The Effects of Mandatory Profit-Sharing on Workers and Firms: Evidence from France *

Elio Nimier-David† David Sraer‡ David Thesmar§

July 20, 2023

Abstract

Since 1967, all French firms with more than 100 employees are required to share a fraction of their excess-profits with their employees. Through this scheme, firms with excess-profits distribute on average 10.5% of their pre-tax income to workers. In 1990, the eligibility threshold was reduced to 50 employees. We exploit this regulatory change to identify the effects of mandated profit-sharing on firms and their employees. The cost of mandated profit-sharing for firms is evident in the significant bunching at the 100 employee threshold observed prior to the reform, which completely disappears post-reform. Using a difference-in-difference strategy, we find that, at the firm-level, mandated profit-sharing (a) increases labor share by 1.8 percentage points, (b) reduces the profit share by 1.4 percentage points, and (c) does not affect investment nor productivity. At the employee level, mandated profit-sharing increases low-skill workers' total compensation and leaves high-skill workers total compensation unchanged. Overall, mandated profit-sharing redistributes excess-profits to lower-skill workers in the firm, without generating significant distortions or productivity effects.

*For useful comments, we thank Edward Glaeser, Pat Kline, Camille Landais, Enrico Moretti, Emmanuel Saez, Gabriel Zucman as well as seminar participants at UC Berkeley, CREST, INSEAD, UMass Amherst and Uppsala University. This research benefited from financial support from the ANR "Investissements d'avenir" program under the ANR grant ANR-18-EURE-0005 (EUR DATA EFM).

†University of Chicago, Booth School of Business, elio.nimier-david@chicagobooth.edu

‡University of California-Berkeley, NBER and CEPR, sraer@berkeley.edu

§MIT, NBER and CEPR, thesmar@mit.edu

1 Introduction

Public policies favoring profit-sharing between firm owners and employees are pervasive around the world (for a review of profit-sharing schemes in OECD countries, see OECD (1995)).[1] There are two important questions around profit-sharing schemes. The first one is an incidence question: do they really benefit workers or are employers simply substituting fixed wages for profit-sharing? The second one relates to their economic effects: do they foster firm productivity by aligning the incentives of owners and employees? Answering these questions is challenging.

First, the adoption of a profit-sharing mechanism is an endogeneous decision by firms, which makes causal inference from observational data difficult. For instance, firms expecting strong gains from profit-sharing might be more likely to set up a profit-sharing scheme; similarly, workers anticipating future productivity gains might lobby for the introduction of profit-sharing in their firms. Such mechanisms would create an upward bias in the relationship between productivity and profit-sharing. So far, the literature has mostly relied on observational data and cross-sectional variations (e.g., Blasi et al. (2008)). Some papers rely on fixed-effect models to account for (time-invariant) unobserved firm characteristics (e.g., Wadhwani and Wall (1990); Kruse (1992); Bell and Neumark (1993)). Alternatively, some authors have modeled explicitly the decision to adopt profit-sharing schemes: FitzRoy and Kraft (1987); Cahuc and Dormont (1997) use a Tobit selection model with firms' characteristics as instruments for profit-sharing. To the best of our knowledge, the only paper using quasi-experimental evidence is Knez and Simester (2001), which relies on a case study, the introduction of performance-based bonuses by Continental Airlines in 1995.

The second challenge is data availability: information about profit-sharing has to be combined with firm-level accounting data. As a result, most studies have relied on small samples, limiting the quality of inference (e.g., FitzRoy and Kraft (1987) focuses on 65 medium-sized metalworking firms in West Germany).

Our paper contributes to our understanding of profit-sharing schemes by offering a credible identification strategy and implementing it on a large administrative dataset. In 1967, the French government passed a law requiring all firms with more than 100 employees to

[1]For instance, in Canada, employers can set up deferred profit-sharing plans: firms make fully tax-free contributions conditional on their realized profits, and employees do not have to pay federal taxes on these contributions until they later withdraw it from the plan. In the US, similar plans with similar tax incentives exist, as well as cash-based profit-sharing plans, whereby employees receive a cash bonus in years where the firm is making profits, contributions by the firms are tax-deductible, but not for the employees. In Mexico, the Employee Participation in Company Profits scheme (PTU) requires companies with employees and more than about $15,000 of sales to share 10% of their profits with their employees, as established by the National Commission for the Participation of Workers in the Profits of Companies. Profits are allocated half uniformly and half proportionally to employees' wages.

redistribute a share of their "excess-profits" (i.e., profits above 5% of book equity) to their employees. The main policy goal was to "align" the objectives of employees and shareholders to improve productivity and reduce social conflicts. The law introduced an explicit formula, still used today, to determine the fraction of excess-profits that must be distributed to employees. This formula implies a significant tax on firms' profits. Absent any behavioral response, a firm with a labor share of 2/3 and a Return On Equity (ROE) of 10% would see 10% of its pretax profit transferred from shareholders to workers through the scheme. In 1991, the requirement threshold was reduced from 100 employees to 50 employees. Combining this policy change with an exhaustive firm-level dataset containing the amount of profit-sharing paid by firms every year allows us to evaluate the economic effects of mandated profit-sharing.

Our empirical analysis proceeds in three steps. The first exercise investigates the cost of profit-sharing for firms through a bunching analysis. Whether firms perceive the regulation as a net cost or benefit is a priori unclear. The profit-sharing scheme provides tax incentives for both firms and workers. On the firm side, payments made to employees through profit-sharing are exempt of payroll taxes – while wages are not. On the employee side, employees have the option to invest the proceeds from profit-sharing in a dedicated account, which become income-tax exempt after five years. If firms required to share their profits by the regulation can reduce workers' wages and keep their total net-of-tax compensation fixed, the scheme would strictly benefit firms at the expense of the tax authority. If instead wages do not adjust enough to the extra compensation induced by profit-sharing, then the regulation represents a net cost for firms. We empirically answer this question through a bunching analysis. Importantly, the profit-sharing requirement is the only regulation that kicks ,in at 100 employees.[2] Prior to 1991 (when the threshol,d comes down to 50), we document significant bunching below the 99 employee threshold. Such bunching quickly disappears after 1991 when the requirement threshold is reduced to 50 employees. Using the post-reform distribution as counterfactual, we show that there is a significant 22.3% excess density for firms between 95 and 99 employees. Thus, despite its tax benefits, some firms perceive mandated profit-sharing as a net cost. This finding suggests that firms have a limited ability to pass through the cost of profit-sharing to their employees through lower wages and that the productivity gains are smaller than the extra cost entailed. The evidence of significant bunching at the 99 employee threshold also implies that the eligibility threshold creates significant distortions, a result reminiscent of what Garicano et al. (2016); Aghion

[2]As emphasized in Garicano et al. (2016), many regulations in France binds when firms cross the 50-employee thresholds (e.g., the requirement to organize a worker's council). This is not the case at the 100 employee threshold.

et al. (2021) document for the 50-employees threshold. We estimate that about 1% of the total employment of firms with 85-120 employees is lost due to excess bunching below the 100 employee threshold.

We confirm this interpretation using an intent-to-treat difference-in-difference analysis at the firm-level.[3] Our treatment group is the universe of firms with 55-85 employees just before the reform (i.e., in 1989 and 1990). Absent changes in their employment counts, these firms would have to start sharing profits in 1991. We do not include firms between 50 and 55 employees as these firms can easily avoid profit-sharing post-reform by crossing the 50 employee thresholds after 1991. We also exclude firms with 85-100 employees as many of them are "bunchers" – firms who endogenously decided not to cross the 100 employee threshold prior to 1991 – and might thus have different characteristics than firms in our control groups. We use two separate control groups: (1) large control firms have between 120-300 employees in 1989-1990; these firms are likely subject to the profit-sharing requirement both *before* and *after* the reform (2) small control firms have between 35-45 employees in 1989-1990; these firms are likely never subject to the profit-sharing requirement.[4]

Our analysis relies on the identifying assumption that, absent the reform, the labor share or productivity of firms in the treatment group would have evolved similarly to firms in the two control groups. We systematically confirm that, prior to 1991, firms in the treatment and the two control groups follow parallel trends, indicating that firms below the 50 employee threshold and above the 100 threshold provide suitable counterfactuals for firms mandated to share profits. While firms of different sizes might respond differently to business cycle shocks, using firms both smaller and larger than treated firms as control groups alleviates the concern that our estimate would pick-up such a size effect.

Using this empirical strategy, we find that workers fully benefit from profit-sharing and that the cost is shared between firm owners and the tax authority. For firms with positive excess-profits, the profit-sharing requirement leads to a 1.8 percentage point increase in the total compensation share (i.e., wage bill plus profit-sharing divided by value added). We show that 77 percent of this increase comes at the expense of firm owners (i.e., the profit share decreases by 1.37 percentage points) and the rest is paid by the tax authority in the form of a significantly lower corporate income tax as profit-sharing reduces the corporate income tax base. The wage share (wage bill divided by value added), however, is not affected. This finding suggests that profit-sharing does not affect wages paid to workers, a result we

[3]While there is an eligibility threshold at 100 employees (prior to 1991, and then at 50 employees), this setting cannot be used for a regression discontinuity design: as we show in our bunching analysis, firms control where they fall relative to this threshold.

[4]We exclude firms close to the 50 employee thresholds, since they are also "bunchers" (Garicano et al. (2016)).

further discuss when moving to worker-level data.

We then exploit the same empirical design to assess how profit-sharing affects firm-level productivity. We consider several measures of productivity used in the literature (Olley and Pakes (1996), Olley and Pakes (1996) with Ackerberg et al. (2015) correction, Wooldridge (2009), Levinsohn and Petrin (2003) and Ackerberg et al. (2015)). We obtain consistent findings across all measures: profit-sharing leads to a precisely estimated zero effect on productivity. For several measures, we reject effects that would increase or decrease productivity by more than 1% for our intent-to-treat estimates. We also consider "softer" measures of productivity (e.g., sick leaves, probability of working extra hours) and fail to find any significant effect. A typical concern with profit-sharing schemes and their effect on productivity is that they are too small to foster employees' incentives. However, this is not the case of the mandated profit-sharing scheme we analyze. In our data, the requirement to share profits represents a transfer to employees of about 10.5% of firms' pre-tax income.[5] This finding contrasts with the empirical literature that finds a sizeable effect of the (endogeneous) adoption of profit-sharing – typically in the range of 3-5% (e.g., FitzRoy and Kraft (1987), Wadhwani and Wall (1990), Kruse (1992), Cahuc and Dormont (1997), Prendergast (1999), Doucouliagos et al. (2020)). In the absence of productivity effects, a reasonable concern is that mandated profit-sharing would discourage investment by reducing the return to capital. In the data, however, mandated profit-sharing has a null effect on investment and on firms' capital-labor ratio. As we explain through the lens of a simple model, this finding is not surprising given that the profit-sharing formula is based on excess-profits and firm's ROE is not too far from the 5% used in the formula. Overall, our findings suggest that mandated profit-sharing, as implemented in France, does not generate significant distortion for firms.

While our firm-level analysis shows that mandated profit-sharing induces significant redistribution from firm owners to workers, this result potentially conceals significant heterogeneity. To further evaluate the effects of mandated profit-sharing on workers, we exploit linked employer-employee data that cover $1/25^{th}$ of all employees in France. We first confirm our main finding on this worker-level data. Workers in firms required to share profits do not experience a decline in their base wage. As a result, their total compensation increases by about 3.5%. The absence of incidence of profit-sharing on workers' base wage has two potential interpretations: (1) profit-sharing is risky so that it has limited value for risk-averse employees (2) wages are downward-rigid. We show that the risk channel is unlikely to be important since the share of profit-sharing in employees' compensation is small. Exploiting our employer-employee dataset, we provide evidence consistent with the wage rigidity chan-

[5] After 1991, for firms with more than 50 employees that pay some profit-sharing, profit-sharing represents, on average, 10.5% of the firm's pre-tax income.

nel. Our starting point is that, given the binding federal minimum wage in France, wages are likely more rigid for low-skill workers. We thus compare how wages respond to mandatory profit-sharing across the skill distribution. We find that the increase in total compensation is concentrated among workers at the lower end of the skill distribution (blue-collar workers, clerks, supervisors, skilled technicians). In contrast, for workers at the high end (managers, engineers, executives), the profit-sharing requirement leads to a decline in their base wage, leaving their total compensation unchanged. This finding is consistent with the wage rigidity channel. It also shows that mandated profit-sharing, in this context, is a progressive policy (at least within firms) as it benefits significantly more lower-skilled workers.

We believe our analysis of a large and mandatory profit-sharing scheme is relevant in the current economic context. The labor share has gone down significantly in most industrialized countries (Neiman (2014)). In the US, the share of the pretax real income going to the bottom 50% of the distribution has stagnated since 1980 (Piketty et al. (2018). Several recent contributions have emphasized the rise in monopsony power in US local labor markets and its detrimental effect on workers' income (Berger et al. (2022),Stansbury and Summers (2020)). Together, these trends have generated a significant renewal of interest for redistributive policies and their economic effects. Our findings show that mandated profit-sharing, as implemented in France, can act as a non-distortive redistributive tool, taxing shareholders' excess-profits to benefit lower-skill workers. It is, however, costly for public finances: every dollar transferred to workers through the mandated profit-sharing scheme costs about 20 cents in reduced corporate income tax receipts. It is also an unequal form of redistribution, since it benefits workers in profitable firms and firms excess-profits are highly persistent in the data.

Our quasi-experimental approach complements the earlier literature on profit-sharing reviewed above, in that it offers a way to explore the *causal* effect of such schemes on workers' compensations and firm outcomes. It is also related to the large literature on Employee Stock Ownership Plans (ESOPs), a non-mandatory yet common profit-sharing scheme among U.S. corporations. Matsa (2019) reviews the rationales behind their adoption by firms: raising capital from informed investors, sharing risk with employees, fostering morale in the company, increasing effort, retention. Kim and Ouimet (2014) leverage U.S. census data and a matching approach to study the impact of ESOPs adoption on employee earnings and company behavior. In contrast to us, they find that small firms adopting ESOPs tend to experience increases in productivity. This finding may partly reflect the endogenous adoption of ESOPs based on unobserved firm characteristics. It is also possible that employees respond differently to a profit-sharing program imposed by federal regulation compared to one set up voluntarily by their firm.

Our paper also relates to the large and mature literature on rent-sharing within firms and how it is affected by institutions. In a recent contribution, Kline et al. (2019) provide well-identified evidence that shocks to firm-level rents are partially transferred to workers, consistent with imperfectly competitive labor markets. DiNardo and Lee (2004) use a regression discontinuity design to evaluate the economic impacts of unionization. They find small and insignificant effects of unions on wages and productivity.[6] Jäger et al. (2021) analyze the causal effect of the German codetermination system (i.e., employee representation on boards of directors) on wages. They find no effects of board-level codetermination on wages, even in firms with particularly flexible wages. Relative to these institutions (unions, codetermination), the mandatory profit-sharing scheme we evaluate in this paper leads to a significant increase in workers' total compensation (and the share of total compensation in value added).

The organization of the paper is as follow. Section 2 describes the profit-sharing scheme and the 1991 change in eligibility. Section 3 presents a simple conceptual framework, which we use to develop hypotheses that we test in our empirical analysis. Section 4 describes the data used and presents some descriptive statistics. In Section 5, we analyze bunching below the 100 employee threshold. Section 6 provides our firm-level evaluation of the reform's incidence on wage-shares, total compensation shares, profit-shares, investment and productivity. In Section 7, we exploit worker-level data to explore the effects of mandated profit-sharing across the skill distribution. Section 8 concludes.

2 Institutional Setting

In August 17^{th} 1967, Charles de Gaulle signed an executive order mandating all firms with more than 100 employees to distribute a share of their profits to their workers. Redistributive concerns were at the heart of this decision. Anticipating the opening of the common market and the ensuing increase in foreign competition, firms were engaging in massive investment to modernize their capital stock (Lasserre (1968)). Lacking external funds, firms had to generate large internal funds to finance these investments, which they partly achieved by limiting workers' wage growth. In this context, mandated profit-sharing was viewed as a way to allow workers to benefit from these investments without reducing the internal funds available to companies.

In practice, the law requires firms to set aside, every year, a positive amount \$RSP to be

[6] See also Lee and Mas (2012), who also compare close union election wins with close union election losses and find a negligible effect of union representation on shareholder value.

distributed to employees.[7] This amount is determined according to the following formula:

$$\$\text{RSP} = \frac{1}{2} \times \frac{\text{wage bill}}{\text{value added}} \times (\text{Net income} - 5\% \text{ book equity})^{+} . \tag{1}$$

The formula has a simple intuition. 5% was the lawmakers' perception of a fair compensation to shareholders. Every additional dollar of profit above this compensation (what we call excess-profits in this paper) should then be split between shareholders and their employees. The sharing rule is scaled by the firm's labor share to reflect the contribution of labor in production.[8]

Note that this reform redistributes a quantitatively large fraction of profits. This can be seen from a simple calibration of formula (1). The ratio of RSP to pre-tax income is given by:

$$\frac{RSP}{\text{Pre-Tax Income}} = \frac{1}{2} \times \frac{\text{wage bill}}{\text{value added}} \times (1 - \tau) \times \left(1 - \frac{5\%}{ROE}\right)$$

where ROE = Net Income/Book Equity is the firm's return on equity and τ is the corporate income tax rate. For a firm with a ROE of 10% and a labor share of 2/3, and given a corporate income tax rate τ of 37% in 1990, profit-sharing would amount to 10.5% of pre-tax income.

