# Outsourcing and Labor Adjustment Costs

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**Abstract**

This paper studies the role of labor outsourcing in facilitating firms' employment adjustments in response to temporary shocks. Using rich administrative panel data on manufacturing establishments in Mexico from 2017 to 2022, I document that firms hiring a portion of their workers through domestic outsourcing operate in more volatile sectors and exhibit greater employment and revenue volatility than non-outsourcing firms. Outsourced employment is significantly more responsive to short-term changes in revenue than in-house employment, consistent with firms using outsourcing to reduce labor adjustment costs. I exploit a 2021 reform that sharply restricted outsourcing to identify the causal effects of removing this adjustment margin. Through a difference-in-differences design, I find that the outsourcing restriction led to a decline in firms' employment dynamism, total employment, revenues, and investment. The negative employment effects were concentrated among firms with high pre-reform employment volatility, consistent with an increase in adjustment costs driving the effects. Our findings highlight the role of outsourcing in enabling flexible labor adjustments and the consequences of increasing adjustment costs for employment and production.

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# 1 Introduction

Firms' ability to contract or expand their labor in response temporary market shocks is fundamental for a dynamic labor market and the efficient allocation of workers across firms (Hopenhayn and Rogerson, 1993; Decker et al., 2018). However, presence of labor adjustment costs can limit their ability to adjust labor in these situations. Labor market institutions, such as employment protection legislation, hiring and firing costs play a key role in shaping these adjustment costs (Schoefer, 2025).

One important mechanism firms may use to reduce adjustment costs is outsourcing. By subcontracting specific tasks or parts of the production process to third parties, firms can expand or shrink their effective labor force without incurring the full regulatory and economic costs of adjusting in-house employment (Katz and Krueger, 2016; Macaluso et al., 2023; Bertrand et al., 2021). Despite the potential role of outsourcing in lowering labor adjustment costs, there is limited empirical evidence on the use of outsourced labor for this purpose and the implications of the flexibility offered by this labor arrangement for firm-level outcomes.

This paper studies how labor outsourcing facilitates firms' adjustments to temporary changes in labor demand and its implications for firm size, production and investment. I study this issue in Mexico, a context with relatively strict dismissal protections, where domestic outsourcing potentially offered a flexible alternative for hiring labor on a flexible, short-term basis. Using detailed monthly establishment-level data from 2017 to 2022, I show that firms used outsourcing to adjust employment more dynamically in response to short-term shocks. I then exploit a major regulatory reform in 2021 that sharply restricted the use of outsourcing to examine the causal effects of increasing labor adjustment costs on firm dynamism, employment, and output.

First, I show evidence consistent with the use of outsourcing to respond to temporary changes labor demand before the outsourcing restriction. I focus on firms that outsourced a portion of their workforce, referred to as 'partial outsourcing' establishments.[1] I show that firms using outsourcing belong to sectors with higher seasonality levels in employment and revenues. These firms also exhibit higher employment volatility relative to other establishments, both within and across sectors. Additionally I show that outsourced labor is more strongly correlated to short-term changes in revenue than in-house labor, suggesting that outsourcing serves as a primary margin of adjustment to temporary shocks.

We then leverage the effect of an outsourcing restriction passed by the Mexican government in 2021 to understand the consequences of removing this adjustment channel. I use a difference-in-differences design where I leverage heterogeneous exposure to the outsourcing restriction depending on whether the establishment was using outsourcing in the year prior to the reform. The outsourcing restriction caused firms to reduce their share of outsourced workers, with most firms ceasing outsourcing altogether. The restriction caused a decrease in establishments' labor dynamism, measured as changes in total employment from one month to the other. Moreover, plants previously using outsourcing decreased their total employment post-reform. This negative employment effect was stronger for plants with high employment volatility pre-reform, suggesting that the effect was driven by the increase in labor adjustment costs. The reform also led to declines in revenues and investment, indicative of

[1] Establishments outsourcing over 95% of their workforce, which I denote as full outsourcing establishments, are not the focus of this paper and studied in detail Colonna and Aldeco (2025).

broader downsizing effects. I also find suggestive evidence of a rise in inventories, consistent with firms increasing buffer stocks when labor becomes less adjustable. Overall, our findings highlight that restricting outsourcing in a context with rigid in-house labor regulations, where firms used this arrangement to adjust to temporary changes labor demand, can reduce firms' ability to respond to temporary shocks, causing declines in employment, production, and investment. The results suggest that the mechanism driving these negative results is the increase in labor adjustment costs faced by firms.

This paper is related to two main strands of literature. The first is the growing literature studying the consequences and the motivations behind outsourcing. Recent research in this area has mostly focused on three main motivations introduced in a seminal work by Abraham and Taylor (1996). First, outsourcing can allow firms to reduce worker wages (Dube and Kaplan, 2010; Goldschmidt and Schmieder, 2017; Drenik et al., 2020; Felix and Wong, 2021), due to the presence of within-firm fairness considerations or rent-sharing. Second, outsourcing can help increase efficiency by helping firms concentrate on their core tasks, allowing for firm specialization and economies of scale (Bilal and Lhuillier, 2021; Abraham and Taylor, 1996). A third reason, more closely related this this study, is that outsourcing can help firms adjust to changes in labor demand by reducing adjustment costs Autor (2003); Macaluso et al. (2023). Few studies have empirically examined how outsourcing-enabled labor flexibility affects firms. Bertrand et al. (2021) show that contract labor can allow for increased employment dynamism and establishment growth in India, where firms with over 100 workers face high firing costs. The paper most closely related to ours is Micco and Muñoz (2024) who leverage a restriction on temp agencies in Chile to show that firms exposed to this reform experienced a decrease in revenues and total employment. I contribute to this literature in two ways. First, the availability of monthly level data allows us to provide direct evidence of the use of outsourcing to adjust to short term changes in labor demand. This is not possible in the previously mentioned studies which leverage yearly data. Second, our analysis of the outsourcing reform provides evidence on the effects of restricting outsourcing on novel outcomes including employment dynamism at the monthly level, and heterogeneous effects according to firms' exposure to labor adjustment costs.

