0.068***	-0.035**	-0.042***	-0.039**	-0.010	-0.007	-0.008	-0.008
	(0.016)	(0.015)	(0.015)	(0.016)	(0.017)	(0.017)	(0.017)	(0.017)
$\eta = 2$	-0.106***	-0.056***	-0.062***	-0.050***	-0.048**	-0.037**	-0.036*	-0.034*
	(0.017)	(0.017)	(0.017)	(0.018)	(0.019)	(0.019)	(0.019)	(0.020)
$\eta = 3$	-0.139***	-0.067***	-0.074***	-0.063***	-0.090***	-0.067***	-0.063***	-0.067***
	(0.021)	(0.020)	(0.020)	(0.022)	(0.022)	(0.022)	(0.022)	(0.024)
$\eta = 4$	-0.190***	-0.085***	-0.099***	-0.074***	-0.113***	-0.070***	-0.071***	-0.058**
	(0.024)	(0.024)	(0.024)	(0.025)	(0.024)	(0.024)	(0.025)	(0.025)
$\eta \geq 4$	-0.244***	-0.107***	-0.150***	-0.100***	-0.165***	-0.103***	-0.139***	-0.096***
	(0.026)	(0.026)	(0.029)	(0.028)	(0.027)	(0.027)	(0.031)	(0.029)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Sect FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Adjusted R^2	0.80	0.82	0.82	0.052	0.76	0.77	0.77	0.026
# Observations	136590	136590	136590	136590	136590	136590	136590	136590
# Treated	2130	2130	2130	2130	2130	2130	2130	2130
# Never Treated	15583	15583	15583	15583	15583	15583	15583	15583
# Sector-Year Bins	2638	2638	2638	2638	2638	2638	2638	2638

Notes: Table presents two-way fixed effects (TWFE), Sun and Abraham (2020) (SA) and IV estimates for the supplier-level specification in equation (1). Outcomes are suppliers' log annual sales in Panel A and log annual employment in Panel B. Columns 4 and 8 correspond to Panels A and B of Figure 2. The first-stage F-statistics for the IV columns exceed 50. Standard errors clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Responsible Sourcing?

Evidence from Costa Rica

Alonso Alfaro-Ureña, Benjamin Faber, Cecile Gaubert,
Isabela Manelici, and Jose P. Vasquez

Appendix for online publication

March 2025

This Appendix supplements the paper "Responsible Sourcing? Evidence from Costa Rica" with the following material:

- Appendix A provides additional descriptive statistics referenced in Section 2.
- Appendix B provides additional event-study figures referenced in Section 3.
- Appendix C provides event-study tables that correspond to the event-study figures discussed in Section 3.
- Appendix D provides derivations, additional details and extensions for the model in Section 4.
- Appendix E provides additional counterfactual results discussed in Section 5.

Appendix A Additional descriptive statistics

Table A1: MNE Sample Coverage

Total Sales	78.9%
Number of Workers	78.6%
Wage Bill	79.4%
Exports	91.2%
Imports	81.1%
Value Added	80.4%
Domestic Purchases	72.9%
Total Net Assets	78.2%

Notes: Table presents the coverage for the period 2008 to 2019 (for eight variables, summing across all years) of the total values for the 481 MNEs in our sample, expressed as a percentage of the total values for the full sample of 2,156 firms that are part of a corporate group with partial foreign ownership. See Section 2.1 for discussion.

Table A2: Sample of RS Rollouts Between 2009 and 2019 by 481 MNEs with Subsidiaries in CR

Year	MNE	Year	MNE	Year	MNE	Year	MNE
2000	McDonalds	2007	The Bank of Nova Scotia	2011	G4S*	2015	Cargill
2001	Baxter Americas Services	2008	Abertis Infrastructuras	2011	Huawei Technologies*	2015	Credomatic*
2001	Baxter International	2008	American Airlines	2011	Maersk*	2015	Emerson Electric*
2001	British American Tobacco	2008	DHL	2011	McCann Advertising*	2015	Griffith Foods International*
2002	Enel Green Power	2008	DHL Customer Support	2011	Philip Morris*	2015	Grupo Aval*
2002	Fyffes	2008	Florida Ice and Farm	2011	Puratos Group*	2015	Kuehne + Nagel Logistics*
2002	Glaxosmithkline	2008	Heinz	2012	American & Efird LLC*	2015	Optica Industrial*
2003	Abbott	2008	Inabensa	2012	Bimbo*	2015	Pipasa*
2003	BASF SE	2008	Millicom	2012	BioMar	2015	Productos Florida*
2003	Hewlett-Packard	2008	Nestle	2012	C&K Components, Inc*	2015	Reca Quimica*
2004	Cisco	2008	Paradise Ingredients	2012	Camino Real Hotels*	2015	Vmware*
2004	F. Hoffmann-La Roche AG	2008	Sodexo	2012	Claro Company*	2015	Volcafe*
2004	IBM	2008	Vitec	2012	Edwards Lifesciences	2015	Yamaha*
2004	Intel	2009	Astrazeneca*	2012	Havells Sylvania*	2016	Aluma Systems*
2004	J. Walter Thompson	2009	ERIAL*	2012	Mexichem Orbia*	2016	Baltimore Spice Company*
2004	Microsoft	2009	Eaton Electrical*	2012	Nutresa*	2016	Burger King*
2004	Novartis	2009	Ericsson*	2012	POPS Ice Creams*	2016	Felguera IHI*
2004	Panasonic	2009	Oracle*	2012	Pfizer*	2016	Kuehne + Nagel Service Center
2004	Philips	2009	Praixar*	2012	Samtec Inc*	2016	Productores Monteverde*
2004	Teradyne	2009	Toyota*	2012	The Westin - Marriott International*	2016	Sigma Alimentos*
2005	Granja Avicola Ricura	2009	UPS*	2012	Zoetis	2017	Brightpoint Group*
2005	Holcim	2010	Accenture*	2013	Allergan*	2017	Cemaco*
2005	The Procter & Gamble Company	2010	Bayer Medical*	2013	Arcelormittal*	2017	Concentrix*
2005	Unilever	2010	Citi Business Services*	2013	Bimbo Servicios	2017	Constructora los Negros*
2005	Walmart	2010	Clorox de Centroamerica*	2013	Dole plc*	2017	FHACASA*
2006	3M	2010	Desatur Corobici*	2013	ICA Construction*	2017	Panduit*
2006	Cemex	2010	El Gallito Industrial*	2013	Medtronic*	2017	Radisson Hotels*
2006	Ecolab	2010	Embotelladora Centroamericana*	2013	Qorvo*	2017	Sonepar Company*
2006	Fujitsu Global	2010	Expeditors International*	2013	Swissport*	2017	Zevex INC*
2006	ICU Medical	2010	Fertilizers Pacific*	2013	Sykes Enterprises*	2017	Zollner Electronic*
2006	Leo Burnett Worldwide, Inc.	2010	Florida bebidas*	2013	Telefonica*	2018	Itinera S.p.A*
2006	Ricoh	2010	Productora la Florida*	2013	Wyndham Hotels & Resorts*	2018	Mckinsey & Company*
2007	BTicino S.p.A	2010	Prosix Engineering*	2014	Alpla Group*	2018	Medplast Medical*
2007	Bacardi	2010	Ristic AG*	2014	Avianca*	2018	The Crowley Company*
2007	Citibank	2010	Smurfit Kappa*	2014	BA Continuum*	2018	Vertiv
2007	Coca Cola	2011	Amway*	2014	Boston Scientific*	2019	Amazon*
2007	Coca Cola Service Center	2011	BATO Shared Services	2014	Davivienda*	2019	IGT Global Solutions*
2007	Getinge	2011	Bourns, Inc*	2014	Del Monte Agric*	2019	Microvention*
2007	Jones Lang LaSalle	2011	Bridgestone*	2014	Del Monte Frozen Products*	2019	R.R. Donnelley*
2007	Kimberly Clark	2011	Cognizant	2014	Greif, Inc*	2019	UPL Limited*
2007	PepsiCo	2011	Colgate-Palmolive Company*	2014	Securitas*		
2007	Robert Bosch	2011	Ernst & Young*	2015	Bekaert*		
2007	Siemens	2011	Essity AB*	2015	CWT Company*		

Notes: Table presents the list of first-time RS rollouts among the 481 MNEs with subsidiaries in CR. We focus on rollouts related to labor standards. This information is based on public records and does not disclose any confidential information. To construct these data, we implemented a double-blind search process conducted by two independent research teams, whose outputs we then cross-checked and combined into one final database. For each MNE, we searched all publicly available company reports, press releases, corporate filings, and online publications, including company websites of the subsidiaries in CR and the MNE groups, for information on corporate social responsibility, responsible sourcing practices and supplier codes of conduct. In addition, for each MNE, we conducted online searches in both local CR and international media outlets. The star "*" next to certain MNE names indicates that these MNEs triggered a first-time RS exposure event for suppliers in our estimation sample. See Section 2.3 for discussion.

Table A3: Descriptive Statistics for the Sample of MNEs

	# Firms	Mean	S.D.	Median
A. MNEs not implementing an RS policy				
Total Sales	312	51913.1	153624.7	18953.9
Employment	312	451.8	978.5	202.9
Wage Bill	312	5252.6	10178.1	2656.5
Exports	236	14578.0	35766.6	2207.3
Imports	304	12043.8	26542.5	2056.1
Value Added	312	10659.4	26367.3	4674.6
Domestic Purchases	312	68.4	118.3	35.6
Total Net Assets	311	58538.2	119534.6	19453.5
Firms in Manuf. Sectors	312	32.7	47.0	0.0
Firms in Agric. Sectors	312	7.1	25.6	0.0
Firms in Ret. & Wholes. Sectors	312	16.7	37.3	0.0
Firms in Serv. Sectors	312	43.6	49.7	0.0
Firms with HQ in USA	312	28.8	45.4	0.0
Firms with HQ in Europe	312	17.3	37.9	0.0
B. MNEs implementing an RS policy but not triggering events				
Total Sales	65	96532.0	149017.5	38518.8
Employment	65	626.0	943.2	303.9
Wage Bill	65	13491.0	21154.4	5376.4
Exports	51	34010.8	77279.4	3173.0
Imports	64	19188.0	34664.4	4283.5
Value Added	65	34017.7	48600.6	12583.7
Domestic Purchases	65	72.7	69.9	45.2
Total Net Assets	65	146429.6	419194.5	28835.3
Firms in Manuf. Sectors	65	21.5	41.4	0.0
Firms in Agric. Sectors	65	1.5	12.4	0.0
Firms in Ret. & Wholes. Sectors	65	20.0	40.3	0.0
Firms in Serv. Sectors	65	56.9	49.9	100.0
Firms with HQ in USA	65	46.2	50.2	0.0
Firms with HQ in Europe	65	38.5	49.0	0.0
C. MNEs implementing an RS policy and triggering events				
Total Sales	104	74015.7	91176.0	37609.9
Employment	104	724.9	1673.0	296.6
Wage Bill	104	10724.9	16916.3	5129.2
Exports	92	25147.5	62888.4	1872.1
Imports	104	20548.9	33986.6	5098.9
Value Added	104	28701.1	52505.0	11202.7
Domestic Purchases	104	83.4	110.9	50.6
Total Net Assets	104	142314.1	477344.8	34609.2
Firms in Manuf. Sectors	104	42.3	49.6	0.0
Firms in Agric. Sectors	104	1.0	9.8	0.0
Firms in Ret. & Wholes. Sectors	104	12.5	33.2	0.0
Firms in Serv. Sectors	104	44.2	49.9	0.0
Firms with HQ in USA	104	51.9	50.2	100.0
Firms with HQ in Europe	104	27.9	45.1	0.0

Notes: Table presents descriptive statistics for three MNE groups: (A) MNEs that did not implement an RS policy; (B) MNEs that implemented an RS policy but did not trigger first-time RS exposure events in our analysis; and (C) MNEs implementing an RS policy and triggering first-time RS exposure events in our analysis. See Section 2.3 for more details. Except for the number of workers, the mean, standard deviation, and median are in thousands of CPI-deflated 2013 U.S. dollars. These statistics represent averages from 2008 to 2019.

Table A4: Descriptive Statistics for Exposed and Non-Exposed Domestic Suppliers to MNEs

	Non-exposed suppliers	Exposed suppliers	Difference
	(1)	(2)	(3)
Time Invariant Characteristics			
Agriculture, Forestry and Fishing	12.13	10.75	1.377
	(32.65)	(30.98)	(0.75)
Manufacturing	9.465	12.86	-3.398***
	(29.27)	(33.49)	(0.69)
Electricity and Gas	0.0578	0.0939	-0.0361
	(2.40)	(3.06)	(0.06)
Sewerage and Waste Management	0.276	0.188	0.0881
	(5.25)	(4.33)	(0.12)
Construction	6.745	3.427	3.317***
	(25.08)	(18.20)	(0.56)
Wholesale and Retail Trade	25.40	27.65	-2.253*
	(43.53)	(44.74)	(1.01)
Transportation and Storage	8.888	10.66	-1.769**
	(28.46)	(30.86)	(0.66)
Accommodation and Food Services	5.410	2.488	2.921***
	(22.62)	(15.58)	(0.51)
Information and Communication	1.604	2.582	-0.978**
	(12.56)	(15.86)	(0.30)
Real Estate	2.708	3.146	-0.437
	(16.23)	(17.46)	(0.38)
Professional, Scientific and Technical	11.88	11.74	0.148
	(32.36)	(32.19)	(0.75)
Administrative and Support Service	6.154	5.962	0.192
	(24.03)	(23.68)	(0.55)
Education	0.443	0.563	-0.121
	(6.64)	(7.49)	(0.16)
Human Health and Social Work	2.875	2.066	0.809*
	(16.71)	(14.23)	(0.38)
Art, Entertainment and Recreation	1.097	1.408	-0.311
	(10.42)	(11.79)	(0.24)
Other Services	3.215	3.005	0.210
	(17.64)	(17.08)	(0.41)
Financial Activities	1.296	0.986	0.310
	(11.31)	(9.88)	(0.26)
Mining and Quarrying	0.353	0.423	-0.0696
	(5.93)	(6.49)	(0.14)
Time Variant Characteristics			
Total Sales (thous. U.S. dollars)	797.1	1572.1	-775.0***
	(3261.30)	(5080.51)	(72.22)
Number of Workers	10.71	18.30	-7.596***
	(35.30)	(54.18)	(0.78)
Total Sales (thous. U.S. dollars) / Worker	124.5	124.9	-0.382
	(574.77)	(252.29)	(12.48)
Wage Bill per Worker	6.407	6.919	-0.512***
	(6.88)	(5.83)	(0.15)
Share of Importers	19.33	29.15	-9.820***
	(39.49)	(45.46)	(0.87)
Share of Exporters	4.820	9.437	-4.617***
	(21.42)	(29.24)	(0.47)
Number of Firms	15583	2130	.

Notes: Table presents descriptive statistics for the sample of suppliers that experience a first-time MNE RS-policy exposure event during our sample period (2009-2019) (column 2), other suppliers to MNEs that are never exposed to RS (column 1), and the difference between non-RS-exposed and RS-exposed suppliers (column 3). All time-varying variables are calculated as averages over time for each supplier. For column 2, we compute the averages using only the year prior to the first RS exposure event. Standard deviations are reported in parentheses. Nominal variables are in thousands of CPI-deflated 2013 U.S. dollars. See Section 2.3 for discussion.

Table A5: Descriptive Text Analysis of the PDF Documents Stating the RS Policy Requirements

Year	MNE	Words	(4)	(5)	(6)	(7)	(8)
2009	Astrazeneca	9258	3	1. Compliance with labor laws 2. Respect for human rights 3. Equal treatment for employees	8	Yes, reputation risk.	1. Supply chain management 2. Product quality assurance 3. Environmental sustainability
2009	ERIAL	2785	8	1. Prohibition of Forced Labor 2. Working Hours Limit 3. Respect for Individual	10	Termination of business relationship	1. Compliance with laws 2. Anti-corruption measures 3. Security protocols
2009	Eaton Electrical	1605	8	1. Minimum legal age requirement 2. Dignity and respect 3. Compliance with wage laws	10	Business relationship termination	1. Compliance with laws 2. Health & safety 3. Anti-corruption
2009	Ericsson	4193	5	1. Safe working conditions 2. Fair employment conditions 3. Prohibition of forced labor	9	Yes, termination.	1. Anti-corruption measures 2. Environmental responsibility 3. Responsible AI
2009	Oracle	3992	3	1. Human rights of workers 2. Non-discrimination 3. Fair labor practices	10	No explicit consequences.	1. Compliance with laws 2. Ethical business conduct 3. Protection of intellectual property
2009	Praixar	777	4	1. Compensation standards 2. Safety regulations 3. Prevention of harassment	9	No consequences mentioned.	1. Compliance with laws 2. Environmental stewardship 3. Product quality
2009	Toyota	3113	7	1. Non-discrimination 2. Safe and healthy working environment 3. Fair wages and benefits	9	No consequences mentioned.	1. Legal compliance 2. Environmental preservation 3. Non-discrimination
2009	UPS	2410	3	1. Human rights compliance 2. Workplace safety 3. Non-discrimination	8	No explicit consequences.	1. Healthcare logistics 2. Carbon reduction 3. Human rights
2010	Accenture	3481	6	1. Non-discrimination in employment 2. Safe work environment 3. Compliance with labor laws	8	Immediate termination	1. Environmental compliance 2. Anti-corruption laws 3. Privacy protection
2010	Bayer Medical	2210	7	1. No child labor 2. Fair wages 3. Safe workplace	9	No explicit consequences.	1. Environmental compliance 2. Product safety 3. Business integrity
2010	Citi Business Services	1658	4	1. No child labor 2. Fair wages 3. Safe working conditions	8	No explicit consequences.	1. Environmental sustainability 2. Business integrity 3. Community engagement
2010	Clorox de Centroamerica	4399	7	1. Non-discrimination in workplace 2. Fair wages and benefits 3. Safe working conditions	9	Termination of relationship.	1. Environmental sustainability 2. Anti-corruption 3. Business ethics

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Table A5: Descriptive Text Analysis of the PDF Documents Stating the RS Policy Requirements

Year	MNE	Words	(4)	(5)	(6)	(7)	(8)
2010	Desatur Corobici	1134	7	1. Compliance with labor laws 2. No forced labor 3. Equal opportunity	10	Contract termination	1. Compliance with laws and regulations 2. Environment 3. Business integrity and anti-bribery
2010	El Gallito Industrial	9401	3	1. Good working conditions 2. Fair wages 3. Safety at workplace	8	No explicit consequences.	1. Sustainability goals 2. Environmental impact reduction 3. Ethical governance
2010	Embotelladora Centroamericana	883	8	1. Non-discrimination 2. Prohibition of child labor 3. Ethical conduct	9	No explicit consequences.	1. Diversity 2. Ethical conduct 3. Prohibition of discrimination
2010	Expeditors International	5640	7	1. Non-discrimination 2. Safe workplace 3. Fair wages	9	Termination of employment	1. Compliance with laws 2. Protection of assets 3. Ethical conduct
2010	Fertilizers Pacific	922	6	1. Safe and healthy work environment 2. Non-discrimination 3. Child labor compliance	10	Immediate termination	1. Environmental protection 2. Business integrity 3. Product misuse prevention
2010	Florida bebidas	883	9	1. Non-discrimination 2. Safe working conditions 3. Ethical conduct	9	Yes. Termination.	1.Diversity promotion 2. Non-discrimination policy 3. Ethical workplace
2010	Productora la Florida	883	8	1. Non-discrimination 2. Prohibition of child labor 3. Ethical behavior	10	Corrective measures	1. Non-discrimination 2. Ethical behavior 3. Reporting misconduct
2010	Prosix Engineering	1658	4	1. No child labor 2. Fair wages 3. Safe working conditions	8	No explicit consequences.	1. Environmental sustainability 2. Business integrity 3. Community engagement
2010	Ristic AG	374	6	1. Decent working conditions 2. Fair wages 3. Workplace safety	8	No explicit consequences.	1. Piangua size guidelines 2. Mangrove conservation 3. Social impact analysis
2010	Smurfit Kappa	609	3	1. No child labor 2. Safe working environments 3. Fair wages	9	No consequences mentioned.	1. Environmental compliance 2. Sustainable sourcing 3. Supplier audits
2011	Amway	203	8	1. Safe working environment 2. Legal working age 3. Equal to minimum wage	9	No explicit consequences.	1. Clean working environment 2. Compliance with local laws 3. No discrimination
2011	Bourns, Inc	961	4	1. Non-discrimination 2. Fair wages 3. Safe working conditions	10	Yes, disciplinary action.	1. Business ethics 2. Compliance with laws 3. Protection of data
2011	Bridgestone	5156	6	1. Safe working conditions 2. Fair wages 3. Non-discrimination	8	No explicit consequences.	1. Health and safety 2. Non-discrimination 3. Environmental sustainability

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Table A5: Descriptive Text Analysis of the PDF Documents Stating the RS Policy Requirements

Year	MNE	Words	(4)	(5)	(6)	(7)	(8)
2011	Colgate-Palmolive Company	2315	5	1. No forced labor 2. Equal opportunity 3. Safe workplace	10	Termination of relationship.	1. Anti-bribery laws 2. Confidential information 3. Environmental compliance
2011	Ernst & Young	2636	7	1. No forced labor 2. Fair wages 3. Safe working conditions	9	Immediate termination	1. Compliance with laws 2. Environmental sustainability 3. Ethics
2011	Essity AB	6673	4	1. Safe and healthy working environment 2. Fair wages and benefits 3. Non-discrimination practices	9	Exclusion from business	1. Quality management system 2. Product safety assessment 3. Environmental management system
2011	G4S	2274	7	1. Good working conditions 2. Fair wages 3. Non-discrimination	10	Termination of contract.	1. Environmental policies 2. Prohibition of corruption and bribery 3. Compliance with the Modern Slavery Act
2011	Huawei Technologies	2123	7	1. Freely chosen employment 2. No child labor 3. Fair wages and benefits	10	Yes, termination.	1. Environmental protection 2. Business ethics 3. Management systems
2011	Maersk	2536	7	1. Safe working environment 2. No discrimination 3. No forced labor	8	Contract termination	1. Business ethics 2. Health & safety 3. Environment
2011	McCann Advertising	2477	6	1. Non-discrimination 2. Safe workplace 3. Fair wages	9	Yes, termination.	1. Legal compliance 2. Business practices 3. Environmental sustainability
2011	Philip Morris	1456	7	1. No child labor 2. Fair wages 3. Safe work environment	10	Contract termination.	1. Child labor prevention 2. Safe work environment 3. Freedom of association
2011	Puratos Group	6550	7	1. Safety in workplace 2. Fair compensation 3. Non-discrimination	10	Immediate dismissal	1. Ethical behavior 2. Compliance with laws 3. Protection of assets
2012	American & Efird LLC	5674	5	1. Non-discrimination 2. Equal opportunity 3. Fair wages	9	Yes, dismissal.	1. Ethical conduct 2. Compliance with laws 3. Protection of information
2012	Bimbo	3250	7	1. Ethical behavior: Integrity, no discrimination. 2. Work conditions: Health, safety, non-discrimination. 3. Child labor prohibition.	9	Contract termination.	1. Anti-corruption measures 2. Intellectual property protection 3. Environmental sustainability
2012	C&K Components, Inc	4019	6	1. Safety at workplace 2. Non-discrimination 3. Fair wages	10	Termination	1. Quality Assurance 2. Product Safety 3. International Trade Controls

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Table A5: Descriptive Text Analysis of the PDF Documents Stating the RS Policy Requirements