The distribution of \$RSP to each individual employee is typically proportional to their current wage.[9] There is a cap on how much an employee can receive in a given year. In 1990 – the year of the reform we analyze in the paper – this cap was equivalent to 63% of the average net wage in the private sector.[10] The scheme has also several tax implications. On the employee side, they have an option to defer receiving their profit-sharing income for 5 years, in which case it is exempt from personal income tax. On the employer side, profit-sharing is not subject to payroll tax, in contrast to regular wages. As a result, employers have a fiscal incentive to prefer profit-sharing over regular wages. This incentive is a priori quite attractive as payroll taxes in France are among the highest in the world. Overall, firms have a double tax incentive to pay employees through profit-sharing: no payroll tax and

[7] RSP stands for *Réserve Spéciale de Participation*, or special profit-sharing fund.

[8] The 1/2 coefficient was set so that, thanks to a system of tax deduction and given the corporate income tax rate of 50% in 1967, RSP would be completely compensated by a reduction in the firms' corporate income tax (in the first year only). This tax deduction was reduced by half in 1982 by the socialist government, making it more costly for firms to share profits with employees.

[9] In 2008, 37% of employees received profit-sharing proportionally to their wage, 5% proportionally to their tenure in the firm, 3% uniformly and finally 54% of employees received profit-sharing based on a formula including mostly a proportional component (DARES (2008)).

[10] Note, however, than when the cap is binding, the firm still has to set aside \$RSP, but employees only receive their share in later years when the cap is no longer binding.

an ability to provide personal income tax-free compensation – provided it is deferred. Note also that, like wages, profit-sharing reduces firms' corporate income tax: for fiscal purposes, profit-sharing is treated as a cost in firms' taxable income.

The eligibility threshold in the initial law was set at 100 employees. Firms with fewer employees could still voluntarily establish a profit-sharing fund and benefit from the same fiscal advantages. In practice, however, very few firms below the 100 threshold opted for this scheme.[11] On October 17^{th}, 1990, the left-leaning French parliament voted to extend the coverage of mandatory profit-sharing by lowering the eligibility threshold to 50 employees. The law was officially amended on November 9^{th}, 1990.[12] Importantly for our identification strategy, while many firm-level regulations kick in at 50 employees (most notably, the requirement to establish a council of worker representatives (Garicano et al. (2016)), profit sharing was the only regulation based on the 100 employee threshold before 1990.

The law still applies today. There has been only few changes to the scheme, and all these changes happened outside of our sample period (1985-1997). Most notably, the cap limiting how much employees can receive from profit-sharing was increased by 25% in 2007. Since 2009, firms have to pay some payroll taxes on the income paid to workers through profit-sharing. The rate was set at 2% in 2009 and was up to 20% in 2022. Interestingly, the formula used to compute \$RSP (Equation 1) is still the original formula from the 1967 law. In 2019, 5.3 millions workers (about 40% of the workforce) received income from this profit-sharing scheme, for an average annual amount of €1,499 or about 3.8% of recipients' wage (Briand (2021)).

3 Illustrative Model and Predictions

To understand how the French mandated profit-sharing scheme might affect workers' compensation and firms, we present a simple augmented user cost model. The model has two periods and is in partial equilibrium (we consider a single firm and assume wages are fixed). In the first period, the company purchases capital k by borrowing debt d and bringing equity $e = k - d$. In the second period, the firm hires l workers and combine them with capital k to generate revenues $y = F(k, l)$, where F is increasing in k and l and concave. Workers receive $wl + RSP$, where RSP corresponds to the total amount of profit-sharing mandated by law

[11] In 1989, among firms in the 35-85 employees range, 6.8% of firms had implemented profit-sharing.

[12] Beyond the change in eligibility threshold, the only other modification made by the new law was to allow firms to use a floor wage when calculating the share of profits distributed to employees from the RSP (Journal Officiel (1990)).

and w is their wage.[13] The firm also pays back $(1 + r_d)d$ to debt holders, where r_d is the interest on debt. The capital stock depreciates and becomes $(1 - \delta)k$ – the firm sells it after production and the price of capital is the price of the produced good, which we normalize to one. Finally, the firm faces a tax rate τ on its accounting profits, so that it pays a corporate income tax of: $\mathcal{T} = \tau (y - wl - r_d d - \delta k - RSP)$.[14]

Shareholders' select the equity they bring, e, and the capital stock to purchase, k, to maximize the cash-flow they receive from the firm. Finding the optimal amount of equity would require a theory of capital structure. While interesting, the interplay between capital structure and profit-sharing is beyond the scope of this exercise. We thus assume that the firm's capital structure is fixed and we call $\phi = \frac{e}{k}$ the constant equity-to-assets ratio. If r_e is the expected returns on the firm's equity, our assumption of a fixed capital structure allows us to assume that r_e and r_d are independent of k. We define $r = (1-\tau) r_d \frac{d}{k} + r_e \frac{e}{k}$, the firm's weighted average cost of capital (WACC), which is then also independent of k.

With these assumptions, V_e, the net present value (NPV) of the project for shareholders, is simply defined by:

$$(1 + r_e)V_e = F(k, l) - wl + (1 - \delta)k - (1 + r_d)d - \mathcal{T} - RSP - (1 + r_e)e,$$

To analyze the effect of profit sharing, we make three additional assumptions. First, RSP is given by the administrative formula $RSP = \gamma \left[((1-\tau)(F(k,l) - wl - \delta k - r_d d) - 0.05 \times e)\right]^+$, where, in the French context, $\gamma = \frac{1}{2} \times \frac{wl}{y}$. In what follows, we assume to simplify exposition that γ is constant and thus that firms do not internalize that reducing wages would affect the amount of profit-sharing due.[15] The second assumption is on the incidence of profit-sharing on the wage paid to workers. We assume that $w = w^* - \lambda \frac{RSP}{l}$, where w^* is the wage absent profit-sharing.[16] When $\lambda > 0$, the firm can lower workers' wages to account for the revenue they receive from profit-sharing. $\lambda = 1$ corresponds to full incidence – profit-sharing does not increase workers' total compensation.

Before proceeding, we should emphasize that our theoretical analysis profit-sharing assumes that profit-sharing does not generate any productivity effect. The main reason for

[13] Note that, to simplify exposition, we do not model payroll taxes. Because RSP is exempt from payroll taxes, mandated profit-sharing could reduce the marginal cost of labor and thus increase employment and investment. The model neglects this effect and can be seen as an upper bound on the negative effect of mandated profit-sharing on employment and investment.

[14] In France, like in the US, firms benefit from a depreciation tax shield and a debt tax shield. Also note that RSP can be deducted from taxable income.

[15] In principle, firms could try to manipulate the labor share to reduce profit sharing. However, we find in our empirical analysis below that mandated profit-sharing does not affect the labor share.

[16] The model assumes that workers are homogenous so they all receive the same share of profit-sharing, namely $\frac{RSP}{l}$.

this assumption is that it matches our empirical findings below. As a result, we assume $F()$ does not depend on profit-sharing. This assumption departs from traditional analyses of profit-sharing (e.g., Weitzman (1986a), Weitzman (1986b)), which typically focus on the positive incentives generated by profit-sharing.

After some algebra, we can show that, in our model, the value of the firm for equity holders is simply:

$$V_e = \frac{(1-\tau)\left(\left(\frac{1-\gamma(1-\tau)}{1-\gamma\lambda(1-\tau)}\right)\left\{F(k,l) - w^*l - \left(\delta + \frac{r}{1-\tau}\right)k\right\} - \phi\Delta\left(\frac{\gamma(1-\lambda)}{1-\gamma\lambda(1-\tau)}\right)k\right)}{1+r_e} \tag{2}$$

where $\Delta = r_e - 5\%$ is the difference between the equity cost of capital and the 5% assumed in the RSP formula. Intuitively, when $\lambda = 1$ – the firm can fully substitute profit-sharing for wages – the value of the firm reverts to the standard formula in the absence of profit-sharing.[17]

From equation 2, it is direct to see that the first-order condition determining employment is simply: $F_l(k,l) = w^*$, which leads to our first set of predictions.

Prediction 1. *For a given capital stock k, mandated profit-sharing does not distort labor demand l. As long as $\lambda < 1$, mandated profit-sharing leads to an increase in the share of total compensation over value added ($\frac{wl+RSP}{F(k,l)}$), a decrease in the profit share ($\frac{Net\ Income}{F(k,l)}$) and a decrease in the tax share ($\frac{\mathcal{T}}{F(k,l)}$).*

The finding that, for a fixed k, profit-sharing does not distort labor demand is intuitive. Because of the substitution between wages and profit-sharing, net income can be rewritten as: $(1-\tau)\left(F(k,l) - w^*l - r_d d - \delta k - (1-\lambda)RSP\right) + e$. Net income is simply its value in the absence of profit-sharing minus the overall cost of profit-sharing, which is only $(1-\lambda)$RSP because of the substitution between profit-sharing and wages. This substitution also implies that the effective RSP formula is: $RSP = \frac{\gamma}{1-\gamma\lambda(1-\tau)}\left((1-\tau)(F(k,l) - w^*l - \delta k - r_d d) - 0.05 \times e\right)$. A higher substitution between profit-sharing and wages (i.e. a higher λ) implies a higher RSP since it reduces the wage bill and thus increases excess-profits. At the margin, it is direct to see that the net benefit of hiring an extra worker is proportional to $(1-\tau)\left(F_l(k,l) - w^*\right)$, which is the same trade-off the firm would face absent profit-sharing. As long as the substitution between profit-sharing and wages is imperfect, the previous finding implies that the total compensation share – wages plus profit-sharing over output y – will be higher with mandated profit-sharing and that net income and thus the profit share will be lower.

[17] This result echoes the standard argument in Lazear (1990) that, with perfect competition and flexible wage, Employment Protection Laws (e.g., severance payment) are perfectly neutral.

We can also use Equation 2 to calculate the first-order condition in the capital stock:

$$F_k(k,l) = \underbrace{\delta + \frac{r}{1-\tau}}_{\text{standard user cost}} + \underbrace{\phi\Delta\frac{\gamma(1-\lambda)}{1-\gamma(1-\tau)}}_{\text{distortion}} \tag{3}$$

Prediction 2. *When the cost of equity r_e is close to 5%, mandated profit-sharing does not distort investment. When $r_e >> 5\%$, mandated profit-sharing reduces investment. For a reasonable calibration of the model's parameters, this distortion is negligible (about 0.4 percentage point, or less than 2% of the standard user cost of capital).*

Equation 3 shows that the firm's capital stock is determined by equalizing the marginal return on capital to the sum of: (1) a standard user cost, equal to the depreciation rate plus the net of tax cost of capital $\frac{r}{1-\tau}$ (2) a distortion which simply reflects the fact that mandated profit-sharing reduces shareholders' profits. When the equity cost of capital r_e is equal to 5% ($\Delta = 0$), there is no distortion as the RSP formula perfectly coincides with shareholders' expected net profits. This intuition is akin to the "new view" of dividend taxation in public finance. If the firm can perfectly substitute wages and profit-sharing ($\lambda = 1$), the distortion also vanishes since profit-sharing would leave net income unchanged. Intuitively, the size of the distortion increases with γ – the effective tax on excess-profits imposed by profit-sharing – and Δ – the wedge between r_e and 5%. Because RSP is tax deductible, a higher corporate income tax rate τ reduces the investment distortion implied by mandated profit-sharing.

The actual size of the investment distortion can be gauged through a simple calibration of Equation 3. Typically, the cost of equity capital should be around 10% (Gormsen and Huber (2014)), so that $\Delta \approx 5\%$. The standard user cost can be calibrated by assuming $\delta = 6\%$ (Midrigan and Xu (2022)) and a WACC r of 8.5% (Gormsen and Huber (2014)). With a corporate income tax $\tau = 37\%$ – the French corporate tax rate in 1990 – the user cost is then 19.4%. Finally, we assume that $\lambda = 0$ (which matches our empirical finding below). In our data, in 1990, the average firm-level labor share is 0.53, so that the formula implies $\gamma \approx 0.26$. Finally, in 1990, the average firm-level equity share ϕ in our data is 24%.[18]. Given this calibration, the distortion term is about 0.37 percentage point, or less than 2% of the undistorted user cost. Note that this distortion is an upper bound on the actual distortion – any substitution $\lambda > 0$ would lead to a lower distortion.

[18]We calculate the equity share as the ratio of book equity to net total assets.

4 Data

To quantify the impact of profit-sharing on workers and firms, we combine firms' balance sheet data with linked employer-employee data over the period 1985-1997.

Financial Statements. On the firm side, we exploit accounting information from tax-files in the BRN files from 1985 to 1997. These files are made available by the French Statistical Office (INSEE) through their secured remote server (CASD). The data contain income statements and balance sheets collected by the Treasury for the universe of firms in the economy that file under the so-called "normal" tax regime. These data are used to determine tax liabilities. They are audited by the tax authority with significant penalties applied in the case of misreporting. The files contain approximately 600,000 firms per year. Importantly, they provide, as an accounting item, the total amount of profit-sharing paid by firms to their employees.

Wage Data. Our data on French workers' employment histories comes from the matched employer-employee DADS (Déclarations Annuelles de Données Sociales) panel. These data are an extract from the DADS Fichier Postes, an exhaustive administrative dataset that contains the Social Security records of all salaried employees in private firms. The DADS Panel tracks all workers in the dataset who were born in October of an even year, which amounts to an overall coverage of slightly more than 4% of the French population working in the private sector. The dataset provides information on a worker's employment spell (duration, start and end date during the year, total gross and net wages, tenure within the firm, and 2-digit occupation). It also contains information about the worker: age, gender, years of labor market experience, and region of residence. The data cover the 1985-1997 period, with the exclusion of 1990 for which the data are not available.

Analysis Sample. We restrict the sample to corporations with a non-missing identifying number, that operate in the for-profit sector and with headquarters in mainland France. We use this entire sample to analyze bunching at the 100 employee threshold over time.

For our difference-in-difference analysis, we apply the same restrictions and focus on firms without reporting gap. We define the treatment status using firm-level employment in 1989 and 1990. Treated firms have between 55 and 85 employees in both 1989 and 1990. Control firms have either between 35 and 45 employees (the *never treated* firms) or 120 to 300 employees (the *always treated* firms) in both 1989 and 1990. This definition leads us to drop firms that (a) have missing employment data in 1989 or 1990 or (b) are close to the 50 or 100 employee thresholds in 1989 and 1990 or (c) see their employment counts switch

across these groups in these two years. The main analysis is run on an unbalanced sample of firms observed at least in 1989 and 1990. We show in Section 6.3 the robustness of our main findings when estimated on a balanced sample of firms. Since the data do not include hours, we restrict the worker-level analysis to employees working full time and focus on their daily wage.

Our final analysis sample contains 10,203 unique firms in the firm panel, and on average 44,702 workers per year in the matched employer-employee data. Tables 1 and 2 provide summary statistics for our firm-level and individual-level datasets over the 1985-1997 period.

5 Bunching Analysis

5.1 Quantifying pre-reform bunching around the threshold

We start our empirical analysis by focusing on the pre-reform period. Prior to 1991, only firms with more than 100 employees were covered by the profit-sharing regulation. After 1991, the eligibility threshold was decreased to 50 employees. While the policy offers substantial tax advantages to income paid through the profit-sharing scheme (no payroll tax and no personal income tax for workers), it is likely a net cost for firm owners. In the data, only a small share of firms below the eligibility threshold voluntarily adopt profit-sharing through the scheme (see Section 2). As we saw in the model described in Section 3, in the absence of perfect substitution between wages and profit-sharing (i.e., when $\lambda < 1$), mandated profit-sharing strictly reduces net income as shareholders cannot perfectly pass the cost of profit-sharing to employees through lower wages. The discontinuity of the policy at 100 employees can thus create a strong disincentive to cross this threshold: hiring the 100^{th} employee generates a marginal benefit but creates an infra-marginal cost since a significant share of the firm's excess-profits (about 10%) is now diverted away from shareholders and redistributed to all the workers in the firm. The distribution of employment around the eligibility threshold offers a revealed preference approach to investigate the magnitude of this disincentive.

A caveat to such a bunching analysis is that our employment data does not perfectly match the employment figure used by the regulation. The employment variable reported in the tax file corresponds to an average head count of workers at the end of all quarters of the fiscal year. The eligibility threshold in the law corresponds to a slightly different employment definition: prior to 1991, a firm is eligible if, during the past year, there were six months or more where the end-of-month headcount was greater than 100. Thus, if the policy does lead to bunching below the 100 employee threshold, we expect this bunching to be somewhat

fuzzy.

Figure 1 reports the share of firms by employment counts for all firms with employment count between 60 and 150 in the raw data. Panel A reports the distribution in the pre-reform years (1985-1989) and Panel B in the post-reform years (1992-1997).[19] In the left panel (pre-reform data), there is clear excess mass below the 100 employee threshold, and missing mass above. Both disappear in the right panel (post-reform data). Figure 1 also shows some bunching at multiples of five employees, which is likely due to a reporting bias. This bunching at multiples of five is of a similar magnitude in both the pre- and post-reform period. It implies that the true drop in the share of firms at 99 vs. 100 employee is likely larger than what reported on Panel A.

We can quantify the excess mass generated by the profit-sharing regulation by using the post-reform employment distribution as a counterfactual.[20] In Figure 2, we bin the data in buckets of five employees starting at 60 employees and report both the pre- and post-reform distribution of employment across these bins. Note that this binning at least partially addresses the concern of bunching at multiples of five discussed above. The vertical bar corresponds to 95% bootstrapped confidence intervals. There is significant excess mass in the 95-99 bin: we observe 22.3% more density at this bin than in the counterfactual. There is also marginally significant and quantitatively smaller excess mass in the 85-89 and 90-94 bins. Overall, this bunching represents a loss of about 1.67% of the employment in affected firms.[21]

5.2 Concerns about employment misreporting

The evidence in Figures 1 and 2 shows that firms perceive mandated profit-sharing as a significant cost, despite its tax benefits. It also suggests that the discontintuity in the eligibility condition leads to employment loss. However, this interpretation assumes that the bunching in employment counts corresponds to a real shift in the employment distribution as opposed to mis-reporting of employment by firms trying to avoid sharing profits. Askenazy et al. (2022) argue that bunching around the 50 employee threshold is partially due to under-

[19] Since the law was signed in the last quarter of 1990, we exclude both 1990 and 1991 from this bunching analysis.