This paper is also contributes to the literature analyzing the impact of labor adjustment costs on firms. Most empirical work in this area relies on cross-country variation in labor market institutions, and suggests that rigid labor market institutions can hinder employment and firm dynamism Heckman and Pages-Serra (2000); Blanchard and Portugal (2001). Studies in this field leveraging quasi-experimental variation in labor market rigidities are less common. Autor et al. (2007) study U.S. states' adoption of wrongful discharge laws and find reduced employment flows and firm entry. Besley and Burgess (2004) show that stricter employment regulations in Indian states lead to lower output and productivity. Daruich et al. (2023) analyze the effects of temporary contract liberalization in Italy and find increased firm profitability, especially among low-productivity firms. I build on this literature by providing direct evidence on the use of a labor arrangement, outsourcing, to promote labor dynamism in a context with rigid labor institutions, with implications for firm employment, output, and investment.

The paper proceeds as follows. Section 2 describes the data and institutional framework. Section 3 provides evidence on the use of outsourcing to adjust to temporary shocks. Section 4 shows the

effects of the outsourcing restriction. Section 5 concludes.

# 2 Data and institutional framework

## 2.1 Data and outsourcing measurement

The main dataset used in this study is the Encuesta Mensual de la Industria Manufacturera (EMIM), a monthly panel survey of manufacturing establishments conducted by Mexico's national statistical agency (INEGI). The dataset spans the period from 2017 to march 2023 and provides rich monthly information on employment, wage bills, production, revenues, and variable costs. The same establishments are surveyed each month, forming a panel dataset. Sample selection is based on revenue rankings within 6-digit industries; establishments are included sequentially until a threshold, typically 60–85% of sectoral revenue, is reached. EMIM therefore approximates a census of large manufacturing establishments. A key feature for our analysis is that EMIM separately reports workers employed directly by the establishment and those hired through third parties (personal suministrado por otra razón social), enabling a consistent establishment-level measure of outsourcing.

The empirical analysis is restricted to a balanced panel of 8,065 establishments, as it is not possible to distinguish exits due to business closure from those due to sample changes.[2]

## 2.2 Institutional framework

Mexico's labor law imposes relatively strict regulations on individual dismissals. Under the Federal Labor Law (LFT, 2021), employers must provide written notice specifying the cause and circumstances of termination, or the dismissal is presumed unjustified. In cases of dismissal without cause, workers are entitled to a mandatory severance package, including three months' salary, 20 days per year of service, and a seniority premium, in addition to accrued benefits. Additionally, and fixed-term contracts are permitted only under specific conditions: when the nature of the work is temporary, tied to a specific project, or justified by the temporary replacement of another worker. If the employer cannot demonstrate a valid reason for the fixed term, the contract is presumed indefinite. Despite a major Mexican labor reform in 2012 that introduced new contract types, improved conflict resolution procedures, and eased hiring and firing restrictions, Mexico ranks among OECD countries with relatively stringent dismissal procedures for regular workers and strict regulation of fixed-term contracts (See Figure A.1). Therefore, in this context, outsourcing provides firms with a flexible alternative for meeting temporary increases in labor demand.

Outsourcing in Mexico is also regulated by the Federal Labor Law (LFT, 2021). Before the 2021 reform, firms were permitted to outsource both specialized services and core business activities, as long as it did not involve tasks that were identical to those performed by workers directly employed by the firm. Mexico had seen a significant rise in domestic outsourcing in the past 20 years, from 6% of the labor force in 2004 to over 15% in 2019 (Banco de Mexico, 2021). The first proposal for an outsourcing reform was presented in November 2020 by the López Obrador administration in Mexico. An important motivation for this initiative stated by the Secretary of Labor (STPS) was to stop the

[2]The EMIM data office at INEGI could not provide establishment-level exit reasons.

'abusive schemes' facilitated by outsourcing (STPS, 2021). The final version of reform was approved in April 2021. The reform imposed that the outsourcing of workers for core activities of the firm was prohibited.[3] Additionally, all employment agencies were obliged to register in a new registry of the Ministry of Labor (REPSE) and three times per year, employment agencies must send detailed information to the Ministry of Labor on all the outsourcing contracts which took place during that period. Strong punishments consisting of high fines and up to three years in prison were introduced for firms not abiding by the new law. Firms were required to comply with the main changes by July 2021, while certain fiscal measures took effect in September 2021.

The reform was quite controversially received, particularly due to its potential effect on unemployment and informality, and on its effect on on small firms who relied on the flexibility given by this type of labor arrangement.[4]

# 3 Outsourcing patterns

## 3.1 Defining partial outsourcing

In this section, I present evidence on outsourcing practices prior to the reform and define the group of outsourcing establishments that form the core of our analysis. In the year preceding the reform, 30% of establishments in EMIM reported engaging in some form of outsourcing. Panel (a) Figure A.2 displays the distribution of the average proportion of workers outsourced by each establishment during that period. The distribution reveals two distinct patterns: a concentration of establishments that outsourced *all* of their workforce, and a smaller but meaningful group that outsourced only a portion. Given these distinctive patterns, establishments with positive outsourcing are divided into two groups.

1. *Full outsourcing establishments:* These are establishments that outsourced more than 95% of their workers for at least one month in the year before the reform.

2. *Partial outsourcing establishments:* These are establishments that had positive outsourcing for at least one month in the year before the reform, but outsourced less than 95% of their workers.

This paper focuses on the motives behind outsourcing and the consequences of the reform for the *partial outsourcing establishments*. Full outsourcing establishments are examined in detail in companion paper Colonna and Aldeco (2025). That study shows that outsourcing decisions for full-outsourcing establishments were primarily driven by the desire to circumvent mandatory profit-sharing requirements—a motivation not relevant for partial outsourcing firms.

Panel (b) of Figure A.2 shows the distribution in the share of outsourced workers among partial outsourcing establishments in the year prior to the reform. Additionally, Table 1 shows descriptive statistics of partial outsourcing establishments and control establishments from the 2018 Economic Census, 2 years prior to the reform. Partial outsourcing establishments outsourced on average 20% of their workforce. Notably, although treatment status is defined in the year prior to the reform, the

[3] The core activity of a firm was defined as the activities included in the company's objects clause (*objeto social*) (LFT (2021), art. 13)

[4] See: Infobae (2020) , Forbes Mexico (2022) , El Economista (2021), El Economista (2021).

average share of outsourced workers among control establishments was only 1% two years prior to the reform, indicating strong persistence in outsourcing use. Partial outsourcing establishments were generally larger and more productive than control establishments. These characteristics are consistent with prior evidence in the outsourcing literature showing that more productive and high paying firms tend to outsource more (Goldschmidt and Schmieder, 2017; Bilal and Lhuillier, 2021).