Year	MNE	Words	(4)	(5)	(6)	(7)	(8)
2012	Camino Real Hotels	10639	3	1. Safe work environment 2. Non-discrimination practices 3. Ethical wage conditions	8	No explicit consequences.	1. Sustainability goals 2. Environmental initiatives 3. Responsible sourcing
2012	Claro Company	7236	5	1. Non-discrimination 2. Safe work environment 3. Fair wages	8	Disciplinary actions.	1. Ethics and integrity 2. Confidentiality and security 3. Anticorruption measures
2012	Havells Sylvania	4968	7	1. Good working conditions 2. Fair wages 3. Workplace safety	8	Yes, termination.	1. Sustainability initiatives 2. Product safety 3. Ethical business conduct
2012	Mexichem Orbia	1456	6	1. Respect for human rights 2. Freedom of association 3. Non-discrimination	9	No explicit consequences	1. Respect for human rights 2. Environmental responsibility 3. Community development
2012	Nutresa	1209	7	1. No child labor 2. Non-discrimination 3. Fair wages	9	Yes, termination.	1. Anticorruption measures 2. Food quality and safety 3. Environmental compliance
2012	POPS Ice Creams	1209	7	1. No child labor 2. Non-discrimination 3. Fair wages	9	Yes, termination.	1. Anticorruption measures 2. Food quality and safety 3. Environmental compliance
2012	Pfizer	1229	7	1. Freely chosen employment 2. Fair treatment 3. Wages, benefits, working hours	8	No explicit consequences.	1. Ethics 2. Environment 3. Health & Safety
2012	Samtec Inc	2222	3	1. Safe workplaces 2. Competitive compensation 3. Non-discrimination	8	No explicit consequences.	1. Environmental compliance 2. Supplier accountability 3. Community engagement
2012	The Westin - Marriott International	2552	5	1. Safe work environment 2. Non-discrimination 3. Fair compensation	10	Jeopardize business relationship.	1. Environment compliance 2. Business ethics 3. Human rights
2013	Allergan	8593	5	1. Compliance with labor laws 2. Safe working conditions 3. Non-discrimination practices	9	No.	1. Environmental sustainability 2. Product safety criteria 3. Workplace safety and health
2013	Arcelormittal	1160	4	1. Safe workplace conditions 2. Fair wages 3. Non-discrimination	9	Supplier disengagement	1. Health and safety 2. Ethical business practices 3. Environmental stewardship
2013	Dole plc	3362	7	1. Safe working conditions 2. Fair wages 3. Non-discrimination	8	Legal action.	1.Ethical behavior 2. Food safety 3. Innovation

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Table A5: Descriptive Text Analysis of the PDF Documents Stating the RS Policy Requirements

Year	MNE	Words	(4)	(5)	(6)	(7)	(8)
2013	ICA Construction	2014	7	1. Non-discrimination in employment 2. Health and safety measures 3. Fair wages and benefits	10	Project limitations.	1. Anti-corruption measures 2. Environmental compliance 3. Fair competition
2013	Medtronic	2653	4	1. Compliance with Supplier Code of Conduct 2. Maintenance of high standards 3. Fair employment practices	8	Yes, discontinuing business relationships.	1. Sustainability standards 2. Supplier diversity 3. Supplier recognition
2013	Qorvo	3091	4	1. Compliance with RBA Code of Conduct 2. Prohibition against bribery 3. Protection of privacy	8	Termination	1. Compliance concern reporting 2. Business ethics 3. Data security
2013	Swissport	6638	4	1. Equal opportunities 2. Health and safety 3. Fair compensation	8	Termination.	1. Compliance with laws and regulations 2. Environmental responsibility 3. Fair competition
2013	Sykes Enterprises	1706	3	1. Prohibition of child labor 2. Equal employment opportunities 3. Prevention of forced labor	9	No explicit consequences.	1. Business integrity 2. Environmental stewardship 3. Confidentiality
2013	Telefonica	17222	7	1. Ethical behavior training 2. Fair remuneration practices 3. Equal pay practices	8	Yes, termination.	1. Compliance with ethics 2. Sustainability in supply chain 3. Promoting diversity
2013	Wyndham Hotels & Resorts	3400	7	1. No child labor 2. Living wage 3. Maximum working hours	9	Termination	1. Environmental sustainability 2. Business ethics 3. Regulatory compliance
2014	Alpla Group	4866	7	1. Non-discrimination 2. Safe working conditions 3. Fair wages	7	No explicit consequences mentioned.	1. Quality standards 2. Environmental sustainability 3. Supplier evaluation
2014	Avianca	4900	5	1. Non-discrimination in hiring. 2. Safety measures at work. 3. Fair wages and compensation.	9	No explicit consequences.	1. Transparency 2. Integrity 3. Environmental responsibility
2014	BA Continuum	2661	3	1. Fair Wages and Benefits 2. Freely Chosen Employment 3. No Discrimination	9	Yes, termination.	1. Ethical business practices 2. Anti-bribery measures 3. Environmental sustainability
2014	Boston Scientific	6618	2	1. Occupational safety 2. No child labor 3. Fair wages	9	No explicit consequences	1. Quality and compliance 2. Material qualification 3. Supplier change control

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Table A5: Descriptive Text Analysis of the PDF Documents Stating the RS Policy Requirements

Year	MNE	Words	(4)	(5)	(6)	(7)	(8)
2014	Davivienda	5603	5	1. Good working conditions 2. Fair wages 3. Non-discrimination	7	No explicit consequences.	1. Environmental sustainability 2. Supplier risk management 3. Energy efficiency
2014	Del Monte Agric	541	8	1. No forced labor 2. Compliance with wage laws 3. Child labor prohibition	10	No explicit consequences.	1. Human rights 2. Protection of the environment 3. Ethical dealings
2014	Del Monte Frozen Products	541	8	1. No forced labor 2. Compliance with wage laws 3. No child labor	10	No explicit consequences.	1. Human rights 2. Environment protection 3. Ethical dealings
2014	Greif, Inc	513	7	1. Safety at workplace 2. Non-discrimination 3. Wages compliance	8	No explicit consequences.	1. Compliance with laws 2. Safety and health 3. Confidentiality and privacy
2014	Securitas	7625	7	1. Respect for human rights 2. Non-discrimination 3. Fair wages	5	Yes, consequences mentioned.	1. Compliance with laws 2. Environmental sustainability 3. Ethical business practices
2015	Bekaert	1130	3	1. Compliance with laws 2. Non-discrimination 3. Fair labor conditions	10	Yes, disengagement.	1. Business Integrity 2. Protection of intellectual property 3. Environmental stewardship
2015	CWT Company	1908	4	1. Compliance with labor laws 2. Respect for human rights 3. Non-discrimination at work	9	Material breach.	1. Environmental compliance 2. Anti-corruption measures 3. Human rights respect
2015	Cargill	984	7	1. Safe working conditions 2. No forced labor 3. Non-discrimination	9	End relationship	1. Legal compliance 2. Transparency and honesty 3. Sustainable practices
2015	Credomatic	2132	4	1. Fair employment practices 2. Health and safety compliance 3. Non-discrimination practice	10	Yes, consequences mentioned.	1. Environmental compliance 2. Anti-corruption measures 3. Intellectual property respect
2015	Emerson Electric	1103	6	1. Reasonable working hours 2. Prohibition of child labor 3. Humane treatment	9	No explicit consequences.	1. Ethics 2. Anti-corruption 3. Environmental sustainability
2015	Griffith Foods International	6993	5	1. Compliance with laws and regulations 2. No discrimination or harassment 3. Safe work environment	10	Yes, termination.	1. Compliance with laws and regulations 2. Respect for human rights 3. Environmental stewardship
2015	Grupo Aval	2132	4	1. Fair employment practices 2. Health and safety compliance 3. Non-discrimination practice	10	Yes, consequences mentioned.	1. Environmental compliance 2. Anti-corruption measures 3. Intellectual property respect

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Table A5: Descriptive Text Analysis of the PDF Documents Stating the RS Policy Requirements

Year	MNE	Words	(4)	(5)	(6)	(7)	(8)
2015	Kuehne + Nagel	658	5	1. No child labor 2. No forced labor 3. Fair wages	9	Material breach.	1. Ethical conduct 2. Health and safety 3. Environmental compliance
2015	Optica Industrial	1260	5	1. No child labor 2. Minimum wage level 3. Freedom of association	8	No consequences.	1. Environmental responsibility 2. Business ethics 3. Legal compliance
2015	Productos Florida	567	3	1. Safe work environment 2. No child labor 3. Fair wages	8	No explicit consequences.	1. Environmental protection 2. Sustainable agriculture 3. Waste reduction
2015	Reca Quimica	2292	7	1. Respect human rights 2. No child labor 3. Fair wages	9	Suspension of relationship.	1. Environmental standards 2. Anti-corruption measures 3. Confidentiality protection
2015	Vmware	1536	5	1. Fair compensation laws 2. Free association rights 3. Safe work environment	9	No explicit consequences.	1. Compliance with laws 2. Ethics 3. Protecting the environment
2015	Volcafe	469	8	1. Compliance with local labor laws 2. Fair wages and benefits 3. Safe and healthy work environment	9	Verification	1. Legal compliance 2. Health & safety 3. Environment
2015	Yamaha	1249	7	1. No forced labor 2. Fair wages and benefits 3. Occupational safety	9	No, the text does not mention explicit consequences.	1. Environmental conservation 2. Ethics 3. Sustainable timber resources
2016	Aluma Systems	1329	4	1. Zero harm commitment 2. Employee engagement survey 3. Code of business conduct	8	No explicit consequences mentioned.	1. Environmental stewardship 2. Safety program 3. Ethical business practices
2016	Baltimore Spice Company	7799	3	1. No child labor 2. No forced labor 3. Fair compensation	9	No explicit consequences.	1. Sustainable agriculture 2. Community development 3. Health & nutrition
2016	Burger King	3018	7	1. Compliance with local laws 2. Respect for human rights 3. Non-discrimination and equality	9	Termination of relationship.	1. Compliance with laws 2. Anti-bribery measures 3. Protection of confidential information
2016	Felguera IHI	5336	4	1. Respect for fundamental rights and public freedom 2. Health and safety 3. Equal opportunities and non-discrimination	10	Yes, dismissal.	1. Compliance with laws 2. Respect for people 3. Protection of information

Continued on next page...

Table A5: Descriptive Text Analysis of the PDF Documents Stating the RS Policy Requirements

Year	MNE	Words	(4)	(5)	(6)	(7)	(8)
2016	Productores Monteverde	4303	3	1. Non-discrimination 2. Safety at workplace 3. Equal opportunities	8	No explicit consequences.	1. Ethics and integrity 2. Customer satisfaction 3. Environmental responsibility
2016	Sigma Alimentos	4303	3	1. Non-discrimination 2. Safety at workplace 3. Equal opportunities	8	No explicit consequences.	1. Ethics and integrity 2. Social responsibility 3. Environmental sustainability
2017	Brightpoint Group	4320	7	1. Freely chosen employment 2. Young Workers 3. Working Hours	9	No	1. Environmental responsibility 2. Business ethics 3. Management system
2017	Cemaco	8794	3	1. Good working conditions 2. Safety at workplace 3. Non-discrimination	7	No explicit consequences.	1. Environmental responsibility 2. Community development 3. Educational support
2017	Concentrix	948	6	1. Non-discrimination 2. Forced labor prohibition 3. Safety compliance	9	Termination of business relations.	1. Compliance with law 2. Conflict of interest 3. Reporting violations
2017	Constructora los Negros	8675	8	1. Compliance with laws 2. Health and safety 3. Non-discrimination	10	Disciplinary offense	1. Compliance with laws 2. Prevention of corruption 3. Protection of environment
2017	FHACASA	7712	4	1. Good working conditions 2. Fair wages 3. Safety at workplace	9	No explicit consequences	1. Ethical conduct 2. Safety and health protocols 3. Environmental sustainability
2017	Panduit	1342	7	1. Freely chosen employment 2. Child labor compliance 3. Safe working environment	9	No explicit consequences.	1. Health & safety 2. Environment 3. Ethics
2017	Radisson Hotels	5831	7	1. No child labor 2. Reasonable work hours 3. Health and safety	10	Termination.	1. Environmental sustainability 2. Business ethics 3. Anti-corruption
2017	Sonepar Company	1149	6	1. Non-discrimination 2. Working conditions 3. Employee compensation	9	No consequences	1. Compliance with laws 2. Environmental responsibility 3. Anti-corruption compliance
2017	Zevex INC	3192	6	1. Equal employment opportunity 2. Fair pay and benefits 3. Safe working environment	9	Yes. Termination.	1. Compliance with laws 2. Protection of company information 3. Ethical business conduct
2017	Zollner Electronic	3252	8	1. Freely chosen employment 2. Young workers 3. Working hours	9	Yes, termination.	1. Health and safety 2. Environment 3. Ethics

Continued on next page...

Table A5: Descriptive Text Analysis of the PDF Documents Stating the RS Policy Requirements

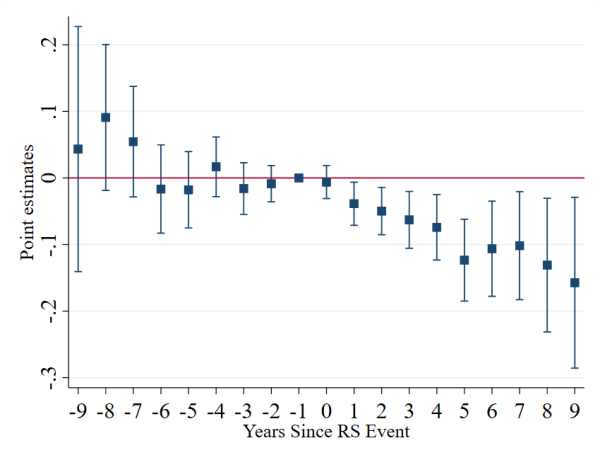
Year	MNE	Words	(4)	(5)	(6)	(7)	(8)
2018	Itinera S.p.A	938	4	1. Safety at workplace 2. Non-discrimination 3. Good working conditions	8	Yes, consequences mentioned.	1. Quality standards 2. Environmental compliance 3. Innovation commitment
2018	Mckinsey & Company	3236	7	1. Non-discrimination 2. Safe workplace 3. Fair wages	8	Termination of relationship	1. Ethics and integrity 2. Data privacy and security 3. Environment
2018	Medplast Medical	616	7	1. Equal pay for equal work 2. Prohibition of child labor 3. Safe work environment	10	Yes, termination.	1. Health and safety 2. Environmental responsibility 3. Ethical behavior
2018	The Crowley Company	2304	7	1. Good working conditions 2. Fair wages 3. Non-discrimination	10	Termination/ Criminal Prosecution	1. Compliance with laws 2. General business practices 3. Safety, security, environment, and quality
2019	Amazon	7282	8	1. Respect for human rights 2. Safe and inclusive workplaces 3. Compliance with labor laws	9	Termination	1. Environmental compliance 2. Transparency and ethical behavior 3. Health and safety regulations
2019	IGT Global Solutions	10242	6	1. Workplace health and safety 2. Equal employment opportunities 3. Compliance with human rights	8	No explicit consequences.	1. Diversity and inclusion 2. Ethical supply chain 3. Environmental compliance
2019	Microvention	2256	5	1. Fair labor practice 2. Non-discrimination 3. Safety and health	9	Termination	1. Quality management 2. Stable supply 3. Compliance and ethics
2019	R.R. Donnelley	4114	4	1. Non-discrimination 2. Safe workplace 3. Fair wages	9	Termination	1. Compliance with laws 2. Anti-bribery measures 3. Data protection
2019	UPL Limited	593	4	1. Minimum age requirement 2. Non-discrimination policy 3. Health & safety regulations	9	Corrective measures	1. Ethics 2. Intellectual property 3. Health, safety, environmental

Notes: Table describes all 104 RS policy documents triggering an RS event for suppliers in our sample, sorted first chronologically by the RS policy year (column 1), and then alphabetically by MNE name (column 2). Column 3 reports the total word count in each document. Columns 4 to 8 are outcomes of ChatGPT-3.5 queries. Column 4 answers to "How much is the document related to labor standards vs. other topics such as protection of the environment? Use a score from 1 to 10, where 10 means that the document only refers to labor conditions and 1 means that the document only refers to other topics such as environmental requirements." Column 5 answers to "What are the main labor protection standards and wage conditions requirements that emerge from the text? Provide up to 3 (only the most important ones)." Column 6 reports the score for: "Categorize the pdf tone in terms of the mandatory nature of the labor and wage requirements. Use a score from 1 to 10, where 1 means that the requirements are optional and 10 means absolutely mandatory." Column 7 answers to "Does the text mention explicit consequences in case of failure to adhere to the stated labor practices? If yes, mention the most important one." Column 8 answers to "What are the main requirements unrelated to labor or wage conditions that emerge from the text? Provide up to 3 (only the most important ones)." See Section 2.3 for discussion.

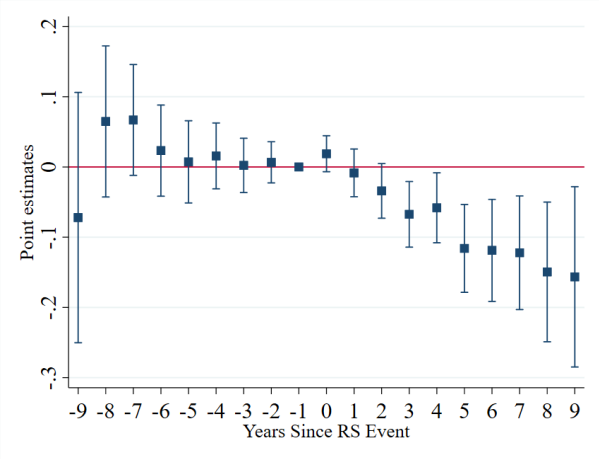
Appendix B Additional figures

Figure B1: Supplier-Level Effects of RS Rollouts on Total Sales and Employment for Extended Event-Study Periods

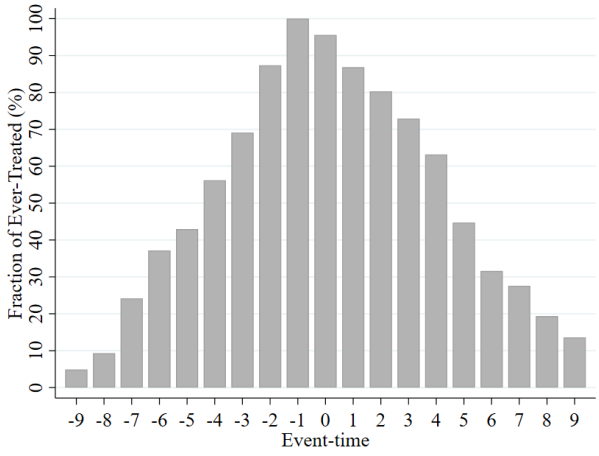
(A) Supplier Total Annual Sales



(B) Supplier Total Employment

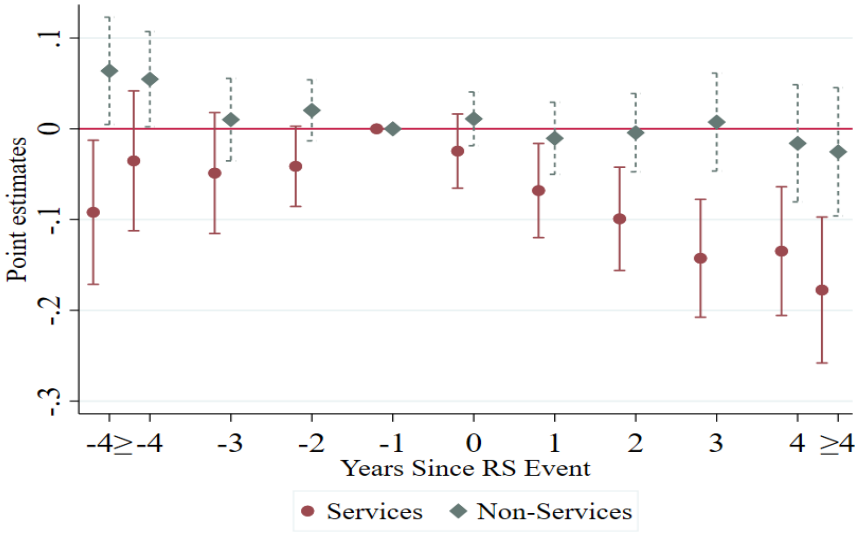


(C) Percentage of Ever-Treated Suppliers by Event-Time



Notes: Panels A and B plot estimates from the supplier-level IV event-study specification in equation (1) for event-study lags and leads between -9 and 9. The outcomes in Panels A and B are log total sales and log number of employees, respectively. These results correspond to columns 4 and 8 of Table 1 for event-study lags and leads between -4 and 4. Both panels show 95 percent confidence intervals based on standard errors clustered at the firm level. Panel C shows the percentage of ever-treated suppliers that report positive sales and employment in the data for each event-study lag and lead between -9 and 9.

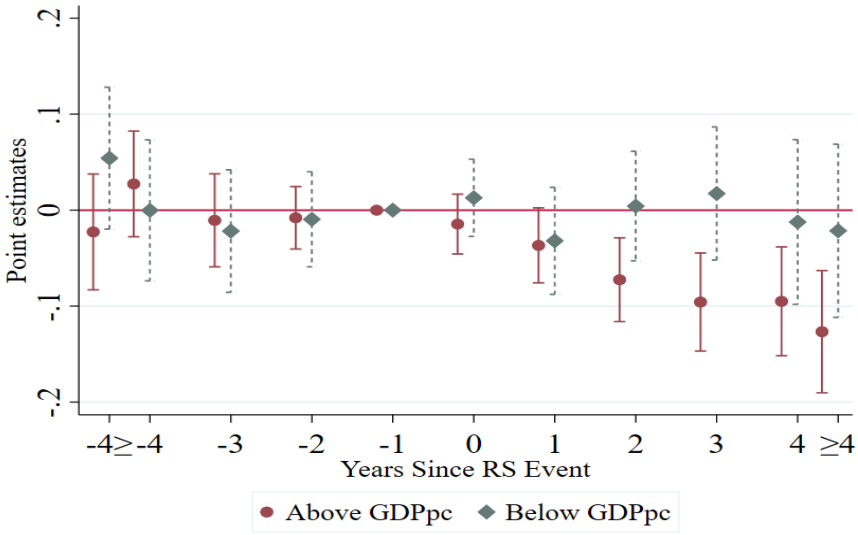
Figure B2: Supplier-Level Total Sales Effect of Exposure to MNE RS Rollouts by Supplier Sector



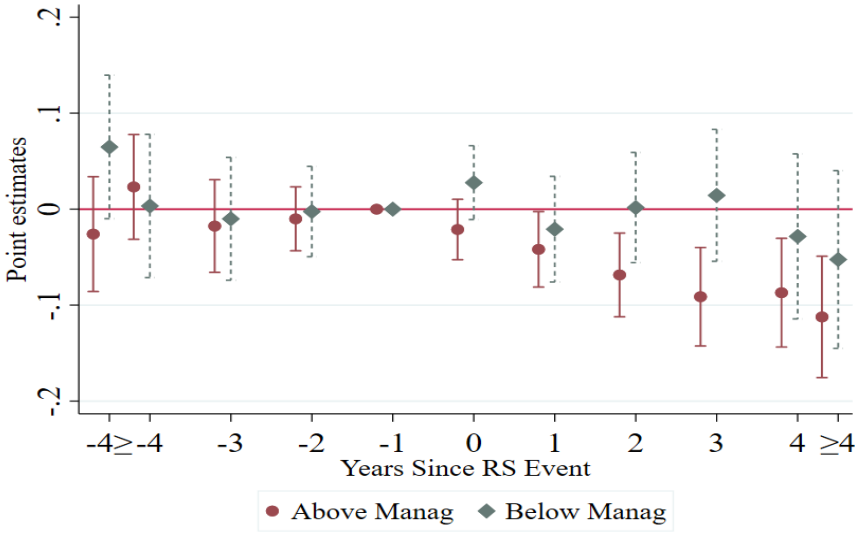
Notes: Figure plots estimates from the IV event-study specification in column 4 of Panel A in Table 1, separating suppliers in service sectors vs. non-service sectors. The outcome is the log of total annual firm sales. 95 percent confidence intervals are based on standard errors clustered at the firm level. See Section 3.2 for discussion.

Figure B3: Supplier-Level Total Sales Effect by Characteristics of the MNE Headquarters Country

Panel A: MNE HQ Country Above/Below Median GDP pc

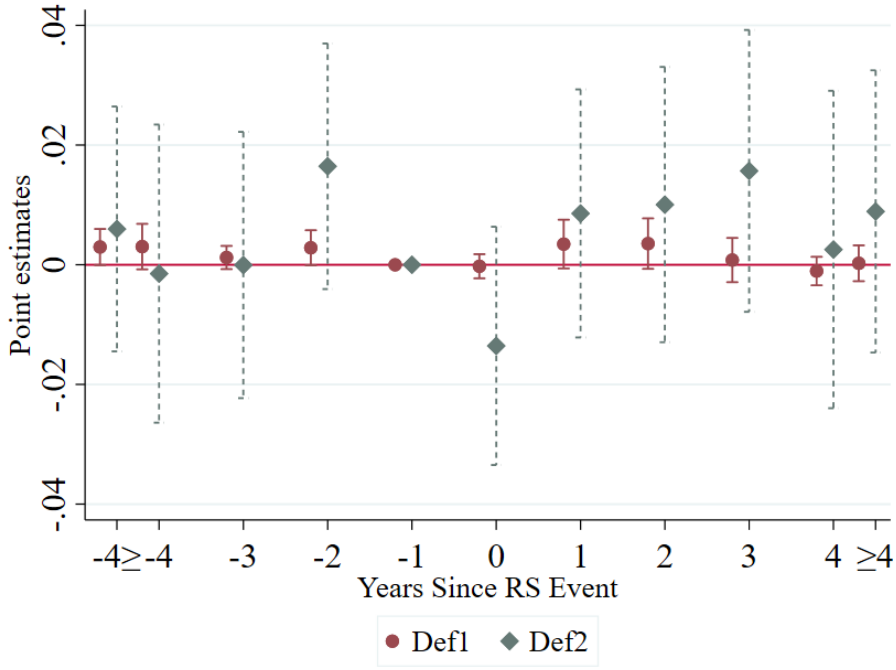


Panel B: MNE HQ Country Above/Below Median Management Score



Notes: Figure plots estimates from the IV event-study specification in column 4 of Panel A in Table 1, separating suppliers based on two distinct characteristics of the MNE buyer that triggered their event. Panel A splits observations depending on whether the GDP per capita in the MNE HQ country is above or below the median of the set of MNE HQ countries. Panel B splits observations based on whether the MNE HQ country management score is above or below the median of the set of MNE HQ countries. The country-level management score is taken from Bloom et al. (2021). 95 percent confidence intervals are based on standard errors clustered at the firm level. See Section 3.2 for discussion.