[20] Using parametric counterfactuals (e.g., Pareto or polynomials) leads to similar results. Appendix Figure B.1 plots the firm-size distribution compared to a Pareto distribution. Again, we clearly see the excess mass and the missing mass in the pre-period, which disappears in the post-period. Interestingly, the Pareto coefficient is the same both in the pre- and post-periods, indicating that the firm-size distribution is stable over time.

[21] To calculate the employment loss due to bunching, we consider firms in the 85-120 employee range (i.e., firms for which there is significant bunching – see Figure 2) and calculate the change in total employment for these firms if the size distribution for this range was the distribution post-reform (our counterfactual). This calculation assumes no extensive margin response to the policy removal.

reporting of employment counts to avoid regulations that start at 50 employees. We believe under-reporting is unlikely to be an issue in our setting. Firms around the 100 employee thresholds have workers' councils who actively monitor the firm's true employment count since misreporting may significantly affect their income. Many firms offer legal assistance to workers' councils to help them verify eligibility and calculate the RSP formula.[22] There are also examples of employees or unions suing firms for trying to misreport employment counts to avoid sharing-profits.[23]

We implement more formal tests based on our tax files. For firms around the 100 threshold, accounts have to be certified by an external auditor (*Commissaire aux comptes*).[24] For these firms, mis-reporting labor costs is costly, especially since wages also have to be reported to social security for payroll tax purposes. If firms are mis-reporting their employment counts to avoid the profit-sharing regulation, but are reporting their wage bill more accurately due to monitoring, the reported wage bill per employee should exhibit a spike left of the 100 threshold, prior to the reform. Figure 3 groups the data in bins of five employees starting at 60 employees and reports, for each employment bin, the log of the average ratio of total labor costs (i.e. wages plus payroll tax) to the number of employees. The vertical bars correspond to 95% confidence interval. Panel A uses data from the pre-reform period (1985-1989) and panel B from the post-reform period (1992-1997). There is no visible discontinuity in the labor cost per employee reported by firms around the 100 threshold, both in the pre- and post-reform periods.

The evidence in Figure 3 is inconsistent with significant employment mis-reporting. Instead, the data support the hypothesis that productive, profitable firms remain inefficiently small to avoid the regulation. Figure 4 shows that, in the pre-reform years, the labor productivity of firms bunching to the left of the 100 employee threshold is significantly higher than the labor productivity of firms to the right of this threshold. This excess labor productivity of firms with 95-99 employees disappears in the post-reform years. Figure 5 shows even more striking evidence that, pre-reform, firms bunching below the 100 employee threshold have significantly higher pre-tax profits than firms above. This excess-profitability of firms left of the 100 employee cutoff disappears in the post-reform years.[25]

In sum, this bunching analysis reveals that (a) despite its tax advantage, mandatory profit-sharing creates a significant net cost for firms and (b) the eligibility threshold generates real inefficiencies as productive firms remain small to avoid the regulation (at a cost of 1.67%

[22] A list of such firms can be found here (in French).

[23] See for instance the case of Bea Systems here (in French).

[24] Firms with more than 50 employees are required by law to have an external auditor certify their accounts.

[25] The measure of pre-tax profits we use in Figure 5 is also pre-profit-sharing, i.e. it corresponds to the firms taxable income prior to paying profit sharing and taxes.

of the employment of bunching firms).

6 Firm-level evidence

6.1 Empirical strategy

We now exploit the decrease in the regulatory threshold from 100 to 50 employees to estimate how mandatory profit-sharing affects firms. We use a simple difference-in-difference strategy with two separate control groups. As described in Section 4, we assign a firm to the treatment group if its employment count in 1989 and 1990 is between 55 employees and 85 employees. We do not use firms closer to the 50 and 100 employee thresholds to limit the influence of bunching firms. This approach corresponds to an intent-to-treat design: firms in the treatment group have a high chance of being subject to mandatory profit-sharing in the years following the reform since they meet the new eligibility criteria in the two years preceding the reform. However, and as shown in the previous Section, actual treatment status is not certain: firms may adjust employment in the post-reform years and fall below the 50 employee eligibility threshold, in which case they would not be mandated to share profits. We then turn to the Wald estimator that rescales our reduced-form estimates by the actual probability to pay profit-sharing.

The empirical design provides two natural control groups: (a) *small control firms* are firms whose employment count in 1989 and 1990 is between 35 and 45 employees (b) *large control firms* are firms with between 120 and 300 employees in both 1989 and 1990. Small control firms are firms with a low likelihood of being subject to mandatory profit-sharing in both the pre- and post-reform periods. Large control firms are firms with a high likelihood of being subject to mandatory profit-sharing in both the pre- and post-reform periods.

Having two different control groups is an important aspect of our empirical strategy. France enters a recession in 1992, which lasts until the end of 1993. If large firms respond differently to the business cycle, comparing treated firms' outcomes with only one of the control group could lead to spurious inference: what would be identified as the causal effect of the reform could be driven by the differential response of firms of different sizes to macroeconomic shocks. Our identification thus crucially relies on comparing treated firms – firms who become subject to mandatory profit-sharing after 1991 – to control firms that are either smaller or larger. In what follows, we present treatment effects relative to each of these two control groups separately, as well as relative to the two groups combined. In the Appendix, we show the robustness of our main findings to different definitions of the treatment and control status.

Figure 6 shows the actual share of firms formally subject to the regulation over time as a function of their assignment to the three different groups (treatment, small control and large control). We confirm that actual treatment is highly, although imperfectly, correlated with treatment assignment. In 1997, 26.7% of firms in our treatment group end up having fewer than 50 employees. 14.4% of the firms in our small control group have more than 50 employees in 1997 and are thus required to share profits. Finally, about 13.7% of the firms in our large control group starts in 1985 with fewer than 100 employees and are thus initially not subject to mandatory profit-sharing. Overall, our intent-to-treat variable strongly predicts actual treatment status.

Our regression analysis uses the following specification, where i is a firm, c is a county[26], s is an industry and t is a year:

$$Y_{icst} = \alpha_i + \delta_{ct} + \mu_{st} + \beta^T \mathbb{1}_{\{i \in \text{Treated}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \beta^C \mathbb{1}_{\{i \in \text{Control}_l\}} \times \mathbb{1}_{\{t \geq 1991\}} + \epsilon_{icst}, \quad (4)$$

α_i corresponds to firm fixed-effects and absorbs any fixed-in-time differences across firms. δ_{ct} and μ_{st} corresponds to county-by-year and industry-by-year fixed-effects. These controls ensure our results are not driven by industry or county level shocks that would affect similarly treated and control groups. $\mathbb{1}_{\{i \in \text{Treated}\}}$ is a dummy variable equal to one if a firm has between 55 and 85 employees in 1989 and 1990. $\mathbb{1}_{\{t \geq 1991\}}$ is a dummy variable equal to one after 1990, the introduction of the reform. $\mathbb{1}_{\{i \in \text{Control}_l\}}$ is a dummy variable equal to one when firm i is in the control group l, with $l \in \{\text{small}, \text{large}\}$. For each regression, we separately report three estimated treatment effects corresponding to the estimated β^T when using either small firms, large firms, or both as a control group. We also trim all variables defined as ratios at the 2.5% and 97.5% level.[27]

The identifying assumption in our intent-to-treat design is a standard parallel trend assumption: in the absence of treatment, the outcome of interest (e.g., labor share, profit share or productivity) for firms in the 35-45 employee group and in the 120-300 employee group would have evolved similarly to those of firms in the 55-85 employee group. In the analysis below, we systematically confirm that, prior to 1991, firms in the treatment and the two control groups follow parallel trends, indicating that firms slightly below the 50 employee threshold (resp. above the 100 threshold) provide suitable counterfactuals for firms mandated to share profits.

[26] A county corresponds to a *département*. They are 94 *départements* in mainland France, each with an average population of about 700,000 inhabitants.

[27] We use a conservative trimming rule given the skewness observed in some of the dependent variables used in our analyses. We confirm the robustness of our findings to alternative cleaning methods. Appendix Table B.1 reproduces the main results when the variables are winsorized at the 2.5% and 97.5% instead of trimmed.

Under the identifying assumption, β^T in equation 4 provides a causal estimate of assignment to treatment – here, mandatory profit-sharing. As discussed above, firms can avoid treatment by reducing their employment count below 50. Despite this endogeneous non-compliance, we can obtain a local average treatment effect (LATE) of mandatory profit-sharing by using $\mathbb{1}_{\{i \in \text{Treated}\}} \times \mathbb{1}_{\{t \geq 1991\}}$ as an instrument for the probability of sharing profits (or the amount of profits shared with employees). More precisely, we use a two-stage least-square approach where we first estimate:

$$(\mathbb{1}_{\{\text{profit-sharing}\}})_{icst} = \alpha_i + \delta_{ct} + \mu_{st} + \gamma^T \mathbb{1}_{\{i \in \text{Treated}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \gamma^C \mathbb{1}_{\{i \in \text{Control}_l\}} \times \mathbb{1}_{\{t \geq 1991\}} + \eta_{icst}. \tag{5}$$

We then use the predicted value from Equation 5 and estimate:

$$Y_{icst} = \alpha_i + \delta_{ct} + \mu_{st} + \psi(\widehat{\mathbb{1}_{\{\text{profit-sharing}\}}})_{icst} + \nu_{icst}, \tag{6}$$

where ψ is the causal effect of profit-sharing on outcome Y for compliers, i.e. for firms in the treatment group who end up being required to share profits with their employee through the scheme. We also run specifications where the main endogenous variable is the profit-sharing to value-added ratio instead of the dummy for profit-sharing used in Equation 5 and 6.

6.2 Profit-sharing response

Panel A of Figure 7 shows the share of firms that report a strictly positive amount of profit-sharing in their income statement, by treatment status and over time. In the treated group, the share of firms reporting positive profit-sharing jumps in 1991: from 10% pre-1990 to about 40% after 1991. In contrast, the share of firms reporting positive profit-sharing in the two control groups does not move around 1990. For small control firms – firms likely to never be subject to the regulation – the share remains small (less than 10%) throughout the sample period. There is a slight positive upward trend, which can reflect both the intent-to-treat design (some small control firms cross the 50 employee threshold after 1990) or business cycle conditions (economic conditions are favorable in the late 1980s, which can lead firms to set-up voluntary profit-sharing plans). There is a more pronounced upward trend in the likelihood of profit-sharing for large control firms prior to 1990. This trend simply mirrors the finding in Figure 6: our intent-to-treat design classifies firms into the large control group if their employment is above 120 in 1989 and 1990; about 17% of firms in our large control have fewer than 100 employees in 1985 and then grow above the 100 employee threshold sometime before 1989. This creates the mechanical upward trend in the probability of sharing profits observed in Panel A of Figure 7.

Panel B of Figure 7 reproduces the same analysis, but focuses on firms for which "excess-profits" – defined as in the regulatory formula presented in Equation 1 – are positive. Firms with negative excess-profits do not have to share any profits, so that, even if they are in principle subject to the regulation, they will not report any profit-sharing on their income statement. A caveat with this more refined approach is that our measure of excess-profits does not exactly match the regulatory definition as some of the items necessary to construct the regulatory excess-profits are missing from our dataset. For instance, regulatory excess-profits are based on *fiscal* net income, while our dataset only reports *accounting* net income: the two concepts can differ slightly because of non-deductible items (e.g., some types of compensation cannot be deducted for fiscal purposes) and tax-loss carryforwards.[28] With this caveat in mind, Panel B of Figure 7 shows that, for firms in the treatment group with positive excess-profits, the likelihood of sharing some profit goes from about 10% pre-1990 (i.e. before they become subject to the regulation) to about 65% post-1990 (once they become more likely to be eligible). The fact that this share does not go to 100% can be due to our intent-to-treat design (not all firms in the treatment group are actually treated as they may cross the 50 employee threshold post-1990), measurement error in excess-profits, or imperfect compliance.[29] In contrast, none of the two control groups experience a sharp change in their profit-sharing share around 1990. We thus conclude that our intent-to-treat design does generate large variations in the propensity of treated firms to share profits with employees.

We quantify the cost of profit-sharing to shareholders in Figure 8. Panel A show the evolution over time of the average ratio of profit-sharing to value-added by treatment status. Panel B conditions on firms with positive excess-profits. For treated firms with positive excess-profits, profit-sharing represents less than 0.2% of value-added prior to 1990; this ratio jumps to 1% right after treated firms become subject to the regulation. In contrast, there are no sharp changes in the ratio of profit-sharing to value-added for firms in the control groups. For firms in the large control group, the ratio is increasing in the late 80s, a finding that mirrors the one in Panel A Figure 7, and that arises for the same reason (i.e., the use of 1989-1990 employment counts to define treatment status).

[28] Appendix Figure B.2 shows the extent of measurement error in the reconstructed regulatory formula. The sample corresponds to firms with more than 50 and fewer than 300 employees between 1991-1997 (post-reform period, firms required to share profits with their employees). We construct 30 bins of the reconstituted regulatory formula for profit-sharing, normalized by value-added, and plot, on the Y-axis, the actual average profit-sharing to value-added ratio. Although the R^2 is close to 1, the slope of this relationship is 0.67 and we can reject a slope of 1. Our approximated formula is thus a good proxy for the true formula, although not perfect.

[29] Appendix Table B.2 suggests a high level of compliance. Firms with a positive reconstructed formula but not paying any profit-sharing represent only 3% of observations in our sample.

Table 3 estimates Equation (4) to quantify the effect of the reform on the propensity to share profits with employees. In column (1), the dependent variable is a dummy equal to one when the firm reports a strictly positive amount of profit-sharing on its income statement. In column (2), the dependent variable is the ratio of profit-sharing to value-added, for firms with positive value-added. Panel A provides the estimate of β^T relative to firms in the large control group; Panel B uses firms in the small control group as reference; Panel C uses both simultaneously. Firms in the treatment group experience a significant increase in the unconditional probability of sharing profits with employees of 25 to 36 percentage points, consistent with the graphical evidence in Figure 7.

We also confirm that this increase in profit-sharing is driven by the 1990 reform using a triple-difference analysis:

$$\begin{aligned} Y_{icst} &= \gamma^T \pi_{it}.\mathbb{1}_{\{i\in\text{Treated}\}}.\mathbb{1}_{\{t\geq 1991\}} + \theta_1^T \mathbb{1}_{\{i\in\text{Treated}\}}.\mathbb{1}_{\{t\geq 1991\}} + \theta_2^T \pi_{it}.\mathbb{1}_{\{i\in\text{Treated}\}} \\ &\quad + \gamma^C \pi_{it}.\mathbb{1}_{\{i\in\text{Control}_l\}}.\mathbb{1}_{\{t\geq 1991\}} + \theta_1^C \mathbb{1}_{\{i\in\text{Control}_l\}}.\mathbb{1}_{\{t\geq 1991\}} + \theta_2^C \pi_{it}.\mathbb{1}_{\{i\in\text{Control}_l\}} \\ &\quad + \mu_1 \pi_{it}.\mathbb{1}_{\{t\geq 1991\}} + \mu_2 \pi_{it} + \alpha_i + \delta_{ct} + \mu_{st} + \epsilon_{icst}, \end{aligned} \tag{7}$$

where π_{it} corresponds to our (noisy) reconstruction of the profit-sharing formula in Equation (1), normalized by value-added. γ^T captures the effect of becoming eligible to profit-sharing in years where profits are high enough to trigger mandatory profit-sharing. Column (1) in Table 4 estimates Equation 7 using the probability of reporting positive profit-sharing as dependent variable. Column (2) uses instead the ratio of profit-sharing to value-added. In both columns and panels, we find that the increase in profit-sharing among treated firms is larger in firms with more excess-profits. Columns (7) and (8) provide a similar analysis but split π_{it} - the profit-sharing formula - into terciles. Relative to the large control group (firms that were already eligible in 1989 and 1990), firms in the treatment group in the bottom tercile of the profit-sharing formula experience a 4 percentage points increase in the probability of sharing profits. In contrast, treated firms in the top tercile of the formula experience a 52 percentage points increase in the probability of sharing profits. For these firms, the profit-sharing to value-added ratio increases by about one percentage point (column (8)). The results are comparable using the small control group.

6.3 Incidence on workers and shareholders

We now look at the incidence of the reform on workers' compensation (parameter λ in the model of Section 3) and firm owners' profits. Panel A of Figure 11 plots the evolution of the wage share for firms in our sample (normalized in levels to 0 in 1990). This evolution is

strikingly similar for firms in the treatment and control groups. The share of value-added that goes to workers in the form of wages is unaffected by mandatory profit-sharing. Panel B shows that, as a result, the *total* compensation share – the fraction of value-added that goes to workers in the form of wages and profit-sharing – increases sharply for treated firms right after 1990. This increase in the total compensation share matches approximately the increase in the profit-sharing share observed in Panel A of Figure 7. Column (3) and (4) in Table 3 estimate Equation 4 using as dependent variables the wage share and the total compensation share. We find a precisely estimated zero effect of mandatory profit-sharing on the wage share, implying that owners do not reduce the cost of profit-sharing by lowering wages (i.e., $\lambda \approx 0$). In contrast, we find a significant increase in the total compensation share of treated firms: 0.5 percentage points relative to large control firms and 0.6 percentage points relative to small control firms. The results are robust to various definitions of the control groups. Appendix Figure B.3 reproduces the analysis using alternative control groups including (i) more narrowly defined groups around the thresholds, (ii) groups with smaller lower-bounds and larger upper-bounds and (iii) larger doughnut hole around the thresholds. In all cases, we observe a clear non-negative effect on wages and a positive and significant impact on total compensation.