Table 1: Summary Statistics on EMIM establishments by outsourcing use - 2018

| | N | Total workers | Share outsourced | Value added per worker | Investment per worker | Foreign | Share women | Share white collar |
|---|---|---|---|---|---|---|---|---|
| Partial outsourcing | 855 | 547 | 0.23 | 861 | 41 | 0.48 | 0.33 | 0.24 |
| Control | 5581 | 399 | 0.01 | 816 | 23 | 0.31 | 0.34 | 0.21 |

This table displays the average value of different variables across the partial outsourcing and for control establishments in EMIM. Figures are computed using 2018 data from EMIM and the Economic Census. Nominal variables are in thousands of Mexican Pesos (2018 value). Partial outsourcing establishments are those with positive outsourcing but less than 95% of their workers in the year pre-reform. Control establishments are those not outsourcing in the year pre-reform.

### 3.2 Outsourcing and employment volatility

This section presents evidence consistent with partial outsourcing establishments relying on outsourcing to adjust their labor force to temporary changes in activity. Columns 1 to 4 of Table 2 show 4-digit NAICS sector level regressions where the outcome are seasonality measures of employment and revenues. Seasonality for outcome $y$ is computed as the average absolute value of the seasonal component from an additive moving-average decomposition of $y$, divided by the average of x over the period. Examples of sectors with high employment seasonality include production of sugars, chocolates and candies and the tobacco industry. It can be seen that sectors with higher seasonal variation had a higher share of partial outsourcing establishments (but not a higher share of full-outsourcing establishments). Columns 5 to 7 of Table 2 compare employment volatility among partial outsourcing establishments, full outsourcing and no outsourcing. Volatility is measured as the within-establishment yearly coefficient of variation of the de-trended employment from 2017 to 2020. Employment is de-trended using an additive time-series decomposition, where I subtract the trend component from the original variable. The regressions show that partial outsourcing establishments tended to have more volatility in employment than non-outsourcing firms, even when controlling for sector fixed effects.

Table 2: Outsourcing, Seasonality, and Employment Volatility

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| Unit of Analysis | Sector level | | | | Establishment level | | |
| Dep. Var. | Seasonality Total workers | Seasonality Revenue | Seasonality Blue collar | Seasonality White collar | Volatility Total workers | Volatility Total workers | Volatility Blue collar |
| Full Outsourcing | -0.010 | -0.020 | -0.010 | -0.007 | −0.008*** | -0.003 | -0.003 |
| | (0.009) | (0.030) | (0.010) | (0.006) | (0.0019) | (0.0017) | (0.002) |
| Partial outsourcing | 0.070* | 0.120* | 0.110* | -0.007 | 0.0069** | 0.007** | 0.009*** |
| | (0.040) | (0.070) | (0.060) | (0.020) | (0.003) | (0.003) | (0.003) |
| Sector FE | No | No | No | No | No | Yes | Yes |
| Observations | 86 | 86 | 86 | 86 | 290,340 | 290,340 | 288,408 |

*Note*: Columns 1–4 present sector-level regressions of seasonal variation in different sector-level outcomes on the share of establishments classified as full or partial outsourcing. Sector seasonality for variable x is computed as the average absolute value of the seasonal component from an additive moving-average decomposition of x, divided by the average of x over the period. All specifications control for establishment size. Columns 5–7 show establishment-level regressions of employment volatility on a binary variable equal to 1 if the establishment is classified as full outsourcing and another equal to 1 if the establishment belongs to the partial outsourcing group. Volatility is measured as the within-establishment yearly coefficient of variation of the de-trended employment from 2017 to 2020. Employment is de-trended using an additive time-series decomposition, where I subtract the trend component from the original variable. All specifications control for establishment size. Robust (Col 1-4) or clustered 4-digit NAICS (Col 5-7) standard errors in parentheses. The results are constructed using establishment data from EMIM for the period 2017-2019. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Furthermore, I assess whether the high volatility observed among outsourcing firms is driven by adjustments in outsourced labor by comparing how outsourced and in-house labor respond to short-term changes in revenue. Specifically, I estimate the elasticity of total employment, in-house employment, and outsourced employment with respect to revenue for partial outsourcing establishments in our sample. All variables are de-trended to isolate temporary fluctuations from long-term trends. The results, presented in Table 3, show that prior to the reform, the elasticity of total employment with respect to revenue was approximately 0.6 (Column 1). The estimated elasticity of outsourced employment (Column 3) is about 3.7 times larger than that of in-house employment (Column 2), suggesting that outsourced labor was substantially more responsive to revenue changes. This pattern is consistent with firms relying on outsourced employment—rather than in-house workers—to adjust to short-term fluctuations in economic activity. Figure A.3 in the appendix illustrates examples of sectors consistent with this evidence. The figure presents sector-level monthly averages of revenue, total employment, in-house employment, and outsourced employment. Two patterns stand out. First, short-term fluctuations in total employment are almost entirely driven by changes in outsourced labor, with in-house employment remaining stable. Second, outsourced employment closely tracks short-term movements in revenue.

Taken together, these results suggest that prior to the outsourcing restriction, partial outsourcing establishments exhibited greater volatility in both employment and revenue, and that this volatility

was primarily managed through adjustments in outsourced rather than in-house labor. The evidence is consistent with firms using outsourced labor to reduce adjustment costs in response to temporary shocks to labor demand. In the next section, I examine how an increase in adjustment costs—caused by the outsourcing restriction—affected these establishments.

Table 3: Elasticity of employment with respect to revenue

| | (1) log(total workers) | (2) log(in-house) | (3) log(outsourced) |
|---|---|---|---|
| log(revenue) | 0.0062*** | 0.0039*** | 0.0145*** |
| | (0.0007) | (0.0012) | (0.0028) |
| Observations | 12,583 | 12,425 | 11,013 |

*Note*: This table shows the results of regressing the logarithm of de-trended values of total workers, total in-house workers or total outsourced workers on de-trended log revenues and establishment fixed-effects. Variables are de-trended using an additive time-series decomposition, where I subtract the trend component from the original variable. Estimation on the balanced sample of establishments in EMIM. All regressions are carried out for years 2017 to 2019 to avoid the pandemic period. Estimation is carried out on the subsample of only partial outsourcing establishments. De-trended revenue is standardized at the establishment level to make coefficients comparable across columns. All regressions are carried out for years 2017 to 2019 to avoid the pandemic period. Clustered standard errors at the establishment level are in parenthesis. Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

# 4 Effect of the outsourcing restriction

This section evaluates the impact of the outsourcing restriction in 2021 on establishments' outsourcing levels, employment dynamism, total employment, revenues and investment.

