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The Impact of Labor Litigation Cases on Firm-level Productivity in Brazil

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WORKING PAPER

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Western Hemisphere Department

The Impact of Labor Litigation Cases on Firm-level Productivity in Brazil**Prepared by Swarnali Ahmed Hannan and Samuel Pienknagura***

Authorized for distribution by Daniel Leigh

March 2025

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ABSTRACT: The Brazilian labor market went through significant changes in 2017 with reforms to reduce litigation and increase flexibility in employment contracts. Using firm-level data, we exploit the variation in litigation cases across Brazilian states to estimate the impact of the 2017 labor reforms on productivity. The results suggest a significant boost in total factor productivity (TFP) for labor- and trade-intensive firms from the decline in litigation costs. High labor intensive firms witnessed an increase in TFP of about 15 percent after the reform compared to low labor-intensive firms. Similar magnitudes are found for trade-intensive firms. There is also some suggestive evidence that the productivity-enhancing effects of the reforms are especially pronounced for small firms.

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WORKING PAPERS

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Prepared by Swarnali Ahmed Hannan and Samuel Pienknagura¹

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Introduction

Our paper attempts to unravel the productivity implications of an important set of policy changes related to labor litigation cases in Brazil. This change formed part of a broader package of labor market reforms in Brazil in 2017 that aimed to increase flexibility in employment contracts and wage settings. Specifically, the policies related to litigation cases sought to discourage excessive litigation through, amongst other factors, tightening standards for fees and complaint requirements.

The micro-nature of these reforms makes it difficult to empirically assess their impact on productivity. Our paper offers a novel approach of tackling this exercise by merging three datasets: (i) Orbis for firm-level data on over 4,500 private and public firms; (ii) the PNAD survey for employment; and (iii) Tribunal Superior do Trabalho for labor litigation cases. This enables us to exploit the state-level variation of the changes in litigation cases and differences in labor intensity across sectors to estimate firm-level productivity effects due to the 2017 reform. The findings suggest substantial boost in total factor productivity (TFP) for labor- and trade-intensive firms, by about 15 percent in each case for high labor (trade) intensive firms compared to those of low labor (trade) intensive ones. There is also suggestive evidence that smaller firms might have higher productivity-enhancing effects than the larger ones. A simple illustrative exercise calculating the change in average productivity from the decline in litigations implied by our estimates relative to a scenario where litigations do not change would suggest an aggregate productivity increase of about 5 percent between the pre-reform and the post-reform periods.

Overall, these findings suggest a substantial—in terms of both economic magnitude and statistical significance—boost in productivity from the 2017 labor market reforms. This might have to some extent contributed towards the rise of overall total factor productivity in Brazil since 2017. Moreover, the decline since 2017 in labor litigation cases and costs associated with the reform may continue supporting productivity through lower litigation costs, particularly for labor- and trade-intensive firms, and lower barriers for firm growth.

The paper contributes to the strand of literature related to the impact of labor market reforms on the economic outcomes. First, it contributes to a large body of literature studying the relationship between labor market regulations and growth. For example, Caballero and others (2013) show that stricter labor market regulation hampers countries' speed of adjustment to shocks, suggesting that countries with stricter labor regulation grow more slowly in the aftermath of shocks. Gnocato, Modena, and Tomasi (2020) assess the link between reforms to labor contracts in Italy and allocative efficiency and find that the deregulation of the use of fixed-term contracts had negative efficiency impacts among regions with long labor court disputes, and positive ones among those with less lengthy settlement procedures. David, Pienknagura, and Roldós (2020) show that the more stringent labor regulation has adverse effect on the labor productivity growth of labor-intensive sectors. Turning to specific changes in labor regulation, Cingano and other (2014) study an increase in dismissal costs for small firms in Italy and find that firms affected by this reform (small firms) experienced a decline in total factor productivity.

Our paper complements this literature by showing that reductions in firing costs, and as a result in labor market rigidity, can boost productivity. Moreover, the focus on Brazil is important given the prevalence of informal employment and firms. This additional dimension, which is not significantly present in advanced economies, and provides additional insights about the impact of labor reforms in high informality settings. Indeed, David,

Roldós and Pienknagura (2020) show that the slow employment adjustment observed in countries with stringent regulation is in part explained by the impact that labor regulations have on informality.

As far as we are aware, this is the first attempt to estimate the firm-level productivity from the 2017 reforms in Brazil. Perhaps, the closest to our analysis comes from Corbi, Ferreira, Narita, and Souza (2022) who study the role of labor courts in determining labor market outcomes in Brazil. The authors use a search-matching model, where laid-off workers decide whether to take firms to court or not, to perform counterfactual exercises simulating the changes in the 2017 labor market reform. They conclude that the cost-shifting policy of 2017 labor market reform resulted in significant positive effects on employment and aggregate output. While the methodology and outcome variables of interest are different, the findings from both the papers echo the same messages.