Figure B4: No Evidence of Supplier Splitting After Exposure to MNE RS Rollouts

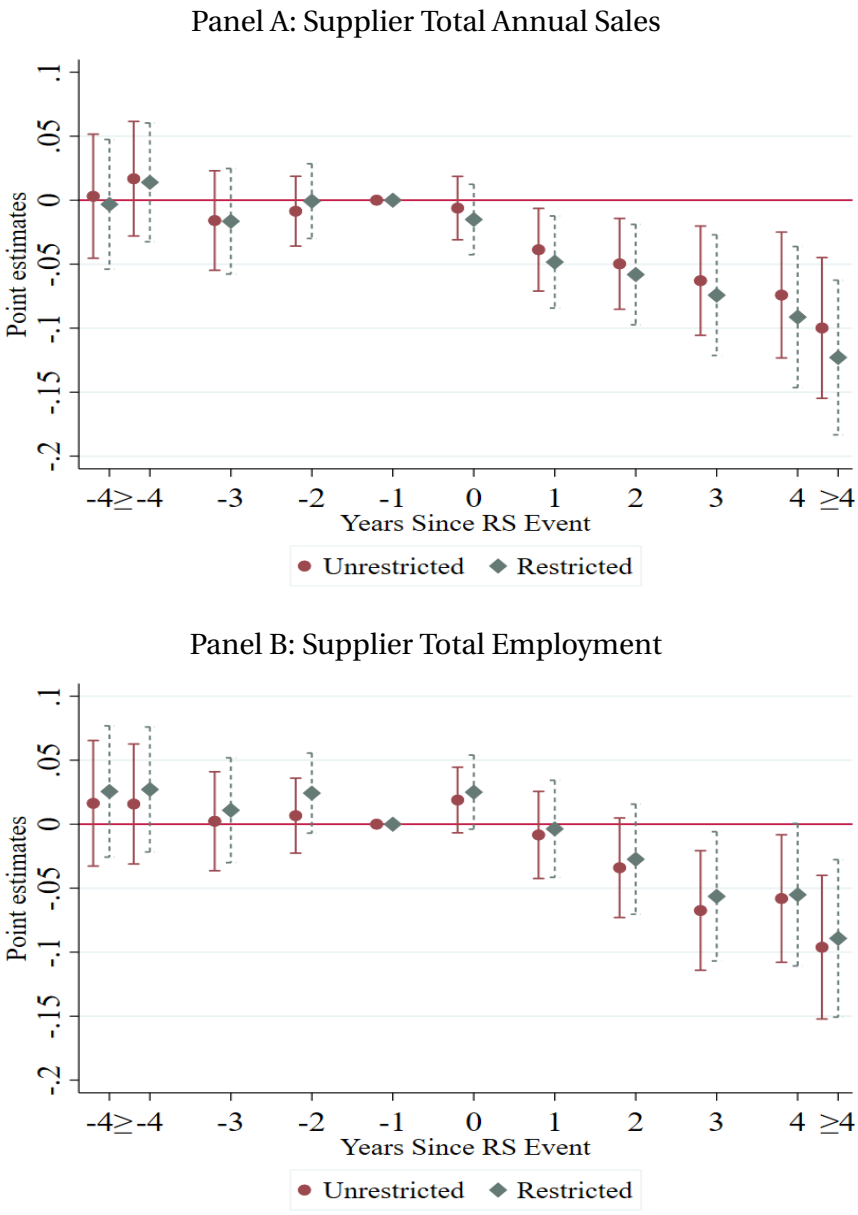


Notes: Figure explores whether some of the negative effects of a first RS rollout exposure on supplier sales and employment could be explained by suppliers "splitting up" into several entities (tax IDs). In this scenario, either the old or new entity could specialize in supplying to the RS-MNE, thereby avoiding costly compliance requirements for the rest of their production. To assess this possibility, we use the matched employer-employee data to investigate whether the propensity for linked worker movements to new tax IDs increases due to first-time exposure to an RS code of conduct. We estimate the same supplier-level IV event-study specification (1). 95 percent confidence intervals are based on standard errors clustered at the firm level.

We use two alternative measures of "firm splitting." The first (Def1) is an outsourcing measure similar to that used in Goldschmidt and Schmieder (2017). The outcome is an indicator equal to 1 if there is a flow of workers from one tax ID (an MNE supplier) to another tax ID satisfying four conditions: (i) the linked movement of workers represents more than 30% of the initial firm's employment in year $(t-1)$; (ii) either the new employer is a new firm (new tax ID), or the inflow represents at least 66% of the receiving firm's employment in year t; (iii) the number of workers at the initial firm in year $(t-1)$ is at least 5; and (iv) the receiving firm operates in the same sector as the originating firm.

The outcome variable in the second definition (Def2) is: $X_{i,t} = \max_{j \neq i} \frac{w_{i,t}^{j,t+1}}{\sum_{j \neq i} w_{i,t}^{j,t+1}}$, where $w_{i,t}^{j,t+1}$ is the number of workers who move from firm i in year t to firm j in year $(t+1)$. We only consider workers who move to another firm (excluding those who continue in the same firm or are unemployed) in year $(t+1)$. Hence, this variable measures the largest relative importance of a receiving firm j in terms of attracting new workers from i across all firms receiving workers from i over the same t to $(t+1)$ period, with a value of 1 at the maximum.

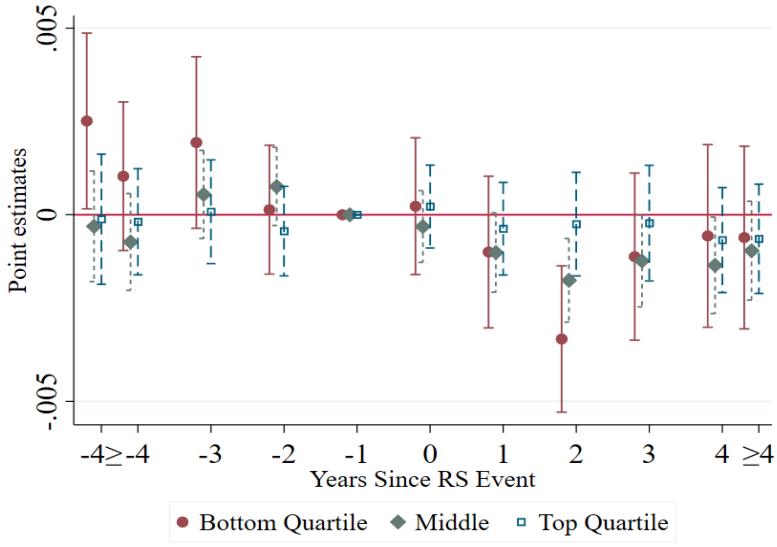
Figure B5: Effects of RS Rollouts on Supplier-Level Sales and Employment: Baseline Sample vs. Sample Restricted to Suppliers With A Single RS Exposure



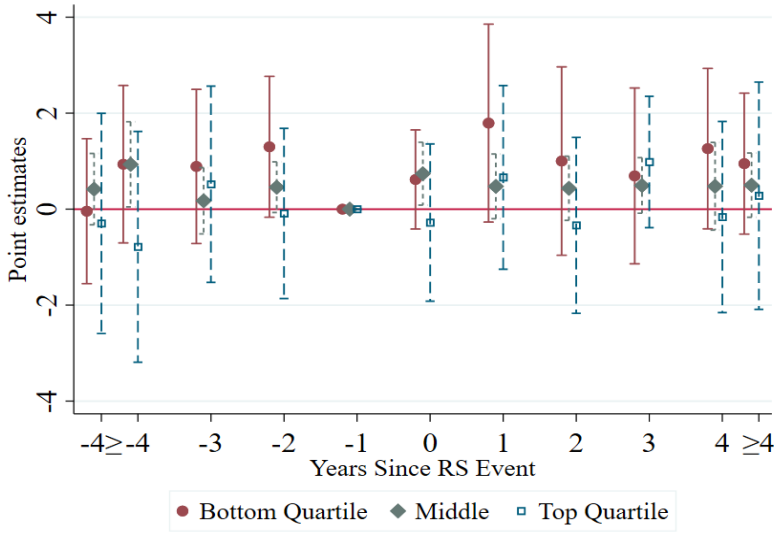
Notes: Both panels plot estimates from the supplier-level IV event-study specification in equation (1). Each panel shows the baseline "unrestricted" results from Figure 2 together with results from a subsample where the treatment group is restricted to suppliers exposed to exactly one RS rollout. Everything else in the "restricted" subsample and regression is kept the same as in the baseline analysis. Panel A presents results for log total sales as an outcome. Panel B presents results for log number of employees as an outcome. 95 percent confidence intervals are based on standard errors clustered at the firm level.

Figure B6: Heterogeneous Effects of Exposure to MNE RS Rollouts on Workplace Accidents and Maternity Leave by Workers' Initial Earnings Quartile

Panel A: Accident Leave: By Initial Worker Earnings



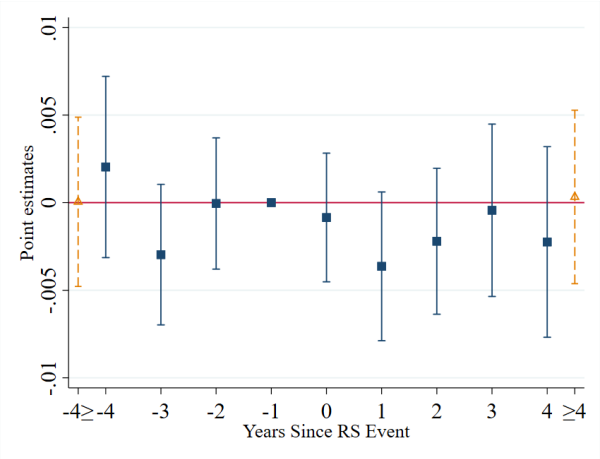
Panel B: Maternity Leave Duration: By Initial Worker Earnings



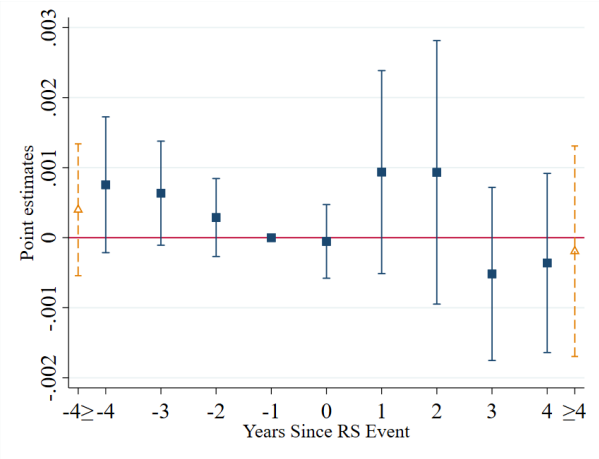
Notes: Panel A shows worker-level IV event-study estimates for the share of months a worker was on leave due to a work-related accident. Panel B shows supplier-level IV event-study estimates for the average number of months of paid maternity leave for female workers, conditional on taking maternity leave. These panels present a heterogeneity decomposition of the findings established across all workers in Panels A and B of Figure 7, with workers separated by their initial earnings quartile. 95 percent confidence intervals are based on standard errors clustered at the firm level.

Figure B7: Effects of RS Rollouts on Supplier Environmental Practices

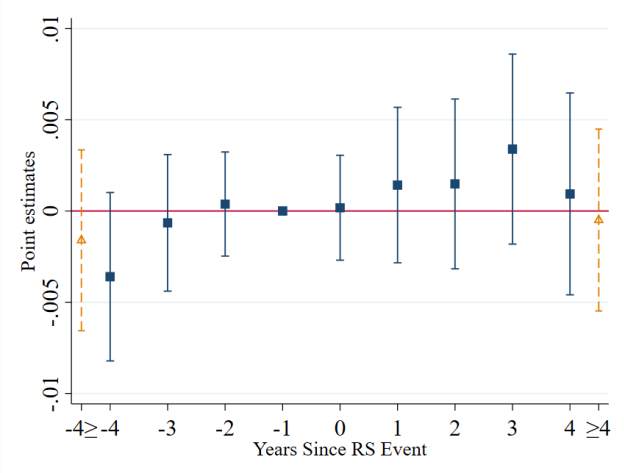
(A) Purchases of Transportation & Travel Services



(B) Purchases of Sewage & Waste Mngmt Services



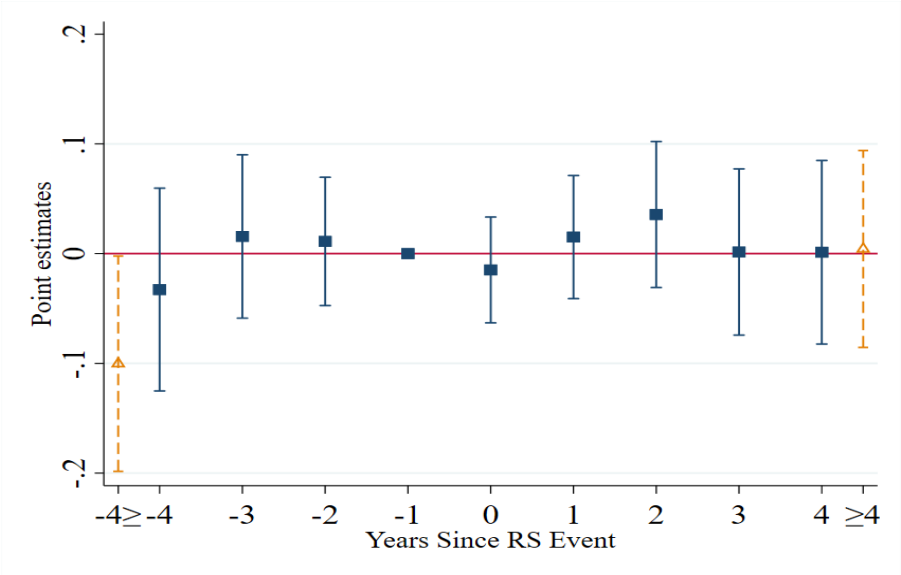
(C) Purchases of Electricity and Gas



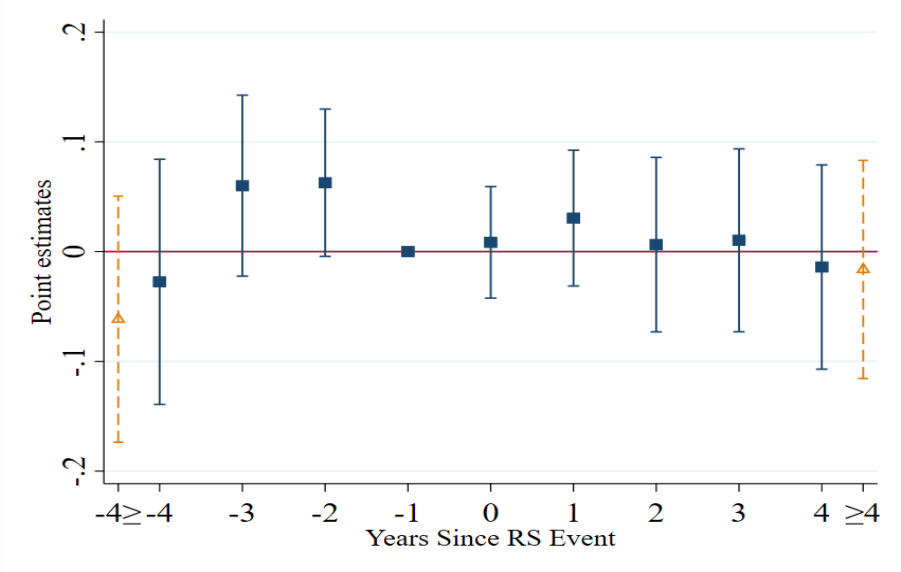
Notes: All panels plot estimates from the supplier-level IV event-study specification in equation (1). The outcomes in all panels represent the value share of arm's-length input purchases by suppliers from firms operating in specific ISIC Rev. 4 sectors. Panel A focuses on transportation (land, rail, water, and air) and travel (sectors 49–51 and 79). Panel B focuses on sewerage and waste collection (sectors 36*–39*). Panel C focuses on electricity and gas (sectors 3510 and 3520). 95 percent confidence intervals are based on standard errors clustered at the firm level.

Figure B8: Supplier-Level Effects of Placebo Rollouts on Annual Sales and Employment

Panel A: Supplier Annual Sales



Panel B: Supplier Employment



Notes: Panels A and B plot estimates from the supplier-level IV event-study specification in equation (1), using placebo events. These placebo events are triggered by MNEs whose first RS rollout does not include directives related to labor standards but instead focuses on other areas, such as environmental or governance practices. These rollouts account for 19% of all first MNE RS rollouts in our search protocol. The placebo analysis sample excludes suppliers that have ever sold to an RS-labor-active MNE, regardless of whether they belong to the treated or never-treated placebo groups. Apart from this exclusion, the placebo analysis sample is constructed identically to the baseline analysis sample. The outcomes in Panels A and B are log total sales and log number of employees, respectively. Both panels show 95 percent confidence intervals based on standard errors clustered at the firm level.

Appendix C Additional event-study tables

Table C1: Worker-Level Effects of Exposure to MNE RS Rollouts on Labor Earnings: All Workers

	(1)	(2)	(3)	(4)
	TWFE	TWFE	SA	IV
$\eta \leq -4$	-0.001	0.005	0.010***	-0.002
	(0.003)	(0.003)	(0.003)	(0.004)
$\eta = -4$	0.002	0.005	0.007**	0.001
	(0.003)	(0.003)	(0.003)	(0.003)
$\eta = -3$	-0.002	-0.000	0.002	-0.004
	(0.003)	(0.003)	(0.003)	(0.003)
$\eta = -2$	-0.002	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)
$\eta = 0$	0.007***	0.006***	0.006***	0.010***
	(0.002)	(0.002)	(0.002)	(0.002)
$\eta = 1$	0.007***	0.007***	0.007***	0.012***
	(0.002)	(0.002)	(0.002)	(0.003)
$\eta = 2$	0.008***	0.009***	0.009***	0.015***
	(0.002)	(0.002)	(0.002)	(0.003)
$\eta = 3$	0.001	0.003	0.002	0.015***
	(0.003)	(0.003)	(0.003)	(0.003)
$\eta = 4$	-0.001	0.003	0.004	0.017***
	(0.003)	(0.003)	(0.003)	(0.003)
$\eta \geq 4$	0.002	0.003	0.004	0.019***
	(0.003)	(0.003)	(0.004)	(0.004)
Year-Sect FE	Yes	Yes	Yes	Yes
Worker-Firm FE	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes
Adjusted R^2	0.81	0.81	0.81	-0.0013
# Observations	2847619	2847619	2847619	2847619
# Firms	57487	57487	57487	57487
# Workers	435450	435450	435450	435450

Notes: Table presents two-way fixed effects (TWFE), Sun and Abraham (2020) (SA) and IV estimates from the worker-level version of the specification in equation (2). The reported estimates correspond to all workers. The outcome is the log of annual worker earnings divided by the number of months of employment, restricted to worker-months in full-time employment. The first-stage F-statistic for the IV column exceeds 50. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 3.2 for discussion.

Table C2: Worker-Level Effects of RS Rollouts on Labor Earnings: Bottom Quartile of Initial Earnings

	(1)	(2)	(3)	(4)
	TWFE	TWFE	SA	IV
$\eta \leq -4$	-0.007	0.005	-0.006	0.015
	(0.009)	(0.009)	(0.010)	(0.011)
$\eta = -4$	0.000	0.005	0.005	0.011
	(0.009)	(0.009)	(0.010)	(0.010)
$\eta = -3$	-0.019**	-0.016**	-0.018**	-0.007
	(0.008)	(0.008)	(0.008)	(0.009)
$\eta = -2$	-0.004	-0.003	-0.003	0.007
	(0.006)	(0.006)	(0.006)	(0.007)
$\eta = 0$	0.029***	0.028***	0.029***	0.037***
	(0.006)	(0.006)	(0.006)	(0.006)
$\eta = 1$	0.041***	0.040***	0.043***	0.047***
	(0.007)	(0.007)	(0.007)	(0.008)
$\eta = 2$	0.046***	0.045***	0.047***	0.058***
	(0.007)	(0.007)	(0.008)	(0.008)
$\eta = 3$	0.045***	0.045***	0.047***	0.062***
	(0.008)	(0.008)	(0.009)	(0.009)
$\eta = 4$	0.036***	0.038***	0.042***	0.054***
	(0.009)	(0.010)	(0.010)	(0.010)
$\eta \geq 4$	0.043***	0.038***	0.048***	0.053***
	(0.009)	(0.010)	(0.012)	(0.011)
Year-Sect FE	Yes	Yes	Yes	Yes
Worker-Firm FE	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes
Adjusted R^2	0.71	0.71	0.71	-0.0051
# Observations	669664	669664	669664	669664
# Firms	34261	34261	34261	34261
# Workers	119369	119369	119369	119369

Notes: Table presents two-way fixed effects (TWFE), Sun and Abraham (2020) (SA) and IV estimates from the worker-level version of the specification in equation (2). We group workers based on their quartile in the distribution of (inflation-adjusted) monthly earnings in the first year we observe each worker, starting from 2006. The reported estimates correspond to workers in the bottom quartile of initial earnings. The outcome is the log of annual worker earnings divided by the number of months of employment, restricted to worker-months in full-time employment. The first-stage F-statistic for the IV column exceeds 50. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 3.2 for discussion.

Table C3: Worker-Level Effects of RS Rollouts on Labor Earnings: Middle Quartiles of Initial Earnings

	(1)	(2)	(3)	(4)
	TWFE	TWFE	SA	IV
$\eta \leq -4$	-0.007**	0.001	0.007*	0.004
	(0.003)	(0.003)	(0.004)	(0.004)
$\eta = -4$	-0.001	0.001	0.002	-0.002
	(0.003)	(0.003)	(0.004)	(0.004)
$\eta = -3$	-0.002	-0.000	-0.001	-0.007**
	(0.003)	(0.003)	(0.003)	(0.003)
$\eta = -2$	-0.004	-0.003	-0.003	-0.003
	(0.002)	(0.002)	(0.002)	(0.003)
$\eta = 0$	0.005**	0.004*	0.005**	0.007***
	(0.002)	(0.002)	(0.002)	(0.003)
$\eta = 1$	0.007***	0.006**	0.007***	0.010***
	(0.003)	(0.003)	(0.003)	(0.003)
$\eta = 2$	0.013***	0.013***	0.014***	0.015***
	(0.003)	(0.003)	(0.003)	(0.003)
$\eta = 3$	0.006**	0.007**	0.007**	0.019***
	(0.003)	(0.003)	(0.003)	(0.003)
$\eta = 4$	0.007**	0.010***	0.009***	0.022***
	(0.003)	(0.003)	(0.004)	(0.004)
$\eta \geq 4$	0.012***	0.010***	0.015***	0.021***
	(0.003)	(0.003)	(0.004)	(0.004)
Year-Sect FE	Yes	Yes	Yes	Yes
Worker-Firm FE	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes
Adjusted R^2	0.70	0.70	0.70	-0.0021
# Observations	1655021	1655021	1655021	1655021
# Firms	43920	43920	43920	43920
# Workers	248429	248429	248429	248429

Notes: Table presents two-way fixed effects (TWFE), Sun and Abraham (2020) (SA) and IV estimates from the worker-level version of the specification in equation (2). We group workers based on their quartile in the distribution of (inflation-adjusted) monthly earnings in the first year we observe each worker, starting from 2006. The reported estimates correspond to workers in the two middle quartiles of initial earnings. The outcome is the log of annual worker earnings divided by the number of months of employment, restricted to worker-months in full-time employment. The first-stage F-statistic for the IV column exceeds 50. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 3.2 for discussion.