## 4.1 Methodology

To estimate the effects of the reform with the establishment-level panel data, I exploit variation in exposure to the reform across firms (Saez et al., 2019; Carry, 2022). I implement a dynamic difference-in-differences specification as follows:

$$Y_{jst} = \sum_{k=Q1,2018}^{Q1,2023} \beta_k \mathbb{1}t \in k \cdot O_j + \lambda_j + \gamma st + \phi_g t + \xi_{jst} \tag{1}$$

Here, $Y_{jsft}$ denotes the outcome of establishment $j$, in sector $s$, at time $t$ (month-year). The treatment indicator $O_j$ equals 1 if the establishment used outsourcing in *any* month during the year prior to the reform. We use a binary indicator rather than a continuous exposure measure, as the latter can be problematic in the presence of heterogeneous treatment effects and non-linearities (Sun and Shapiro, 2022). The term $\mathbb{1}_{t\in k}$ is a variable equal to one is month $t$ falls into quarter $k$.

Establishment fixed effects $\lambda_j$ are included to control for time-invariant firm characteristics, as well as 4 digit NAICS sector-by-time ($\gamma_{st}$) to account for seasonality and shocks at the sectoral level. I also

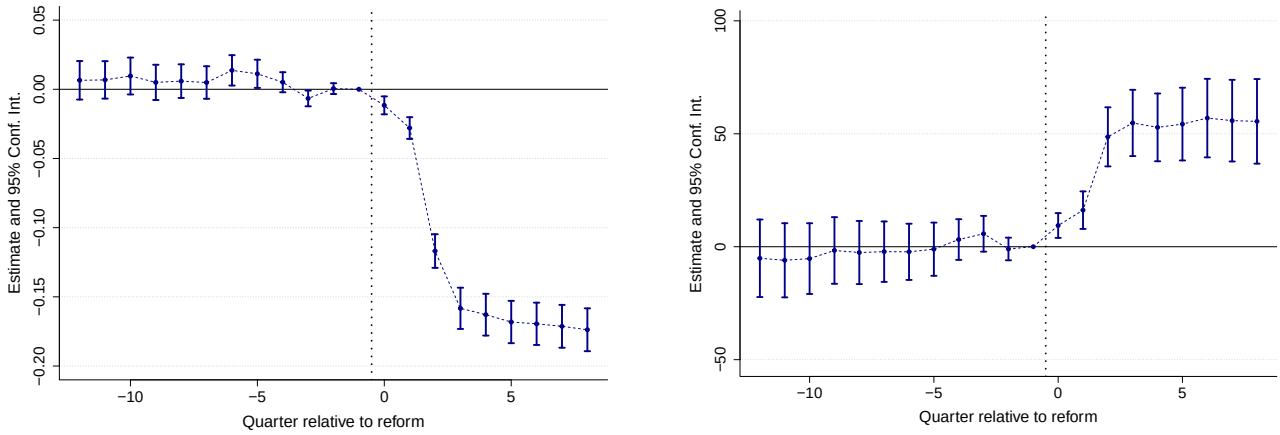
add size-group specific linear trends $\phi_g t$, where establishments are grouped into six categories based on their pre-reform employment size. This allows for differential trends by firm size, as larger firms are more likely to outsource and tend to grow faster in Mexico. The coefficient $\beta_k$ for the last quarter of 2020 is normalized to zero. The control group includes establishments that did not use outsourcing in any month during the year before the reform. Full-outsourcing establishments are removed from the sample in this estimation. Standard errors are clustered at the establishment level (Rambachan and Roth, 2022).

## 4.2 Results

### 4.2.1 Effects of the reform on employment outcomes

**Outsourcing.** Figure 1 shows that the reform had strong effects on outsourcing use among partial outsourcing establishments. The share of workers outsourced decrease by approximately 17% post-reform, while the number of in-house workers increased by approximately 70 workers on average. Most of the effect on outsourcing use is driven by the extensive margin. After the reform, the share of partial outsourcing establishments using outsourcing in a given month fell from around 0.88 to 0.25.

Figure 1: Effect on outsourcing




(a) Share of workers outsourced

(b) Number of in-house workers

*Notes:* This figure plots the $\theta_k$ from Equation 1 and 95% confidence intervals. The estimation is carried out on a balanced panel of establishments from EMIM between 2017 and 2022. Treatment group includes establishments with positive outsourcing before the reform, but lower than 95% (partial outsourcing). Control group includes establishments with no outsourcing before the reform. Establishments outsourcing over 95% of workers before the reform (full outsourcing) are excluded from the estimation. The outcome variables are: panel a: share of workers outsourced; panel b: number of in-house workers. $\theta_{Q42020}$ is normalized to 0. Standard errors are clustered at the establishment level.

**Employment dynamism.** As discussed in Section 3, our evidence suggests that establishments were using outsourcing to better adjust to temporary fluctuations in labor demand. Therefore, I assess whether establishments' employment dynamism was affected by the reform. I evaluate the effect of the reform on employment fluctuations using a similar methodology to Bertrand et al. (2021). Specifically, I define an 'action' variable which takes the value of one if an establishment changed its total production employment by more than a certain percentage $p$ from one month to the next (in

absolute value). I then carry out the following regression:

$$Action_{jt}^{p} = \beta_1 \cdot Post_t * Outs_j + \lambda_j + \phi_t + u_{it} \tag{2}$$

Where $Action_{jt}^{p}$ is the action variable for percentage $p$, $Outs_j$ takes the value of 1 if the establishment belonged to the partial outsourcing group pre-reform and zero otherwise, and $Post_t$ takes the value of 1 in periods after the outsourcing restriction. I perform this regression for different $p = 2\%, 5\%, 10\%$ and $20\%$. I estimate this equation on the balanced panel of establishments in EMIM, excluding full-outsourcing establishments. I restrict the post-reform period to the months after October 2021 to avoid the transition period of the reform. The pre-reform period is restricted to the years 2017 and 2018 to have a similar number of periods post and pre-reform and avoid the employment dynamics caused by Covid.

The results from this estimation are displayed in Panel A of Table 4. The estimate of $\beta_1$ is negative in all specifications, while it is significant for high levels of $p$. Post-reform, the probability that a partial outsourcing establishment experienced a change in employment levels of more than 10% decreased by 1 percentage point, or 12% relative to the group's pre-reform mean. Panel B shows the results when estimating the regression on the subset of establishments with high pre-reform employment volatility, proxied by above-median values of $Action_{jt}^{0.1}$ in the pre-reform period. The magnitude of the effect for this subgroup is larger. This evidence suggests that the outsourcing restriction increased adjustment costs for firms using outsourcing to adjust to temporary changes in demand, which caused them to decrease their employment dynamism.