The focus of the paper is on the impact of productivity from labor market reforms. There are other significant considerations when designing labor market policies. This is beyond the scope of the analysis of our paper but are equally important to monitor and evaluate. Labor regulations affect the incentives of both firms and workers, which, if not properly accounted for by the policy maker, can undermine the policy's ability to achieve different goals. For example, on the one hand, the expected decline in labor costs from tightening standards of litigation cases could increase employment opportunities and wages for workers. On the other hand, this could unintentionally make it more difficult for workers to access the labor court and affect employees' rights to litigate, which would not be a desirable outcome.

The rest of the paper is organized as follows. Section II discuss the main aspects of the 2017 labor market reform. Section III outlines data and empirical strategy. Section IV presents the findings of the empirical work. Section V concludes.

The 2017 labor market reform

This section briefly documents the macroeconomic and firm-level productivity over years. While many factors may be at play for the rising TFP since 2017, this paper studies one of the important policy changes that could be driving this trend to some extent, namely the 2017 labor market reform. The section then provides a description of the main elements of the 2017 labor market reform.

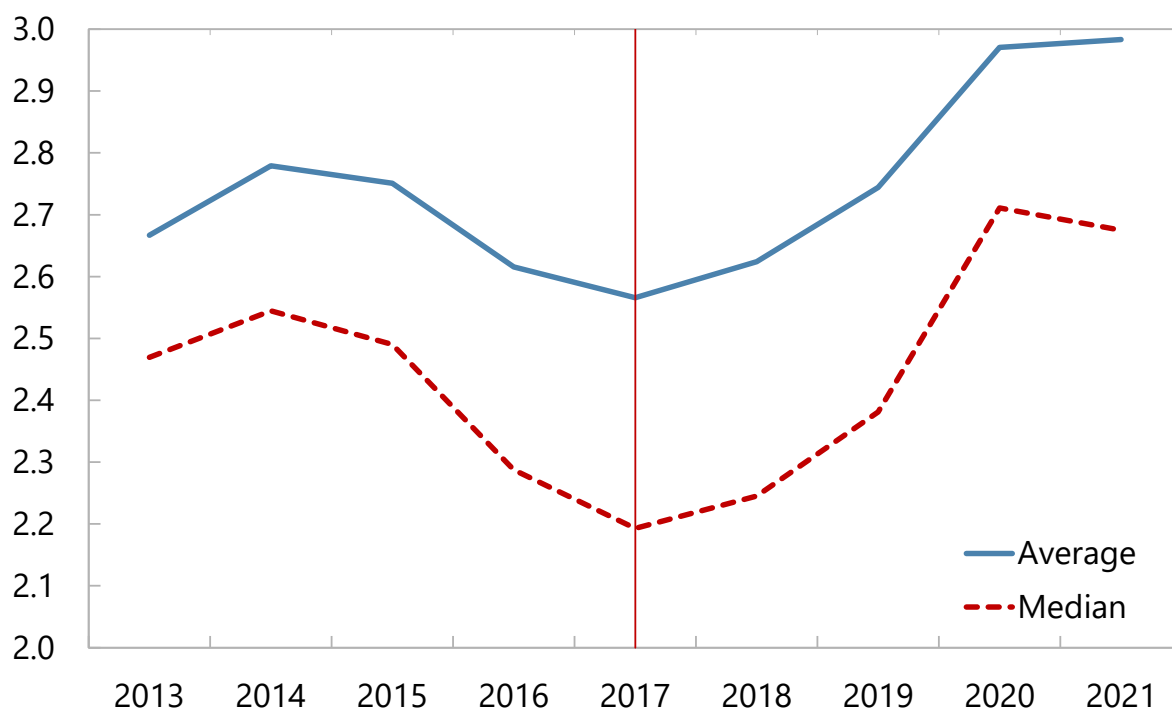
The increase in productivity since 2017

After hovering around 2.5-3 percent in late 1990s to early 2013, Brazil's potential growth declined significantly during the 2014-2016 downturn (IMF 2024). The decline in potential growth was underpinned by stagnant productivity growth and low capital and labor growth (IMF 2023). In particular, agriculture was the only sector with high productivity in the last decades, while that of industry and services were stagnant.

Notably, the potential growth bottomed out in 2017, in the context of supply-side reforms. From a macroeconomic perspective, a growth accounting exercise suggests that the increase was driven by rising total factor productivity (TFP), reflecting catch-up toward the technological frontier and increasing trade integrations.

Figure 1. Firm-Level Productivity

(TFP (logs))



Sources: Orbis database, Fund staff calculations.

The improvement in productivity displayed in the aggregate level is also confirmed from firm-level data. As Figure 1 shows (see section on data for details on computation), firm-level productivity declined since about 2014 and then started improving again from 2017, both on average and for median firms.²

A snapshot of the 2017 labor market reform

The Brazilian Labor Law went through significant changes in 2017 with reforms to increase flexibility in employment contracts and wage setting and to reduce litigation (IMF 2017 and 2018). The reforms, *inter alia*, expanded the modalities for part-time employment, enabled workers to take annual leave in up to three installments, allowed work from home, provided flexibility for high income workers to make individual agreements with their employers that could precede over collective agreements negotiated by their union, made union dues optional. The changes were expected to increase temporary work and labor force participation, but the impact on aggregate employment was not clear at the onset.