Panel A of Figure 12 shows the evolution of the profit share. The profit share is defined as the ratio of accounting net income to value-added, restricted to firms with positive value-added. It is normalized (in levels) to be equal 0 in 1990. There is a sharp increase in the profit share from 1985 to 1990, which is commonly experienced by firms in both treated and control groups. This increase corresponds to the large reduction in the corporate income tax rate implemented over this period.[30] After 1991, however, we observe a sharp reduction of the profit share for firms in the treatment group. Column (5) in Table 3 shows that the profit share of treated firms falls by about 0.5 percentage points relative to large control firms and by 0.4 percentage points for small control firms. Column (5) and (11) in Table 4 show that this reduction in the profit share of treated firms is concentrated among firms with larger excess-profits, confirming our causal interpretation. The difference between the effect on the labor share and the profit share is entirely explained by a reduction in the tax share, i.e. the ratio of the corporate income tax to value-added (Column (6) in Table 3). Since profit-sharing is deducted from the firm's taxable income, part of the increase in workers' compensation comes at the expense of the government.

We visually confirm the robustness of all these findings, and in particular the absence of pre-trends, in Appendix Figure B.4, where we report event-study graphs that plot year-

[30]The statutory corporate income tax rate is 50% in 1985, 45% from 1986 to 1987, 42% in 1988, 39% in 1989, 37% in 1990, 34% in 1991 and 1992, and 33% after 1993.

by-year treatment effects relative to both control groups. We also check that endogenous attrition is not driving our results. Appendix Table B.3 restricts the sample to firms that are present every year in our sample. The findings on this *balanced* sample are highly consistent with our baseline results. Firms in the treatment group do not experience a significant change in their wage share. Their total compensation share, however, increases by a significant 0.64 percentage points, while their profit share decreases by 0.36 percentage points (significant at the 10% level) and their tax share by 0.12 percentage points (only significant at the 10% relative to the large control group). Finally, we reproduce the analysis comparing firms with more similar sizes. Appendix Table B.4, divides the treatment group into two sub-groups and compare small control firms to small treated firms (55-69 employees) and large control firms to large treated firms (70-85). The results are consistent with our main findings. There is a precisely estimated zero effect on the wage share (column (3)), a highly significant increase in the total compensation share of about 0.6 percentage points (column (4)), a significant reduction in the profit share of about 0.4-0.7 percentage points (column (5)) and a significant reduction in the corporate tax share of between 0.1-0.3 percentage points (Column (6)).

These incidence results correspond to intent-to-treat effects. They do not measure the actual treatment effect on the treated. To better quantify the evidence on incidence, Table 5 presents IV estimates, which gets to the local average treatment effect (LATE). In Column (1), we present OLS estimates of a regression of the wage share on a "positive profit-sharing" dummy, controlling for various fixed-effects. Such an OLS regression is in the spirit of the empirical literature on profit-sharing adoption reviewed in the introduction. We find that profits-sharing is associated with a large and significant (5 ppt) reduction in the wage share, suggesting a large incidence of profit-sharing on wages. IV results do, however, show that these OLS estimates are strongly biased. In column (2), we instrument the probability to share profits using our intent to treat-design (i.e. using the interaction of a treatment dummy equal to one if a firm has between 55 and 85 employees in 1989 and 1990 and a post dummy equal to one after 1990). Consistent with the reduced-form findings, the IV regression estimates a precise zero effect of profit-sharing on the wage share – a result in sharp contrast with the OLS estimate. Column (4) shows that sharing profits leads to an increase in the total compensation share of 1.79 percentage points. Column (5)-(8) repeat this analysis on the intensive margin of profit-sharing. We find that a one percentage point increase in profit-sharing relative to value-added leads to an insignificant increase in the wage share, and a highly significant 1.5 percentage point increase in the total compensation share. Note that, consistent with $\lambda = 0$ in the model, we cannot reject a point estimate of 1 (i.e. a full pass-through of profit-sharing to employees). One plausible explanation for the discrepancy between OLS and IV estimates is that firms voluntarily signing profit-sharing

agreements might be experiencing productivity growth shocks that temporarily reduce the firm's labor share (e.g., because of imperfect rent-sharing).

Appendix Table B.5 analyzes profit and tax shares and reports results consistent with analyses of wages and total compensation. While OLS results find that profit-sharing is strongly correlated with higher profit and tax shares, IV estimates show that these estimates are also biased. Using the change in eligibility requirement as an instrument, we find that, for actually treated firms, the profit share significantly decreases by 1.37 percentage points (column 2), and the tax share by 0.4 percentage points (column 4). As a result, shareholders bear about 77% of the cost while the remaining 23% are paid by the tax authority through lower corporate taxes.

6.4 Real effects

We have shown in Section 3 that profit-sharing is expected to reduce investment if the cost of equity r_e is greater than 5%. While the calibration of Section 3 suggests that the effect of mandatory profit-sharing on the cost of capital should be small, this remains an empirical question.

Figure 13 plots the evolution of the investment ratio by treatment group (normalized in levels to 0 in 1990). It shows no clear pattern in investment following the introduction of mandated profit-sharing. There is a sharp decline in investment for all firms during the recession of 1991 to 1993. However, there is no clear pattern across the three groups of firms. This finding is consistent with our calibration: the French mandatory profit-sharing scheme does not distort investment significantly.

An effect emphasized in the profit-sharing literature is that its introduction may raise productivity by encouraging workers to work harder (e.g., leading to more effort, reduced sick days or fewer strikes). This was also a motivation for the French reform: the "alignment" of shareholders' and workers' interests should result in increased production. Figure 14 shows this is not the case. There is no evidence that treated firms' TFP (measured using Ackerberg et al. (2015)) or Return on Assets (ROA, measured as the ratio of a firm's EBITDA to net asset value) increase after 1991 relative to firms in either control groups. Note that productivity is perhaps where the external validity of our results may face stronger limitations. Voluntary profit-sharing may have more effect on productivity (workers want to reciprocate) than firm compliance with regulation (workers just take it as given and do not feel compelled to reciprocate).

We confirm the absence of impact on firms' economic activity in Table 6: column (1), (3) and (4) shows a precisely estimated zero effects on investment and TFP, measured using

either Levinsohn and Petrin (2003) or Ackerberg et al. (2015) approaches. For instance, we can reject at the 5% that mandated profit-sharing reduces investment by 1.1%. Similarly, column (2) finds small and insignificant effect of mandated profit-sharing on firms' capital-labor ratio, which can also be seen graphically in Appendix Figure B.5. In Table B.6, we show that these results are robust to various definitions of TFP beyond the ones used in Table 6. In column (7) and (8) of Table B.3, we confirm the robustness of these findings on the balanced sample of firms. Appendix Figure B.3 and Appendix Table B.4 show the robustness of the findings on investment and productivity for various definition of the control and treatment groups.

Finally, we consider "softer" measures of productivity such as the number of days of sick leave and the probability of working extra-hours. Table 7 shows that the mandatory profit-sharing does not lead to a reduction in sick days or an increase in extra-time work. This finding suggests that mandatory profit-sharing does not increase workers' effort.

6.5 Triple-difference analysis

After the 1991 reform, firms above 50 employees are required to share profits with their employees. Whether this requirement is binding in expectation depends on whether the firm typically generates excess-profits (i.e., fiscal net income above five percent of book equity). In the data, excess-profits are highly persistent: Appendix Figure B.6 shows that, across all firms and years, there is an 80 percent chance that a firm generates positive excess-profit in year t conditional on generating excess-profits in year t-1. This persistence implies that the requirement to share profits bears more on certain firms (the ones that typically generate higher excess-profits) than others. We can use this finding to further refine our identification strategy.

We define $\overline{\frac{\text{Formula}_{\text{pre}}}{\text{Value-added}}}$ as the firm-level average ratio of the reconstructed regulatory formula for profit-sharing to value-added, computed over the pre-reform period. Firms with a higher $\overline{\frac{\text{Formula}_{\text{pre}}}{\text{Value-added}}}$ are firms that generated larger excess-profits in the pre-reform period. Since excess-profits are persistent, we expect firms with a higher $\overline{\frac{\text{Formula}_{\text{pre}}}{\text{Value-added}}}$ in the treatment group to be more "exposed" to the reform. For these firms, mandated profit-sharing is more likely

to lead to actual profit-sharing. We thus estimate the following triple-difference model:[31]

$$\begin{aligned} Y_{icst} &= \phi^T \left(\overline{\frac{\text{Formula}_{\text{pre}}}{\text{Value-added}}}\right)_i . \mathbb{1}_{\{i \in \text{Treated}\}} . \mathbb{1}_{\{t \geq 1991\}} + \phi^C \left(\overline{\frac{\text{Formula}_{\text{pre}}}{\text{Value-added}}}\right)_i . \mathbb{1}_{\{i \in \text{Control}_l\}} . \mathbb{1}_{\{t \geq 1991\}} \\ &+ \xi^T \mathbb{1}_{\{i \in \text{Treated}\}} . \mathbb{1}_{\{t \geq 1991\}} + \xi^C \mathbb{1}_{\{i \in \text{Control}_l\}} . \mathbb{1}_{\{t \geq 1991\}} + \mu_1 \left(\overline{\frac{\text{Formula}_{\text{pre}}}{\text{Value-added}}}\right)_i . \mathbb{1}_{\{t \geq 1991\}} \\ &+ \alpha_i + \delta_{ct} + \mu_{st} + \omega_{icst} \end{aligned} \tag{8}$$

Note that Equation (8) differs from Equation (7) because the triple interaction uses the average *ex ante* excess-profits while Equation (7) uses the yearly *realized* profits. Thus, ϕ^T is meant to capture how firms adjust their behavior when they know *ex ante* that they are likely to have to share profits with employees. Equation (8) also relies on a weaker identifying assumption than our main specification (Equation 4) since it compares, within each control and treatment groups, firms with high vs. low average pre-reform excess-profits. This within-size bucket comparison further alleviates concerns that our main estimates may capture some size effects.

Table 8 reports the estimates for ϕ^T and ξ^T in Equation 8. Column (1) shows that for firms with negative average excess-profits pre-reform, being in the treatment group increases the probability of profit-sharing by a significant 17 percentage points, which represents about half of the overall treatment effect (30 ppt in Panel C, Column (1) of Table 3). Column (1) also shows that the treatment effect is significantly larger for firms with higher average pre-reform excess-profits. For a firm with an average pre-reform formula of about 1.3% of its value-added, the probability of sharing profits post-reform almost doubles relative to firms with negative pre-reform excess-profits. Column (2) shows even stronger effects on the amount of profit-sharing paid by firms. Column (1) and (2) thus confirms the premise of this triple-difference analysis: Treated firms with larger pre-reform excess-profits are more exposed to the reform.

Columns (3)-(6) confirms our main findings on incidence. They show that, relative to control firms, treated firms with larger average pre-reform excess-profits experience a significant increase in their total compensation share, and a significant decrease in their profit share and their tax share. In contrast, columns (3)-(6) do not show any significant effect for treated firms with negative average pre-reform excess-profits. Column (7) and (8) also confirm the findings in Section 6.4 as it fails to find significant effects on investment or TFP

[31] Note that the specification in Equation 8 does not include the interaction of $\left(\overline{\frac{\text{Formula}_{\text{pre}}}{\text{Value-added}}}\right)_i \times \mathbb{1}_{\{i \in \text{Treated}\}}$ and $\left(\overline{\frac{\text{Formula}_{\text{pre}}}{\text{Value-added}}}\right)_i \times \mathbb{1}_{\{i \in \text{Control}_l\}}$ since these terms are absorbed by the firm fixed-effects α_i.

even for treated firms with a larger exposure to the reform. Appendix Table B.7 estimates a similar triple-difference equation but replaces the continuous variable $\left(\overline{\frac{\text{Formula}_{\text{pre}}}{\text{Value-added}}}\right)$ with a dummy variable equal to one if $\left(\overline{\frac{\text{Formula}_{\text{pre}}}{\text{Value-added}}}\right)$ is above its in-sample median value. The results are qualitatively similar.

6.6 Avoidance

Since profit-sharing is a net cost for firm owners, we could expect that firms would try to avoid profit-sharing. There are two main symptoms of avoidance we can investigate in the data. First, as we discussed in Section 5, firms can reduce their employment below the regulation threshold (now 50 employees) so that they are no longer mandated to share profits. Figure 6 shows that a significant share of firms in the treatment group leaves that group by the end of our sample period. Figure 9 shows that this is partly due to avoidance. This figure plots the probability that the firm's employment in t+1 is strictly below the 50 employee cutoff as a function of employment in year t. Panel A focuses on the period around the reform. The grey diamonds corresponds to t=1988 so that t+1 is the last year before the reform that reduced the regulatory threshold from 100 to 50 employees. The dark circles corresponds to t=1990, so that firms with more than 50 employees in t+1 now have have to share profits. Firms around the threshold (i.e. between 46 and 56 employees) become significantly more likely to either go below or remain below the 50 employee threshold once the regulation starts to kick-in at 50 employees. There is thus evidence of significant avoidance of the profit-sharing regulation at the extensive margin. It remains, however, a "local" phenomenon: there is no significant increase in the probability of going below the threshold for firms with more than 56 employees or less than 45 employees. Panel B reproduces this exercise on the pre-treatment period, and, as expected, finds no effect of this alternative "placebo" treatment.

Firms can also avoid the regulation on the intensive margin, i.e. by reducing their income to generate lower (or negative) excess-profits. Panel A of Figure 10 plots the average realized reconstructed regulatory formula (see Equation (1)) expressed as a share of value-added for firms in each group. Avoidance should lead to a significant reduction in the regulatory formula for firms in the treatment group after 1991. Instead, we see a similar evolution across groups over time. Panel B shows the evolution (normalized in levels to 0 in 1990) of the probability that the regulatory formula is positive (and thus that firms are required to share some of their profits). Consistent with Panel B, we do not see any evidence of shifting in the regulatory formula. Overall, avoidance appears limited to the extensive margin (optimizing employment, not profits) for firms in a narrow band around the 50 employee threshold (46-56

employees).

7 Employee-level evidence

7.1 Effects of profit-sharing on employee-level wages

In the last part of the paper, we exploit worker-level data to investigate how mandated profit-sharing affects workers of different skills. We start by reproducing our estimates of the effect of the regulation on employees' compensation using worker-level data.

The matched employer-employee data do not report the amount of profit-sharing received by individual workers, so that we need to impute it. We merge employee-level data with accounting data (which report aggregate profit-sharing). We then assume that individual profit-sharing is paid proportionally to employee's wage, up to a cap determined by law. This approach is consistent with the typical profit-sharing agreement used by firms in France (DARES (2008)). Formally, we use the following formula:

$$\text{Profit-sharing to employee i in firm j} = \min\left(\min\left(\frac{\text{wage}_i}{\text{wage bill}_j}, \frac{\text{cap}_1}{\text{wage bill}_j}\right) \times \text{RSP}_j, \text{cap}_2\right)$$

The firm's wage bill and employee's wage are reported in the DADS, the total amount of profit-sharing paid to employees (RSP_j) is reported in the BRN sample. The formula above accounts for the fact that (a) the share of profit-sharing that accrue to any given employee is capped by the law (cap_1) and (b) the total euro amount of profit-sharing an employee can earn in a given year is also capped (cap_2).

Table 9 replicates the firm-level incidence analysis of Section 6 using employee-level data, which allows to account for worker-level characteristics. We start from the sample of *firms* used in Section 6 and use the same treatment assignment as in the firm-level analysis (i.e., treated if firm employment is between 55-85 in 1989 and 1990, small control group if it is between 35 and 45 and large control group if it is between 120-300). We then merge this sample with the employer-employee dataset, which allows to observe the wage and characteristics of $1/25^{th}$ of their employees. Finally, we estimate the following equation using OLS:

$$Y_{jicst} = \alpha_i + \phi_j + \zeta X_{jt} + \delta_{ct} + \mu_{st} + \beta^T \mathbb{1}_{\{i \in \text{Treated}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \beta^C \mathbb{1}_{\{i \in \text{Control}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \epsilon_{icst} \quad (9)$$

j index employees, i the firm they work for, c the county where they are employed, s the industry of their establishment and t the year of observation. In column (1) and (5), we

include α_i (firm fixed-effects), δ_{ct} (county-by-year fixed-effects), and μ_{st} (industry-by-year fixed-effects). In column (2) and (6), we add employee-level controls X_{jt}: gender, age, age^2, tenure, tenure^2, experience, experience^2, and the employee's 2-digit occupation code. In column (3) and (7), we include employee fixed-effects ϕ_j but do not include employee-level controls. Column (4) and (8) include all controls. Column (1)-(4) use log-daily gross wage as the dependent variable; column (5)-(8) use log-daily total compensation (the sum of gross wage and profit-sharing).

Consistent with the firm-level analysis, we find a null effect on daily gross wages and a positive, statistically significant, effect on total compensation in all four specifications. Relative to the large control group, employees working for firms in the treatment group experience an increase in their total compensation of about 1.2% to 1.5% depending on controls. The effect is smaller and less precisely estimated when estimated against the small control group (about 0.7%-0.8%). We therefore confirm with employee-level data that the wage incidence of mandated profit-sharing is on average zero ($\lambda = 0$).

The estimates in Table 9 correspond to intent-to-treat effects. Column (1)-(4) of Table 10 present LATEs: we regress the employee-level log-daily wage (column (1) and (2)) or log-daily total compensation (column (3) and (4)) on a dummy equal to one if the firm the employee works for reports positive profit-sharing on its income statement. Column (1) and (3) use OLS estimates, while column (2) and (4) instrument the profit-sharing dummy using the interaction Treatment $\times$ Post. The estimates show that mandated profit-sharing increases workers' total compensation by a highly significant 3.5% on average without affecting their fixed wage significantly. Column (5)-(8) repeat this analysis but exploit the intensive margin of profit-sharing. Again, profit-sharing increases total compensation with small and insignificant impact on fixed wage. In these regressions, OLS estimates tend to find a positive effect of profit-sharing on wages, most likely reflecting the dynamics of wages in firms that endogenously adopt profit-sharing agreements.