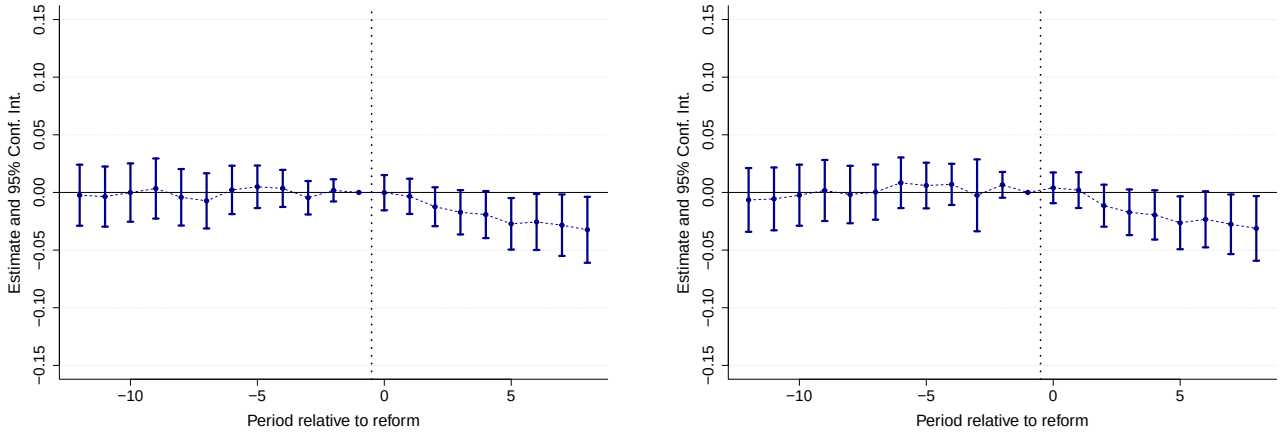
Table 4: Effect of the reform on employment dynamism

| | (1) p = 2% | (2) p = 5% | (3) p = 10% | (4) p = 20% |
|---|---|---|---|---|
| *A. All establishments* | | | | |
| $\beta_1$ | -0.014 | -0.013 | -0.011* | -0.007** |
| | (0.01) | (0.009) | (0.006) | (0.003) |
| Observations | 261,874 | 261,874 | 261,874 | 261,874 |
| *B. Establishments with high volatility pre-reform* | | | | |
| $\beta_1$ | -0.01 | -0.02 | -0.018* | -0.012* |
| | (0.017) | (0.013) | (0.009) | (0.006) |
| Observations | 125,951 | 125,951 | 125,951 | 125,951 |
| Treatment Pre-reform mean | 0.4 | 0.18 | 0.08 | 0.03 |
| Control Pre-reform mean | 0.3 | 0.13 | 0.06 | 0.024 |

*Notes:* This table shows the results of the estimation of Equation 2. The outcome is a binary variable equal to 1 if total production employment of an establishment changed by more than a certain percentage $p$ from one month to the next. The different columns represent $p \in \{2, 5, 10, 20\}$. Establishment fixed-effects are included in all columns. The estimation sample is a balanced panel of establishment from EMIM. Pre-reform period is restricted to 2017 and 2018. Post-reform period is restricted to 10/2021-03/2023. Clustered standard errors at the 4d NAICS sector level are in parenthesis. Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

**Total employment.** The results for total employment, composed of outsourced + in-house workers, among partial outsourcing establishments are depicted in Figures 2. Establishments with positive outsourcing in the pre-reform period reduced total employment by roughly 3% compared to the control group. Table A.1 further shows that the probability of a decline in total employment between the month before the reform and 12 months after is 9% higher for partial outsourcing establishments. This indicates that the negative employment effects stem from a reduction in the absolute number of workers in the treatment group relative to the pre-reform period.

Figure 2: Effect on employment



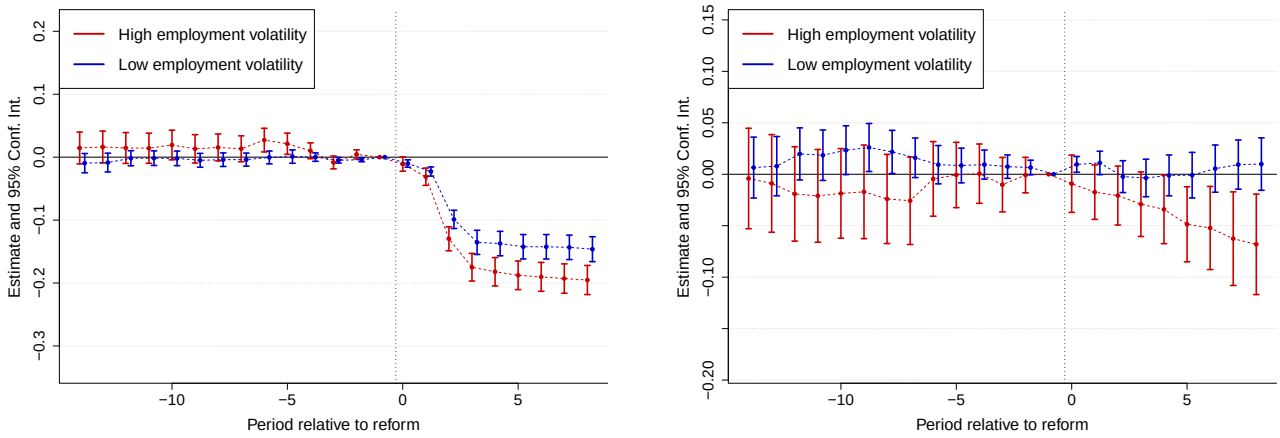

(a) Effect on total employment

(b) Effect on total hours worked

*Notes:* This figure plots the $\theta_k$ from Equation 1 and 95% confidence intervals. The estimation is carried out on a balanced panel of establishments from EMIM between 2017 and 2022. Treatment group includes establishments with positive outsourcing before the reform, but lower than 95% (partial outsourcing). Control group includes establishments with no outsourcing before the reform. Establishments outsourcing over 95% of workers before the reform (full outsourcing) are excluded from the estimation. The outcome variable are: panel a: log of the total number of workers (outsourced + in-house); panel b: log of the total number of hours worked. $\theta_{Q42020}$ is normalized to 0. Standard errors are clustered at the establishment level.