One of the main aspects of the reform related to changes in labor court litigation. Prior to the reform, the backlog of pending cases at labor courts was very high by international standards (IMF 2017). The workers usually faced no direct costs from litigation as they were excused from paying any court fees, expert witnesses' fees or attorney's fees. This created large incentives for litigation, resulting in high costs on firms and limiting the demand for labor force force (Corbi, Ferreira, Nartia, and Souza; 2022). These constraints were binding from the employers' perspective. 7.4 percent of 1,802 Brazilian firms in the 2009 World Bank Enterprise Survey had reported labor regulations as the biggest obstacle, almost double of those reported for all countries and Latin America and Caribbean across all the years surveyed (3.9 percent and 3.6 percent, respectively).

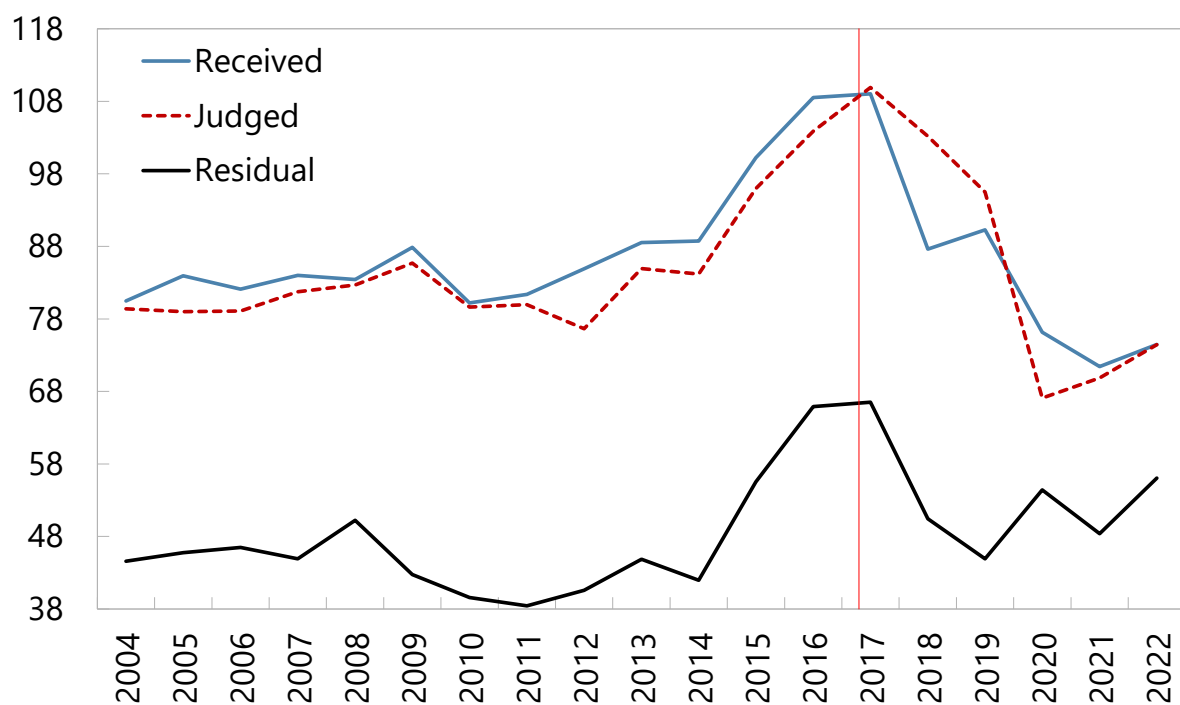
The reforms aimed to reduce the judicialization of labor relations and made important changes to discourage excessive litigation through tightening standards for: (i) different fees—e.g., proof of income required to be exempted from court fees; (ii) frivolous and groundless litigation (plaintiffs can be required to pay a fine and/or compensate the defendant); (iii) withdrawal of complaints (if the opposing side has presented the defense, the plaintiff is required to get the consent from the opposing side); and (iv) complaint requirements, following similar guidelines to those of civil complaints. The details of the changes are documented in Corbi and others (2022).

The impact of the changes related to labor court litigation led to a marked drop in labor litigation cases (Figure 2). The number of labor litigation cases received per 1000 formal workers across the total economy dropped by 20 percent in 2018, the first year after the reform, and decreased further until 2021 and picked up slightly in 2022. Similar patterns are observed for number of judged and residual cases.

² The changes in TFP displayed in Figure 1 could partly reflect cyclical economic patterns since common TFP estimates do not properly incorporate patterns in factor utilization (Fernald and Wang, 2015). This is less of a concern in our econometric exercise later in the paper because the rich set of fixed effects included in the analysis absorb cyclical movements in capital utilization.

Figure 2. Labor Litigation

(Cases per 1,000 formal workers, all levels)



Sources: Tribunal Superior do Trabalho; CAGED; Fund staff calculations.

Data and Empirical Strategy

This section presents the data used in the analysis and the empirical strategy. It begins by describing the three data sources employed in the econometric analysis. The section then presents the difference-in-difference estimation used to gauge the impact of the 2017 labor reform on firm-level TFP in Brazil.