Table C4: Worker-Level Effects of RS Rollouts on Labor Earnings: Top Quartile of Initial Earnings

	(1)	(2)	(3)	(4)
	TWFE	TWFE	SA	IV
$\eta \leq -4$	-0.016**	-0.011*	0.012	-0.011
	(0.006)	(0.006)	(0.008)	(0.009)
$\eta = -4$	-0.012**	-0.011*	-0.002	-0.014**
	(0.006)	(0.006)	(0.007)	(0.007)
$\eta = -3$	-0.011**	-0.012**	-0.008	-0.014**
	(0.005)	(0.005)	(0.005)	(0.006)
$\eta = -2$	-0.012***	-0.013***	-0.013***	-0.013***
	(0.004)	(0.004)	(0.004)	(0.004)
$\eta = 0$	0.002	0.001	0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.004)
$\eta = 1$	0.000	0.001	-0.000	0.000
	(0.004)	(0.004)	(0.004)	(0.005)
$\eta = 2$	-0.007	-0.005	-0.006	-0.006
	(0.005)	(0.005)	(0.005)	(0.006)
$\eta = 3$	-0.020***	-0.016***	-0.020***	-0.012*
	(0.005)	(0.006)	(0.006)	(0.006)
$\eta = 4$	-0.010*	-0.003	-0.005	0.005
	(0.006)	(0.006)	(0.006)	(0.007)
$\eta \geq 4$	-0.011*	-0.003	-0.007	0.009
	(0.006)	(0.006)	(0.007)	(0.008)
Year-Sect FE	Yes	Yes	Yes	Yes
Worker-Firm FE	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes
Adjusted R^2	0.87	0.87	0.87	-0.0062
# Observations	522356	522356	522356	522356
# Firms	18798	18798	18798	18798
# Workers	67633	67633	67633	67633

Notes: Table presents two-way fixed effects (TWFE), Sun and Abraham (2020) (SA) and IV estimates from the worker-level version of the specification in equation (2). We group workers based on their quartile in the distribution of (inflation-adjusted) monthly earnings in the first year we observe each worker, starting from 2006. The reported estimates correspond to workers in the top quartile of initial earnings. The outcome is the log of annual worker earnings divided by the number of months of employment, restricted to worker-months in full-time employment. The first-stage F-statistic for the IV column exceeds 50. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 3.2 for discussion.

Table C5: Effects of RS Rollouts on Suppliers' Employment of Workers in the Initial Bottom Earnings Quartile

	(1)	(2)	(3)	(4)
	TWFE	TWFE	SA	IV
$\eta \leq -4$	-0.047	0.040	0.054	0.031
	(0.032)	(0.033)	(0.033)	(0.033)
$\eta = -4$	-0.055*	0.003	0.021	-0.004
	(0.031)	(0.030)	(0.030)	(0.031)
$\eta = -3$	-0.036	-0.003	0.018	-0.001
	(0.025)	(0.025)	(0.025)	(0.025)
$\eta = -2$	-0.028*	-0.012	0.004	-0.010
	(0.016)	(0.016)	(0.016)	(0.018)
$\eta = 0$	0.003	-0.006	-0.009	-0.010
	(0.016)	(0.016)	(0.016)	(0.016)
$\eta = 1$	-0.025	-0.036*	-0.038*	-0.050**
	(0.019)	(0.020)	(0.020)	(0.020)
$\eta = 2$	-0.041*	-0.057**	-0.059**	-0.062***
	(0.022)	(0.023)	(0.023)	(0.024)
$\eta = 3$	-0.075***	-0.087***	-0.085***	-0.081***
	(0.027)	(0.029)	(0.029)	(0.029)
$\eta = 4$	-0.082***	-0.090***	-0.088***	-0.094***
	(0.029)	(0.031)	(0.032)	(0.032)
$\eta \geq 4$	-0.083***	-0.088**	-0.114***	-0.091***
	(0.032)	(0.035)	(0.040)	(0.035)
Firm FE	Yes	Yes	Yes	Yes
Year-Sect FE	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes
Adjusted R^2	0.81	0.81	0.81	-0.023
# Observations	60391	60391	60391	60391
# Treated	1456	1456	1456	1456
# Never Treated	9128	9128	9128	9128
# Sector-Year Bins	2400	2400	2400	2400

Notes: Table presents two-way fixed effects (TWFE), Sun and Abraham (2020) (SA) and IV estimates for the supplier-level specification in equation (1). We group workers based on their quartile in the distribution of (inflation-adjusted) monthly earnings in the first year we observe each worker, starting from 2006. The reported estimates correspond to the outcome variable—the logarithm of the number of employees—and focus on workers in the bottom quartile of initial earnings. The first-stage F-statistic for the IV column exceeds 50. Standard errors clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 3.2 for discussion.

Table C6: Effects of RS Rollouts on Suppliers' Employment of Workers in the Initial Middle Earnings Quartiles

	(1)	(2)	(3)	(4)
	TWFE	TWFE	SA	IV
$\eta \leq -4$	-0.139***	-0.017	0.007	-0.021
	(0.027)	(0.027)	(0.029)	(0.028)
$\eta = -4$	-0.125***	-0.048*	-0.026	-0.042
	(0.026)	(0.025)	(0.026)	(0.026)
$\eta = -3$	-0.063***	-0.019	0.002	-0.029
	(0.021)	(0.021)	(0.021)	(0.021)
$\eta = -2$	-0.015	0.003	0.016	0.008
	(0.015)	(0.015)	(0.015)	(0.015)
$\eta = 0$	0.052***	0.045***	0.043***	0.038**
	(0.014)	(0.014)	(0.014)	(0.015)
$\eta = 1$	0.028	0.024	0.024	0.021
	(0.018)	(0.018)	(0.018)	(0.019)
$\eta = 2$	0.010	0.014	0.015	0.016
	(0.020)	(0.020)	(0.020)	(0.021)
$\eta = 3$	-0.034	-0.023	-0.024	-0.013
	(0.023)	(0.023)	(0.024)	(0.025)
$\eta = 4$	-0.078***	-0.048*	-0.051*	-0.035
	(0.026)	(0.027)	(0.027)	(0.028)
$\eta \geq 4$	-0.100***	-0.050*	-0.079**	-0.043
	(0.028)	(0.029)	(0.032)	(0.031)
Firm FE	Yes	Yes	Yes	Yes
Year-Sect FE	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes
Adjusted R^2	0.79	0.79	0.79	0.0059
# Observations	96547	96547	96547	96547
# Treated	1872	1872	1872	1872
# Never Treated	12295	12295	12295	12295
# Sector-Year Bins	2545	2545	2545	2545

Notes: Table presents two-way fixed effects (TWFE), Sun and Abraham (2020) (SA) and IV estimates for the supplier-level specification in equation (1). We group workers based on their quartile in the distribution of (inflation-adjusted) monthly earnings in the first year we observe each worker, starting from 2006. The reported estimates correspond to the outcome variable—the logarithm of the number of employees—and focus on workers in the two middle quartiles of initial earnings. The first-stage F-statistic for the IV column exceeds 50. Standard errors clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 3.2 for discussion.

Table C7: Effects of RS Rollouts on Suppliers' Employment of Workers in the Initial Top Earnings Quartile

	(1)	(2)	(3)	(4)
	TWFE	TWFE	SA	IV
$\eta \leq -4$	-0.081**	0.021	0.061*	-0.017
	(0.033)	(0.033)	(0.034)	(0.035)
$\eta = -4$	-0.080**	-0.010	0.031	-0.037
	(0.031)	(0.031)	(0.031)	(0.033)
$\eta = -3$	-0.062**	-0.016	0.017	-0.027
	(0.027)	(0.027)	(0.027)	(0.029)
$\eta = -2$	-0.058***	-0.031	-0.018	-0.031
	(0.021)	(0.021)	(0.021)	(0.022)
$\eta = 0$	0.024	0.017	0.012	0.006
	(0.018)	(0.018)	(0.018)	(0.019)
$\eta = 1$	0.032	0.031	0.029	0.022
	(0.023)	(0.023)	(0.024)	(0.024)
$\eta = 2$	0.009	0.007	0.007	0.003
	(0.024)	(0.025)	(0.026)	(0.026)
$\eta = 3$	-0.009	-0.001	0.004	-0.001
	(0.027)	(0.028)	(0.029)	(0.030)
$\eta = 4$	-0.015	0.009	0.019	0.016
	(0.030)	(0.032)	(0.033)	(0.035)
$\eta \geq 4$	-0.061*	-0.018	-0.064*	-0.011
	(0.032)	(0.034)	(0.037)	(0.037)
Firm FE	Yes	Yes	Yes	Yes
Year-Sect FE	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes
Adjusted R^2	0.75	0.75	0.75	-0.017
# Observations	60391	60391	60391	60391
# Treated	1456	1456	1456	1456
# Never Treated	9128	9128	9128	9128
# Sector-Year Bins	2400	2400	2400	2400

Notes: Table presents two-way fixed effects (TWFE), Sun and Abraham (2020) (SA) and IV estimates for the supplier-level specification in equation (1). We group workers based on their quartile in the distribution of (inflation-adjusted) monthly earnings in the first year we observe each worker, starting from 2006. The reported estimates correspond to the outcome variable—the logarithm of the number of employees—and focus on workers in the top quartile of initial earnings. The first-stage F-statistic for the IV column exceeds 50. Standard errors clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 3.2 for discussion.

Table C8: Effects of RS Rollouts on Suppliers' Relative Employment of Initially Low vs. High Earning Workers

	(1)	(2)	(3)	(4)	(5)
	TWFE	TWFE	SA	IV	PPML
$\eta \leq -4$	0.034	0.019	-0.008	0.048	0.242***
	(0.039)	(0.040)	(0.041)	(0.043)	(0.092)
$\eta = -4$	0.025	0.013	-0.010	0.033	0.180**
	(0.039)	(0.039)	(0.040)	(0.042)	(0.092)
$\eta = -3$	0.026	0.014	0.001	0.026	0.118
	(0.033)	(0.033)	(0.033)	(0.035)	(0.080)
$\eta = -2$	0.030	0.019	0.022	0.022	0.179
	(0.024)	(0.025)	(0.025)	(0.025)	(0.118)
$\eta = 0$	-0.021	-0.022	-0.021	-0.016	-0.001
	(0.021)	(0.022)	(0.022)	(0.024)	(0.052)
$\eta = 1$	-0.057**	-0.066**	-0.067**	-0.072**	-0.054
	(0.026)	(0.027)	(0.027)	(0.029)	(0.056)
$\eta = 2$	-0.050*	-0.063**	-0.066**	-0.066**	-0.087
	(0.028)	(0.029)	(0.029)	(0.032)	(0.063)
$\eta = 3$	-0.065**	-0.085**	-0.088***	-0.080**	-0.090
	(0.032)	(0.033)	(0.034)	(0.036)	(0.067)
$\eta = 4$	-0.067*	-0.100***	-0.106***	-0.111***	-0.169**
	(0.035)	(0.038)	(0.039)	(0.042)	(0.073)
$\eta \geq 4$	-0.021	-0.070*	-0.050	-0.080*	-0.141**
	(0.036)	(0.039)	(0.044)	(0.043)	(0.069)
Firm FE	Yes	Yes	Yes	Yes	Yes
Year-Sect FE	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes	Yes
Adjusted R^2	0.67	0.68	0.68	-0.039	
# Observations	60391	60391	60391	60391	103881
# Treated	1456	1456	1456	1456	1664
# Never Treated	9128	9128	9128	9128	11362
# Sector-Year Bins	2400	2400	2400	2400	2526

Notes: Table presents two-way fixed effects (TWFE), Sun and Abraham (2020) (SA), IV and PPML estimates for the supplier-level specification in equation (1). The outcome variable in columns 1–4 is the log ratio of initially low-earning to initially high-earning workers. In the PPML specification (column 5), the outcome is the same ratio but without the log transformation. The first-stage F-statistic for the IV column exceeds 50. Standard errors clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 3.2 for discussion.

Table C9: Effects of RS Rollouts on the MNE Subsidiary Employment and Relative Employment in the MNE Group

	(1)	(2)	(3)	(4)	(5)	(6)
	TWFE	SA	IV	TWFE	SA	IV
$\eta \leq -4$	-0.099	-0.149	-0.124	-0.001	-0.004	-0.001
	(0.121)	(0.142)	(0.135)	(0.004)	(0.004)	(0.004)
$\eta = -4$	0.042	0.057	0.044	0.001	-0.000	0.001
	(0.091)	(0.102)	(0.100)	(0.006)	(0.006)	(0.006)
$\eta = -3$	-0.007	-0.006	-0.001	-0.001	-0.002	-0.001
	(0.096)	(0.098)	(0.105)	(0.003)	(0.003)	(0.003)
$\eta = -2$	0.000	-0.017	0.008	0.001	0.000	0.001
	(0.078)	(0.072)	(0.086)	(0.002)	(0.002)	(0.002)
$\eta = 0$	0.040	0.040	0.048	0.001	0.000	0.001
	(0.069)	(0.063)	(0.076)	(0.001)	(0.002)	(0.001)
$\eta = 1$	-0.052	-0.059	-0.026	0.003	0.002	0.003
	(0.093)	(0.086)	(0.102)	(0.002)	(0.003)	(0.003)
$\eta = 2$	-0.118	-0.109	-0.103	0.001	-0.001	0.001
	(0.130)	(0.116)	(0.147)	(0.003)	(0.002)	(0.003)
$\eta = 3$	0.057	0.070	0.087	0.002	-0.000	0.002
	(0.103)	(0.088)	(0.116)	(0.003)	(0.002)	(0.003)
$\eta = 4$	0.051	0.026	0.080	0.002	-0.001	0.002
	(0.107)	(0.090)	(0.120)	(0.004)	(0.002)	(0.004)
$\eta \geq 4$	-0.042	-0.022	-0.017	-0.001	0.000	-0.001
	(0.111)	(0.037)	(0.123)	(0.004)	(0.001)	(0.004)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Sect FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.74	0.74	-0.039	0.94	0.94	-0.076
# Observations	5229	5229	5229	1612	1612	1612
# Treated MNEs	169	169	169	104	104	104
# Non-Treated MNEs	310	310	310	57	57	57
# Sector-Year Bins	1748	1748	1748	860	860	860

Notes: Table presents two-way fixed effects (TWFE), Sun and Abraham (2020) (SA) and IV estimates for the MNE-level version of the specification in equation (1). In columns 1-3, the outcome is the log employment of the MNE subsidiary in CR. In columns 4-6, the outcome is the fraction of employment of the CR subsidiary in total global employment of the MNE. The first-stage F-statistics for the IV columns exceed 50. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 3.2 for discussion.

Table C10: Effects of RS Rollouts on the MNE Subsidiary Sales and Relative Sales in the MNE Group

	(1)	(2)	(3)	(4)	(5)	(6)
	TWFE	SA	IV	TWFE	SA	IV
$\eta \leq -4$	-0.192	-0.261	-0.237	-0.001	-0.009	-0.005
	(0.137)	(0.165)	(0.151)	(0.007)	(0.006)	(0.008)
$\eta = -4$	0.024	0.070	-0.000	0.006	0.003	0.002
	(0.105)	(0.121)	(0.113)	(0.009)	(0.009)	(0.010)
$\eta = -3$	-0.062	-0.049	-0.071	-0.001	-0.003	-0.004
	(0.121)	(0.125)	(0.133)	(0.006)	(0.006)	(0.007)
$\eta = -2$	-0.092	-0.108	-0.110	0.002	0.001	-0.005
	(0.081)	(0.076)	(0.090)	(0.004)	(0.004)	(0.003)
$\eta = 0$	0.069	0.077	0.068	-0.000	-0.002	-0.002
	(0.065)	(0.059)	(0.072)	(0.003)	(0.003)	(0.003)
$\eta = 1$	-0.051	-0.039	-0.033	-0.003	-0.005	-0.003
	(0.098)	(0.090)	(0.108)	(0.003)	(0.003)	(0.004)
$\eta = 2$	-0.101	-0.064	-0.089	-0.002	-0.004	-0.000
	(0.130)	(0.114)	(0.147)	(0.004)	(0.003)	(0.004)
$\eta = 3$	0.034	0.083	0.067	-0.004	-0.003	0.001
	(0.110)	(0.089)	(0.123)	(0.004)	(0.003)	(0.005)
$\eta = 4$	0.034	0.073	0.058	-0.005	-0.005**	0.001
	(0.116)	(0.091)	(0.130)	(0.004)	(0.002)	(0.006)
$\eta \geq 4$	-0.083	-0.027	-0.071	-0.008*	-0.001	-0.002
	(0.122)	(0.044)	(0.135)	(0.004)	(0.001)	(0.005)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Sect FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.77	0.77	-0.039	0.94	0.94	-0.071
# Observations	5229	5229	5229	1790	1790	1790
# Treated MNEs	169	169	169	116	116	116
# Non-Treated MNEs	310	310	310	59	59	59
# Sector-Year Bins	1748	1748	1748	952	952	952

Notes: Table presents two-way fixed effects (TWFE), Sun and Abraham (2020) (SA) and IV estimates for the MNE-level version of the specification in equation (1). In columns 1-3, the outcome is the log sales of the MNE subsidiary in CR. In columns 4-6, the outcome is the fraction of sales of the CR subsidiary in total global sales of the MNE. The first-stage F-statistics for the IV columns exceed 50. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 3.2 for discussion.

Table C11: Intensive Margin Effects of RS Rollouts on Sales Transactions to the RS-MNE

	(1)	(2)	(3)	(4)
	TWFE	TWFE	SA	IV
$\eta \leq -4$	-0.030	-0.067*	-0.049	-0.016
	(0.035)	(0.035)	(0.037)	(0.037)
$\eta = -4$	0.048	0.024	0.030	0.077**
	(0.034)	(0.033)	(0.034)	(0.035)
$\eta = -3$	0.000	-0.010	-0.012	0.020
	(0.030)	(0.030)	(0.030)	(0.031)
$\eta = -2$	0.008	0.001	0.003	0.026
	(0.022)	(0.022)	(0.022)	(0.023)
$\eta = 0$	0.010	0.018	0.011	0.003
	(0.018)	(0.018)	(0.018)	(0.019)
$\eta = 1$	-0.013	0.000	-0.008	-0.007
	(0.023)	(0.023)	(0.023)	(0.024)
$\eta = 2$	-0.001	0.018	0.007	-0.002
	(0.026)	(0.026)	(0.027)	(0.028)
$\eta = 3$	-0.038	-0.015	-0.032	-0.036
	(0.028)	(0.028)	(0.029)	(0.030)
$\eta = 4$	-0.055*	-0.031	-0.044	-0.054
	(0.031)	(0.030)	(0.032)	(0.033)
$\eta \geq 4$	-0.079**	-0.055*	-0.058	-0.076**
	(0.033)	(0.032)	(0.039)	(0.035)
Year-Sect FE	Yes	Yes	Yes	Yes
Year-BuyerSect FE	Yes	Yes	Yes	Yes
Supplier-Buyer FE	Yes	Yes	Yes	Yes
Controls	Yes	No	Yes	Yes
Adjusted R^2	0.73	0.73	0.73	-0.0023
# Observations	515797	515797	515797	515797
# Treated	1678	1678	1678	1678
# Never Treated	13079	13079	13079	13079
# Sector-Year Bins	2550	2550	2550	2550

Notes: Table presents two-way fixed effects (TWFE), Sun and Abraham (2020) (SA), IV and PPML estimates for the transaction-level version of the specification in equation (2). The outcome variable is the log transaction value between a supplier i and a buyer j. The first-stage F-statistic for the IV column exceeds 50. Standard errors clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 3.2 for discussion.

Table C12: Supplier-Level Effects of RS Rollouts on Total Sales to Other (Non-RS) Buyers

	(1)	(2)	(3)	(4)
	TWFE	TWFE	SA	IV
$\eta \leq -4$	-0.039	0.031	0.069**	0.023
	(0.030)	(0.030)	(0.033)	(0.032)
$\eta = -4$	-0.012	0.016	0.050	0.018
	(0.030)	(0.031)	(0.032)	(0.032)
$\eta = -3$	0.003	0.001	0.034	0.010
	(0.027)	(0.027)	(0.028)	(0.028)
$\eta = -2$	0.012	-0.004	0.014	-0.002
	(0.021)	(0.021)	(0.021)	(0.022)
$\eta = 0$	0.024	-0.014	-0.018	-0.003
	(0.018)	(0.018)	(0.018)	(0.019)
$\eta = 1$	0.007	-0.025	-0.029	-0.027
	(0.022)	(0.023)	(0.023)	(0.024)
$\eta = 2$	-0.030	-0.050**	-0.051**	-0.041
	(0.023)	(0.024)	(0.024)	(0.025)
$\eta = 3$	-0.068**	-0.071***	-0.074***	-0.057*
	(0.027)	(0.028)	(0.028)	(0.030)
$\eta = 4$	-0.088***	-0.066**	-0.080**	-0.060*
	(0.030)	(0.032)	(0.032)	(0.034)
$\eta \geq 4$	-0.156***	-0.101***	-0.156***	-0.097***
	(0.031)	(0.033)	(0.035)	(0.036)
Firm FE	Yes	Yes	Yes	Yes
Year-Sect FE	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes
Adjusted R^2	0.78	0.78	0.78	-0.0060
# Observations	132199	132199	132199	132199
# Treated	2098	2098	2098	2098
# Never Treated	15291	15291	15291	15291
# Sector-Year Bins	2630	2630	2630	2630

Notes: The table presents two-way fixed effects (TWFE), Sun and Abraham (2020) (SA), IV and PPML estimates for the supplier-level specification in equation (1). The outcome variable is the log total sales to other (non-RS) buyers. The first-stage F-statistic for the IV column exceeds 50. Standard errors clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 3.2 for discussion.

Appendix D Theory appendix

Appendix D.1 Model derivations

In this appendix, we present the main equilibrium equations. Here, contrary to the main text, trade patterns are not restricted and Home firms can export to Foreign. This case nests our baseline specification.

We proceed in two steps. First, we characterize firm-level outcomes taking general equilibrium (GE) quantities as given, then we derive the complete GE solution of the model.

Notations Let $y^t_{ij,r}$ denote outcome y of an entity with RS status r and for workers of type t. When $i = H$, then $y^t_{ij,r}$ refers to a Home firm producing for the destination market $j = H, F, M$ (respectively: Home, exports to Foreign, or production of inputs for MNE subsidiaries).[i] When $i = M$, then $y^t_{M,r}$ refers to the production of MNE subsidiaries at Home. Market-level aggregates are denoted with capital letters. Finally, $y_{ij,r}$ without superscript t sums outcomes across worker types ($y_{ij,r} = \sum_{t=l,h} y^t_{ij,r}$) and $y^t_{i,r}$ without j subscript sums outcomes across all the production lines of a firm ($y^t_{i,r} = \sum_{j=H,F,M} y^t_{ij,r}$). Similarly, Y^t_{ij} without subscript r sums outcomes across firms of all r-statuses ($Y^t_{ij} = \sum_{r=R,N} Y^t_{ij,r}$). Numbers-only equations refer to equations in Section 4 in the main body of the paper.

Labor use Given the labor aggregator in equation (4), a firm or an MNE subsidiary facing wages $\{w^t_{i,r}\}$ chooses relative employment of low- and high-wage workers as follows:

$$\chi^t_{i,r} = \frac{w^t_{i,r}\ell^t_{i,r}}{W_{i,r}\ell_{i,r}} = \frac{\alpha^t_i \left(w^t_{i,r}\right)^{1-\rho}}{W^{1-\rho}_{i,r}}, \tag{D1}$$

where $\ell_{i,r}$ is the labor aggregate in equation (4) and $W_{i,r}$ is the corresponding labor cost index of the firm:

$$W_{i,r} = \left[\left(\alpha^l_i\right)^\rho \left(w^l_{i,r}\right)^{1-\rho} + \left(\alpha^h_i\right)^\rho \left(w^h_{i,r}\right)^{1-\rho}\right]^{\frac{1}{1-\rho}}, \text{ for } i = H, M, F. \tag{D2}$$

In the baseline equilibrium without RS, we simply denote χ^t_H (χ^t_M, respectively) the share of $t-$workers in the wage bill of Home firms (MNE subsidiaries, respectively).