**Heterogeneity by pre-reform employment volatility.** To assess whether the observed employment declines following the outsourcing restriction were driven by increased labor adjustment costs, I examine whether firms that were potentially more exposed to adjustment costs experienced greater employment losses. Specifically, I estimate the effect of the reform separately for firms with high and low levels of pre-reform employment volatility. I measure volatility as the share of months prior to the reform in which an establishment changed its total production employment by more than 10% month-over-month (this measure is equivalent to the average of the variable $Action_{0.1}$ used in Equation 2). I define establishments as 'high employment volatility' establishments if their value of this variable was above the sample median, and 'low employment volatility' establishments otherwise. Our hypothesis is that firms with higher pre-reform employment volatility benefited more from the flexibility offered by outsourcing, and thus faced a larger cost shock after the reform. Figure 3 shows the effects of the reform on the share of outsourced workers and on total employment for high and low employment volatility establishments. While both groups experienced a decline in the share of outsourced workers post-reform, only high-volatility establishments exhibit a significant drop in total employment. Figure A.4 shows that these results are robust to splitting the sample by the establishments above and below the sample mean (instead of the median), and when defining high and low volatility establishments using changes in employment of more than 20% (rather than 10%). Taken together, these findings suggest that the overall negative employment effects shown in Figure 2 are concentrated among firms with highly volatile employment patterns, consistent with these firms facing a greater increase in adjustment costs following the reform.

Figure 3: Heterogeneous effects by employment volatility




(a) Effect on share outsourced

(b) Effect on total employment

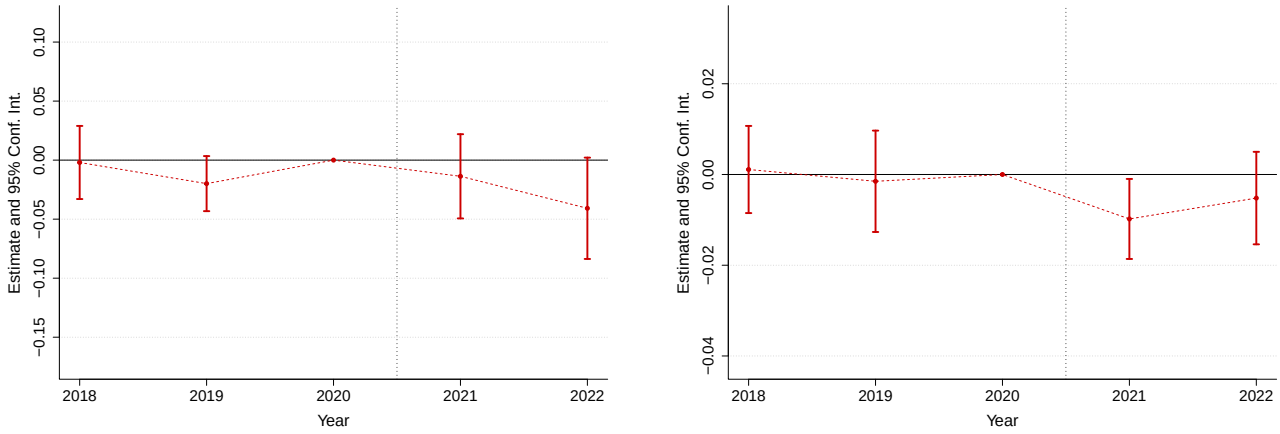
*Notes:* This figure plots the $\theta_k$ from Equation 1 and 95% confidence intervals. The estimation is carried out on a balanced panel of establishments from EMIM between 2017 and 2022. Treatment group includes with positive outsourcing before the reform, but lower than 95% (partial outsourcing). Control group includes establishments with no outsourcing before the reform. Establishments outsourcing over 95% of workers before the reform (full outsourcing) are excluded from the estimation. $\theta_{Q42020}$ is normalized to 0. Standard errors are clustered at the establishment level.

Overall, the results in this section show the outsourcing restriction led to a decline in employment dynamism among treated establishments and a reduction in total employment, driven primarily by establishments with high pre-reform employment volatility. These findings are consistent with the reform causing an increase in labor adjustment costs, which made it more difficult for establishments to respond to short-term fluctuations in labor demand, resulting in employment reductions.

### 4.2.2 Production, investment and inventories

In this section we assess whether the negative employment effects of the reform had implications for other establishment outcomes. Figure 4 shows suggestive evidence that partial outsourcing establishments experienced a negative effect on revenues and investment rate. These patterns, in combination with the negative effects of the reform on employment, are consistent with a general downsizing of establishments exposed to the reform after the outsourcing restriction. Figure A.5 shows positive, yet noisily estimated, coefficients for establishment inventories. This suggests that post-reform, establishments may have increased reliance on inventories to absorb temporary fluctuations in output demand rather than adjusting production directly.

Figure 4: Effect on revenue and investment




(a) Log Revenue

(b) Net investment rate

*Notes:* This figure plots the $\theta_k$ from Equation 1 and 95% confidence intervals. The estimation is carried out on a balanced panel of establishments from EMIM between 2017 and 2022. Treatment group includes with positive outsourcing before the reform, but lower than 95% (partial outsourcing). Control group includes establishments with no outsourcing before the reform. Establishments outsourcing over 95% of workers before the reform (full outsourcing) are excluded from the estimation. $\theta_{Q42020}$ is normalized to 0. Standard errors are clustered at the establishment level.

# 5 Conclusion

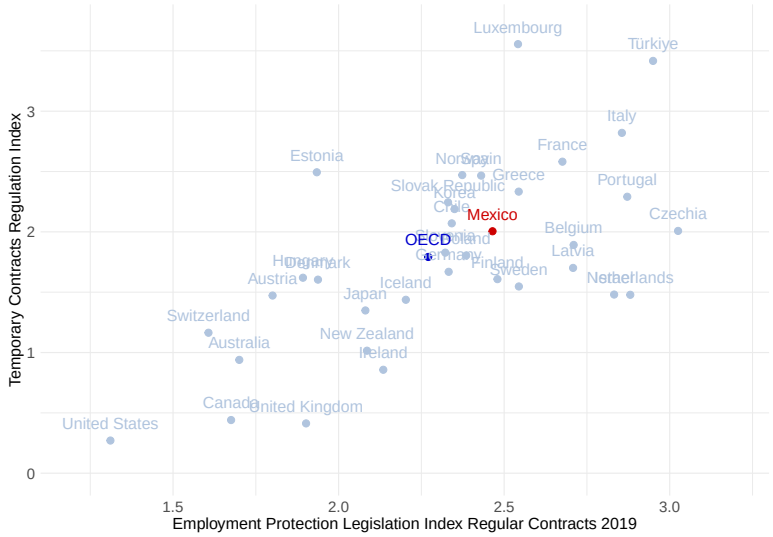
This paper has examined the role of domestic labor outsourcing in facilitating flexible employment adjustments and the implications of restricting this margin in a context of rigid labor regulation. Using rich administrative data on Mexican manufacturing establishments from 2017 to 2022, I first document that firms engaging in partial outsourcing operate in more volatile sectors and display greater employment dynamism. I show that outsourced labor responds significantly more to revenue fluctuations than in-house labor, consistent with outsourcing being used as a primary channel for adjusting to temporary shocks.