Data

The analysis in the paper relies on three different data sources on firm-level productivity, employment, and litigation cases to estimate the impact of the decline of litigation costs on firm-level productivity. Firm-level information comes from Orbis; data on employment and labor force participation at the state level comes from the PNAD survey; state-level information on labor litigation cases comes from TST (Tribunal Superior do Trabalho). Below we describe each dataset in more detail.

Orbis: Firm-level information comes from Bureau van Dijk's (BvD) Orbis global database. The analysis covers over 4,500 private and public firms comprising different industries operating in Brazil. BvD collects data from various sources and harmonizes them into an internationally comparable format. The underlying Orbis dataset includes corporate balance sheet and income statement information. Firms are grouped using the 4-digit NACE industry classification, based on their main line of business as reported in the last year (not time-varying). The downloaded data is then cleaned using steps based on Kalemli-Ozcan and others (2015), Gopinath et al (2017), and Díez and other (2021). Essentially, this involves correcting for duplicate entries and basic reporting mistakes (e.g., dropping firms reporting negative assets); conducting further quality checks; and deflating nominal variables using relevant deflators. This paper uses data from 2014 onwards, as firm-level coverage in Brazil prior to 2014 is relatively poor. Following the methodology proposed by Akerberg and others (2015), TFP is estimated using a gross output approach, with cost of goods sold and tangible fixed assets as inputs.³

Key to our analysis, Orbis provides information on the location of the firm's headquarters. In the case of Brazil, this amounts to information about the state in which the firm is based. This information will be critical in allowing us to assess which firms were more impacted by the fall in labor litigation across states. Note that, in principle, the information in Orbis provides an imperfect measure of firms' exposure to changes in labor litigation at the state level, as some firms' HQ may be located in one state, but production may occur in other states. In other words, to the extent that HQ location and the location of plants differ, the variable used in the analysis will be an imperfect gauge of intensity of the reform from the point of view of the firm. In the empirical analysis we conduct several robustness exercises to assuage concerns about this potential disconnect.

Finally, to understand whether the reform had a differential impact for labor- and trade-intensive firms, sectoral labor and trade intensity is computed using data for firms in advanced economies.⁴ A sector's labor intensity is constructed by calculating the median ratio of labor cost over total costs for firms in the sector in key advanced economies. Similarly, a sector-level measure of trade intensity is constructed by computing the median ratio of export revenue over sales for each sector.

³ In countries reporting cost of employees and cost of materials, a synthetic COGS, defined as the sum of these two inputs, is used in the production function estimation.

⁴ The analysis used firm-level data for Belgium, Denmark, Finland, France, Greece, Italy, the Netherlands, Norway, Portugal, Spain, and the United Kingdom.

PNAD: Data on employment and labor force are from the *Pesquisa Nacional por Amostra de Domicílios* (PNAD). PNAD is a household survey with national coverage administered by the Instituto Brasileiro de Geografia e Estatística (IBGE), and it is one of the primary sources of nationally representative labor market and demographics data. PNAD data has the advantage of covering both formal and informal work arrangements. Importantly for our paper, PNAD reports aggregate data on employment and labor force at the state level, which we use to normalize litigation cases, as described below.

TST data: To construct a measure of state-level exposure to the labor reform we rely on data from Brazil's TST, which reports the number of labor litigation cases at the state level per year. To capture state-level heterogeneity in the impact of the reform we construct a variable that captures the change in the number of litigation cases as a share of either employment or labor between 2016 and 2019 in each state. This captures the intensity with which the reform affected the state. For robustness, we construct these measures of intensity of the reform using both the number of cases filed in the year and the number of cases filed and judged.

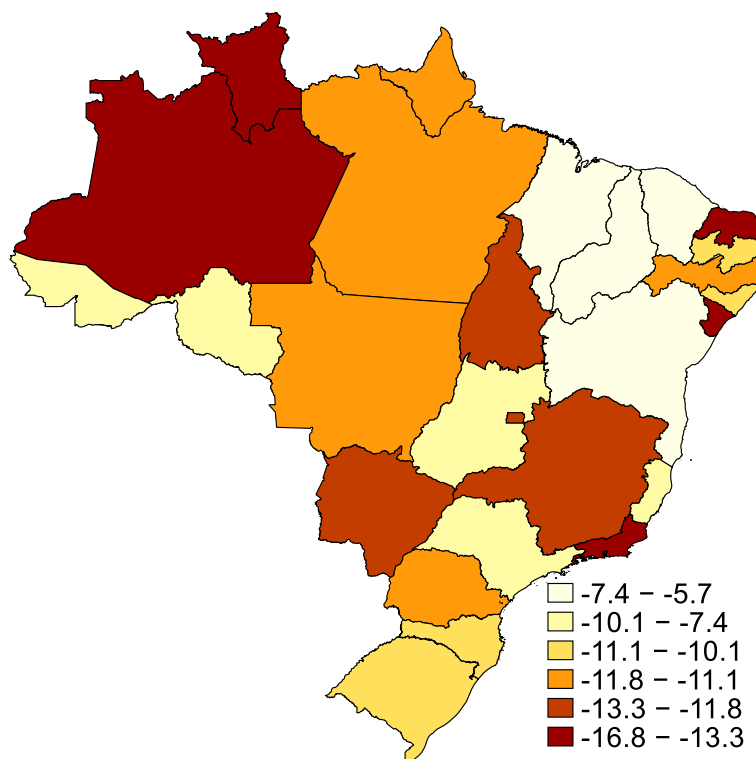
Figure 3 shows the geographic distribution of the changes in litigations as fraction of employment between 2016 and 2019. As shown, states that saw the largest reductions are distributed across Brazil, suggesting that the reforms affected states with different sectoral production patterns and population levels. Table 1 presents summary statistics for the main variables used in the analysis.