Non-MNE firms All firms with the same productivity z make the same choices and firm-level expressions are given as a function of their productivity. Denoting $\mu_{ij,r}$ the markup of firms of type r on market $j = H, F, M$, output prices are given by:

$$p_{ij,r} = \mu_{ij,r}\frac{\varrho_{ij} W_{H,r}}{z},$$

where $\varrho_{ij} = \varrho$ if $ij = HF, FH$ and $\varrho_{ij} = 1$ otherwise. In a baseline without RS, firms are monopolistically competitive on all markets so that

$$\mu_{ij,r} = \frac{\sigma}{\sigma - 1}. \tag{D3}$$

When RS is implemented, we allow for the markups to adjust so that only a share β of the suppliers' cost increase is passed through to the input price paid by the MNE (on other markets, the pass-through is complete). We define

$$\beta = \frac{\partial \log p_{HM,R}}{\partial \chi^l_H \log \tau^l_R}, \tag{D4}$$

where $\chi^l_H \log \tau^l_R$ measures the size of the RS cost shock as described in the next section. Given CES demand and firms' linear production costs, firm sales $y_{ij,r}$, employment $\ell^t_{ij,r}$, and profits $\pi_{ij,r}$ (conditional on

[i] Notations are symmetric for Foreign, with fewer combinations of subscripts since, e.g., Foreign firms do not produce intermediates.

choosing to produce) are, respectively:

$$y_{ij,r} = \mu_{ij,r}^{1-\sigma} z^{\sigma-1} \varrho_{ij}^{1-\sigma} {W_{i,r}}^{1-\sigma} D_{j,r}, \tag{D5}$$

$$\ell_{ij,r}^{t} = \left(\alpha_i^t\right)^{\rho} \left(\mu_{ij,r}\right)^{-\sigma} z^{\sigma-1} \varrho_{ij}^{1-\sigma} \left(w_{i,r}^t\right)^{-\rho} {W_{i,r}}^{\rho-\sigma} D_{j,r} + f_{ij} \left(\alpha_i^t\right)^{\rho} \left(\frac{w_{i,r}^t}{W_{i,r}}\right)^{-\rho}, \quad t = l, h \tag{D6}$$

$$\pi_{ij,r} = \mu_{ij,r}^{-\sigma} \left(\mu_{ij,r} - 1\right) z^{\sigma-1} \varrho_{ij}^{1-\sigma} {W_{i,r}}^{1-\sigma} D_{j,r} - W_{i,r} f_{ij}, \tag{D7}$$

where $D_{j,r}$ corresponds to the aggregate demand shifter on market j for firms with status $r = R, N$:

$$D_{i,r} = P_i^{\sigma-1} X_i \quad \text{, for } i = H, F, \tag{D8}$$

$$D_{M,r} = R_r^{\sigma} M_r. \tag{D9}$$

In these expressions, we have used X_i to denote total expenditure in country $i = H, F$ and P_i to denote the ideal price index for consumption in i which, given the demand in equation (3), is:

$$P_i = \left(\int_{\Omega_i} {p_w}^{1-\sigma} d\omega\right)^{\frac{1}{1-\sigma}}. \tag{D10}$$

On the market for intermediate inputs sold to MNEs, R_r is the input cost index for an MNE subsidiary with RS status r, which, given the production function in equation (6), is:

$$R_r = \left(\int_{\Omega_x} {p_{HM,r}\left(\omega_x\right)}^{1-\sigma} d\omega_x + \xi^{\sigma} W_{M,r}^{1-\sigma}\right)^{\frac{1}{1-\sigma}}, \tag{D11}$$

and M_r is subsidiary output given in equation (6).

Profits on each destination market $j = H, M, F$ are increasing in productivity, so that only firms above a given productivity cutoff enter the market. Given the expression for profits in equation (D7), the selection cutoff corresponding to zero profit on market j for firms with RS status r is:

$$z_{ij,r}^{*} = \left(\frac{1}{\left(\mu_{ij,r} - 1\right)\mu_{ij,r}^{-\sigma}}\right)^{\frac{1}{\sigma-1}} \frac{f_{ij}^{\frac{1}{\sigma-1}} \varrho_{ij} {W_{i,r}}^{\frac{\sigma}{\sigma-1}}}{D_{j,r}^{\frac{1}{\sigma-1}}}. \tag{D12}$$

The total sales of firms on destination market $j = H, M, F$ are then given by $Y_{ij,r} = \int_{z_{ij,r}^{*}}^{\infty} y_{ij,r}\left(z\right) dG_i\left(z\right)$, which, given the assumption that productivity is Pareto distributed, can be written as:

$$Y_{ij,r} = \left(\frac{\theta}{\theta - \sigma + 1}\right) \left(\mu_{ij,r} \varrho_{ij} W_{i,r}\right)^{1-\sigma} D_{j,r} \left(z_{ij,r}^{*}\right)^{\sigma-1-\theta}. \tag{D13}$$

MNE headquarters and subsidiary We turn to describing the choices of the MNE headquarters in Foreign and subsidiary in Home. We have already defined above the cost index R_r of an MNE subsidiary with RS status r (see equation (D11)). The MNE headquarters in Foreign imports the good produced by its subsidiary in Home, subject to iceberg transport costs, so that the marginal cost of the MNE headquarters of type r is: $c_r = \varrho R_r$. The final goods markets in Foreign and at Home are monopolistically competitive, hence the MNE (headquarters) sells to final consumers in market $j = F, H$ at price:

$$p_{Mj,r} = \frac{\sigma}{\sigma - 1} \varrho_{Mj} c_r,$$

where $\varrho_{Mj} = 1$ if $j = F$ and $\varrho_{Mj} = \varrho$ if $j = H$. Given the CES final demand in equation (3), MNE sales in $j = F, H$ are:

$$p_{Mj,r} q_{Mj,r} = d_r \left(\frac{\sigma}{\sigma - 1} \varrho_{Mj} c_r \right)^{1-\sigma} D_{j,r}.$$

In turn, one can express the total MNE subsidiary output for an MNE of type r as:

$$M_r = d_r \left(\frac{\sigma}{\sigma - 1} \right)^{-\sigma} \varrho^{1-\sigma} R_r^{-\sigma} \sum_j \varrho_{Mj}^{-\sigma} D_{j,r}. \tag{D14}$$

Finally, total sales of all MNEs across both markets H and F are:

$$Y_M = \frac{\sigma}{\sigma - 1} \varrho \sum_{r=N,R} N_{M,r} R_r \sum_{j=H,F} \varrho_{Mj} M_{j,r}.$$

Appendix D.2 Effects of RS (extension)

The RS policy described in the main text induces a net increase in labor costs for firms hiring low-wage workers. However, it is possible that RS policies incentivize firms to make their workers more productive, or that they are accompanied by transfers of technology or expertise by the MNE to its suppliers.[41] In this more general model, we allow for RS to be potentially accompanied by such direct changes in labor productivity. We define labor productivity gains associated with RS as $T_R \geq 1$ and assume that they impact the productivity of all workers of the firm affected RS and are paid to workers. Denoting $\tilde{w}^t_{H,R}$ the compensation paid to a type t worker by a supplier adopting RS policies, we therefore have:

$$\tilde{w}^t_{H,R} = T_R \tau^t_R w^t_{H,N}, \text{ for } t = l, h. \tag{D15}$$

From the point of view of suppliers, the net labor costs $w^t_{H,R}$ incurred for high- and low-wage labor per efficiency unit are still given by equation (7). That is, τ^l_R measures the pure labor cost increase on low-wage workers faced by an RS supplier, net of any labor productivity gains. The model of the main text is nested and corresponds to $T_R = 1$.

Appendix D.3 Derivations of the comparative statics

We compute here the first-order effect of RS. Hat notations $\hat{y} = d \log y$ denote log changes in variable y.

In addition to the forces considered in the main text, we allow RS to directly impact the productivity of both low- and high-wage worker types at impacted suppliers, increasing it proportionately by $\hat{T}_R \geq 0$. Therefore, RS is summarized by $\left(\hat{\tau}^l_R, \hat{T}_R, \hat{d}_R, \beta \right)$, with $\hat{T}_R = 0$ in the main text.

Workers' compensation are impacted by RS due to the wage premium as well as the potential productivity gain that accompanies RS. Following the definition of RS in equation (7) and (D15), the relative effect of RS on workers' compensation is:

$$\hat{\tilde{w}}^l_{H,R} - \hat{\tilde{w}}^l_{H,N} = \hat{T}_R + \hat{\tau}^l_R,$$
$$\hat{\tilde{w}}^h_{H,R} - \hat{\tilde{w}}^h_{H,N} = \hat{T}_R.$$

Given the demand in equation (3) and monopolistic competition, markups are constant on the final goods markets (equal to $\frac{\sigma}{\sigma-1}$) so that $\hat{\mu}_{Hj,r} = 0$ for $j = H, F$. On the MNE market, we have defined the partial pass-through in equation (D4) so that:

$$\hat{\mu}_{HM,R} = (\beta - 1) \chi^l_H \hat{\tau}^l_R.$$

[41] See e.g., Verhoogen (2016) for a case in which labor standards improved productivity.

Putting together the impact of RS on costs and markups, the relative impact of RS on firms' prices is:

$$\hat{p}_{Hj,R} - \hat{p}_{Hj,N} = \chi_H^l \hat{\tau}_R^l, \quad \text{for } j = H, F,$$
$$\text{and } \hat{p}_{HM,R} - \hat{p}_{HM,N} = \beta \chi_H^l \hat{\tau}_R^l.$$

Turning to sales from equation (D5), notice that aggregate demand shifters on the final goods markets are the same for R and N firms, so that $\hat{D}_{j,R} - \hat{D}_{j,N} = 0$ for $j = H, F$. In contrast, aggregate demand shifters faced by $R-$suppliers depend on the demand for final goods produced by RS-MNEs, which is different from the one faced by non-RS MNEs. Specifically, using CES demand for MNE goods, one can show that $M_r = d_r \left(\frac{\sigma}{\sigma-1}\right)^{-\sigma} \varrho^{1-\sigma} R_r^{-\sigma} \sum_j \varrho_{Mj}^{-\sigma} D_{j,r}$, so that $\hat{D}_{M,R} - \hat{D}_{M,N} = \hat{d}_R$.[ii] Combining the effect of RS on prices and on aggregate demand shifters yields the following differential sales response in each market:

$$\hat{y}_{Hj,R} - \hat{y}_{Hj,N} = (1-\sigma)\, \chi_H^l \hat{\tau}_R^l < 0, \quad \text{for } j = H, F, \tag{D16}$$
$$\hat{y}_{HM,R} - \hat{y}_{HM,N} = (1-\sigma)\, \beta \chi_H^l \hat{\tau}_R^l + \hat{d}_R. \tag{D17}$$

Turning to RS exposed firms, log-differentiating the cutoffs in equation (D12) yields:

$$\hat{z}^*_{Hj,R} - \hat{z}^*_{Hj,N} = 0 \text{ for } j = H, F, \tag{D18}$$
$$\hat{z}^*_{HM,R} - \hat{z}^*_{HM,N} = \frac{\sigma}{\sigma-1} \chi_H^l \hat{\tau}_R^l - \frac{1}{\sigma-1} \hat{d}_R. \tag{D19}$$

The expressions (10) and (14) stem from log-differentiating equation (D13) combined with the results above on the cutoff. Finally, log-differentiating equation (D14) yields:

$$\widehat{R_R M_R} - \widehat{R_N M_N} = \hat{d}_R + (1-\sigma)\left(\hat{R}_R - \hat{R}_N\right). \tag{D20}$$

To compute the change in the MNE subsidiary output price (also its cost, given the monopolistic competition assumption), note that equation (D11) integrated over the MNE suppliers yields:

$$R_r^{1-\sigma} = \mu_{HM,r}^{1-\sigma} W_{H,r}^{1-\sigma} \left(\frac{\theta}{\theta-\sigma+1}\right) \left(\left[z^*_{M,r}\right]^{\sigma-1-\theta}\right) + \xi^\sigma W_{M,r}^{1-\sigma}. \tag{D21}$$

Log-differentiating this expression yields:

$$\hat{R}_R - \hat{R}_N = \left[\Xi\beta + \Xi\left(\frac{\sigma-1-\theta}{1-\sigma}\right)\frac{\sigma}{\sigma-1}\right] \chi_H^l \hat{\tau}_R^l - \Xi\left(\frac{\sigma-1-\theta}{1-\sigma}\right)\frac{1}{\sigma-1}\hat{d}_R \tag{D22}$$

which, combined with equation (D20) yields the desired comparative statics reported in the main text (see equation (15)).

Appendix D.4 Welfare effects: full model

To compute the welfare effects of RS, we start by writing down the equations that define the general equilibrium of the model. To close the model and solve for general equilibrium quantities, we write down the income in each country, labor market clearing and trade balance. These steps are detailed next.

[ii] The demand shifter on the MNE input market can be computed from the MNE output demand. Given equation (3), MNE sales in $j = F, H$ are $p_{Mj,r} q_{Mj,r} = d_r \left(\frac{\sigma}{\sigma-1} \varrho_{Mj} c_r\right)^{1-\sigma} D_{j,r}$, so that total output for MNE subsidiary of type r is: $M_r = d_r \left(\frac{\sigma}{\sigma-1}\right)^{-\sigma} \varrho^{1-\sigma} R_r^{-\sigma} \sum_j \varrho_{Mj}^{-\sigma} D_{j,r}$.

General equilibrium Denote $L^t_{Hj,r}$ the total number of type t workers in Home firms working in a production line corresponding to goods sold on market $j = H, F, M$, and $L^t_{M,r}$ the total labor directly employed at MNE subsidiaries of type r at Home. Labor market clearing at Home yields:

$$\bar{L}^t_H = \sum_{r=R,N} \left\{ \sum_{j=H,M,F} L^t_{Hj,r} + L^t_{M,r} \right\}. \tag{D23}$$

Denote X^t_j the income of type t workers in country j. Workers derive income from their labor, as well as their share in local (non-MNE) firms' profits. The total income of workers of type t at Home is:

$$X^t_H = \sum_{r=R,N} \left\{ \sum_{j=H,M,F} \tilde{w}^t_{H,r} L^t_{Hj,r} + \tilde{w}^t_{M,r} L^t_{M,r} \right\} + \sum_{r=R,N} \sum_{j=H,M,F} \Pi^t_{Hj,r}, \tag{D24}$$

where $\Pi^t_{Hj,r}$ is the share of Home firm profits generated on market j for firms of type r that are apportioned (proportionally to labor income) to type t workers. Given the CES-Pareto setup, profits are a constant fraction of sales and wage bill in the equilibrium without RS. In particular, one can write:

$$\Pi^t_{Hj,r} = (a-1)\, \tilde{w}^t_{H,r} L^t_{Hj,r}, \tag{D25}$$

where we have defined $a \equiv \frac{\theta\sigma}{\theta\sigma-(\sigma-1)}$. Finally, total income in H is:

$$X_H = \sum_{t=l,h} X^t_H.$$

In Foreign, total income is made of labor income, Foreign firm profits and profits made by multinationals (which are a constant fraction of their sales $Y_M = X_{MF} + X_{MH}$):

$$X_F = aW_F L_F + \frac{1}{\sigma - 1} \left(X_{MF} + X_{MH} \right).$$

In both countries, income equals expenditures: $X_j = \sum_{i=H,F,M} X_{ij}$. Equivalently, trade balance is given by:

$$X_{FH} + X_{MH} = \frac{\sigma - 1}{\sigma} \left(X_{MF} + X_{MH} \right) + X_{HF},$$

where X_{ij} denotes expenditure of country $j = H, F$ on final goods produced by firms in country $i = H, F$ or final goods sold by MNEs' headquarters in Foreign when $i = M$. This expression accounts for the fact that MNE subsidiary production is imported by F from H at cost and then sold by the MNE headquarters with a constant markup $\frac{\sigma}{\sigma-1}$ to final consumers in $j = H, F$.

An equilibrium of this economy is a set of wages $\left\{ w^t_{j,N} \right\}_{j,t}$ and labor allocations $\left\{ L^t_{ij,r} \right\}_{ij,r,t}$ such that (i) consumers maximize utility; (ii) firms make profit-maximizing decisions, as summarized in the main text; (iii) labor markets clear in both countries; and (iv) trade is balanced as described above.

Effect of RS on welfare We consider the first-order effect of a small RS policy $\left(\hat{\tau}^l_R, \hat{T}_R, \hat{d}_R, \beta \right)$ implemented by a fraction γ of MNEs, that are otherwise identical to other MNEs. We take the Foreign wage index as the numeraire so that $\hat{W}_F = 0$. We are interested in the change in Welfare for workers of type t,

$$\hat{U}^t_H = \hat{X}^t_H - \hat{P}_H. \tag{D26}$$

Taking log-differentials of equation (D24) yields:

$$\hat{X}_H^t = \Phi^t \left[\hat{w}_{H,N}^t + \phi_{H,R}^t \left(\hat{\tau}_R^t + \hat{T}_R\right) + \phi_M^t \hat{L}_M^t\right] + \left(1-\Phi^t\right)\left[\hat{w}_{H,N}^t + \hat{L}_H^t + \varphi_{H,R}\left(\hat{\tau}_R^t + \hat{T}_R\right) + \varphi_{HM,R}\hat{a}\frac{a}{a-1}\right], \tag{D27}$$

where we recognize that markups can change after RS, given the partial pass-through of the policy - see below eq. (D28) ; Φ^t is the share of the labor income in the income of type t in the initial equilibrium:

$$\Phi^t \equiv \frac{\sum_{j=H,M,F} \chi_H^t X_{Hj}/a + \chi_M^t W_M L_M}{\sum_{j=H,M,F} \chi_H^t X_{Hj} + \chi_M^t W_M L_M}.$$

$\phi_{H,R}^t$ is the share of total Home wage bill for type t corresponding to suppliers that are subject to RS:

$$\phi_{H,R}^t \equiv \frac{\sum_{j=H,M,F} \gamma \phi_{Hj,R} X_{Hj}/a}{\sum_{j=H,M,F} \chi_H^t X_{Hj}/a + \chi_M^t W L_M}.$$

ϕ_M^t is the share of total Home wage bill for type t corresponding to MNE subsidiaries M:

$$\phi_M^t \equiv \frac{\chi_M^t W L_M}{\sum_{j=H,M,F} \chi_H^t X_{Hj}/a + \chi_M^t W L_M}.$$

$\varphi_{H,R}$ is the share of total Home firm profits corresponding to firms that are subject to RS requirements:

$$\varphi_{H,R} \equiv \frac{\sum_{j=H,M,F} \gamma \phi_{Hj,R} X_{Hj}}{\sum_{j=H,M,F} X_{Hj}}.$$

Finally, $\varphi_{HM,R}$ is the share of Home firm profits corresponding to the sales to MNE subsidiaries that will implement RS:

$$\varphi_{HM,R} \equiv \frac{\gamma X_{HM}}{\sum_{j=H,M,F} X_{Hj}}.$$

Firm profits will be differentially affected between RS and non-RS firms, and within RS firms between production lines, since RS can be accompanied by a reduction in the suppliers' markup, through the imperfect pass-through β of the policy. Specifically,

$$\hat{a} = (\beta - 1)\, \chi_H^l \hat{\tau}_R^l. \tag{D28}$$

Summing up over both worker types, the change in aggregate total income is:

$$\hat{X}_H = \sum_t \frac{X_H^t}{X_H} \hat{X}_H^t. \tag{D29}$$

Denote X_{ij} the expenditure of country $j = H, F$ on final goods produced by firms in country $i = H, F$ or final goods sold by MNEs' headquarters in Foreign when $i = M$. Let P_{ij} denote the corresponding price index. Given the CES demand in equation (3), changes in expenditure are given by:

$$\hat{X}_{ij} = (1-\sigma)\left(\hat{P}_{ij} - \hat{P}_j\right) + \hat{X}_j \qquad \text{for } i,j = H,F, \tag{D30}$$

$$\hat{X}_{Mj} = \gamma \hat{d}_R + (1-\sigma)\left(\hat{P}_{Mj} - \hat{P}_j\right) + \hat{X}_j \qquad \text{for } j = H,F, \tag{D31}$$

$$\hat{X}_{HM,r} = (1-\sigma)\left(\hat{P}_{M,r} - \hat{R}_r\right) + \widehat{R_r M_r} \qquad \text{for } r = N,R, \tag{D32}$$

$$\hat{X}_{M,r} = \widehat{R_r M}_r = \hat{d}_r + \sum_{j=H,F} \frac{X_{Mj}}{X_{MH}+X_{MF}} \left[(1-\sigma)\left(\hat{R}_r - \hat{P}_j\right) + \hat{X}_j\right] \qquad \text{for } r = N, R, \tag{D33}$$

$$\hat{Y}_M = \gamma \widehat{R_R M}_R + (1-\gamma)\,\widehat{R_N M}_N. \tag{D34}$$

Price index changes are given by:

$$\hat{P}_j = \sum_{i=H,F,M} \lambda_{ij} \hat{P}_{ij} \qquad \text{for } i, j = H, F, \tag{D35}$$

$$\hat{P}_{ij} = \hat{W}_{i,N} + \gamma \phi_{ij} \chi_i^l \hat{\tau}_{i,T}^l + \frac{\theta-(\sigma-1)}{\sigma-1} \hat{z}_{ij} \qquad \text{for } i, j = H, F, \tag{D36}$$

$$\hat{P}_{HM,r}, = \hat{W}_{i,N} + \beta \chi_H^l \hat{\tau}_{H,r}^l + \frac{\theta-(\sigma-1)}{\sigma-1} \hat{z}_{HM,r} \qquad \text{for } r = N, R, \tag{D37}$$

$$\hat{R}_r = \Xi \hat{P}_{HM,r} + (1-\Xi)\,\hat{W}_{M,r} \qquad \text{for } r = N, R, \tag{D38}$$

$$\hat{P}_{Mj} = (1-\gamma)\,\hat{R}_N + \gamma\left(\hat{R}_R - \frac{1}{\sigma-1}\hat{d}_R\right) \qquad \text{for } j = H, F, \tag{D39}$$

where we have used the usual notation for trade shares, $\lambda_{ij} = \frac{X_{ij}}{X_j}$, while the threshold changes are:

$$\hat{z}_{ij} = \frac{\sigma}{\sigma-1}\hat{W}_{i,N} - \hat{P}_j - \frac{1}{\sigma-1}\hat{X}_j \qquad \text{for } i = H; j = H, F, \tag{D40}$$

$$\hat{z}_{Fj} = 0, \qquad \text{for } i = H; j = H, F, \tag{D41}$$

$$\hat{z}_{HM,r} = \frac{\sigma}{\sigma-1}\hat{W}_{H,r} - \frac{1}{\sigma-1}\hat{d}_r - \sum_{j=H,F} \frac{X_{Mj}}{X_{MH}+X_{MF}} \left[\hat{P}_j + \frac{1}{\sigma-1}\hat{X}_j\right] \qquad \text{for } r = N, R. \tag{D42}$$

Log-differentiating Foreign income and the trade balance yields:

$$\hat{X}_F = \frac{w_F L_F}{w_F L_F + \frac{1}{\sigma-1}E_x}\hat{W}_F + \frac{\frac{1}{\sigma-1}Y_M}{w_F L_F + \frac{1}{\sigma-1}Y_M}\hat{Y}_M, \tag{D43}$$

$$\frac{X_{FH}}{X_{FH}+\frac{1}{\sigma}X_{MH}}\hat{X}_{FH} + \frac{\frac{1}{\sigma}X_{MH}}{X_{FH}+\frac{1}{\sigma}X_{MH}}\hat{X}_{MH} = \frac{\frac{\sigma-1}{\sigma}X_{MF}}{X_{HF}+\frac{\sigma-1}{\sigma}X_{MF}}\hat{X}_{MF} + \frac{X_{HF}}{X_{HF}+\frac{\sigma-1}{\sigma}X_{MF}}\hat{X}_{HF}. \tag{D44}$$

Changes in wage indexes are given by:

$$\hat{W}_{H,R} - \hat{W}_{H,N} = \chi_H^l \hat{\tau}_R^l, \tag{D45}$$

$$\hat{W}_{M,R} - \hat{W}_{M,N} = 0, \tag{D46}$$

as workers directly working at MNEs are not impacted by the RS shock – they are already enjoying better labor conditions before the MNE implements RS labor standards for its suppliers.

Changes in labor allocations $\hat{L}_H^t$ and $\hat{L}_M^t$ needed in equation (D27) are given by noting that $\hat{L}_H^t = -\hat{L}_M^t \frac{L_M^t}{L_H^t}$, and by using the MNE's change in labor demand, given CES combination of high- and low-wage workers in production:

$$\widehat{WL}_{M,r} = (1-\sigma)\left(\hat{W}_{M,r} - \hat{W}_{H,r}\right) + \hat{X}_{M,r} \qquad \text{for } r = R, N, \tag{D47}$$

$$\widehat{wL}_{M,r}^t = (1-\rho)\left(\hat{w}_H^t - \hat{W}_M\right) + \hat{WL}_{M,r} \qquad \text{for } t = l, h; r = R, N, \tag{D48}$$

$$\widehat{wL}_M^t = (1-\rho)\left(\hat{w}_H^t - \hat{W}_M\right) + \gamma(1-\sigma)\left(\hat{W}_M - \hat{W}_{H,R}\right) + \quad (1-\gamma)(1-\sigma)\left(\hat{W}_M - \hat{W}_{H,N}\right) \tag{D49}$$
$$+ \gamma\hat{X}_{M,R} + (1-\gamma)\,\hat{X}_{M,N} \text{ for } t = l, h; r = R, N,$$

so that overall:

$$\hat{L}_M^t = (1-\gamma)\,\widehat{wL}_{M,N}^t + \gamma\widehat{wL}_{M,R}^t - \hat{w}_{H,N}^t \text{ for } t = l,h. \tag{D50}$$

Finally, log-differentiating the labor market clearing equation leads to:

$$\hat{w}_{H,N}^h - \hat{w}_{H,N}^l = \frac{\varphi_{H,R}\Phi_{labor}^h\hat{\tau}_{H,R}^l + \frac{1}{\rho}\left(1-\tau_M^{-\rho}\right)\left(1-\Phi_{labor}^h\right)\hat{L}_M^h}{1-\left(1-\tau_M^{-\rho}\right)\left(1-\Phi_{labor}^h\right)}, \tag{D51}$$

where Φ_{labor}^t is the share of workers of type t hired by firms, rather than by MNE subsidiaries:

$$\Phi_{labor}^t \equiv \frac{\sum_{j=H,M,F} X_{Hj}/a}{\sum_{j=H,M,F} X_{Hj}/a + \frac{\chi_M^t}{\chi_H^t}\frac{W_M L_M}{T_M}}.$$

The change in welfare for Home workers of type t is given by the solution of the system of equations (D26)-(D51).