7.2 Profit-sharing and employee risk exposure

One interpretation of the finding that mandatory profit-sharing does not affect wages is that profit-sharing might have low value for risk-averse workers. We find that this interpretation is unlikely to hold in the data since profit-sharing adds little risk to workers' total compensation. First, note that our regressions use log compensation as the LHS variable, and find that mandatory profit-sharing increases total compensation by about 3.5%. Thus, workers with a log utility function – hence a relative risk aversion of 1 – would experience an overall increase in expected utility from mandatory profit-sharing (assuming that they do not smooth income

shocks and consume all of their income). In non-reported regression, we replaced log wage with CRRA utilities with RRA from 2 to 5, and also find significant increases. Hence, even very risk averse hand-to-mouth employees would benefit from mandatory profit-sharing.

The intuition behind these results is that the effect of profit-sharing on compensation risk is too small to matter. We can see this intuition through the following calibration. Let W be total compensation, composed of wage w and profit-sharing π. Then, a first order Taylor expansion leads to:

$$\text{var} \log W \approx (1 - s_\pi)^2 \text{var} \log w + s_\pi^2 \text{var} \log \pi$$

where we note s_π as the mean share of profit-sharing in total compensation and assume to simplify that the covariance term is zero. In the data, profit-sharing represents, on average, less than 4% of a worker's total compensation (for firms with positive excess-profits). As an upper-bound, we can thus assume that $s_\pi \approx 4\%$. To contribute 10% of the variance of log total compensation, the variance of log profit-sharing would have to be 66 times larger than the variance of log wages, which is implausible.

We can also provide an empirical decomposition to quantify the small role of profit-sharing in total compensation risk. Given that $(ps/w) \ll 1$, the variance of the log compensation is given by:

$$\text{var}\left(\log W\right) = \text{var}\left(\log(w + ps)\right) \approx \text{var}\left(\log w\right) + \text{var}\left(\frac{ps}{w}\right) + 2\text{cov}\left(\log w, \frac{ps}{w}\right)$$

This formula decomposes the variance of log total compensation into the variance of log wages and (a) a term that quantifies the risk of profit-sharing ($var\left(\frac{ps}{w}\right)$) and (b) a term due to the covariance of log wages and profit-sharing. Appendix Figure B.7 implements this decomposition. The covariance term is small and can be ignored. The term in var $\left(\frac{ps}{w}\right)$, which summarizes the contribution of profit-sharing to the total dispersion of compensation increases slightly in the treatment group, while it remains constant in the two control groups. In all cases, its contribution to the total cross-sectional variance of compensation is small (about 5% of the variance of log wages).

7.3 Heterogeneity analysis

Another interpretation for the low incidence of mandated profit-sharing on wages is that firms might have a hard time reducing wages (or slowing down their increase). This is especially relevant in France, where the minimum wage is high and binding. To test this hypothesis, we compare how higher and lower-skill workers are affected by mandated profit-sharing.

We split employees into three categories based on their occupation, available in the employer-employee data: (a) Low Skill (clerks and blue collar workers) – our reference group (b) Intermediate Skill (supervisor or skilled technicians) and (c) High Skill (managers, engineers and executives). We augment Equation 9 by interacting the Treatment and Post dummies with the High Skill and Intermediate Skill dummies. Table 11 report the baseline treatment effect (Treatment x Post) and the triple interactions. Columns (1) and (3), reproduce the results for the whole workforce (including low, intermediate and high-skill workers). In column (2) and (4), we estimate the effect by skill group using only firm, industry-year and county-year fixed effects. In column (3) and (5), we add employee-level controls (gender, age, age^2, tenure, tenure^2, experience, experience^2).

Table 11 shows that mandated profit-sharing does not increase the total compensation of high-skill workers. Relative to low-skill workers in large control firms, the base wage of high-skill workers in treated firms decreases significantly by 2.5% once the firms they work for are required to share profits with employees (columns (2)-(3), Panel C). Comparison to small control firms yields less precise estimates, although both control group yields estimates of similar magnitude.

As a result of this adjustment to their base wage, the total compensation of high-skill workers in treated firms does not increase following the introduction of mandatory profit-sharing (columns (5)-(6)). In contrast, we find that the increase in total compensation induced by mandated profit-sharing is concentrated among low- and intermediate-skill workers.

Table 12 confirm these findings using IV estimates. In Panel A, we regress the log-wage (column (1)-(2)) and the log-total compensation (column (3)-(4)) on a dummy equal to one if the firm the employee works for reports positive profit-sharing, instrumented by Treatment $\times$ Post, interacted with the various skill levels. We find that the elasticity of wages to profit-sharing (both on the extensive and intensive margin) is negative for high-skill workers, but zero for low-skill ones. As a result, the effect on total compensation is strongly positive for low and medium skill workers, but not statistically different from zero for the average high-skill worker.

Overall, the results in this section depict a consistent picture: (a) on average, workers' wages remain unchanged when their firm is required to share profits with employees, (b) their total compensation increases, (c) the rise in earnings volatility induced by the scheme is small, and (d) these effects are concentrated among low-skill workers – higher-skill workers benefit significantly less from mandated profit-sharing. One possible interpretation is that, because of wage rigidity at the low-end of the skill distribution, firms cannot substitute wages and profit-sharing for these workers, making the French mandatory profit-sharing scheme more progressive.

8 Conclusion

This paper evaluates the economic effects of a large mandated profit-sharing scheme in France on workers and firms. This scheme requires all firms above a certain size threshold to pay about one third of their excess-profits (net income in excess of 5% of book equity) to their employees, proportionally to their wages. We identify the effects of the scheme by exploiting a 1991 reform that reduced the requirement threshold from 100 employees to 50 employees. Our empirical analysis uncovers several important findings.

At the firm-level, we find that the total compensation share (wage bill plus profit-sharing over value-added) increases by about 1.8 percentage points and that more than 3/4 of this increase in labor cost is borne by firm owners through reduced profits. This increase in total compensation at the firm-level conceals some heterogeneity. Using worker-level data, we show that high-skill workers (managers, engineers, executives) do experience a reduction in fixed wage that matches the average profit-sharing they receive through the scheme. In contrast, lower-skill workers fully benefit from firms' requirement to share profits with no incidence on their base wage. A possible interpretation is that lower-skill worker's wages exhibit significant rigidity, which is especially plausible in an economy with a binding minimum wage. Overall, mandated profit-sharing, despite its tax advantages, represents a net cost for firm owners, a finding we confirm by showing significant bunching below the 100 employee threshold prior to 1991.

We also exploit this setting to analyze the real effects of profit-sharing. We find that, despite its large magnitude for firm owners – about 10.5% of pre-tax income in firms with strictly positive excess profits – mandated profit-sharing has no effect on firms' productivity or investment. Overall, our analysis suggests that mandated profit-sharing is essentially a redistributive tool, which acts as a non-distortive tax on owners directly paid to lower-skill workers in the same firms.

A Tables

TABLE 1: Summary statistics: firm-level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Mean	SD	P5	P10	P25	P50	P75	P90	P95
Employment	94	93	28	33	40	63	133	203	247
Sales	72,213	203,744	6,745	9,483	16,254	34,73	75,65	147,365	227,418
Value-added	17,406	31,578	2,866	4,072	6,16	10,325	21,437	37,683	51,475
Formula	227	620	0	0	0	33	215	604	1,033
Profit-sharing	152	534	0	0	0	0	18	447	864
Wages	9,321	10,852	2,15	2,661	3,692	5,909	12,092	20,247	25,931
Tot. compensation	9,474	11,077	2,152	2,664	3,700	5,953	12,312	20,685	26,586
Profit-sharing / Value-added	0.0046	0.0157	0	0	0	0	0.0014	0.0182	0.0271
Wages / Value-added	0.6288	2.1692	0.3565	0.4148	0.4992	0.5758	0.6512	0.7266	0.8202
Tot. compensation / Value-added	0.6335	2.17	0.3667	0.4255	0.5061	0.5794	0.6532	0.728	0.8214
Profit / Value-added	0.1104	30.3	-0.2261	-0.0745	0.0045	0.0401	0.1032	0.1918	0.2668
Taxes / Value-added	0.0802	15.65	-0.0004	0	0.0016	0.0178	0.0567	0.1071	0.1445
Investment rate	-0.35	49.41	-0.35	-0.13	0	0.10	0.26	0.46	0.60
Value-added / Employment	195	676	85	102	129	162	208	282	357
Sales / Employment	825	2,755	157	209	301	466	896	1,483	1,956
Number of firms	10,203	888							

	Manufacturing	Construction	Retail	Services	Agriculture
Share	0.45	0.12	0.18	0.24	0.05

Note: This table provides summary statistics of the main firm-level characteristics computed using firms financial statements over the period 1985-1997. Sales, value-added, formula, profit-sharing, wages and total compensation are expressed in thousands of Francs (in 1984 value). Total compensation is defined as the sum of the wage bill plus profit-sharing. Taxes stands for corporate income taxes. Formula corresponds to the minimal amount of profit-sharing that should be paid by firms according to the rule defined by the law. Investment rate is defined as capital expenditures in tangible assets normalized by the gross value of tangible assets. Go back to main text

TABLE 2: Summary statistics: worker-level

	Male	Full time	Blue-collars	Clerks	Supervisors	Managers	Executives
Share	0.64	0.85	0.54	0.21	0.18	0.07	0.01

	Mean	SD	P5	P10	P25	P50	P75	P90	P95
Gross wage (daily)	39.3	100.8	8.2	15.8	24.8	31.6	42.7	63.4	86.1
Tot. compensation (daily)	40	103.2	8.3	16	25.1	32.1	43.5	64.7	87.7
Years of experience	15.7	11.5	1.1	2.5	6.1	13.3	23.6	33.5	38
Tenure	6.4	8.8	0	0	0.2	2.9	8.5	18	26.8
Age	36	11	21	23	27	35	44	52	56
Observations	44,702								

Note: This table provides summary statistics of the main worker-level characteristics computed using the linked employer-employee data over the period 1985-1997. Gross wage and total compensation are expressed in euros (in 1984 value). Total compensation is defined as the sum of fixed wage plus profit-sharing. Profit-sharing is imputed proportionally to the wage using firms' financial statements (see Section 7 for more details). Go back to main text

TABLE 3: Effects of profit-sharing on workers' compensation and shareholders' profits

	(1)	(2)	(3)	(4)	(5)	(6)
	$\mathbb{1}_{\{\text{Profit-sharing}>0\}}$	$\frac{\text{Profit-sharing}}{\text{Value-added}}$	$\frac{\text{Wage}}{\text{Value-added}}$	$\frac{\text{Tot. compensation}}{\text{Value-added}}$	$\frac{\text{Profits}}{\text{Value-added}}$	$\frac{\text{Taxes}}{\text{Value-added}}$
Panel A: Relative to large control						
Treatment x Post	0.3638***	0.0047***	0.0011	0.0054***	-0.0053***	-0.0014*
	(0.0096)	(0.0002)	(0.0019)	(0.0018)	(0.0020)	(0.0007)
Panel B: Relative to small control						
Treatment x Post	0.2540***	0.0035***	0.0020	0.0059***	-0.0036**	-0.0013*
	(0.0073)	(0.0001)	(0.0018)	(0.0017)	(0.0018)	(0.0007)
Panel C: Relative to both groups						
Treatment x Post	0.3043***	0.0040***	0.0016	0.0057***	-0.0044***	-0.0013**
	(0.0075)	(0.0001)	(0.0016)	(0.0015)	(0.0017)	(0.0006)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.53	0.50	0.57	0.56	0.35	0.55
Observations	132,589	127,667	123,557	123,542	124,374	124,404

Note: This table reports Intent to Treat estimates of the impact of mandatory profit-sharing at the firm level. $\mathbb{1}_{\{\text{Profit-sharing}>0\}}$ is a dummy variable equal to 1 if a firm reports a strictly positive amount of profit-sharing on its income statement. $\frac{\text{Tot. compensation}}{\text{Value-added}}$ is the ratio of firms' wage bill plus profit-sharing to its value-added. $\frac{\text{Profits}}{\text{Value-added}}$ is the ratio of firms' net income to its value-added. $\frac{\text{Taxes}}{\text{Value-added}}$ is the ratio of firms' corporate income taxe to its value-added. All the ratios are defined only for firms with positive value-added. Treatment is a dummy variable equal to one if a firm has between 55 and 85 employees in 1989 and 1990. Post is a dummy variable equal to one after 1990, the introduction of the reform. We estimate the following equation using OLS:

$$Y_{icst} = \alpha_i + \delta_{ct} + \mu_{st} + \beta^T \mathbb{1}_{\{i \in \text{Treated}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \beta^C \mathbb{1}_{\{i \in \text{Control}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \epsilon_{icst}$$

α_i corresponds to firm fixed-effects, δ_{ct} to county-by-year fixed-effects, and μ_{st} to industry-by-year fixed-effects. Panel A reports β^T when the large control is the reference group. Panel B reports β^T when the small control is the reference group. Panel C reports β^T when both small and large firms are used as controls. The large control group consists of firms with between 120 and 300 employees in 1989 and 1990. The small control group consists of firms with between 35 and 45 employees in 1989 and 1990. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

TABLE 4: Incidence on workers and shareholders conditional on firms' profits

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	$\mathbb{1}_{\{\text{Profit-sharing}>0\}}$	$\frac{\text{Profit-sharing}}{\text{Value-added}}$	$\frac{\text{Wage}}{\text{Value-added}}$	$\frac{\text{Tot. compensation}}{\text{Value-added}}$	$\frac{\text{Profits}}{\text{Value-added}}$	$\frac{\text{Taxes}}{\text{Value-added}}$	$\mathbb{1}_{\{\text{Profit-sharing}>0\}}$	$\frac{\text{Profit-sharing}}{\text{Value-added}}$	$\frac{\text{Wage}}{\text{Value-added}}$	$\frac{\text{Tot. compensation}}{\text{Value-added}}$	$\frac{\text{Profits}}{\text{Value-added}}$	$\frac{\text{Taxes}}{\text{Value-added}}$
Panel A: Relative to large control												
Treatment x Post	0.2121***	0.0002**	0.0020	0.0019	-0.0000	-0.0003	0.0401***	0.0003***	0.0037	0.0037	-0.0022	-0.0004
	(0.0090)	(0.0001)	(0.0022)	(0.0021)	(0.0024)	(0.0003)	(0.0076)	(0.0001)	(0.0029)	(0.0029)	(0.0034)	(0.0004)
Treatment x Post x $\frac{\text{Formula}}{\text{Value-added}}$	14.9437***	0.4536***	-0.0285	0.4230***	-0.5886***	-0.1661***						
	(0.6191)	(0.0133)	(0.1173)	(0.1172)	(0.1183)	(0.0247)						
Treatment x Post x $\mathbb{1}_{\{\frac{\text{Formula}}{\text{Value-added}}>\text{Tercile 1}\}}$							0.3405***	0.0016***	-0.0009	0.0007	-0.0025	-0.0012**
							(0.0158)	(0.0002)	(0.0033)	(0.0033)	(0.0039)	(0.0006)
Treatment x Post x $\mathbb{1}_{\{\frac{\text{Formula}}{\text{Value-added}}>\text{Tercile 2}\}}$							0.5200***	0.0101***	-0.0034	0.0065*	-0.0094**	-0.0033***
							(0.0140)	(0.0003)	(0.0034)	(0.0034)	(0.0039)	(0.0009)
Panel B: Relative to small control												
Treatment x Post	0.1209***	0.0002**	0.0023	0.0025	0.0015	-0.0002	0.0086	0.0001	-0.0004	-0.0004	0.0015	0.0005
	(0.0065)	(0.0001)	(0.0020)	(0.0020)	(0.0021)	(0.0003)	(0.0059)	(0.0001)	(0.0028)	(0.0028)	(0.0032)	(0.0004)
Treatment x Post x $\frac{\text{Formula}}{\text{Value-added}}$	15.6810***	0.4053***	-0.0637	0.3277***	-0.5145***	-0.1456***						
	(0.5434)	(0.0122)	(0.1103)	(0.1107)	(0.1080)	(0.0235)						
Treatment x Post x $\mathbb{1}_{\{\frac{\text{Formula}}{\text{Value-added}}>\text{Tercile 1}\}}$							0.3235***	0.0015***	0.0040	0.0056*	-0.0007	-0.0016***
							(0.0118)	(0.0001)	(0.0031)	(0.0031)	(0.0036)	(0.0005)
Treatment x Post x $\mathbb{1}_{\{\frac{\text{Formula}}{\text{Value-added}}>\text{Tercile 2}\}}$							0.5393***	0.0101***	-0.0002	0.0097***	-0.0103***	-0.0036***
							(0.0129)	(0.0003)	(0.0033)	(0.0033)	(0.0037)	(0.0009)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.63	0.75	0.64	0.63	0.45	0.92	0.69	0.69	0.63	0.62	0.44	0.81
Observations	126,830	124,688	120,736	120,703	121,409	121,640	126,830	124,688	120,736	120,703	121,409	121,640