Table 1. Summary Statistics

	Average	St. Dev.	Min	Max
log TFP	2.71	1.39	0.077	6.69
log Sales	16.23	2.11	4.57	24.27
Change in litigation cases, as a share of employment	-10.01	2.41	-16.79	-5.65
Change in litigation cases, as a share of labor force	-9.03	2.28	-14.76	-5.66
Labor Intensity	0.53	0.42	0.08	5.48
Trade Intensity	0.004	0.016	0	0.45

Empirical strategy

To gauge the impact of the 2017 labor reforms on productivity in Brazil, we exploit both variation in litigation cases across Brazilian states and differences in sectoral labor intensity. More specifically, we leverage the fact that the 2017 labor reform induced a heterogeneous response in litigation cases across Brazilian states. This, coupled with the fact that firms in sectors with higher labor intensity were arguably more exposed to the reform, allows to trace the differential productivity performance of firms that were more likely to be affected by the reform (high labor intensity firms in states experiencing larger reductions in litigations) relative to those that were ex-ante less affected.

Figure 3. The Geographic Distribution of Changes in Labor Litigations

Source: Authors' calculations based on PNAD and TST data.

Following the rationale described above, we estimate the following econometric specification:

$$tfp_{i,s,t,k} = \beta * post * intensity_k * \Delta litigation_s + \gamma_{k,t} + \sigma_{s,t} + \theta_i + \vartheta X_{i,t} + \varepsilon_{i,k,t,s} \quad (1)$$

where $tfp_{i,s,t,k}$ is the estimated TFP of firm i in sector k in state s at time t , $post$ is a dummy variable taking value one if the year is post 2017 (after the labor reform); $\Delta litigation_s$ captures the change in state-level litigation as a share of employment⁵ between 2016 and 2019, $intensity_k$ is a proxy of labor (trade) intensity in sector k ; $X_{i,t}$ are firm-level variables (lagged TFP); $\gamma_{k,t}$ are sector-time fixed effects, which capture global sectoral trends in a flexible way $\sigma_{s,t}$ are state-time fixed effects, aimed at capturing state-wide time varying variables such as economic activity or local labor market slack, and θ_i are firm fixed effects, aimed at capturing any unobserved time-invariant firm characteristic. The parameter of interest, β , captures the difference in productivity between the firms most affected by the reform (those in labor/trade intensive sectors, in states with large changes in litigation cases) versus other firms and the expectation is that firms with high labor intensity in states with larger declines in litigation cases experienced a larger increase in TFP compared to other firms (negative β). We winsorize our data to exclude the top 99 percent and the bottom 1 percent of the productivity distribution and we cluster our standard errors at the state-year level.

⁵ For robustness, we also normalize litigation cases by each state's labor force.

To further study the relationship between the labor reforms of 2017 and firm-level productivity, we conduct an event study analysis that expands the specification of equation (1) as follows:

$$tfp_{i,s,t,k} = \sum_{v \in year, year \neq 2017,}^{2021} (I(v = t) * \beta^v * post * intensity_k * \Delta litigation_s) + \gamma_{k,t} + \sigma_{s,t} + \theta_i + \vartheta X_{i,t} + \varepsilon_{i,k,t,s} \quad (2)$$

Where I is an indicator function taking value one if $v = t$ and zero otherwise. The idea is to test whether the coefficients for the years prior to the reform are statistically insignificant, which can be reassuring about the absence of pre-trends.

Results

This section presents results stemming from the estimation of (1). It starts by discussing baseline results. Then it turns to exploring the robustness of the results to the exclusion of large states and to alternative exposure measures.

Baseline results

The analysis shows a significant boost in TFP for labor intensive firms from the decline in litigation costs (Table 1, column 1). Post-reform productivity in firms operating in labor intensive sectors and states witnessing large reductions in litigation cases was significantly larger compared to the pre-reform period. Note that productivity dynamics may be affected by firm-specific variables such as past TFP or size. To test the robustness of our results to such variables, columns (2) and (3) control for lagged TFP and lagged sales (both in logs), respectively. Results show that, if anything, the inclusion of these controls raises the point estimate (in absolute terms) of our coefficient of interest, suggesting a stronger impact of the reform in the affected firms. Finally, Table 1, column (4) shows results for an exercise where we normalize litigation cases by the state's labor force (as opposed to its employment). We find that results are virtually unchanged when we use this alternative normalization.

Similarly, the productivity of firms in trade intensive sectors also increases from the decline in litigation costs (Table 1, column 5). As is the case in labor intensive sectors, firms operating in trade intensive sectors and states that experienced large drops in litigation cases saw productivity improvements in the aftermath of Brazil's labor reform, a result that remains present after controlling for lagged productivity and sales (columns (6) and (7)). Our results are also robust to normalizing the decline in litigation cases by labor force (column (8)).