Distributional implications To compute the welfare impact of RS on exposed workers, we write that

$$X_H^{t,E} = \left(1+\Pi^0\right) w_H^t L_H^{t,E},$$

where

$$\Pi^0 = \frac{\frac{a-1}{a}\sum_{j=H,M,F} X_{Hj}}{W_H L_H + W_M L_M}$$

measures the aggregate domestic profits that are redistributed to workers, proportional to their wage. The number of exposed workers is fixed (corresponds to those working initially for exposed suppliers). Therefore,

$$\hat{X}_H^{t,E} = \hat{w}_H^t + \hat{\tau}^t + \hat{T}^t + \hat{\Pi}^0\left(1-\Phi\right),$$

where Φ is the share of labor income in total income of domestic workers, $\Phi = \frac{\sum_{j=H,M,F} X_{Hj}/a + W_M L_M}{\sum_{j=H,M,F} X_{Hj} + W_M L_M}$.

Changes in aggregate profits depend on changes in markups corresponding to suppliers selling to RS-MNEs, as well as changes in the composition of domestic production. Indeed, when MNE subsidiaries expand, the corresponding profit is not redistributed to domestic workers, so aggregate profits decrease when $\hat{L}_M^t$ increases. Specifically, we find:

$$\hat{\Pi^0} = \frac{a}{a-1}\phi_{H,R}^t\hat{a} - \phi_M\sum_{t=l,h}\left(\frac{L_M^t}{L_H^l+L_H^h} + \frac{L_M^t}{L_M^l+L_M^h}\right)\hat{L}_M^t,$$

where $\phi_M$is the share of total Home wage bill corresponding to MNE subsidiaries:

$$\phi_M \equiv \frac{WL_M}{\sum_{j=H,M,F} X_{Hj}/a + WL_M},$$

and $\phi_{H,R}$ is the share of total wage bill of workers employed in domestic firms corresponding to workers employed at firms supplying MNEs that will implement RS:

$$\phi_{H,R} = \frac{W_{HM,R}L_{HM,R}}{W_H L_H},$$

so that overall, the welfare impact of RS on exposed workers is:

$$\hat{U}_H^{t,E} = \hat{w}_H^t + \hat{\tau}^t + \hat{T}_R + (1-\Phi)\left(\frac{a}{a-1}\phi_{H,R}^t\hat{a} - \phi_M\sum_{t=l,h}\left(\frac{L_M^t}{L_H^l+L_H^h} + \frac{L_M^t}{L_M^l+L_M^h}\right)\hat{L}_M^t\right).$$

Appendix D.5 Welfare effects: sufficient statistics

With some simplifications, the effect of RS on welfare can be derived in closed form. First, our baseline model has that $X_{HF} = X_{MH} = 0$ and MNEs are owned by absentee capitalists so that $\hat{X}_F = \hat{W}_F$. Second, we consider for this derivation the special case where $\Xi = 1$, $\sigma - 1 \to \theta$ and $\gamma = 1$ (all MNEs implement RS). The system of equations (D26)-(D51) simplifies as follows. The changes in incomes are given by:

$$\begin{aligned}\hat{X}_H &= \hat{W}_{H,N} + \Lambda\lambda_{HH}\chi^l_H\hat{\tau}^l_{H,R} + \lambda_{FH}\beta\chi^l_H\hat{\tau}^l_{H,R} + (\Lambda\lambda_{HH} + \lambda_{FH})\hat{T}_R,\\ \hat{X}_F &= 0.\end{aligned}$$

The change in the Home price index is simply:

$$\hat{P}_H = \lambda_{HH}\left(\hat{W}_{H,N} + \Lambda\chi^l_H\hat{\tau}^l_{H,R}\right), \tag{D52}$$

so that the change in aggregate welfare is:

$$\hat{U}_H = (1 - \lambda_{HH})\hat{W}_{H,N} + \beta\lambda_{FH}\chi^l_H\hat{\tau}^l_{H,R} + (\Lambda\lambda_{HH} + \lambda_{FH})\hat{T}_R.$$

Trade balance finally pins down the change in the Home wage index. Given simple trade patterns,

$$\hat{\lambda}_{FH} + \hat{X}_H = \hat{\lambda}_{MF},$$

where the relevant changes in expenditures are given through CES demand by:

$$\begin{aligned}\hat{\lambda}_{MF} &= \lambda_{FF}\hat{d}_R + \lambda_{FF}(1-\sigma)\left(\hat{W}_{H,N} + \beta\chi^l_H\hat{\tau}^l_{H,R}\right) \text{ and}\\ \hat{\lambda}_{FH} &= (\sigma - 1)\lambda_{HH}\left(\hat{W}_{H,N} + \Lambda\chi^l_H\hat{\tau}^l_{H,R}\right).\end{aligned}$$

Solving out for the Home price index yields:

$$\hat{W}_{H,N} = -\frac{\left[\lambda_{FF}(\sigma-1)\beta + \sigma\lambda_{HH}\Lambda + \lambda_{FH}\beta\right]\chi^l_H\hat{\tau}^l_{H,R} + (\Lambda\lambda_{HH} + \lambda_{FH})\hat{T}_R - \lambda_{FF}\hat{d}_R}{1 + (\lambda_{FF} + \lambda_{HH})(\sigma - 1)},$$

so that, finally, the change in aggregate welfare is:

$$\begin{aligned}\hat{U}_H = (\beta - \Lambda)\underbrace{\frac{\lambda_{HH}\lambda_{FH}\sigma}{1 + (\lambda_{FF} + \lambda_{HH})(\sigma-1)}}_{\equiv W_{tax}}\chi^l_H\hat{\tau}^l_{H,R} + (\Lambda\lambda_{HH} + \lambda_{FH})\underbrace{\frac{(\sigma\lambda_{HH} + \lambda_{FF}(\sigma-1))}{1 + (\lambda_{FF} + \lambda_{HH})(\sigma-1)}}_{\equiv W_{prod}}\hat{T}_R\\ + \lambda_{FH}\underbrace{\frac{\lambda_{FF}}{1 + (\lambda_{FF} + \lambda_{HH})(\sigma-1)}}_{\equiv W_d}\hat{d}_R.\end{aligned} \tag{D53}$$

Distributional effects for low- vs. high-wage workers To disentangle the effect of the policy on low- and high-wage workers, note that labor market clearing yields:

$$\hat{w}^l_{H,N} - \hat{w}^h_{H,N} = -(\Lambda\lambda_{HH} + \lambda_{FH})\hat{\tau}^l_{H,R},$$

while the change in income for worker type t is given by:

$$\hat{X}^t_H = \hat{w}^t_{H,N} + (\Lambda\lambda_{HH} + \lambda_{FH})\left(\hat{T}_R + \hat{\tau}^t_{H,R}\right) + \lambda_{FH}(\beta - 1)\chi^l_H\hat{\tau}^l_{H,R}, \tag{D54}$$

as profits are apportioned to the wage bill. Overall,

$$\hat{U}_H^l - \hat{U}_H^h = \hat{X}_H^l - \hat{X}_H^h = \left(\hat{w}_{H,N}^l - \hat{w}_{H,N}^h\right) + \left(\Lambda\lambda_{HH} + \lambda_{FH}\right)\left(\hat{\tau}_{H,R}^l\right) = 0,$$

so that low- and high-wage workers benefit on average from the exact same welfare gains:

$$\hat{U}_H^l = \hat{U}_H^h = \hat{U}_H. \tag{D55}$$

Distributional effects for exposed vs. non-exposed workers Exposed low- or high-wage workers are defined as those who were working at suppliers to an MNE before that MNE rolls out its first RS policy. The exposed group is index by superscript E. We have:

$$\begin{aligned} X_H &= X_{HH} + X_{HM}, \\ X_H^E &= \Lambda X_{HH} + X_{HM}, \end{aligned}$$

where X_H^E is exposed income (and for type t: $X_H = \chi_H^t X_H$, $X_H = \chi_H^{t,E} X_H^E$). Using derivations similar to the ones in the main model, we have:

$$\hat{X}_H^{t,E} = \hat{w}_{H,N}^t + \hat{T}_R + \hat{\tau}_{H,R}^t + \phi_{Ra}^t \hat{a},$$

while

$$\hat{X}_H^{t,NE} = \hat{w}_{H,N}^t + \phi_{Ra}^t \hat{a},$$

where $\phi_{Ra}^t \hat{a}$ is the change in per-capita profit, redistributed to all workers irrespective of whether they are exposed or not. Since both groups face the same change in the price index (given by equation (D52)), we have, in relative terms:

$$\Delta\hat{U}_H^t \equiv \hat{U}_H^{t,E} - \hat{U}_H^{t,NE} = \hat{X}_H^{t,E} - \hat{X}_H^{t,NE} = \hat{T}_R + \hat{\tau}_{H,R}^t,$$

which is different for high- vs. low-wage workers because of the term $\hat{\tau}_{H,R}^t$.

Using that $\Gamma^{t,E}\hat{U}_H^{t,E} + \left(1 - \Gamma^{t,E}\right)\hat{U}_H^{t,NE} = \hat{U}_H^t$ where $\hat{U}_H^t$ is given by equation (D55) and $\Gamma^{t,E} \equiv \frac{X_H^{t,E}}{X_H^t}$, we find:

$$\begin{aligned} \hat{U}_H^{t,E} &= \hat{U}_H + \lambda_{HH}\left(1 - \Lambda\right)\Delta\hat{U}_H^t, \\ \hat{U}_H^{t,NE} &= \hat{U}_H - \left(\Lambda\lambda_{HH} + \lambda_{FH}\right)\Delta\hat{U}_H^t. \end{aligned}$$

That is, using equation (D53):

$$\hat{U}_H^{t,NE} = \left[\left(\beta - \Lambda\right)W^{tax}\chi_H^l - \left(\lambda_{FH} + \Lambda\lambda_{HH}\right)\right]\hat{\tau}_R^l \;+\; \left(\lambda_{FH} + \Lambda\lambda_{HH}\right)\left(W^{prod} - 1\right)\hat{T}_R + W_d\hat{d}_R.$$

It is immediately clear that $W_{prod} - 1 = \frac{-1+\lambda_{HH}}{1+(\lambda_{FF}+\lambda_{HH})(\sigma-1)} < 0$, so that the second term is negative. One can also show that for $\beta \leq 1$, $\left(\beta - \Lambda\right)W^{tax} < \left(\lambda_{FH} + \Lambda\lambda_{HH}\right)W^{prod}$. To that end, note that

$$\lambda_{HH}\lambda_{FH} < \lambda_{FH}\left[\lambda_{HH} + \lambda_{FF}\left(\frac{\sigma - 1}{\sigma}\right)\right],$$

therefore for any $\Lambda \geq 0$, the following is also true:

$$\lambda_{HH}\lambda_{FH}\left(1 - \Lambda\right) < \left(\Lambda\lambda_{HH} + \lambda_{FH}\right)\left[\lambda_{HH} + \lambda_{FF}\left(\frac{\sigma - 1}{\sigma}\right)\right].$$

Hence

$$\lambda_{HH}\lambda_{FH}\sigma\left(1-\Lambda\right)<\left(\Lambda\lambda_{HH}+\lambda_{FH}\right)\left[\sigma\lambda_{HH}+\lambda_{FF}\left(\sigma-1\right)\right],$$

which means that

$$\left(1-\Lambda\right)W^{tax}<\left(\lambda_{FH}+\Lambda\lambda_{HH}\right)W^{prod},$$

and, in turn, for any $\beta\leq 1$ and $\chi_H^l\leq 1$:

$$\left(\beta-\Lambda\right)W^{tax}\chi_H^l<\left(\lambda_{FH}+\Lambda\lambda_{HH}\right)W^{prod}.$$

Therefore,

$$\left(\beta-\Lambda\right)W^{tax}\chi_H^l-\left(\lambda_{FH}+\Lambda\lambda_{HH}\right)<\left(\lambda_{FH}+\Lambda\lambda_{HH}\right)W^{prod}-\left(\lambda_{FH}+\Lambda\lambda_{HH}\right)<0.$$

To conclude, the first and second terms in $\hat{U}_H^{t,NE}$ are unambiguously negative while only the last term is positive.

Appendix D.6 Model extensions

Appendix D.6.1 Labor market power

A natural question is whether RS policies are implemented in a context where – from an efficiency perspective – wages are initially too low. In the baseline model presented in the main text, wages are those that clear the market – they are not too low from an efficiency perspective, and raising them introduces, *a priori*, a distortion. Alternatively, it could be that wages are set too low compared to an efficient benchmark. Capturing this possibility requires Home firms to exert labor market power on the Home labor market. To entertain the possibility of pre-existing wage markdowns, we now extend the model to feature an upward-sloping labor supply curve that Home firms are facing. To generate this feature in the most tractable way, we assume that, in addition to their preferences over a CES consumption bundle, workers have heterogeneous preferences for jobs. Utility of worker i working on production line ω is:

$$U^i=C\varepsilon^i\left(\omega\right),$$

where $C=\left(\int_{\Omega^k}d_\omega {q_\omega}^{\frac{\sigma-1}{\sigma}}d\omega\right)^{\frac{\sigma}{\sigma-1}}$ as above, and idiosyncratic preferences $\varepsilon^i\left(\omega\right)$ are drawn i.i.d across workers and production lines, according to a Fréchet distribution with shape parameter κ. Workers are, therefore, ex-ante homogeneous but ex-post heterogeneous. Production of firms and MNEs are otherwise unchanged, with, for simplicity, only one ex-ante worker type, whose exogenous aggregate supply is L_k in country k. That is, workers are perfect substitutes in production and ℓ_ω is the number of workers hired on production line ω. With this setup, firms face an upward-sloping labor supply curve when hiring on their production line producing good ω:

$$\frac{\ell_\omega}{L_H}=\left(\frac{w_\omega}{\Phi}\right)^\kappa,\text{with }\Phi=\left(\int_{\Omega_H\cup\Omega_x}{w_\omega}^\kappa d\omega\right)^{\frac{1}{\kappa}}. \tag{D56}$$

Notice that when $\kappa\to\infty$, the model collapses to a familiar setup in which all workers are identical and firms face a perfectly elastic labor supply, as in our baseline model with one type of worker (nested in the main one). Importantly, we assume here that firms set wages according to monopsonistic competition. Because they face a firm-specific upward-sloping labor supply curve, firms restrict hiring to keep the wages of all their workers low. Formally, taking the first-order condition for profit maximization of the supplier leads to the following wage profile across heterogeneous firms and across production lines:

$$w_{Hj,r}=\frac{\sigma-1}{\sigma}\frac{\kappa}{\kappa+1}zp_{Hj,r}.$$

Firms optimally set wages at a markdown $\frac{\kappa}{\kappa+1}$ relative to their marginal revenue product of labor. Using the product market clearing on the output markets pins down the scale of production of each firm on each production line, given this wage-price schedule. In equilibrium, a firm with productivity z on production line $j = H, F, M$ optimally offers wages:

$$w^*_{Hj,r} = z^{\frac{\sigma-1}{\kappa+\sigma}} \Phi^{\frac{\kappa}{\kappa+\sigma}} D_{j,r}^{\frac{1}{\kappa+\sigma}} L_H^{-\frac{1}{\kappa+\sigma}} \left(\frac{\sigma-1}{\sigma}\frac{\kappa}{\kappa+1}\right)^{\frac{\sigma}{\kappa+\sigma}}, \tag{D57}$$

where the demand shifters $D_{j,r}$ on market j are defined in equations (D8) and (D9). When wages are optimally chosen, the sales of a firm with productivity z on market j are given by:

$$y_{Hj,r} = z^{\frac{(\sigma-1)(\kappa+1)}{\kappa+\sigma}} \Phi^{\frac{\kappa(1-\sigma)}{\kappa+\sigma}} (D_{j,r})^{\frac{1+\kappa}{\kappa+\sigma}} L_H^{\frac{\sigma-1}{\kappa+\sigma}} \left(\frac{\sigma-1}{\sigma}\frac{\kappa}{\kappa+1}\right)^{\frac{\kappa(\sigma-1)}{\kappa+\sigma}}.$$

Note that if a wage $\underline{w}$ is imposed on the firm through RS, rather than being chosen optimally by the firm, firm sales depend on whether hiring is determined by the labor supply curve (which is the case when labor supply $\leq$ labor demand), or whether it is determined by the labor demand curve (when labor supply $\geq$ labor demand). In the former case, we have:

$$y_{Hj,R} = \frac{\sigma}{\sigma-1}\underline{w}^{\kappa}\Phi^{1-\kappa}\Gamma\left(1-\frac{1}{\kappa}\right)L_H, \tag{D58}$$

where Γ is the Gamma function. In the latter case, we have:

$$y_{Hj,R} = \left(\frac{\sigma}{\sigma-1}\right)^{1-\sigma} z^{\sigma-1}\underline{w}^{1-\sigma} D_{j,r}. \tag{D59}$$

Comparative statics Next, we examine how RS impacts firm sales under the hypothesis that labor markets are monopsonistic. Our strategy is still to compare firms with similar productivity, some being exposed to RS, and others not. Given that wages are heterogeneous, we model the RS policy as a wage floor that stipulates that $w_i, R \geq \underline{w}$. Given that the RS policy $\underline{w}$ is binding only for firms at which wages are low, several cases arise, depending on where the firm wage, pre-RS, lies compared to the wage floor $\underline{w}$ imposed by the RS policy. To that end, we denote $w^*_k(z)$ the monopsony wage level of a firm with productivity z on production line $k = H, F, M$. Three main cases arise.

First, if $w^*_k(z) \geq \underline{w}$, that is, given equation (D57), when firm productivity is high enough, RS is not binding. There is no relative effect of RS on suppliers that adopt it vs. those with equivalent productivity that do not.

Second, when $w^*_k(z) < \underline{w} \leq \frac{\kappa+1}{\kappa} w^*_k(z)$, RS is now binding and corresponds to a wage increase from $w^*_k(z)$ to $\underline{w}$ for impacted firms. In this case, the sales of compliers go up, both on the final goods markets and on the intermediate goods market. This sales increase comes from the following mechanism: higher wages make the firm hire more employees compared to the monopsonistic case where the firm voluntarily restricted its hiring. This leads to higher production and higher sales, given that the wage (hence price) increase is moderate - but of course, to lower profits.[iii]

Third, if $\underline{w} > \frac{\kappa+1}{\kappa} w^*_k(z)$, which could be the case for the lowest productivity firms, these firms see their sales decrease. The wage increase is too high to sustain higher sales.

[iii] These qualitative patterns mask two different subcases: one where firm hiring is set by the labor supply curve, hence sales are given by (D58). This happens so long as $\underline{w} \leq w^{eq}$, where w^{eq}_k is a firm-specific equilibrium wage for which labor supply equals labor demand on production line k. In the other subcase, the wage increase is high enough that the labor supply is higher than labor demand, hence sales are pinned down by equation (D59), but the wage increase is not too high, so that labor hired is still above the monopsonistic level.

Overall, for compliers, we have the following comparative statics for $k = H, F, M$:

$$\begin{cases} \hat{y}_{k,R} - \hat{y}_{k,N} = 0 & \text{if } w_k^*(z) \geq \underline{w} \\ \hat{y}_{k,R} - \hat{y}_{k,N} \geq 0 & \text{if } w_k^*(z) \leq \underline{w} \leq \frac{\kappa+1}{\kappa} w_k^*(z) \\ \hat{y}_{k,R} - \hat{y}_{k,N} \leq 0 & \text{if } w_k^*(z) \leq \frac{\kappa+1}{\kappa} \underline{w} \end{cases}$$

In practice, note that this third case is likely to be of limited empirical relevance. First, because these lower productivity firms are likely to exit the market. Second, because the RS wage is unlikely to be high enough to trigger a wage increase of more than $\frac{\kappa+1}{\kappa}$, which corresponds to a 20% increase in wages for typical values of the parameter κ.[iv] Therefore, we expect that on average for complying firms,

$$\hat{y}_{k,R} - \hat{y}_{k,N} \geq 0, \tag{D60}$$

both on the final goods market and on the MNE input market.

Turning to the effect on exposed firms, we need to take into account the extensive margin effect of the RS policy, in addition to this positive effect of RS on the intensive margin. Because the RS policy reduces profits for all firms for which RS is binding, the policy is accompanied by exits of preexisting suppliers that were close to the selection cutoff. Therefore, the effect of the RS policy on exposed firms is overall ambiguous:

$$\hat{Y}_{tot,R} - \hat{Y}_{tot,N} \text{ has an ambiguous sign.}$$

Appendix D.6.2 Unemployment

We recompute the welfare gains of a representative worker $\hat{U}_H$, now assuming that there is unemployment in the economy. Specifically, workers choose whether to be unemployed and get a fixed utility u_0, or work and get utility $\frac{\bar{w}}{P_H}$. Each worker has idiosyncratic preferences for either option, assumed to follow a Fréchet distribution with mean 1 and shape κ. Formally,

$$U(\omega) = \max\left\{\frac{\bar{w}}{P_H}\epsilon_w(\omega), u_0\epsilon_u(\omega)\right\},$$

where $\bar{w} = \frac{X_H}{L_{H,N}+L_{H,R}} = \frac{w_H L_{H,N} + w_H L_{H,R}\left(1+\tilde{t}\right)+\Pi_{H,N}+\Pi_{H,R}}{L_{H,N}+L_{H,R}}$ is the income per capita in the employed sector. Labor market clearing writes:

$$L_{H,N} + L_{H,R} + L_{H,U} = L_H.$$

Given the properties of the Fréchet distribution, the share of unemployed workers λ^U is:

$$\lambda^U = \frac{L_{H,U}}{L_H} = \frac{u_0^\kappa}{u_0^\kappa + \left(\frac{\bar{w}}{P_H}\right)^\kappa}. \tag{D61}$$

We now compute how the expected welfare in the economy,

$$U^H = \mathbb{E}(U) \propto \left(u_0^\kappa + \left(\frac{\bar{w}}{P_H}\right)^\kappa\right)^{\frac{1}{\kappa}}, \tag{D62}$$

will change following RS. Given equation (D62), a small shock to the economy yields:

$$\hat{U}_H = \left(1-\lambda^U\right)\left(\hat{\bar{w}} - \hat{P}_H\right), \tag{D63}$$

[iv] For instance, Berger et al. (2022) find values of the labor supply elasticity ranging from $\kappa \in (3,7)$, which leads to $\frac{1}{\kappa-1} \in (16\%, 50\%)$.

with

$$\widehat{L}_{H,E} = \left(\hat{\tilde{w}} - \hat{P}_H\right)\kappa\lambda^U,$$

where $L_{H,E} = L_{H,N} + L_{H,R}$ (E stands for employed). First, we compute $\hat{\tilde{w}} - \hat{P}_H$. As in the baseline case, income per capita changes according to:

$$\hat{\tilde{w}} = \hat{W}_{H,N} + \Lambda\lambda_{HH}\chi_H^l\hat{\tau}_{H,R}^l + \lambda_{FH}\beta\chi_H^l\hat{\tau}_{H,R}^l + \left(\Lambda\lambda_{HH} + \lambda_{FH}\right)\hat{T}_R, \tag{D64}$$

while the expression for the change in the price index is unchanged compared to the baseline case so that:

$$\hat{\tilde{w}} - \hat{P}_H = \lambda_{FH}\hat{W}_{H,N} + \lambda_{FH}\beta\chi_H^l\hat{\tau}_{H,R}^l + \left(\Lambda\lambda_{HH} + \lambda_{FH}\right)\hat{T}_R. \tag{D65}$$

Second, we use the trade balance to solve for $\hat{W}_{H,N}$ as a function of $\hat{\tilde{w}} - \hat{P}_H$:

$$\begin{aligned}
\hat{X}_H &= \hat{\lambda}_{MF} - \hat{\lambda}_{FH},\\
\hat{X}_H - \hat{P}_H &= \hat{\lambda}_{MF} - \hat{\lambda}_{FH} - \hat{P}_H,\\
\left(\hat{\tilde{w}} - \hat{P}_H\right)\left(1 + \kappa\lambda^U\right) &= \hat{\lambda}_{MF} - \hat{\lambda}_{FH} - \hat{P}_H.
\end{aligned}$$

Using, as in the baseline case:

$$\begin{aligned}
\hat{\lambda}_{MF} &= \hat{d}_R + \left(1 - \lambda_{MF}\right)\left(1 - \sigma\right)\left(\hat{W}_{H,N} + \beta\chi_H^l\hat{\tau}_{H,R}^l\right),\\
\hat{\lambda}_{FH} &= \left(\sigma - 1\right)\lambda_{HH}\left(\hat{W}_{H,N} + \Lambda\chi_H^l\hat{\tau}_{H,R}^l\right),
\end{aligned}$$

we get:

$$\hat{W}_{H,N} = \left(\hat{\tilde{w}} - \hat{P}_H\right)\frac{\left(1 + \kappa\lambda^U\right)}{\left(\lambda_{FF} + \lambda_{HH}\right)\left(1 - \sigma\right) - \lambda_{HH}} - \left[\frac{\left(1 - \sigma\right)\lambda_{FF}\beta - \sigma\lambda_{HH}\Lambda}{\left(\lambda_{FF} + \lambda_{HH}\right)\left(1 - \sigma\right) - \lambda_{HH}}\right]\chi_H^l\hat{\tau}_{H,R}^l - \frac{1}{\left(\lambda_{FF} + \lambda_{HH}\right)\left(1 - \sigma\right) - \lambda_{HH}}\hat{d}_R.$$

Therefore, using equation (D65), we have:

$$\hat{\tilde{w}} - \hat{P}_H = \frac{\left(\lambda_{FF} + \lambda_{HH}\right)\left(1 - \sigma\right) - 1}{\left(\lambda_{FF} + \lambda_{HH}\right)\left(1 - \sigma\right) - 1 - \lambda_{FH}\kappa\lambda^U}\left\{\left(\beta - \Lambda\right)W_{tax}\chi_H^l\hat{\tau}_{H,R}^l + \left(\Lambda\lambda_{HH} + \lambda_{FH}\right)W_{prod}\hat{T}_R + W_d\hat{d}_R\right\},$$

so that overall:

$$\hat{U}_H = \frac{1 - \lambda^U}{1 + \frac{\lambda_{FH}\kappa\lambda^U}{1 + \left(\lambda_{FF} + \lambda_{HH}\right)\left(\sigma - 1\right)}}\left\{\underbrace{\left(\beta - \Lambda\right)W_{tax}\chi_H^l\hat{\tau}_{H,R}^l + \left(\Lambda\lambda_{HH} + \lambda_{FH}\right)W_{prod}\hat{T}_R + W_d\hat{d}_R}_{\text{baseline } \hat{U}_H}\right\}.$$

We see that the aggregate welfare gains of the baseline case are dampened by the term: $\frac{1 - \lambda^U}{1 + \frac{\lambda_{FH}\kappa\lambda^U}{1 + \left(\lambda_{FF} + \lambda_{HH}\right)\left(\sigma - 1\right)}}$ in the presence of unemployment. Overall, the welfare effect of RS is only very slightly attenuated by the presence of unemployment in our empirical setting.