Note: This table reports Intent to Treat estimates of the impact of mandatory profit-sharing at the firm level, by level of *formula*. $\mathbb{1}_{\{\text{Profit-sharing}>0\}}$ is a dummy variable equal to 1 if a firm reports a strictly positive amount of profit-sharing on its income statement. $\frac{\text{Tot. compensation}}{\text{Value-added}}$ is the ratio of firms' wage bill plus profit-sharing to its value-added. $\frac{\text{Profits}}{\text{Value-added}}$ is the ratio of firms' net income to its value-added. $\frac{\text{Taxes}}{\text{Value-added}}$ is the ratio of firms' corporate income taxe to its value-added. All ratios are defined only for firms with positive value-added. Treatment is a dummy variable equal to one if a firm has between 55 and 85 employees in 1989 and 1990. Post is a dummy variable equal to one after 1990, the introduction of the reform. $\frac{\text{Formula}}{\text{Value-added}}$ is the ratio of firms' minimal amount of profit-sharing that should be paid according to the law (see Equation (1)) to its value-added. $\mathbb{1}_{\{\frac{\text{Formula}}{\text{Value-added}}>\text{Tercile 1}\}}$ is a dummy variable equal to one if firms' $\frac{\text{Formula}}{\text{Value-added}}$ is above the first tercile of the sample's distribution. $\mathbb{1}_{\{\frac{\text{Formula}}{\text{Value-added}}>\text{Tercile 2}\}}$ is a dummy variable equal to one if firms' $\frac{\text{Formula}}{\text{Value-added}}$ is above the second tercile of the sample's distribution. Panel A reports β^T when the large control is the reference group. Panel B reports β^T when the small control is the reference group. The large control group consists of firms with between 120 and 300 employees in 1989 and 1990. The small control group consists of firms with between 35 and 45 employees in 1989 and 1990. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

TABLE 5: Semi-elasticity of wages and total compensation to profit-sharing at the firm level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$\frac{\text{Wage}}{\text{Value-added}}$		$\frac{\text{Tot. compensation}}{\text{Value-added}}$		$\frac{\text{Wage}}{\text{Value-added}}$		$\frac{\text{Tot. compensation}}{\text{Value-added}}$	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Panel A: Profit-Sharing Dummy								
$\mathbb{1}_{\{\text{Profit-sharing}>0\}}$	-0.0534***	0.0050	-0.0401***	0.0179***				
	(0.0009)	(0.0050)	(0.0009)	(0.0049)				
Panel B: Profit-sharing to value-added ratio								
$\frac{\text{Profit-sharing}}{\text{Value-added}}$					-3.3884***	0.6129	-2.4510***	1.5095***
					(0.0529)	(0.3857)	(0.0524)	(0.3816)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cragg Donald F stat		7,277		7,319		3,971		3,995
Kleibergen Paap F stat		1,683		1,687		975		976
Observations	123,538	123,538	123,542	123,542	120,562	120,562	120,461	120,461

Note: This table provides the semi-elasticity of the wage share (respectively the total compensation share) to profit-sharing at the firm level. $\mathbb{1}_{\{\text{Profit-sharing}>0\}}$ is a dummy variable equal to 1 if a firm reports a strictly positive amount of profit-sharing on its income statement. $\frac{\text{Profit-sharing}}{\text{Value-added}}$ is the ratio between the amount of profit-sharing paid by a firm and its value-added. Column (1), (3), (5) and (7) use OLS estimations. Column (2), (4), (6) and (8) instrument profit-sharing using the interaction between a Treatment dummy, equal to one if the firm has between 55 and 85 employees in 1989 and 1990, and a Post dummy equal to one after 1990. The semi-elasticity is estimated using a two-stage least squares procedure. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

TABLE 6: Effects on firms' activity

	(1)	(2)	(3)	(4)
	Investment Rate	$\log(\frac{\text{capital}}{\text{labor}})$	TFP Levinsohn-Petrin	TFP Ackerberg-Caves-Frazer
Panel A: Relative to large control				
Treatment x Post	0.0057	-0.0131	-0.0076	-0.0058
	(0.0036)	(0.0080)	(0.0051)	(0.0048)
Panel B: Relative to small control				
Treatment x Post	-0.0045	-0.0060	-0.0037	-0.0023
	(0.0035)	(0.0075)	(0.0045)	(0.0043)
Panel C: Relative to both groups				
Treatment x Post	0.0002	-0.0092	-0.0055	-0.0039
	(0.0030)	(0.0067)	(0.0041)	(0.0039)
Firm FE	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes
Adj R^2	0.16	0.88	0.94	0.86
Observations	123,813	124,481	122,152	122,180

Note: This table reports Intent to Treat estimates of the impact of mandatory profit-sharing at the firm level. The investment rate is defined as capital expenditures in tangible assets normalized by the gross value of tangible assets. The capital-labor ratio is the log of net total assets divided by employment. Column (3) and (4) provide the results for total factor productivity computed using Levinsohn and Petrin (2003) and Ackerberg et al. (2015) methodologies respectively. TFP is computed separately for each 2-digit industry using the NAF classification measured in 1990. Treatment is a dummy variable equal to one if a firm has between 55 and 85 employees in 1989 and 1990. Post is a dummy variable equal to one after 1990, the introduction of the reform. We estimate the following equation using OLS:

$$Y_{icst} = \alpha_i + \delta_{ct} + \mu_{st} + \beta^T \mathbb{1}_{\{i \in \text{Treated}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \beta^C \mathbb{1}_{\{i \in \text{Control}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \epsilon_{icst}$$

α_i corresponds to firm fixed-effects, δ_{ct} to county-by-year fixed-effects, and μ_{st} to industry-by-year fixed-effects. Panel A reports β^T when the large control is the reference group. Panel B reports β^T when the small control is the reference group. Panel C reports β^T when both small and large firms are used as controls. The large control group consists of firms with between 120 and 300 employees in 1989 and 1990. The small control group consists of firms with between 35 and 45 employees in 1989 and 1990. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

TABLE 7: Additional measures of productivity and working conditions

	(1)	(2)	(3)
	$\mathbb{1}_{\{\text{Sick leave}\}}$	$\mathbb{1}_{\{\text{Overtime}\}}$	$\frac{\text{Actual hours - Usual hours}}{\text{Usual hours}}$
Panel A: Relative to large control			
Treatment x Post	-0.0012	0.0007	-0.0002
	(0.0021)	(0.0019)	(0.0011)
Panel B: Relative to small control			
Treatment x Post	-0.0035	0.0022	-0.0019*
	(0.0022)	(0.0020)	(0.0011)
Panel C: Relative to both groups			
Treatment x Post	-0.0022	0.0013	-0.0010
	(0.0020)	(0.0017)	(0.0010)
Firm-size FE	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes
Adj R^2	0.00	0.01	0.01
Observations	201,775	201,775	108,272

Note: This table reports Intent to Treat estimates of the impact of mandatory profit-sharing at the individual level. $\mathbb{1}_{\{\text{Sick leave}\}}$ is a dummy variable equal to 1 if a worker declares fewer working hours during the reference week due to sick leave. $\mathbb{1}_{\{\text{Overtime}\}}$ is a dummy variable equal to 1 if a worker declares working more hours than the usual number of hours during the reference week. Finally, $\frac{\text{Actual hours - Usual hours}}{\text{Usual hours}}$ is the difference between the declared number of hours worked during the reference week and the usual number of hours worked, expressed as a fraction of usual working time. These three measures are computed using the labor force survey. Treatment is a dummy variable equal to one if the individual works in a firm with employment between 50 and 99. Post is a dummy variable equal to one after 1990, the introduction of the reform. We estimate the following equation using OLS:

$$Y_{icst} = \alpha_T + \delta_{ct} + \mu_{st} + \beta^T \mathbb{1}_{\{i \in \text{Treated}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \beta^C \mathbb{1}_{\{i \in \text{Control}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \epsilon_{icst}$$

α_T corresponds to group fixed-effects (i.e., treatment group, small control group, large control group), δ_{ct} to county-by-year fixed-effects, and μ_{st} to industry-by-year fixed-effects. Panel A reports β^T when the large control is the reference group. Panel B reports β^T when the small control is the reference group. Panel C reports β^T when both small and large firms are used as controls. The large control group consists of firms with between 100 and 500 employees. The small control group consists of firms with between 20 and 49 employees. Standard errors (in parenthesis) are robust to heteroskedasticity. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

TABLE 8: Heterogenous effect on exposed firms

	(1) $\mathbb{1}_{\{\text{Profit-sharing}>0\}}$	(2) $\frac{\text{Profit-sharing}}{\text{Value-added}}$	(3) $\frac{\text{Wage}}{\text{Value-added}}$	(4) $\frac{\text{Tot. compensation}}{\text{Value-added}}$	(5) $\frac{\text{Profits}}{\text{Value-added}}$	(6) $\frac{\text{Taxes}}{\text{Value-added}}$	(7) Investment Rate	(8) TFP Ackerberg-Caves-Frazer
Panel A: Relative to large control								
Treatment x Post	0.1920***	-0.0001	0.0009	0.0006	0.0012	0.0007	0.0018	-0.0019
	(0.0127)	(0.0002)	(0.0028)	(0.0027)	(0.0031)	(0.0008)	(0.0053)	(0.0071)
Treatment x Post x $\frac{\overline{\text{Formula}_{pre}}}{\text{Value-added}}$	17.0863***	0.4995***	0.0089	0.4867**	-0.6436***	-0.2207***	0.3701	-0.4197
	(0.9637)	(0.0217)	(0.2058)	(0.1937)	(0.2208)	(0.0778)	(0.3598)	(0.5113)
Panel B: Relative to small control								
Treatment x Post	0.1594***	0.0014***	0.0023	0.0035	0.0001	-0.0006	-0.0078	0.0004
	(0.0094)	(0.0001)	(0.0026)	(0.0026)	(0.0028)	(0.0008)	(0.0053)	(0.0064)
Treatment x Post x $\frac{\overline{\text{Formula}_{pre}}}{\text{Value-added}}$	9.3335***	0.2172***	0.0306	0.2894	-0.4094**	-0.1554**	0.2762	-0.4546
	(0.7733)	(0.0162)	(0.2024)	(0.1961)	(0.2088)	(0.0771)	(0.3553)	(0.4773)
Panel C: Relative to both groups								
Treatment x Post	0.1744***	0.0007***	0.0017	0.0021	0.0006	0.0000	-0.0032	-0.0006
	(0.0098)	(0.0002)	(0.0023)	(0.0023)	(0.0025)	(0.0007)	(0.0046)	(0.0057)
Treatment x Post x $\frac{\overline{\text{Formula}_{pre}}}{\text{Value-added}}$	12.7748***	0.3328***	0.0232	0.3823**	-0.5167***	-0.1870***	0.3071	-0.4363
	(0.7865)	(0.0170)	(0.1772)	(0.1689)	(0.1870)	(0.0666)	(0.3118)	(0.4215)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.54	0.51	0.57	0.57	0.35	0.58	0.16	0.87
Observations	132,360	127,597	123,482	123,469	124,301	124,343	123,605	122,087

Note: This table reports Intent to Treat estimates of the impact of mandatory profit-sharing at the firm level, for different levels of *ex-ante* exposure to the reform. $\mathbb{1}_{\{\text{Profit-sharing}>0\}}$ is a dummy variable equal to 1 if a firm reports a strictly positive amount of profit-sharing on its income statement. $\frac{\text{Tot. compensation}}{\text{Value-added}}$ is the ratio of firms' wage bill plus profit-sharing to its value-added. $\frac{\text{Profits}}{\text{Value-added}}$ is the ratio of firms' net income to its value-added. $\frac{\text{Taxes}}{\text{Value-added}}$ is the ratio of firms' corporate income taxe to its value-added. All ratios are defined only for firms with positive value-added. The investment rate is defined as capital expenditures in tangible assets normalized by the gross value of tangible assets. TFP stands for "Total Factor Productivity". It is computed using the method designed by Ackerberg et al. (2015). Firms' TFP is computed separately for each 2-digit industry using the NAF classification measured in 1990. Treatment is a dummy variable equal to one if a firm has between 55 and 85 employees in 1989 and 1990. Post is a dummy variable equal to one after 1990, the introduction of the reform. $\frac{\overline{\text{Formula}_{pre}}}{\text{Value-added}}$ corresponds to the average pre-reform ratio of the firm-level profit-sharing formula normalized by its value added. We estimate the following equation using OLS:

$$
\begin{aligned}
Y_{icst} \quad = \quad & \phi^T \left(\frac{\text{Formula}_{\text{pre}}}{\text{Value-added}} \right)_i . \mathbb{1}_{\{i \in \text{Treated}\}} . \mathbb{1}_{\{t \geq 1991\}} + \phi^C \left(\frac{\text{Formula}_{\text{pre}}}{\text{Value-added}} \right)_i . \mathbb{1}_{\{i \in \text{Control}_l\}} . \mathbb{1}_{\{t \geq 1991\}} \\
& + \xi^T \mathbb{1}_{\{i \in \text{Treated}\}} . \mathbb{1}_{\{t \geq 1991\}} + \xi^C \mathbb{1}_{\{i \in \text{Control}_l\}} . \mathbb{1}_{\{t \geq 1991\}} + \mu_1 \left(\frac{\text{Formula}_{\text{pre}}}{\text{Value-added}} \right)_i . \mathbb{1}_{\{t \geq 1991\}} \\
& + \alpha_i + \delta_{ct} + \mu_{st} + \omega_{icst}
\end{aligned}
$$

α_i corresponds to firm fixed-effects, δ_{ct} to county-by-year fixed-effects, and μ_{st} to industry-by-year fixed-effects. Panel A reports ξ^T and ϕ^T when the large control is the reference group. Panel B reports ξ^T and ϕ^T when the small control is the reference group. Panel C reports ξ^T and ϕ^T when both small and large firms are used as controls. The large control group consists of firms with between 120 and 300 employees in 1989 and 1990. The small control group consists of firms with between 35 and 45 employees in 1989 and 1990. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

TABLE 9: Effects on wage and total compensation at the employee level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	log(wage)				log(total compensation)			
Panel A: Relative to large control								
Treatment x Post	0.0028	0.0037	0.0043	0.0044	0.0126***	0.0140***	0.0153***	0.0154***
	(0.0037)	(0.0028)	(0.0031)	(0.0029)	(0.0037)	(0.0029)	(0.0033)	(0.0031)
Panel B: Relative to small control								
Treatment x Post	-0.0005	-0.0016	-0.0013	-0.0021	0.0082*	0.0075**	0.0081*	0.0072*
	(0.0048)	(0.0036)	(0.0041)	(0.0038)	(0.0048)	(0.0037)	(0.0042)	(0.0039)
Panel C: Relative to both groups								
Treatment x Post	0.0022	0.0026	0.0031	0.0030	0.0117***	0.0126***	0.0138***	0.0137***
	(0.0035)	(0.0027)	(0.0030)	(0.0028)	(0.0035)	(0.0028)	(0.0031)	(0.0029)
Employee controls	No	Yes	No	Yes	No	Yes	No	Yes
Employee FE	No	No	Yes	Yes	No	No	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.32	0.63	0.84	0.85	0.32	0.63	0.84	0.84
Observations	436,970	436,335	383,305	382,695	436,820	436,186	383,157	382,548

Note: This table reports Intent to Treat estimates of the impact of mandatory profit-sharing on workers compensation at the employee level. Wage is the employee's daily gross wage. Total compensation is the sum of the employee's daily gross wage and the daily amount of profit-sharing received during the year. Treatment is a dummy variable equal to one if the firm the employee works for has between 55 and 85 employees in 1989 and 1990. Post is a dummy variable equal to one after 1990, the introduction of the reform. We estimate the following equation using OLS:

$$Y_{jicst} = \alpha_i + \phi_j + \zeta X_{jt} + \delta_{ct} + \mu_{st} + \beta^T \mathbb{1}_{\{i \in \text{Treated}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \beta^C \mathbb{1}_{\{i \in \text{Control}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \epsilon_{icst}$$

α_i corresponds to firm fixed-effects, ϕ_j to employee fixed-effects, δ_{ct} to county-by-year fixed-effects, and μ_{st} to industry-by-year fixed-effects. The employee-level controls X_{jt} include: gender, age, age^2, tenure, tenure^2, experience, experience^2, and the employee's 2-digit occupation. Panel A reports β^T when the large control is the reference group. Panel B reports β^T when the small control is the reference group. Panel C reports β^T when both small and large firms are used as controls. The large control group consists of firms with between 120 and 300 employees. The small control group consists of firms with between 35 and 45 employees. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

TABLE 10: Effects on employee wage and total compensation: IV estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	log(wage)		log(total compensation)		log(wage)		log(total compensation)	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Panel A: Profit-sharing dummy								
$\mathbb{1}_{\{\text{profit-sharing}>0\}}$	0.0019	0.0072	0.0281***	0.0353***				
	(0.0015)	(0.0075)	(0.0016)	(0.0081)				
Panel B: Inverse hyperbolic sine of profit-sharing								
Asinh(profit-sharing)					0.1010***	0.0022	0.1038***	0.0375***
					(0.0026)	(0.0096)	(0.0018)	(0.0096)
Employee Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cragg_Donald		18668		18638		8628		8627
Kleibergen_Paap		1166		1165		573		572
Observations	436,215	436,215	436,186	436,186	426,770	426,149	426,481	426,481

Note: This table provides the semi-elasticity of log wage (respectively log total compensation) to profit-sharing at the individual level. Wage is the employee's daily gross wage. Total compensation is the sum of the employee's daily gross wage and the daily amount of profit-sharing received during the year. $\mathbb{1}_{\{\text{Profit-sharing}>0\}}$ is a dummy variable equal to 1 if the firm the employee works for reports a strictly positive amount of profit-sharing on its income statement. Asinh(profit-sharing) is the inverse hyperbolic sine of the daily amount of profit-sharing received by the employee during the year. Column (1), (3), (5) and (7) use OLS estimations. Column (2), (4), (6) and (8) instrument profit-sharing using the interaction between a Treatment dummy, equal to one if the firm the employee works for has between 55 and 85 employees in 1989 and 1990, and a Post dummy equal to one after 1990. The employee-level controls include: gender, age, age^2, tenure, tenure^2, experience, experience^2, and the employee's 2-digit occupation. The semi-elasticity is estimated using a two-stage least squares procedure. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