Results are not only statistically but also economically significant. The regression estimates imply that firms in the average state in labor intensive sectors (90th percentile of the sectoral distribution) witnessed an increase in TFP of about 15 percent after the 2017 reform due to the decline in litigation cases, compared to firms in low labor-intensive sectors (10th percentile). High trade-intensive firms witnessed a similar increase in TFP after the reform compared to firms in low trade-intensive sectors.

How do our estimates translate at the aggregate level? To get a sense, we conduct a simple back-of-the-envelope exercise for illustrative purposes. Using our estimates, we compute the change in firm-level productivity in a sector with average labor intensity that has been exposed to the decline in litigations to represent the change in productivity at the national level. We compare this to the firm-level productivity of a similar sector that do not experience a change in litigation. The exercise, which further assumes that all other variables (including fixed effects) remain constant, suggests that aggregate productivity increases by about 5 percent between the pre-reform period (2014-2017) and the post reform period (2017-2021). The findings are in line with Corbi and others (2022) who find that the reform had significant positive effects on employment and aggregate output by reducing costs of lawsuits.

Table 2. The Effect of Changes in State-level Litigations on Productivity

VARIABLES	(1) log TFP	(2) log TFP	(3) log TFP	(4) log TFP	(5) log TFP	(6) log TFP	(7) log TFP	(8) log TFP
log TFP (t-1)		0.0543* (0.0297)	0.0721** (0.0312)	0.0722** (0.0312)		0.0539* (0.0297)	0.0717** (0.0312)	0.0718** (0.0312)
log Sales (t-1)			0.0095 (0.0114)	0.0095 (0.0114)			0.0098 (0.0114)	0.0098 (0.0114)
post 2017 x labor intensity x change in litigations (% of employment)	-0.0117** (0.0049)	-0.0134*** (0.0040)	-0.0137** (0.0057)		-0.0125** (0.0049)	-0.0143*** (0.0040)	-0.0152*** (0.0058)	
post 2017 x labor intensity x change in litigations (% of labor force)				-0.0134** (0.0059)				-0.0149** (0.0060)
post 2017 x trade intensity x change in litigations (% of employment)					-0.4734*** (0.1068)	-0.3813*** (0.1038)	-0.3904*** (0.1133)	
post 2017 x trade intensity x change in litigations (% of labor force)								-0.4146*** (0.1153)
Constant	2.6810*** (0.0111)	2.6026*** (0.0844)	2.5134*** (0.1917)	2.5180*** (0.1917)	2.6699*** (0.0117)	2.5916*** (0.0846)	2.4973*** (0.1923)	2.5029*** (0.1923)
Observations	38,879	21,650	17,959	17,959	38,879	21,650	17,959	17,959
R-squared	0.9613	0.9735	0.9751	0.9751	0.9613	0.9735	0.9751	0.9751
Sample	All	All	All	All	All	All	All	All

Note: All regressions include firm, state-year, and sector-year fixed effects. Standard errors clustered at the country-year level in parentheses

*** p<0.01, ** p<0.05, * p<0.1

So far, the analysis has focused on the response of the average firm within sectors to the labor reform. Yet, potentially reforms could have heterogeneous impacts across firms. For example, litigations could exert larger costs on small firms, which are typically more financially constrained. We explore the potentially heterogeneous impacts of reforms across firms of different size by interacting our variable of interest with firm size (the log of lagged sales). To avoid confounding the interaction coefficient with the effect that size could have on productivity growth, this exercise also controls for size. The result of this exercise is presented in Table 2.

Our findings suggest that the productivity-effects of the reforms are more pronounced for small firms, albeit differences in impact between small and large firms are not always statistically significant (Table 2). First, note that in the extended regression where, in addition to the controls in (1), we include the interaction of the variable of interest ($post * labor\ intensity_k * \Delta litigation_s$) with size, the self-standing coefficient remains negative and statistically significant. The interaction with size, on the other hand, is positive but not significant, suggesting that, while this points to smaller post-reform improvements in productivity among large firms, differences vis-à-vis small firms are not significant. This result is robust to using labor force when normalizing litigation cases (column (2)). Interestingly, when we add the interaction with trade intensity and size results also point to a smaller impact of the reform on large firms, but now the coefficient for the interaction between size and the trade intensity variable is statistically significant (columns (3) and (4)). Thus, taken together, our results suggest that the reform were particularly productive-enhancing for small firms.