Appendix D.6.3 Extension with a more general demand system

We allow here for a more flexible demand system faced by CR firms, with different elasticities of substitution between the final goods and the intermediate input markets. Specifically, we assume that:

$$U_i = \left(\int_{\Omega_i} d_\omega q_\omega^{\frac{\sigma_i - 1}{\sigma_i}} d\omega \right)^{\frac{\sigma_i}{\sigma_i - 1}}, \text{ for } i = H, F,$$

$$M = \left(\int_{\Omega_x} m_{\omega(x)}^{\frac{\sigma_M - 1}{\sigma_M}} d\omega(x) + \xi \ell_M^{\frac{\sigma_M - 1}{\sigma_M}} \right)^{\frac{\sigma_M}{\sigma_M - 1}},$$

with $\sigma_H = \sigma_F$ but σ_M is possibly different.

Comparative statics The comparative statics are modified as follows. The relative impact of RS on firms' output prices is unchanged, but firm sales on destination market $j = H, F, M$ for a firm with RS status $r = R$ or N are now given by:

$$y_{Hj,r} = p_{Hj,r}^{1-\sigma_j} D_{j,r}, \tag{D66}$$

where

$$D_{j,r} = P_j^{\sigma_j - 1} X_j \quad \text{for } j = H, F,$$
$$\text{and } D_{M,r} = N_r R_r^M M_r.$$

Therefore, computations for the sales on the final goods market (where the relevant elasticity of substitution is σ_H) are unchanged and the sales to the MNE become:

$$y_{HM,r} = p_{HM,r}^{1-\sigma_M} N_r R_r^{\sigma_M - \sigma_H} d_r \left(\frac{\sigma_H}{\sigma_H - 1} \varrho_{Mj} \right)^{-\sigma_H} (\varrho)^{1-\sigma_H} \sum_j \varrho_{Mj}^{-\sigma_H} D_{j,r}.$$

The comparative statics on the sales of compliers are:

$$\hat{y}_{Hj,R} - \hat{y}_{Hj,N} = (1 - \sigma_H) \chi_H^l \hat{\tau}_R^l < 0, \quad \text{for } j = H, F, \tag{D67}$$

$$\hat{y}_{HM,R} - \hat{y}_{HM,N} = (1 - \sigma_M) \beta \chi_H^l \hat{\tau}_R^l + (\sigma_M - \sigma_H) \Xi \left(\frac{\beta + \left(\frac{\sigma_M - 1 - \theta}{1 - \sigma_M} \right) \frac{\sigma_M}{\sigma_M - 1}}{1 + \Xi \left(\frac{\sigma_M - 1 - \theta}{1 - \sigma_M} \right) \frac{\sigma_M - \sigma_H}{\sigma_M - 1}} \right) \chi_H^l \hat{\tau}_R^l \tag{D68}$$
$$+ \hat{d}_R \left(1 - (\sigma_M - \sigma_H) \left(\frac{\Xi \frac{\theta - \sigma_M + 1}{\sigma_M - 1} \frac{1}{\sigma_M - 1}}{1 + \Xi \left(\frac{\theta - \sigma_M + 1}{\sigma_M - 1} \right) \frac{\sigma_M - \sigma_H}{\sigma_M - 1}} \right) \right).$$

Turning to exposed firms, the relative change in the productivity cutoff for serving the MNE market is:

$$\hat{z}_{HM,R}^* - \hat{z}_{HM,N}^* = \frac{\sigma_M}{\sigma_M - 1} \chi_H^l \hat{\tau}_R^l - \frac{\sigma_M - \sigma_H}{\sigma_M - 1} \left(\frac{\Xi \beta \chi_H^l \hat{\tau}_R^l + \Xi \left(\frac{\sigma_M - 1 - \theta}{1 - \sigma_M} \right) \frac{\sigma_M}{\sigma_M - 1} \chi_H^l \hat{\tau}_R^l - \Xi \frac{\sigma_M - 1 - \theta}{1 - \sigma_M} \frac{1}{\sigma_M - 1} \hat{d}_R}{1 + \Xi \left(\frac{\sigma_M - 1 - \theta}{1 - \sigma_M} \right) \frac{\sigma_M - \sigma_H}{\sigma_M - 1}} \right) - \frac{1}{\sigma_M - 1} \hat{d}_R,$$

so that the impact of RS on exposed firms (including total sales) is:

$$\hat{Y}_{Hj,R} - \hat{Y}_{Hj,N} = (1 - \sigma_H) \chi_H^l \hat{\tau}_R^l < 0, \quad \text{for } j = H, F, \tag{D69}$$

$$\hat{Y}_{HM,R} - \hat{Y}_{HM,N} = \left\{ (1 - \sigma_M) \beta - (\theta - \sigma_M + 1) \frac{\sigma_M}{\sigma_M - 1} + \frac{\theta (\sigma_M - \sigma_H)}{\sigma_M - 1} \left(\frac{\beta + \frac{\theta - \sigma_M + 1}{\sigma_M - 1} \frac{\sigma_M}{\sigma_M - 1}}{1 + \Xi \frac{\theta - \sigma_M + 1}{\sigma_M - 1} \frac{\sigma_M - \sigma_H}{\sigma_M - 1}} \right) \Xi \right\} \chi_H^l \hat{\tau}_R^l \tag{D70}$$
$$+ \left(\frac{\theta}{\sigma_M - 1} - (\sigma_M - \sigma_H) \frac{\theta}{\sigma_M - 1} \left(\frac{\frac{\theta - \sigma_M + 1}{\sigma_M - 1} \frac{1}{\sigma_M - 1}}{1 + \Xi \left(\frac{\theta - \sigma_M + 1}{\sigma_M - 1} \right) \frac{\sigma_M - \sigma_H}{\sigma_M - 1}} \right) \Xi \right) \hat{d}_R,$$

$$\hat{Y}_{Htot,R} - \hat{Y}_{Htot,N} = (1-\zeta)(1-\sigma_H)\,\chi_H^l \hat{\tau}_R^l \tag{D71}$$
$$+\zeta\left\{(1-\sigma_M)\beta - (\theta-\sigma_M+1)\frac{\sigma_M}{\sigma_M-1} + \frac{\theta(\sigma_M-\sigma_H)}{\sigma_M-1}\left(\frac{\beta+\frac{\theta-\sigma_M+1}{\sigma_M-1}\frac{\sigma_M}{\sigma_M-1}}{1+\Xi\frac{\theta-\sigma_M+1}{\sigma_M-1}\frac{\sigma_M-\sigma_H}{\sigma_M-1}}\right)\Xi\right\}\chi_H^l\hat{\tau}_R^l$$
$$+\zeta\frac{\theta}{\sigma_M-1}\left(1-(\sigma_M-\sigma_H)\left(\frac{\frac{\theta-\sigma_M+1}{\sigma_M-1}\frac{1}{\sigma_M-1}}{1+\Xi\left(\frac{\theta-\sigma_M+1}{\sigma_M-1}\right)\frac{\sigma_M-\sigma_H}{\sigma_M-1}}\right)\Xi\right)\hat{d}_R.$$

Finally, turning to the impact of RS on the sales of the MNE subsidiary, we get:

$$\widehat{R_R M_R} - \widehat{R_N M_N} = (1-\sigma_H)\frac{\beta+\frac{\theta-\sigma_M+1}{\sigma_M-1}\frac{\sigma_M}{\sigma_M-1}}{1+\Xi\frac{\theta-\sigma_M+1}{\sigma_M-1}\frac{\sigma_M-\sigma_H}{\sigma_M-1}}\Xi\chi_H^l\hat{\tau}_R^l + \left(1+\Xi\frac{\frac{\theta-\sigma_M+1}{\sigma_M-1}\frac{\sigma_H-1}{\sigma_M-1}}{1+\Xi\frac{\theta-\sigma_M+1}{\sigma_M-1}\frac{\sigma_M-\sigma_H}{\sigma_M-1}}\right)\hat{d}_R.$$

Welfare computations We are interested in the change in welfare for workers of type t,

$$\hat{U}_H^t = \hat{X}_H^t - \hat{P}_H. \tag{D72}$$

The income of type t is given by:

$$X_H^t = \sum_{r=R,N}\left\{\sum_{j=H,M,F}\tilde{w}_{H,r}^t L_{Hj,r}^t + \tilde{w}_{M,r}^t L_{M,r}^t\right\} + \sum_{j=H,M,F}(a_{Hj,N}-1)\,\tilde{w}_{H,N}^t L_{Hj,N}^t + (a_{Hj,R}-1)\,\tilde{w}_{H,R}^t L_{Hj,R}^t,$$

where $a_{H,N} = \frac{\theta\sigma_H}{\theta\sigma_H-(\sigma_H-1)} = a_{F,N}$ and $a_{M,N} \equiv \frac{\theta\sigma_M}{\theta\sigma_M-(\sigma_M-1)}$.

Log-differentiating this equation leads to:

$$\hat{X}_H^t = \Phi^t\left[\hat{w}_{H,N}^t + \phi_{H,R}^t\left(\hat{\tau}_R^t + \hat{T}_R\right) + \phi_M^t\hat{L}_M^t\right] \tag{D73}$$
$$+\left(1-\Phi^t\right)\left[\hat{w}_{H,N}^t + \sum_{j=H,F,M}\Psi_j\hat{L}_{Hj}^t + \Psi_R^t\left(\hat{\tau}_R^t+\hat{T}_R\right) + \Psi_{HM,R}\hat{a}_{a_{M,R}}\frac{a_{M,N}}{a_{M,N}-1}\right],$$

where Φ^t is the share of the labor income in the income of type t in the initial equilibrium:

$$\Phi^t \equiv \frac{\sum_{j=H,M,F}\chi_H^t X_{Hj}/a_j + \chi_M^t W_M L_M}{\sum_{j=H,M,F}\chi_H^t X_{Hj} + \chi_M^t W_M L_M},$$

$\phi_{H,R}^t$ is the share of total Home wage bill for type t corresponding to firms that will implement RS labor standards:

$$\phi_{H,R}^t \equiv \frac{\sum_{j=H,M,F}\gamma\phi_{Hj,R}X_{Hj}/a_i}{\sum_{j=H,M,F}X_{Hj}/a_j + \chi_M^t W L_M},$$

ϕ_M^t is the share of total Home wage bill for type t corresponding to MNE subsidiaries M:

$$\phi_M^t \equiv \frac{\chi_M^t W L_M}{\sum_{j=H,M,F}X_{Hj}/a_j + \chi_M^t W L_M},$$

Ψ_j is the share of total Home firm profits coming from each market j:

$$\Psi_j = \frac{\Pi_{Hj}^t}{\sum_{j=H,F,M}\Pi_{Hj}^t},$$

Ψ_R is the share of total Home firm profits corresponding to firms that will implement RS labor standards, that is:

$$\Psi_R^t = \frac{\sum_{j=H,M,F} \Pi_{Hj,R}^t}{\sum_{j=H,F,M} \Pi_{Hj}^t},$$

and finally $\Psi_{HM,R}$ is the share of Home firm profits corresponding to sales to MNE subsidiaries that will implement RS:

$$\Psi_{HM,R} \equiv \frac{\gamma \Pi_{HM}}{\sum_{j=H,M,F} \Pi_{Hj}}.$$

These latter profits will be differentially affected between production lines since RS can be accompanied by a reduction in the supplier's markup, through the imperfect pass-through β of the policy. Specifically,

$$\hat{a}_{M,R} = (\beta - 1)\, \chi_H^l \hat{\tau}_R^l. \tag{D74}$$

Summing up over both worker types, the change in aggregate total income is:

$$\hat{X}_H = \sum_t \frac{X_H^t}{X_H} \hat{X}_H^t. \tag{D75}$$

Denote X_{ij} the expenditure of country $j = H, F$ on final goods produced by firms in country $i = H, F$ or final goods sold by MNEs' headquarters in Foreign when $i = M$. Let P_{ij} denote the corresponding price index. Given the CES demand in equation (3), the changes in expenditure are given by:

$$\hat{X}_{ij} = (1 - \sigma_j)\left(\hat{P}_{ij} - \hat{P}_j\right) + \hat{X}_j \qquad \text{for } i, j = H, F, \tag{D76}$$

$$\hat{X}_{Mj} = \gamma \hat{d}_R + (1 - \sigma_j)\left(\hat{P}_{Mj} - \hat{P}_j\right) + \hat{X}_j \qquad \text{for } j = H, F, \tag{D77}$$

$$\hat{X}_{HM,r} = (1 - \sigma_M)\left(\hat{P}_{M,r} - \hat{R}_r\right) + \widehat{R_r M}_r \qquad \text{for } r = N, R, \tag{D78}$$

$$\widehat{R_r M}_r = \hat{d}_r + \sum_{j=H,F} \frac{X_{Mj}}{X_{MH} + X_{MF}} \left[(1 - \sigma_j)\left(\hat{R}_r - \hat{P}_j\right) + \hat{X}_j\right], \tag{D79}$$

$$\hat{Y}_M = \gamma \widehat{R_R M}_R + (1 - \gamma)\, \widehat{R_N M}_N. \tag{D80}$$

Price index changes are given by:

$$\hat{P}_j = \sum_{i=H,F,M} \lambda_{ij} \hat{P}_{ij} \qquad \text{for } i, j = H, F, \tag{D81}$$

$$\hat{P}_{ij} = \hat{W}_{i,N} + \gamma \phi_{ij} \chi_i^l \hat{\tau}_{i,T}^l + \frac{\theta - (\sigma_j - 1)}{\sigma_j - 1} \hat{z}_{ij} \qquad \text{for } i, j = H, F, \tag{D82}$$

$$\hat{P}_{HM,r} = \hat{W}_{i,N} + \beta \chi_H^l \hat{\tau}_{H,r}^l + \frac{\theta - (\sigma_j - 1)}{\sigma_j - 1} \hat{z}_{HM,r} \qquad \text{for } r = N, R, \tag{D83}$$

$$\hat{R}_r = \Xi \hat{P}_{HM,r} + (1 - \Xi)\, \hat{W}_{M,r} \qquad \text{for } r = N, R, \tag{D84}$$

$$\hat{P}_{Mj} = (1 - \gamma)\, \hat{R}_N + \gamma \hat{R}_R \qquad \text{for } j = H, F, \tag{D85}$$

where we have used the usual notation for trade shares, $\lambda_{ij} = \frac{X_{ij}}{X_j}$. The threshold changes are:

$$\hat{z}_{ij} = \frac{\sigma_j}{\sigma_j - 1} \hat{W}_{i,N} - \hat{P}_j - \frac{1}{\sigma_j - 1} \hat{X}_j \text{ for } i = H; j = H, F, \tag{D86}$$

$$\hat{z}_{Fj} = 0, \tag{D87}$$

$$\hat{z}_{HM,r} = \frac{\sigma_M}{\sigma_M - 1}\hat{W}_{H,r} - \frac{\sigma_i - \sigma_f}{\sigma_i - 1}\hat{R}_r - \frac{1}{\sigma_M - 1}\hat{d}_r - \sum_{j=H,F}\frac{X_{Mj}}{X_{MH} + X_{MF}}\left[\hat{P}_j + \frac{1}{\sigma_M - 1}\hat{X}_j\right] \quad \text{for } r = N, R. \tag{D88}$$

Log-differentiating Foreign income and the trade balance yields:

$$\hat{X}_F = \frac{w_F L_F}{w_F L_F + \frac{1}{\sigma_H - 1}E_x}\hat{W}_F + \frac{\frac{1}{\sigma_H - 1}Y_M}{w_F L_F + \frac{1}{\sigma_H - 1}Y_M}\hat{Y}_M, \tag{D89}$$

$$\frac{X_{FH}}{X_{FH} + \frac{1}{\sigma_H}X_{MH}}\hat{X}_{FH} + \frac{\frac{1}{\sigma_H}X_{MH}}{X_{FH} + \frac{1}{\sigma_H}X_{MH}}\hat{X}_{MH} = \frac{\frac{\sigma_H - 1}{\sigma_H}X_{MF}}{X_{HF} + \frac{\sigma_H - 1}{\sigma_H}X_{MF}}\hat{X}_{MF} + \frac{X_{HF}}{X_{HF} + \frac{\sigma_H - 1}{\sigma_H}X_{MF}}\hat{X}_{HF}. \tag{D90}$$

Changes in labor allocations $\hat{L}^t_H$ and $\hat{L}^t_M$ needed in equation (D73) are given by noting that $\hat{L}^t_H = -\hat{L}^t_M \frac{L^t_M}{L^t_H}$ and using the MNE's change in labor demand, given the CES combination of high- and low-wage workers:

$$\widehat{WL}_{M,r} = (1 - \sigma_M)\left(\hat{W}_{M,r} - \hat{W}_{H,r}\right) + \hat{X}_{M,r} \text{ for } r = R, N, \tag{D91}$$

$$\widehat{wL}^t_{M,r} = (1 - \rho)\left(\hat{w}^t_H - \hat{W}_M\right) + \widehat{WL}_{M,r} \text{ for } t = l, h; r = R, N, \tag{D92}$$

$$\begin{aligned}\widehat{wL}^t_M = {} & (1 - \rho)\left(\hat{w}^t_H - \hat{W}_M\right) + \gamma(1 - \sigma_M)\left(\hat{W}_M - \hat{W}_{H,R}\right) + (1 - \gamma)(1 - \sigma_M)\left(\hat{W}_M - \hat{W}_{H,N}\right) \\ & + \gamma\hat{X}_{M,R} + (1 - \gamma)\hat{X}_{M,N} \text{ for } t = l, h; r = R, N,\end{aligned} \tag{D93}$$

so that overall:

$$\hat{L}^t_M = (1 - \gamma)\widehat{wL}^t_{M,N} + \gamma\widehat{wL}^t_{M,R} - \hat{w}^t_{H,N} \text{ for } t = l, h. \tag{D94}$$

Finally, log-differentiating the labor market clearing leads to:

$$\hat{w}^h_{H,N} - \hat{w}^l_{H,N} = \frac{\varphi_{H,R}\Phi^h_{labor}\hat{\tau}_{H,R} + \frac{1}{\rho}\left(1 - \tau_M^{-\rho}\right)\left(1 - \Phi^h_{labor}\right)\hat{L}^h_M}{1 - \left(1 - \tau_M^{-\rho}\right)\left(1 - \Phi^h_{labor}\right)}, \tag{D95}$$

where Φ^t_{labor} is the share of workers of type t employed by firms rather than by MNE subsidiaries:

$$\Phi^t_{labor} \equiv \frac{\sum_{j=H,M,F} X_{Hj}/a_j}{\sum_{j=H,M,F} X_{Hj}/a_j + \frac{\chi^t_M}{\chi^t_H}\frac{W_M L_M}{T_M}}.$$

The change in the welfare for Home workers of type t is given by the solution of the system of equations (D72)-(D95).

Appendix D.6.4 MNEs also implement RS-like labor standards at their subsidiaries

In our baseline specification, we assume that all MNEs pay a wage premium, whether or not they implement RS, and that this premium is equal to the RS premium. Formally, we assume $\tau^t_{M,R} = \tau^t_{M,N} = \tau^t_{H,R}$ for $t = l, h$. Here, we consider an alternative specification in which MNEs adopt the same labor conditions as their suppliers: standard labor conditions for MNEs without RS and RS-like labor conditions for MNEs with RS. Under this assumption, we have:

$$\tau^t_{M,r} = \tau^t_{H,r}, \text{for } t = l, h; r = N, R. \tag{D96}$$

In this case, the first-order effect of a small RS policy $\left(\hat{\tau}^l_R, \hat{T}_R, \hat{d}_R\right)$ implemented by a fraction γ of MNEs

is different from the one computed in the baseline, as the policy also applies to workers directly employed by MNE subsidiaries. We report here the equations that differ from the welfare equations detailed in Appendix D.4. First, the change in wage indexes is now:

$$\hat{W}_{H,R} - \hat{W}_{H,N} = \chi_H^l \hat{\tau}_R^l, \tag{D97}$$

$$\hat{W}_{M,R} - \hat{W}_{M,N} = \chi_M^l \hat{\tau}_R^l. \tag{D98}$$

which replace equations (D45) and (D46).

Second, the change in income for a representative worker of type t is:

$$\hat{X}_H^t = \Phi^t \left[\hat{w}_{H,N}^t + \tilde{\phi}_{H,R}^t \left(\hat{\tau}_R^t + \hat{T}_R \right) \right] + \left(1 - \Phi^t\right) \left[\hat{w}_{H,N}^t + \hat{L}_H^t + \varphi_{H,R} \left(\hat{\tau}_R^t + \hat{T}_R \right) + \varphi_{HM,R} \hat{a} \frac{a}{a-1} \right], \tag{D99}$$

instead of equation (D27), where Φ^t, $\varphi_{H,R}$ and $\varphi_{MH,R}$ are like in the baseline, but the share of total Home wage bill for type t corresponding to entities (suppliers and MNE subsidiaries) that will be subject to RS is now $\tilde{\phi}_{H,R}^t$,with

$$\tilde{\phi}_{H,R}^t \equiv \frac{\sum_{j=H,M,F} X_{Hj,R} + aWL_{M,R}}{\sum_{r=R,N} \left\{ \sum_{j=H,M,F} X_{Hj,r} + aWL_{M,r}^t \right\}}.$$

Finally, log-differentiating the labor market clearing condition leads to:

$$\hat{w}_{H,N}^h - \hat{w}_{H,N}^l = \frac{\sum_{j=H,M,F} X_{Hj,R} + aWL_{M,R}}{\sum_{r=R,N} \left\{ \sum_{j=H,M,F} X_{Hj,r} + aWL_{M,r}^t \right\}} \hat{\tau}_R, \tag{D100}$$

which replaces equation (D51). The other equations in (D26)-(D51) are unchanged. Together with the substitutions above, these yield the change in welfare for Home workers of type t.