TABLE 11: Effects on employee wage and total compensation: low vs. high skill

	(1)	(2)	(3)	(4)	(5)	(6)
		log(wage)			log(total compensation)	
Panel A: Relative to large control						
Treatment x Post	0.0028	0.0049	0.0065**	0.0126***	0.0152***	0.0169***
	(0.0037)	(0.0032)	(0.0029)	(0.0037)	(0.0033)	(0.0030)
Treatment x Post x Intermediate Skills		-0.0020	-0.0041		-0.0020	-0.0042
		(0.0085)	(0.0077)		(0.0086)	(0.0078)
Treatment x Post x High-Skill		-0.0261*	-0.0276**		-0.0304**	-0.0310**
		(0.0152)	(0.0138)		(0.0153)	(0.0139)
Panel B: Relative to small control						
Treatment x Post	-0.0005	-0.0052	-0.0022	0.0082*	0.0046	0.0076*
	(0.0048)	(0.0044)	(0.0039)	(0.0048)	(0.0045)	(0.0040)
Treatment x Post x Intermediate Skills		0.0087	0.0060		0.0081	0.0055
		(0.0124)	(0.0109)		(0.0125)	(0.0110)
Treatment x Post x High-Skill		-0.0204	-0.0193		-0.0275	-0.0260
		(0.0229)	(0.0207)		(0.0230)	(0.0207)
Panel C: Relative to both groups						
Treatment x Post	0.0022	0.0028	0.0047*	0.0117***	0.0130***	0.0150***
	(0.0035)	(0.0031)	(0.0028)	(0.0035)	(0.0031)	(0.0029)
Treatment x Post x Intermediate Skills		0.0000	-0.0022		-0.0001	-0.0023
		(0.0083)	(0.0075)		(0.0084)	(0.0076)
Treatment x Post x High-Skill		-0.0250*	-0.0262*		-0.0297**	-0.0301**
		(0.0149)	(0.0135)		(0.0150)	(0.0136)
Employee controls	No	No	Yes	No	No	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.32	0.56	0.63	0.32	0.56	0.63
Observations	436,970	436,970	436,335	436,820	436,820	436,186

Note: This table reports Intent to Treat estimates of the impact of mandatory profit-sharing on workers' compensation at the individual level, by skill. Wage is the employee's daily gross wage. Total compensation is the sum of the employee's daily gross wage and the daily amount of profit-sharing received during the year. Treatment is a dummy variable equal to one if the firm the employee works for has between 55 and 85 employees in 1989 and 1990. Post is a dummy variable equal to one after 1990, the introduction of the reform. Intermediate Skills is a dummy equal to one if the employee's job description is supervisor or skilled technicians. High-skill is a dummy equal to one for managers, engineers and executives. The baseline skill includes clerks and blue collar-workers. We augment the regression model in Table 9 by interacting the Treatment and Post dummies with the High Skill and Intermediate Skills dummies. We only report the baseline treatment effect (Treatment x Post) and the triple interactions. Column (1) and (3) only include firm, industry-year and province-year fixed-effects. Column (2) and (4) control for employee-level controls X_{jt}: gender, age, age^2, tenure, tenure^2, experience, experience^2. Panel A reports the treatment effect relative to the large control group and Panel B relative to the small control group. Panel C reports β^T when both small and large firms are used as controls. The large control group consists of firms with between 120 and 300 employees in 1989 and 1990. The small control group consists of firms with between 35 and 45 employees in 1989 and 1990. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

TABLE 12: Effects on employee wage and total compensation: low vs. high skill, IV estimates

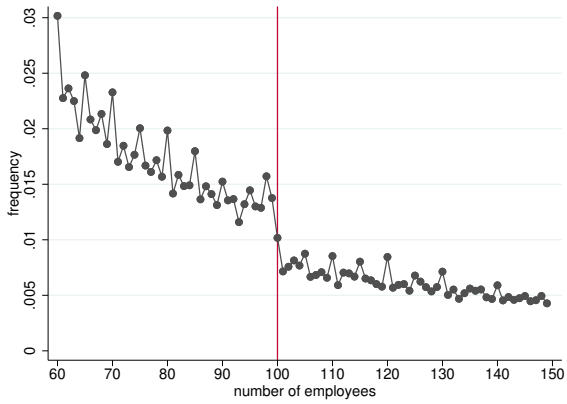
	(1)	(2)	(3)	(4)
	log(wage)		log(total compensation)	
Panel A: Profit-Sharing Dummy				
$\mathbb{1}_{\{\text{profit-sharing}>0\}}$	0.0072	0.0136*	0.0350***	0.0422***
	(0.0075)	(0.0079)	(0.0076)	(0.0081)
$\mathbb{1}_{\{\text{profit-sharing}>0\}}$ x $\mathbb{1}_{\{\text{Intermediate Skills}\}}$		-0.0058		-0.0072
		(0.0209)		(0.0211)
$\mathbb{1}_{\{\text{profit-sharing}>0\}}$ x $\mathbb{1}_{\{\text{High-skill}\}}$		-0.0823*		-0.0941**
		(0.0429)		(0.0438)
K-P F stat	1,166	391	1,166	391
K-P F stat (Intermediate)		194		194
K-P F stat (High-skill)		67		66
Nul effect on high-skill (p-value)		0.102		0.226
Observations	436,215	436,215	436,186	436,186
Panel B: Inverse hyperbolic sine of daily profit-sharing				
Asinh(profit-sharing)	0.0022	0.0155	0.0375***	0.0548***
	(0.0096)	(0.0109)	(0.0096)	(0.0108)
Asinh(profit-sharing) x $\mathbb{1}_{\{\text{Intermediate Skills}\}}$		-0.0859**		-0.0987***
		(0.0364)		(0.0364)
Asinh(profit-sharing) x $\mathbb{1}_{\{\text{High-skill}\}}$		-0.7553***		-0.7653***
		(0.2270)		(0.2265)
K-P F stat	573	199	573	199
K-P F stat (Intermediate)		109		109
K-P F stat (High-skill)		35		36
Nul effect on high-skill (p-value)		0.001		0.002
Observations	426,149	410,460	426,481	410,813
Employee Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes

Note: This table provides the semi-elasticity of log wage (respectively log total compensation) to profit-sharing at the individual level, by skill. Wage is the employee's daily gross wage. Total compensation is the sum of the employee's daily gross wage and the daily amount of profit-sharing received during the year. $\mathbb{1}_{\{\text{Profit-sharing}>0\}}$ is a dummy variable equal to 1 if the firm the employee works for reports a strictly positive amount of profit-sharing on its income statement. Asinh(profit-sharing) is the inverse hyperbolic sine of the daily amount of profit-sharing received by the employee during the year. Intermediate Skills is a dummy equal to one if the employee's job description is supervisor or skilled technicians. High-skill is a dummy equal to one for managers, engineers and executives. The baseline skill includes clerks and blue collar-workers. We augment the regression model in Table 10 by interacting profit-sharing (dummy or asinh) with the High Skill and Intermediate Skills dummies. All estimates instrument profit-sharing variables using the interactions between a Treatment dummy, equal to one if the firm the employee works for has between 55 and 85 employees in 1989 and 1990, a Post dummy, equal to one after 1990, and the skill dummies. All regressions include the following employee-level controls: gender, age, age^2, tenure, tenure^2, experience, experience^2, and the employee's 2-digit occupation. All regressions also include firm fixed-effects, industry-year fixed-effects, and province-year fixed-effects. Intermediate workers include supervisors and skilled technicians. The semi-elasticity is estimated using a two-stage least squares procedure. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level.
Go back to main text

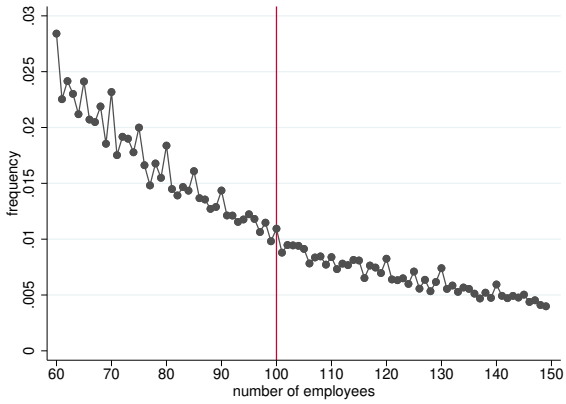
B Figures

FIGURE 1: Distribution of employment around the 100 employee threshold

(A) Pre-reform (1985-1989)

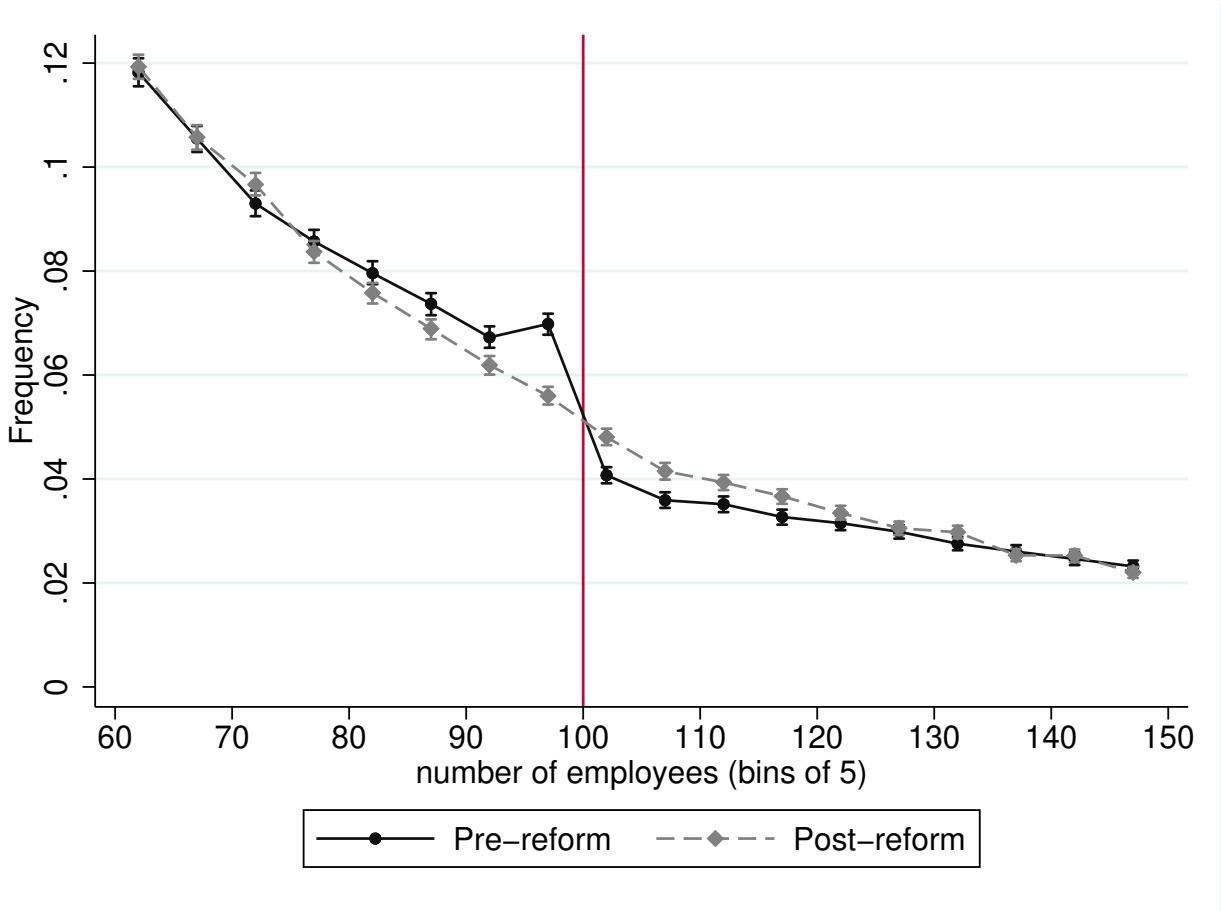


(B) Post-reform (1992-1997)



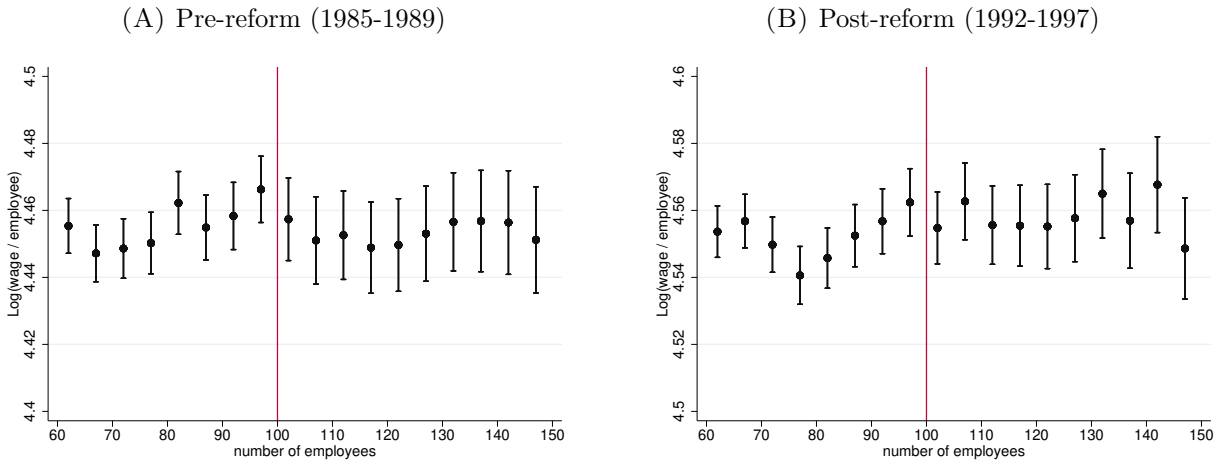
Note: This figure shows the share of firms by employment count for firms with more than 60 employees and less than 150 employees. Panel A corresponds to the pre-reform years (1985-1989); Panel B to the post-reform years (1992-1997). Firm's employment count comes from tax files. Go back to main text

FIGURE 2: Excess mass at the 100 employee threshold



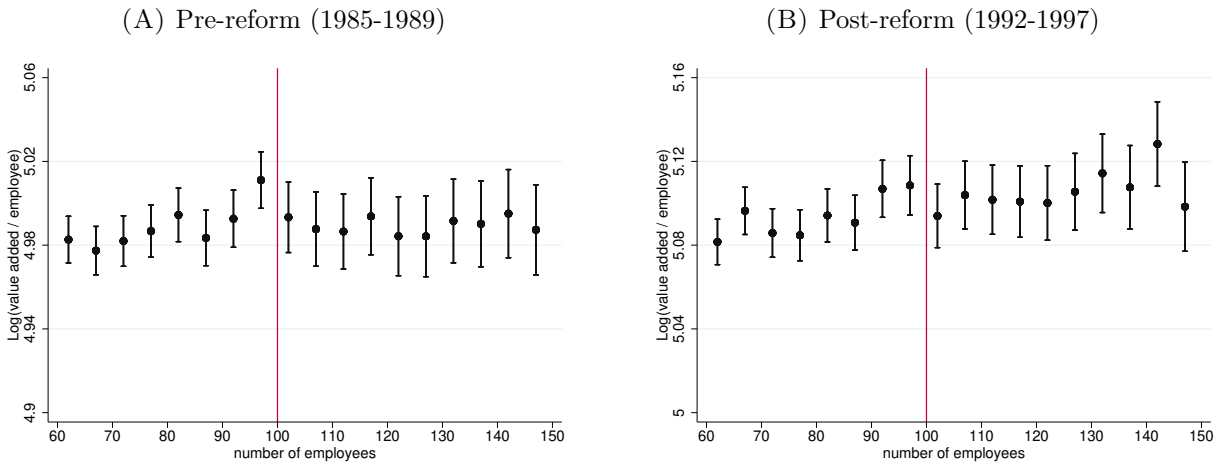
Note: This figure shows the share of firms by employment bins for firms with more than 60 employees and less than 150 employees. We use bins of 5 employees starting at 60 employees. The solid line corresponds to the pre-reform distribution (1985-1989); the dashed line corresponds to the post-reform distribution (1992-1997). The vertical bars are 95% confidence intervals. They are computed using bootstrap. Firm's employment count comes from tax files. Go back to main text

FIGURE 3: Wage bill per employee and number of employees



Note: For each firm in the sample, we compute the log ratio of firms' total wage bill to their number of employees. The figure reports the average value of this log ratio by employment bins, where we use bins of five employees starting at 60 employees. The sample period is 1985-1989 (Panel A) and 1992-1997 (Panel B). Firm's employment count and wage data comes from tax files. The vertical bars correspond to 95% confidence intervals. Go back to main text

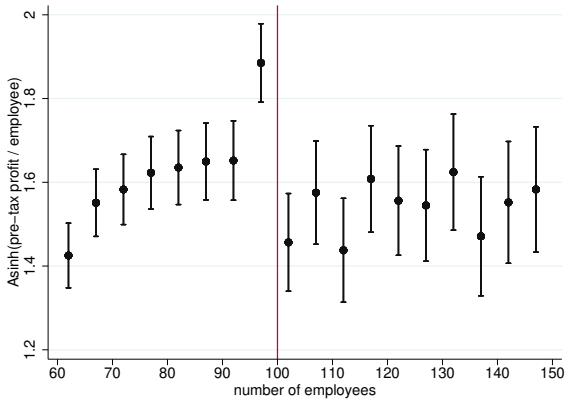
FIGURE 4: Value-added per employee and number of employees