Table 3. The Role of Firm Size

VARIABLES	(1) log TFP	(2) log TFP	(3) log TFP	(4) log TFP
log TFP (t-1)	0.0722** (0.0312)	0.0722** (0.0312)	0.0710** (0.0312)	0.0711** (0.0312)
log Sales (t-1)	0.0105 (0.0110)	0.0105 (0.0111)	0.0111 (0.0111)	0.0111 (0.0111)
post 2017 x labor intensity x change in litigations as pct. of employment	-0.0201** (0.0093)		-0.0191* (0.0101)	
log Sales (t-1) x post 2017 x trade intensity x change in litigations as pct. of employment	0.0004 (0.0005)		0.0003 (0.0006)	
post 2017 x labor intensity x change in litigations as pct. of labor force		-0.0204** (0.0100)		-0.0191* (0.0108)
log Sales (t-1) x post 2017 x trade intensity x change in litigations as pct. of labor force		0.0004 (0.0006)		0.0003 (0.0006)
post 2017 x trade intensity x change in litigations as pct. of employment			-1.0887*** (0.3672)	
log Sales (t-1) x post 2017 x trade intensity x change in litigations as pct. of employment			0.0405** (0.0199)	
post 2017 x trade intensity x change in litigations as pct. of labor force				-1.2063*** (0.4034)
log Sales (t-1) x post 2017 x trade intensity x change in litigations as pct. of labor force				0.0462** (0.0223)
Constant	2.4979*** (0.1875)	2.5028*** (0.1877)	2.4780*** (0.1882)	2.4839*** (0.1884)
Observations	17,959	17,959	17,959	17,959
R-squared	0.9751	0.9751	0.9751	0.9751
Sample	All	All	All	All

Note: All regressions include firm, state-year, and sector-year fixed effects. Standard errors clustered at the state-year level in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Robustness exercises

In this section we test the robustness of our results to several exercises.

First, our exercise assumes that firms are mostly affected by legislation of the state where their headquarters are located. While, broadly speaking, this may be a reasonable assumption in Brazil since around two thirds of active companies are individual entrepreneurs, and thus the headquarter and location are likely to be the same state, it may not necessarily apply to firms in Orbis, which are expected to be larger firms, and could potentially be multi-establishment firms. This may be a caveat of our analysis since litigation data are based on the state where the firm's headquarter is located, and not necessarily where the its employment is located. To assuage this concern, we conduct two robustness exercises. First, we remove firms in the top 90 percentile of size. Table 3, column (1) presents the result of this exercise, which, consistent with the findings in Table 2, shows that the coefficient of interest is larger when we focus on the set of smaller firms. In a second exercise, we remove firms headquartered in large states (Brasília, Rio de Janeiro, and São Paulo), where the likelihood of firms being located in multiple locations could be higher. Results, presented in columns (2)-(4) of Table 3, shows that our findings are robust to the exclusion of firms in Brasília, Brasília and Rio de Janeiro, and Brasília and Sao Paulo, respectively.

Second, we explore the sensitivity of our results to the inclusion of the COVID-19 years. During the 2020-2021 firm-level outcomes were influenced by the impact that the COVID-19 pandemic had on economic activity and the economic support provided by governments. Thus, to test the sensitivity of our results to the inclusion of

these years, the last column in Table 3 shows regression results where we limit the sample to the 2014-2019 period. The results are robust to the exclusion of the COVID years.

Table 4. Robustness to the Exclusion of Large Firms, Large Regions, and COVID years

VARIABLES	(1) log TFP	(2) log TFP	(3) log TFP	(4) log TFP	(5) log TFP
log TFP (t-1)	0.0645** (0.0284)	0.0544* (0.0300)	0.0555* (0.0329)	0.0414 (0.0312)	-0.0035 (0.0383)
post 2017 x labor intensity x change in litigations as pct. of employment	-0.0177*** (0.0063)	-0.0149*** (0.0041)	-0.0177** (0.0068)	-0.0175*** (0.0057)	-0.0132*** (0.0039)
Constant	2.7077*** (0.0864)	2.5995*** (0.0856)	2.5446*** (0.0927)	2.6139*** (0.0889)	2.7166*** (0.1055)
Observations	15,859	21,306	18,927	13,609	18,089
R-squared	0.9746	0.9737	0.9737	0.9766	0.9753
Sample	Exc. top 90 pct. by sales Exc. Brasília Exc. Brasília and Rio de Janeiro Exc. Brasília and Sao Paulo Pre-2020				

Note: All regressions include firm, state-year, and sector-year fixed effects. Standard errors clustered at the state-year level in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Third, we assess the robustness of our findings to using an alternative measure of state level exposure to the reform. In particular, instead of using the actual reduction in litigation cases, we employ the level of pre-reform litigation cases to capture the differential impact on high- versus low-exposure litigation states. The idea is that high litigation states were ex-ante more likely to get a positive productivity boost from the reform. Our findings, shown in Table 4, show that, as expected, firms in states where litigation cases in 2016 were higher (as a share of both employment and labor force) saw a larger productivity improvement in the post-reform period compared to states that had low levels of litigation prior to the reform.