Appendix D.6.5 Extension with multiple sourcing countries

We lay out here the case where the MNE sources from many countries indexed by $i \in \mathcal{I}$, among which Costa Rica (that is, $H \subset \mathcal{I}$). The MNE headquarters aggregates input from subsidiaries in a range of countries, with CES aggregator:

$$\mathcal{M} = \left(\sum_{i \in \mathcal{I}} M_i^{\frac{\alpha-1}{\alpha}} \right)^{\frac{\alpha}{\alpha-1}}. \tag{D101}$$

Its cost index is therefore:

$$P_M = \left(\sum_{i \in \mathcal{I}} \varrho_{iF}^{1-\alpha} R_i^{1-\alpha} \right)^{\frac{1}{1-\alpha}},$$

where ϱ_{iF} is the iceberg trade cost from i to F and R_i is the cost index of production in country i. Every country $i \in \mathcal{I}$ is modeled like the Home country of the main text. The RS policy is implemented everywhere, but we assume that it may be more or less easy to implement across countries. That is, countries may already be close, or far from, the labor standards imposed by RS. To that end, we allow $\tau_{i,R}^l$, the size of the RS cost shock, to be different for different countries $i \in \mathcal{I}$. Other RS characteristics (T_R, d_R, β) are symmetric across countries.

We now recompute the comparative statics for outcomes measured at Home under these assumptions, and compare them to the baseline case. On the final goods market, it is easy to see that the comparative statics remain unchanged, but they are now different on the MNE input market as this market is impacted by RS shocks happening in all sourcing countries. For simplicity of exposition (but without loss of generality for what we aim to establish here), we consider the case of the simplified model described in Section 4. That is, we assume that sourcing countries i do not trade with one another directly ($X_{iF} = X_{Mi} = 0$,$X_{ij} = 0$ for $i \neq j$, $\{i,j\} \in \mathcal{I}^2$), that MNEs only use local inputs but not local labor directly ($\Xi = 1$) and that extensive

margin effects are turned off ($\sigma - 1 \to \theta$).

Following RS, an MNE of type $r = N, R$, sees its final good price change by:

$$\hat{P}_{M,r} = \sum_{i \in \mathcal{I}} s_i^o \hat{R}_{i,r}, \tag{D102}$$

where s_i^o is the share of MNE sourcing done in country i, $s_i^o = \frac{\varrho_{jF}^{1-\alpha} R_j^{1-\alpha}}{\sum_{j=1}^N \varrho_{jF}^{1-\alpha} R_j^{1-\alpha}}$. Similar to our derivation in the baseline, for an MNE of type r, input costs change in each sourcing country i according to:

$$\hat{p}_{iM,R} = \hat{R}_{i,r} = \hat{W}_{i,N} + \beta \chi_i^l \hat{\tau}_{i,r}^l,$$

where $\hat{\tau}_{i,N}^l = 0$ but $\hat{\tau}_{i,R}^l$ can be heterogeneous across countries. Suppliers in country i supply the MNE market and have corresponding sales:

$$y_{iM,r} = p_{iM,r}^{1-\sigma} N_r R_{i,r}^{\sigma} M_{i,r},$$

where total MNE production in sourcing country i is given by:

$$R_{i,r} M_{i,r} = \left(\frac{\varrho_{iF} R_{i,r}}{P_{M,r}} \right)^{1-\alpha} P_{M,r}^{1-\sigma} d_r D_M, \tag{D103}$$

where D_M is a demand shifter measuring demand for the final good produced by the MNE worldwide ($D_i = \sum_j \varrho_{Fj} X_j P_j^{\sigma-1}$). Combining equations (D102) and (D103), the relative change in the sales of suppliers and MNE subsidiary at Home, relative to those not impacted by RS, are:

$$\hat{y}_{HM,R} - \hat{y}_{HM,N} = (1-\alpha)\,\beta \chi_H^l \hat{\tau}_{H,R}^l + (\alpha - \sigma) \left(\sum_{j \in \mathcal{I}} s_j^o \beta \chi_j^l \hat{\tau}_{j,R}^l \right) + \hat{d}_R,$$

$$\widehat{R_{H,R} M_{H,R}} - \widehat{R_{H,N} M_{H,N}} = (1-\alpha)\,\beta \chi_H^l \hat{\tau}_{H,R}^l + (\alpha - \sigma) \left(\sum_{j \in \mathcal{I}} s_j^o \beta \chi_j^l \hat{\tau}_{j,R}^l \right) + \hat{d}_R,$$

while in the baseline case, we had:

$$\hat{y}_{HM,R} - \hat{y}_{HM,N} = (1-\alpha)\,\beta \chi_H^l \hat{\tau}_{H,R}^l + \hat{d}_R,$$
$$\widehat{R_{H,R} M_{H,R}} - \widehat{R_{H,N} M_{H,N}} = (1-\alpha)\,\beta \chi_H^l \hat{\tau}_{H,R}^l + \hat{d}_R.$$

Comparing the two comparative statics, we see, first, that if $\alpha = \sigma$, then the two models yield exactly the same comparative statics. Second, assume now that $\alpha \neq \sigma$, and that a researcher employs the empirical strategy outlined in this paper, assuming Costa Rica is the sole sourcing country, while the actual data-generating process involves multiple sourcing countries. That is, we assume that from the event study on sales in our empirical strategy, the researcher backs out a residual "demand shock" $\hat{D}_R$:

$$\hat{D}_R \equiv \hat{y}_{iM,R} - \hat{y}_{iM,N} - (1-\sigma)\,\beta \chi_i^l \hat{\tau}_{i,R}^l. \tag{D104}$$

Under the multi-country sourcing model, what this shifter captures is, in fact:

$$\hat{D}_R = (\alpha - \sigma) \left(\sum_{j \in \mathcal{I}} s_j^o \beta \chi_j^l \hat{\tau}_{j,R}^l - \beta \chi_H^l \hat{\tau}_{H,R}^l \right) + \hat{d}_R. \tag{D105}$$

In this model with multiple sourcing countries, the residual shock $\hat{D}_R$ captures both the true RS

demand shock $\hat{d}_R$, as well as the fact that the MNE reallocates production between sourcing countries when RS is differently costly across countries. This second effect is captured by the reallocation term $\sum_{J\in\mathcal{I}} s_j^o \beta \chi_j^l \hat{\tau}_{j,R}^l - \beta \chi_H^l \hat{\tau}_{H,R}^l$, which measures the relative cost change in Home compared to the average sourcing country. First, note that if RS is not heterogeneous across countries, that term is equal to zero and the empirical strategy corresponding to the baseline model correctly identifies $\hat{D}_R = \hat{d}_R$. Second, if RS has heterogeneous costs across countries, the reallocation term is not 0. To gauge whether, in our context, the effect of RS is likely very heterogeneous between Home (CR) and other countries on average, we turn to the MNE-level event study. First, return to the equation defining the share of MNE costs coming from MNE subsidiary i (equation (D103)) and define the share of inputs sourced in country i as $s_{i,r} = \frac{R_{i,r}M_{i,r}}{\sum_j R_{j,r}M_{j,r}} = \left(\frac{\varrho_{iF}R_{i,r}}{P_{M,r}}\right)^{1-\alpha}$. Then, after the RS shock, for an RS-MNE compared to a baseline non-RS-MNE subsidiary at Home, we have:

$$\hat{s}_{H,R} - \hat{s}_{H,N} = (1-\alpha)\left(\beta\chi_H^l\hat{\tau}_{H,R}^l - \sum_{j\in\mathcal{I}} s_j^o\beta_j\chi_j^l\hat{\tau}_{j,R}^l\right).$$

Recall that in our empirical results, we find that this regression estimates a statistical 0: we do not find evidence that the RS event affects subsidiary sales in CR differently from MNE-level sales in the Orbis data. This indicates that, on average (across the RS rollouts we consider in our sample), CR is neither more nor less affected than other sourcing countries by the RS shock. Overall, this suggests that CR is close to the average country in terms of how binding RS is, i.e., there is no reallocation of production in or out of CR due to a particularly strong or weak RS policy in CR compared to the other sourcing countries. In this context, we can now come back to the estimation of the demand shock. Given that $(1-\alpha)\left(\beta\chi_H^l\hat{\tau}_{H,R}^l - \sum_{j\in\mathcal{I}} s_j^o\beta_j\chi_j^l\hat{\tau}_{j,R}^l\right) = 0$, we find that running the regression corresponding to equation (D104) to estimate the demand shock $\hat{d}_R$ is valid (see equation (D105)) and recovers:

$$\hat{D}_R = \hat{d}_R,$$

as in the baseline model. To complete this discussion (including for contexts in which this margin may feature more strongly), we move on to the welfare equations to evaluate the corresponding welfare consequences in this extended model with multiple sourcing countries.

Welfare We compute the welfare effects of all MNEs implementing RS in all of their sourcing countries, extending the simplified baseline of equation (16) to a multi-country setting. The expressions for the changes in income and price index, and therefore, the aggregate welfare in Home are unchanged:

$$\hat{U}_H = (1-\lambda_{HH})\,\hat{W}_{H,N} + \beta\lambda_{FH}\chi_H^l\hat{\tau}_{H,R}^l + (\Lambda\lambda_{HH} + \lambda_{FH})\,\hat{T}_R.$$

What changes compared to the baseline model is the trade balance expression that pins down the Home wage index. Given the simple trade patterns we assume, we have:

$$\hat{\lambda}_{FH} + \hat{X}_H = \hat{\lambda}_{M_HF},$$

where the expression for changes in expenditures $\hat{\lambda}_{FH}$ is unchanged and, using equations (D101) and (D103), the total exports from H to F are given by:

$$X_{M_HF} = \frac{\varrho_{HF}^{1-\alpha}R_H^{1-\alpha}}{P_M^{1-\alpha}}\frac{P_M^{1-\sigma}}{P_F^{1-\sigma}}d_M X_F,$$

so that, in changes, after an RS shock:

$$\hat{\lambda}_{M_H F} = (1-\sigma)\left(\hat{W}_{H,N} + \beta\chi_H^l \hat{\tau}_{H,R}^l\right) - (1-\sigma)\hat{P}_F + \underbrace{\hat{d}_R - (\sigma-\alpha)\left(\sum_{i\in\mathcal{I}} s_i^o \beta\chi_i^l \hat{\tau}_{i,R}^l - \beta\chi_H^l\hat{\tau}_{H,R}^l\right)}_{=\hat{D}_R} \tag{D106}$$

$$- (\sigma-\alpha)\left(\sum_{i\in\mathcal{I}} s_i^o \hat{W}_{i,N} - \hat{W}_{H,N}\right).$$

Using that $\hat{D}_R = \hat{d}_R$ in our empirical context, we get:

$$\hat{\lambda}_{M_H F} = (1-\sigma)\left(\hat{W}_{H,N} + \beta\chi_H^l \hat{\tau}_{H,R}^l\right) - (1-\sigma)\hat{P}_F + \hat{d}_R - (\sigma-\alpha)\left(\sum_{i\in\mathcal{I}} s_i^o \hat{W}_{i,N} - \hat{W}_{H,N}\right), \tag{D107}$$

while in the baseline case we had:

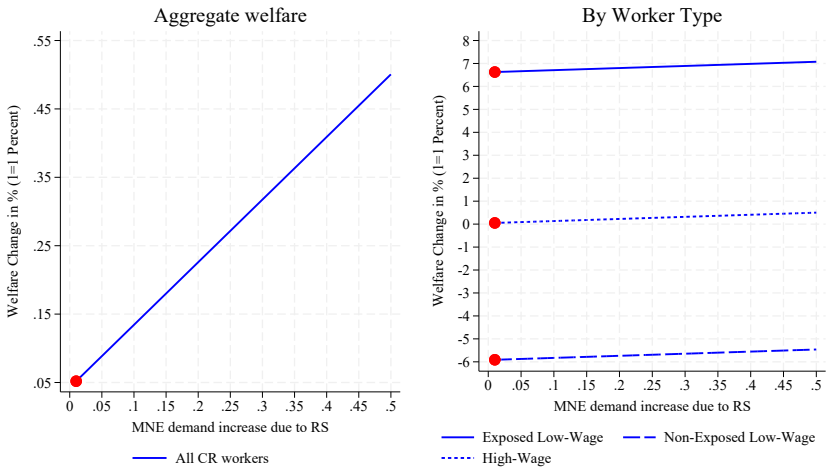
$$\hat{\lambda}_{M_H F} = (1-\sigma)\left(\hat{W}_{H,N} + \beta\chi_H^l \hat{\tau}_{H,R}^l\right) - (1-\sigma)\hat{P}_F + \hat{d}_R. \tag{D108}$$

Comparing equations (D107) and (D108), after assuming that $(\sigma-\alpha)\left(\sum_{i\in\mathcal{I}} s_i^o \hat{W}_{i,N} - \hat{W}_{H,N}\right) \sim 0$,[v] the two models (single-sourcing-country and multiple-sourcing-countries) lead to the same welfare expressions for Home in our empirical context, and the baseline approach correctly backs out the welfare effect of RS, even in a multi-country setting.

[v] $(\sigma-\alpha)\left(\sum_{i\in\mathcal{I}} s_i^o \hat{W}_{i,N} - \hat{W}_{H,N}\right) \sim 0$ implies that the cross-country reallocation we can observe due to a given RS rollout by an MNE also holds in GE. That is, if we do not observe cross-country reallocation by MNEs due to their own RS rollouts, then the assumption is that those same MNEs also do not reallocate due to broader GE effects of RS.

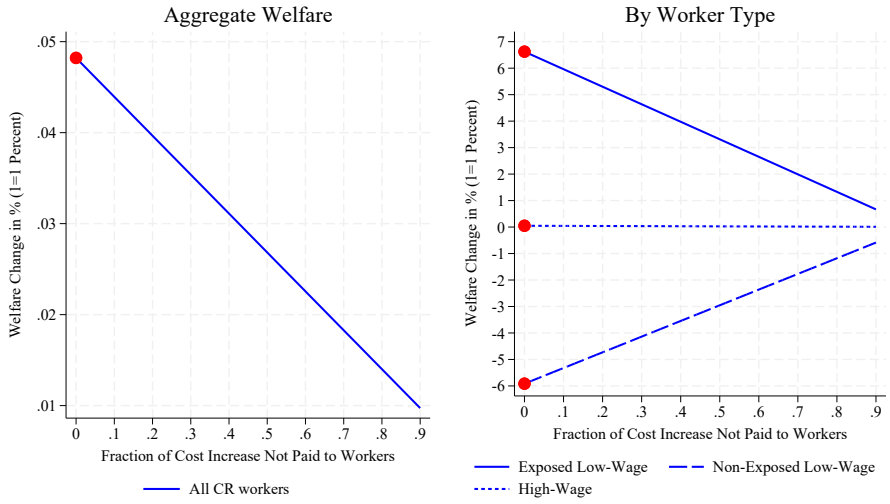
Appendix E Additional counterfactual results

Figure E1: Alternative values of the RS-induced demand shock $\left(\hat{d}_R\right)$



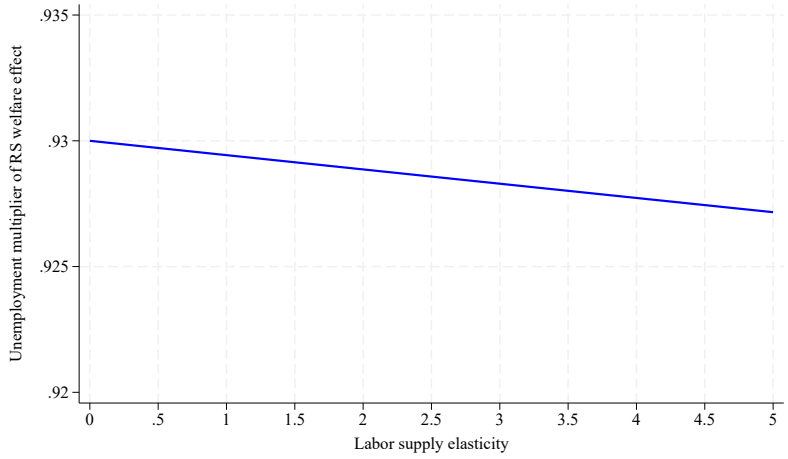
Notes: Red dots indicate our baseline parameter values. As the demand shock increases, MNE production in CR increases. Through the lens of the welfare expressions (16)-(18), this increases domestic welfare of all groups proportionately. See Section 5 for discussion.

Figure E2: Alternative fractions of $\hat{\tau}_R^l$ captured by workers



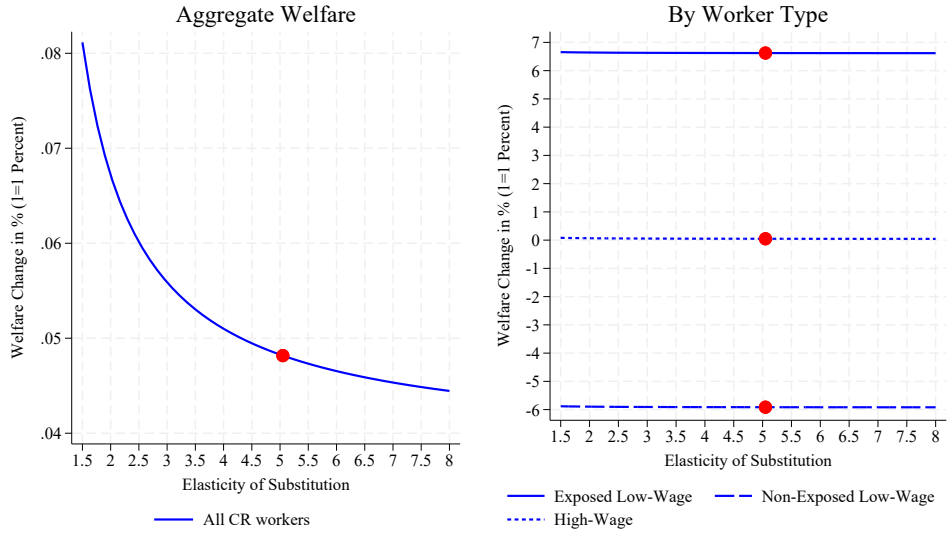
Notes: Red dots indicate our baseline assumption that the increase in labor-related costs is captured by workers through either direct pay or improved workplace amenities. The graphs depict results from the extended welfare expression in the presence of "red tape" in equation (19). See Sections 4 and 5 for discussion.

Figure E3: Welfare implications of RS in a setting with unemployment for different values of the labor supply elasticity (κ)



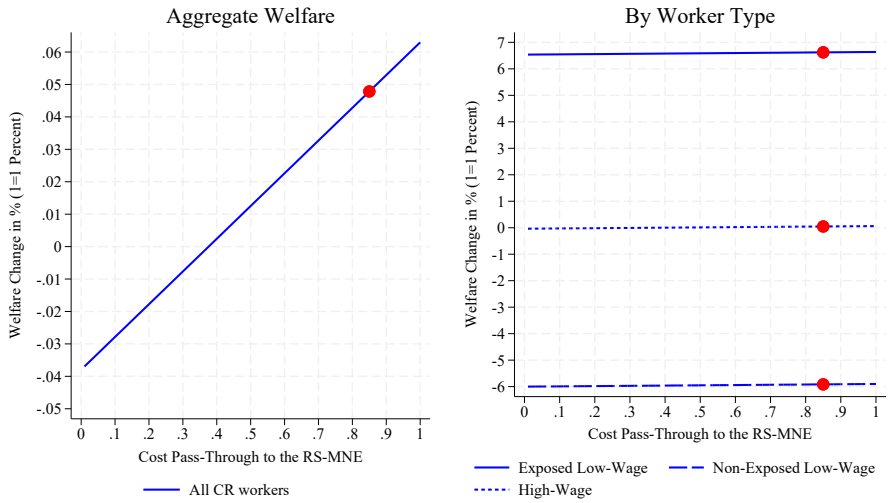
Notes: Figure plots the attenuating factor of the welfare effect of RS in a model with unemployment $\left(1-\Lambda^{U}\right)$ across different values of the labor supply elasticity κ. The level of unemployment at the beginning of our sample is 7%. See Section 5 for discussion and Appendix D.6.2 for a detailed exposition.

Figure E4: Alternative values of the elasticity of substitution between varieties (σ)



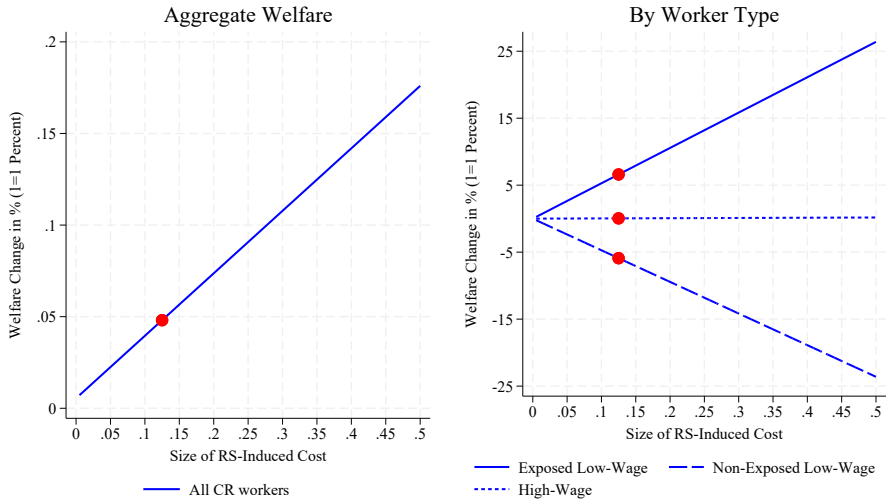
Notes: Figure plots how the welfare effect of RS changes for a reasonable range of values for the elasticity of substitution between varieties. The elasticity σ governs the price elasticity of demand for inputs and final goods, and it matters to welfare in the baseline model through its effect on W^{tax} and W^{d} defined in equation (16). Red dots indicate our baseline parameter values. See Section 5 for discussion.

Figure E5: Alternative values of the pass-through rate (β) of the RS cost increase



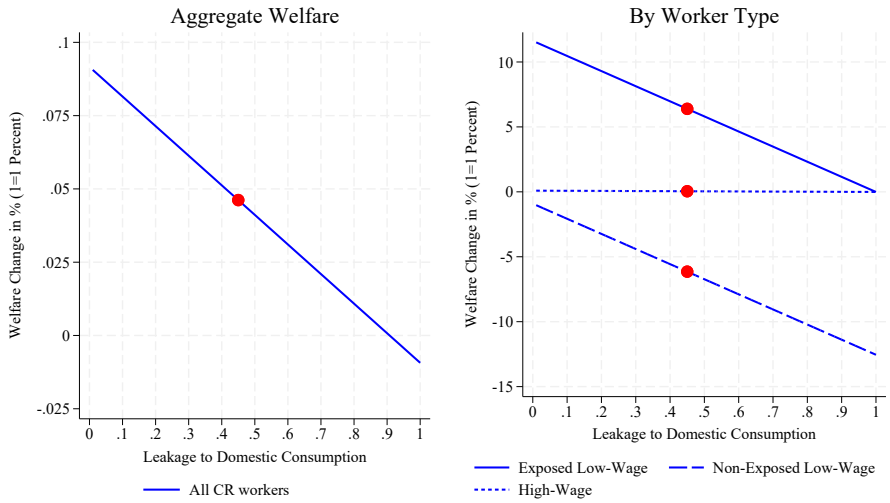
Notes: Figure plots how the welfare effect of RS changes for the full range of possible values for the pass-through rate. When $\beta = 0$, Home suppliers bear the full cost increase from RS policies; when $\beta = 1$, RS cost increases are fully passed through to the input price paid by the MNEs. Red dots indicate our baseline parameter values. See Section 5 for discussion.

Figure E6: Alternative values of the RS wage increase for low-wage workers $\left(\hat{\tau}_R^l\right)$



Notes: Figure plots how the welfare effect of RS changes for different values of the wage increase for low-wage workers $\left(\hat{\tau}_R^l\right)$, defined in equation (7). Red dots indicate our baseline parameter values. See Section 5 for discussion.

Figure E7: Alternative values of leakage (Λ)



Notes: Figure plots how the welfare effect of RS changes for the full range of possible values for the share of expenditure on domestic goods that is spent on goods produced by RS-compliant firms (Λ). This parameter measures the degree of "leakage" of RS policies into the domestic price index, and is defined in footnote 28. Red dots indicate our baseline parameter values. See Section 5 for discussion.

References in appendices

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