We then exploit a 2021 reform in Mexico that sharply curtailed the use of outsourcing to identify the causal effects of removing this flexibility margin. Leveraging a dynamic difference-in-differences framework, I find that the reform reduced employment dynamism and led to declines in total employment, especially among firms with high pre-reform employment volatility. These effects are consistent with the reform raising labor adjustment costs for firms previously relying on outsourced labor. Finally, I find suggestive evidence of a decrease in revenues, and investment among treated firms, consistent with an overall downsizing of economic activity following the increase in adjustment costs.

Overall, our findings highlight the importance of flexible labor arrangements in contexts with high regulatory frictions. Restricting outsourcing can significantly constrain firms' ability to respond to short-term shocks, with adverse consequences for firm size, output, and investment. These results have important implications for understanding the role of outsourcing in reducing labor misallocation across firms. While I do not directly examine misallocation in this paper, our findings suggest that outsourcing may allow labor to be reallocated more efficiently in response to idiosyncratic firm-level shocks. Exploring this connection more explicitly represents a promising avenue for future research.

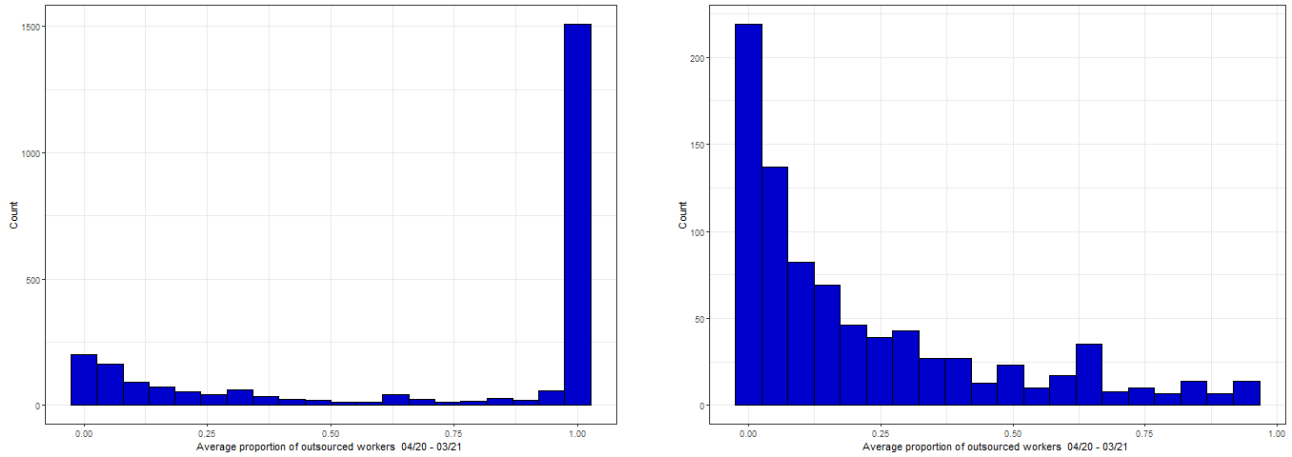
# 6 Appendix A: Additional Tables and Figures

Figure A.1: Employment protection legislation in Mexico relative to OECD countries




*Notes:* This figures shows OECD indexes for strictness of employment protection across countries in 2019. Each point in this figure represents a country; the x-axis measures the OECD index of dismissal regulations for regular contracts of that country, and the y-axis measures the OECD index for restrictions on temporary contracts. Higher values of both indices indicate stricter measures. Mexico is highlighted in red, OECD average in blue. Figures were build using OECD Employment Protection Legislation Index (OECD, 2019).

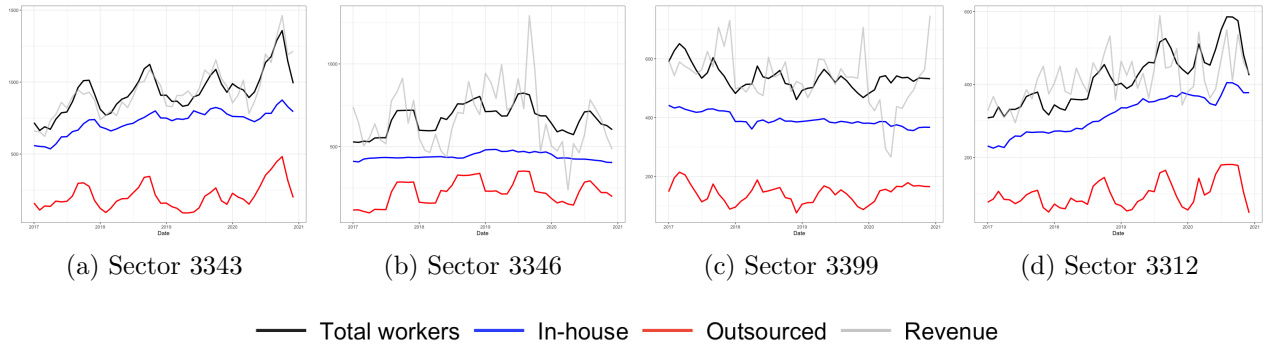
Figure A.2: Histograms share workers outsourced in pre-reform year




(a) Conditional on share outsourced $> 0$ (b) Conditional on share outsourced $\in (0, 0.95)$

*Notes:* These histograms show the distribution of each establishment's average share of outsourced workers during the year prior to the approval of the outsourcing reform. Panel (a) includes all establishments with positive outsourcing. Panel (b) further restricts the sample to establishments with positive outsourcing but excludes those where outsourced workers account for 95% or more of total employment (i.e., full-outsourcing establishments).