Table 5. Pre-Reform Litigations (Exposure) and Productivity

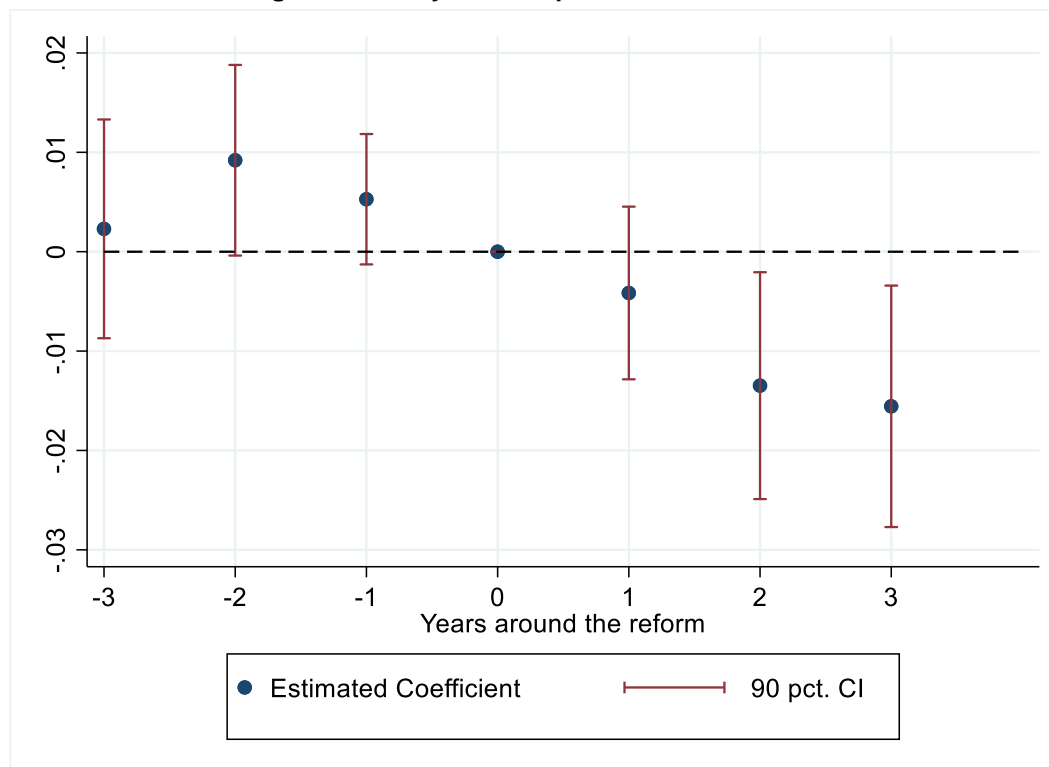
VARIABLES	(1) log TFP	(2) log TFP	(3) log TFP	(4) log TFP
log TFP (t-1)	0.0546* (0.0297)	-0.0034 (0.0383)	0.0546* (0.0297)	-0.0034 (0.0383)
post 2017 x labor intensity x Litigations in 2016 (% of employment)	0.0032* (0.0017)		0.0032* (0.0017)	
post 2017 x labor intensity x Litigations in 2016 (% of labor force)		0.0046** (0.0018)		0.0046** (0.0018)
Constant	2.6140*** (0.0846)	2.7210*** (0.1057)	2.6140*** (0.0846)	2.7210*** (0.1057)
Observations	21,650	18,089	21,650	18,089
R-squared	0.9735	0.9753	0.9735	0.9753
Sample	All	Pre-2020	All	Pre-2020

Note: All regressions include firm, state-year, and sector-year fixed effects. Standard errors clustered at the state-year level in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Further, we conduct the event analysis described in equation (2) to test for the existence of pre-trends. The results of this exercise, presented in Figure 3, show that the relationship between productivity in the years prior to the reform and the interaction term is not statistically significantly different from zero. By contrast, consistent with the baseline results in Table 2, the coefficient is negative and statistically significant for the years after the reform. These results are reassuring as they are indicative that the results found in the baseline analysis are not driven by pre-existing trends in the states most affected by the reform.

Figure 4. The Dynamic Impact of Labor Reforms



Source: Authors' calculations based on the estimation of equation (2).

Conclusion

Using firm-level data, we find strong evidence that the decline in litigation costs, from the 2017 labor market reforms that tightened standards for labor litigation, had a positive impact on the productivity for labor- and trade-intensive firms. There is also some suggestive evidence that the reform had a higher productivity effect on smaller firms, highlighting that high litigation costs could be a disproportional burden on smaller firms. To the extent that lower litigation costs could encourage firms to increase their sizes by removing one obstacle to grow bigger, there could be even higher and more persistent impact on firm-level productivity. Apart from these reforms, intensifying ongoing efforts to increase labor force participation and skill upgrading would be essential to improve potential growth through higher productivity (IMF 2024).

Our findings are consistent with a large body of literature showing the potentially adverse effects of labor regulations on growth (e.g. Caballero and others, 2013; Cingano and others, 2014). It expands on previous work by exploiting subnational variation to the labor reform and by focusing on a country with high prevalence of informality. The latter adds to the understanding to the complex links between labor regulations, informality, and growth.

While our paper sheds positive impact of labor market reforms on productivity, the scope of the paper should be borne in mind—namely, on productivity. There are other important factors that need to be considered when designing labor market policies. For example, workers' rights to litigate should be protected and care should be taken that policies do not inadvertently make it difficult for workers to access the labor court. In addition, our exercise focuses on the litigation aspect of the reform only. The impact of other components of the reform could also be studied to get a holistic view on the macroeconomic impact of the 2017 labor market reform. We leave it on future studies to delve into these issues.

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