Figure A.3: Total, in-house and outsourced workers in partial outsourcing establishments - Selected sectors




(a) Sector 3343 (b) Sector 3346 (c) Sector 3399 (d) Sector 3312

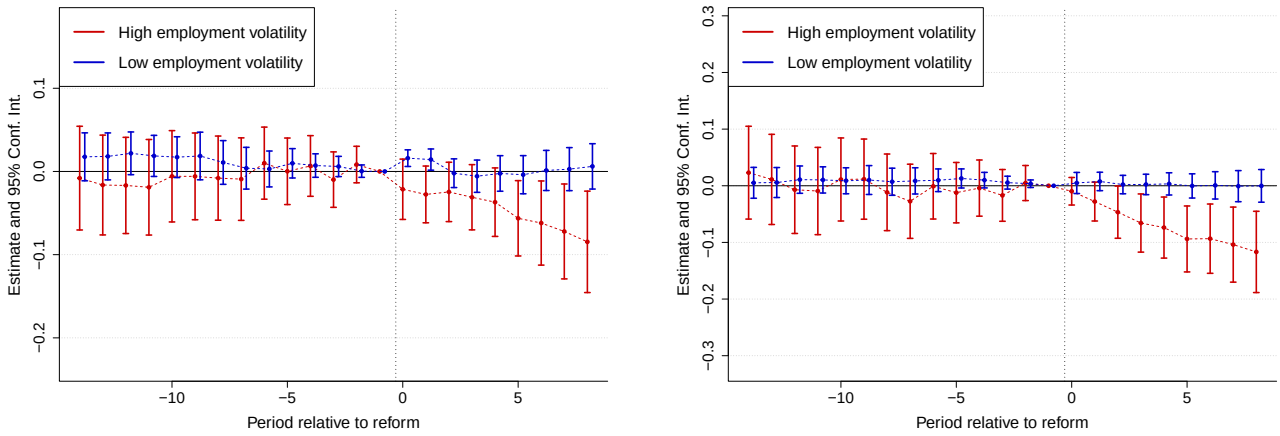
*Notes:* The figure shows trends in total employment, in-house employment, outsourced employment, and revenue across four selected sectors (NAICS codes 3343, 3346, 3399, and 3312) for partial outsourcing establishments (establishments with positive outsourcing, but less than 95% of total workforce). Employment is divided between in-house workers (blue line) and outsourced workers (red line), while total employment (black line) combines both groups. Revenue is plotted in grey. Revenue numbers are standardized such that the mean equals that of total workers. The figures are constructed using establishment survey data from EMIM from 2017 to 2021.

Table A.1: Employment declines

| | (1) | (2) | (3) |
|---|---|---|---|
| *Employment decline between* 11/2020 *and* 11/2021 *in:* | | | |
| | Total workers | White collar | Blue collar |
| Partial outsourcing | 0.0963*** | 0.1217*** | 0.0725*** |
| | (0.0264) | (0.0226) | (0.0266) |
| Observations | 6,376 | 6,376 | 6,376 |

*Notes:* This table reports the results of a regression where the explanatory variable is an indicator equal to one if the establishment is classified as partial outsourcing, and the outcome is a dummy variable equal to one if an establishment's de-seasonalized employment fell between the month the outsourcing reform was proposed (November 2020) and 12 months after this date. This variable is built for total employment, white-collar employment and blue-collar employment. Results are built using a balanced sample of establishments from EMIM. Full outsourcing establishments are excluded from the estimation. Signif. Codes: ***: 0.01, **: 0.05, *: 0.1 [Back to Section 4.2.1]

Figure A.4: Heterogeneous effects by employment volatility

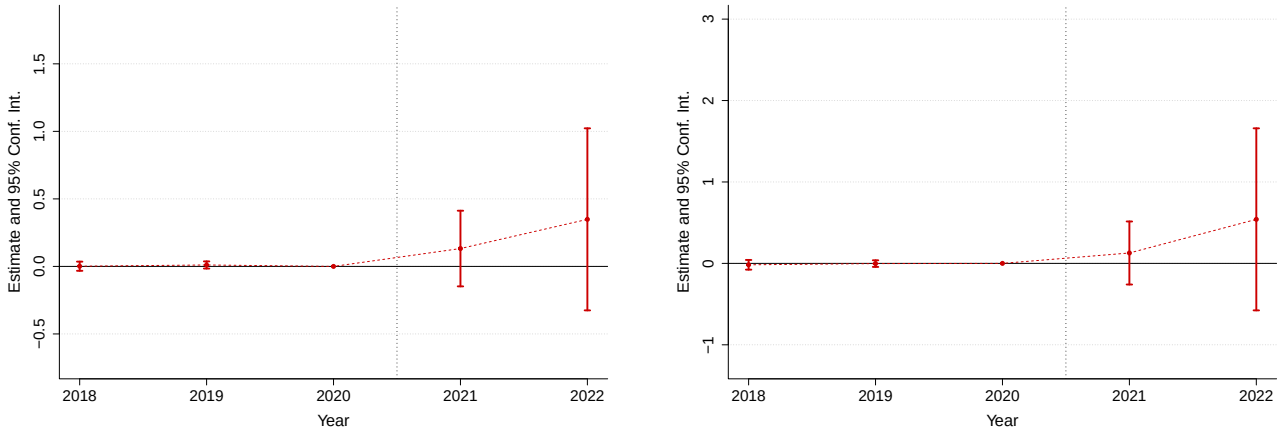



(a) Split by mean

(b) Split by mean p = 0.2

*Notes:* This figure plots the $\theta_k$ from Equation 1 and 95% confidence intervals. The estimation is carried out on a balanced panel of establishments from EMIM between 2017 and 2022. Treatment group includes with positive outsourcing before the reform, but lower than 95% (partial outsourcing). Control group includes establishments with no outsourcing before the reform. Establishments outsourcing over 95% of workers before the reform (full outsourcing) are excluded from the estimation. $\theta_{Q42020}$ is normalized to 0. Standard errors are clustered at the establishment level.

Figure A.5: Effects on inventories




(a) Inventories / Revenue

(b) Inventories / Total costs

*Notes:* This figure plots the $\theta_k$ from Equation 1 and 95% confidence intervals. The estimation is carried out on a balanced panel of establishments from EMIM between 2017 and 2022. Treatment group includes with positive outsourcing before the reform, but lower than 95% (partial outsourcing). Control group includes establishments with no outsourcing before the reform. Establishments outsourcing over 95% of workers before the reform (full outsourcing) are excluded from the estimation. $\theta_{Q42020}$ is normalized to 0. Standard errors are clustered at the establishment level.

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