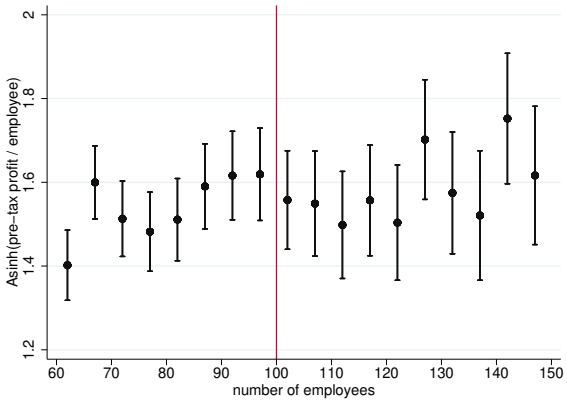
Note: For each firm in the sample, we compute the log ratio of firms' value-added to their number of employees. The figure reports the average value of this log ratio by employment bins, where we use bins of five employees starting at 60 employees. The sample period is 1985-1989 (Panel A) and 1992-1997 (Panel B). Firm's employment count and value-added data comes from tax files. The vertical bars correspond to 95% confidence intervals. Go back to main text

FIGURE 5: Pre-tax profit per employee and number of employees

(A) Pre-reform (1985-1989)

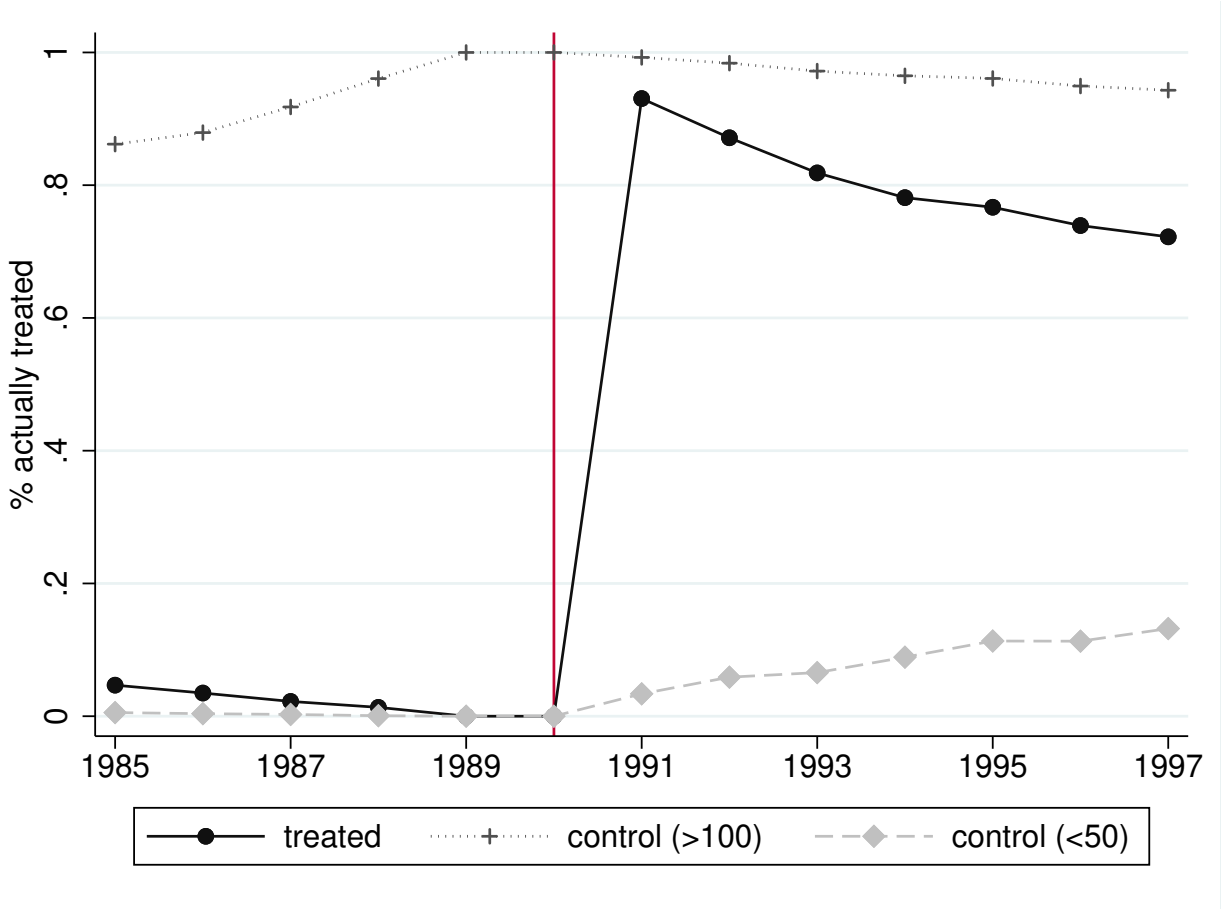


(B) Post-reform (1992-1997)



Note: For each firm in the sample, we compute the hyperbolic sine transformation of the ratio of firms' pre-tax profit to their number of employees. The figure reports the average value by employment bins, where we use bins of five employees starting at 60 employees. The sample period is 1985-1989 (Panel A) and 1992-1997 (Panel B). Firm's employment count and pre-tax profit data comes from tax files. The vertical bars correspond to 95% confidence intervals. Go back to main text

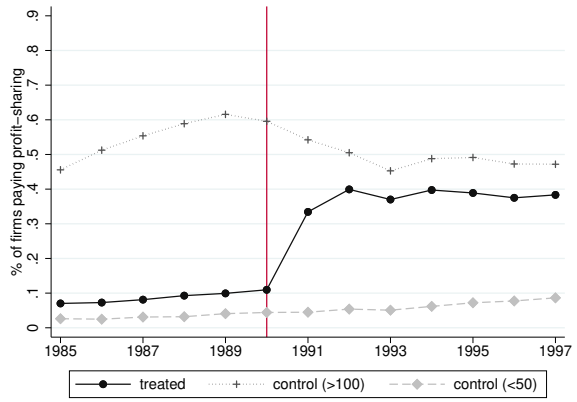
FIGURE 6: Treatment status and actual treatment



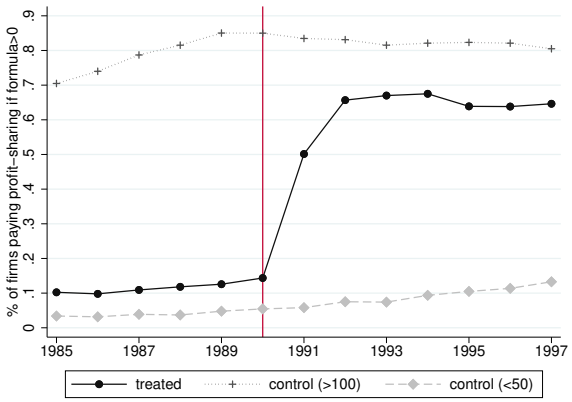
Note: This figure plots the share of firms that are actually mandated to have a profit-sharing scheme by treatment status. Treated firms have between 55 and 85 employees in 1989 and 1990 (dark solid dots). Control (>100) are firms with between 120 and 300 employees in 1989 and 1990 (dotted dark grey crosses). Control (<50) are firms with between 35 and 45 employees in 1989 and 1990 (dashed light grey diamonds). The vertical red line corresponds to 1990, the year the reform is voted and implemented. Go back to main text

FIGURE 7: Share of firms sharing profits over time, by treatment status

(A) Unconditional



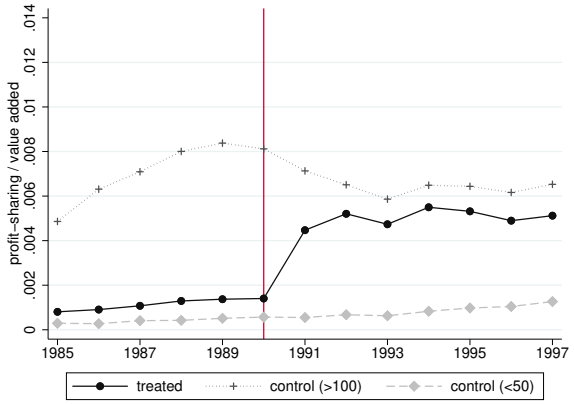
(B) Conditional on positive excess-profits



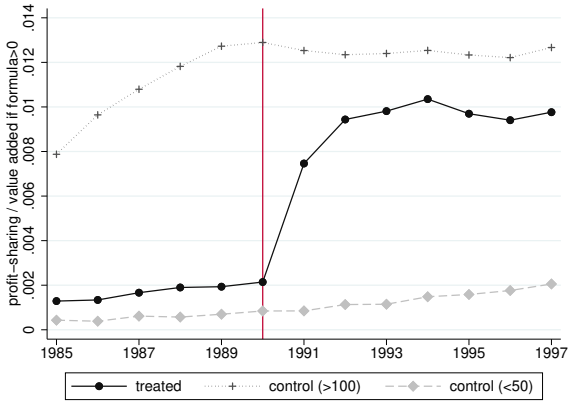
Note: Panel A plots the share of firms within each group that reports a strictly positive amount of profit-sharing on their income statement. Panel B conditions on firms with positive excess-profits. Excess-profits are defined as accounting net income minus five percent of book equity. Treated firms have between 55 and 85 employees in 1989 and 1990 (dark solid dots). Control (>100) are firms with between 120 and 300 employees in 1989 and 1990 (dotted dark grey crosses). Control (<50) are firms with between 35 and 45 employees in 1989 and 1990 (dashed light grey diamonds). Go back to main text

FIGURE 8: Profit-sharing as a share of value-added, by treatment status

(A) Unconditional



(B) Conditional on positive excess-profits

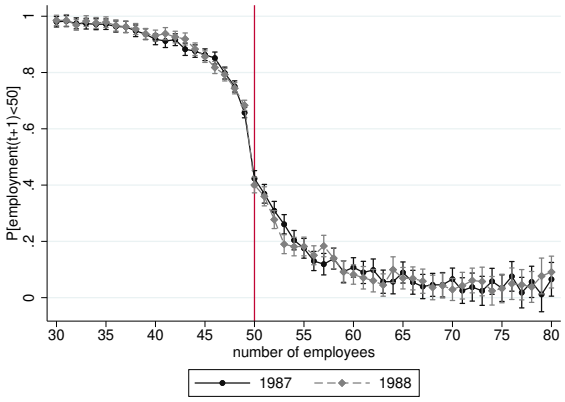


Note: Treated firms have between 55 and 85 employees in 1989 and 1990 (dark solid dots). Control (>100) are firms with between 120 and 300 employees in 1989 and 1990 (dotted dark grey crosses). Control (<50) are firms with between 35 and 45 employees in 1989 and 1990 (dashed light grey diamonds). Panel A plots the average ratio of profit-sharing to value-added within each group over time. Panel B conditions on firms with positive excess-profits. Excess-profits are defined as accounting net income minus five percent of book equity. Go back to main text

FIGURE 9: Crossing the 50 employee threshold

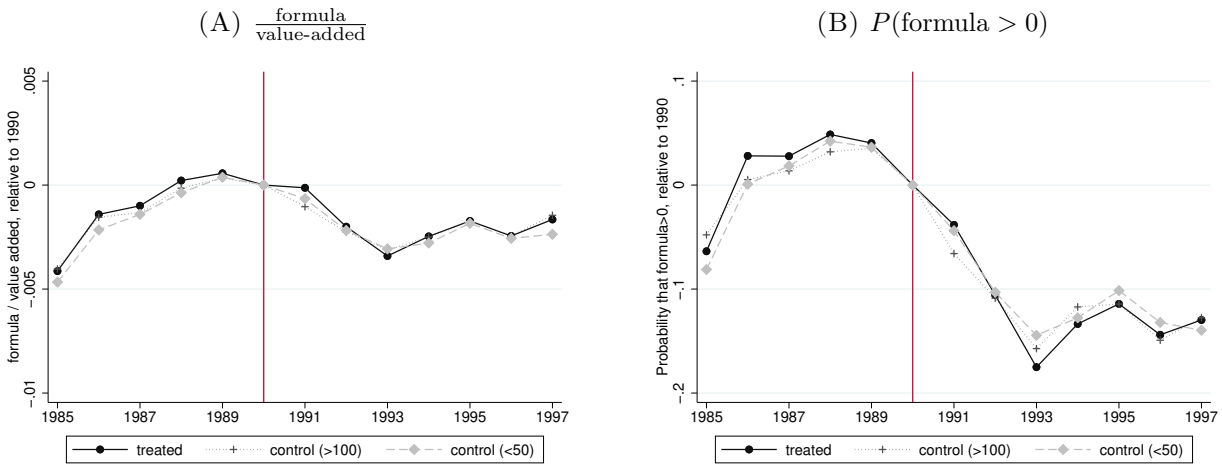
(A) Treatment: 1988 vs. 1990

(B) Placebo: 1987 vs. 1988



Note: This figure shows the average probability that a firm's employment in year t+1 is strictly lower than 50, by employment counts in t. The sample period is 1988 and 1990 (Panel A), and 1987 and 1988 (Panel B). The vertical bars are 95% confidence intervals. Go back to main text

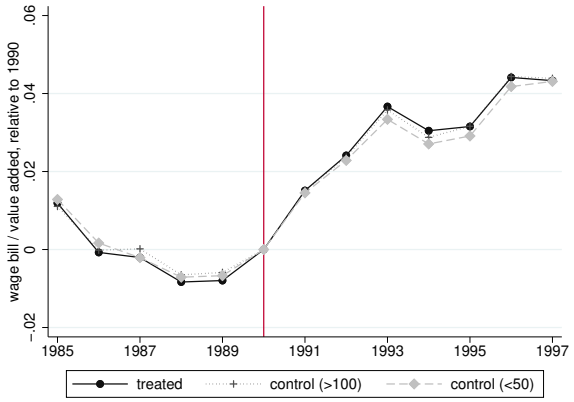
FIGURE 10: Formula, by treatment status



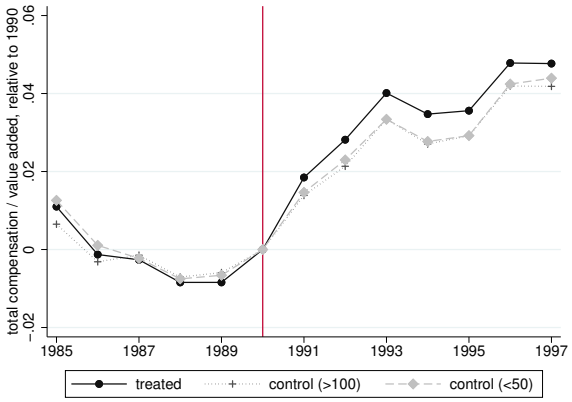
Note: Panel A provides the average formula to value-added ratio for firms over time, by treatment status. Panel B shows the probability that the formula is 0 (i.e. firms have negative excess-profits) by year and treatment status. "Formula" corresponds to the regulatory formula used to compute the total dollar amount to be shared with employees (Equation (1)). Treated firms have between 55 and 85 employees in 1989 and 1990 (dark solid dots). Control (>100) are firms with between 120 and 300 employees in 1989 and 1990 (dotted dark grey crosses). Control (<50) are firms with between 35 and 45 employees in 1989 and 1990 (dashed light grey diamonds). Go back to main text

FIGURE 11: Wage and total compensation share in value-added over time, by treatment status

(A) Wage share

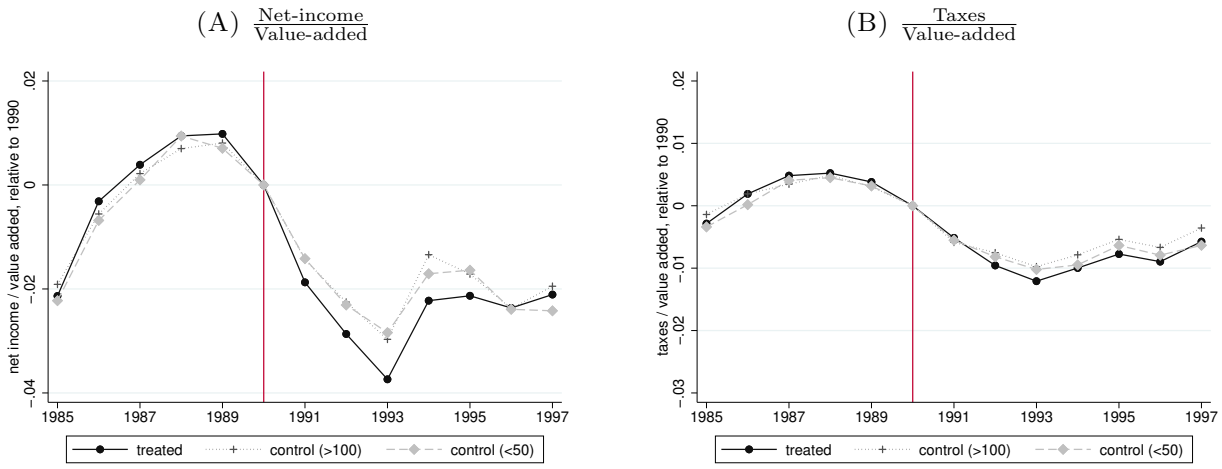


(B) Total compensation share



Note: The wage share is defined as the ratio of a firm's wage bill to its value-added. Each year, we compute the difference between a firm's wage share and its wage share in 1990. Panel A reports the average of this relative wage share for each group over time. Panel B repeats this exercise for the total compensation share, defined as the ratio of a firm's wage bill plus profit-sharing to its value-added. Treated firms have between 55 and 85 employees in 1989 and 1990 (dark solid dots). Control (>100) are firms with between 120 and 300 employees in 1989 and 1990 (dotted dark grey crosses). Control (<50) are firms with between 35 and 45 employees in 1989 and 1990 (dashed light grey diamonds). Go back to main text

FIGURE 12: Profit and tax shares in value-added over time, by treatment status

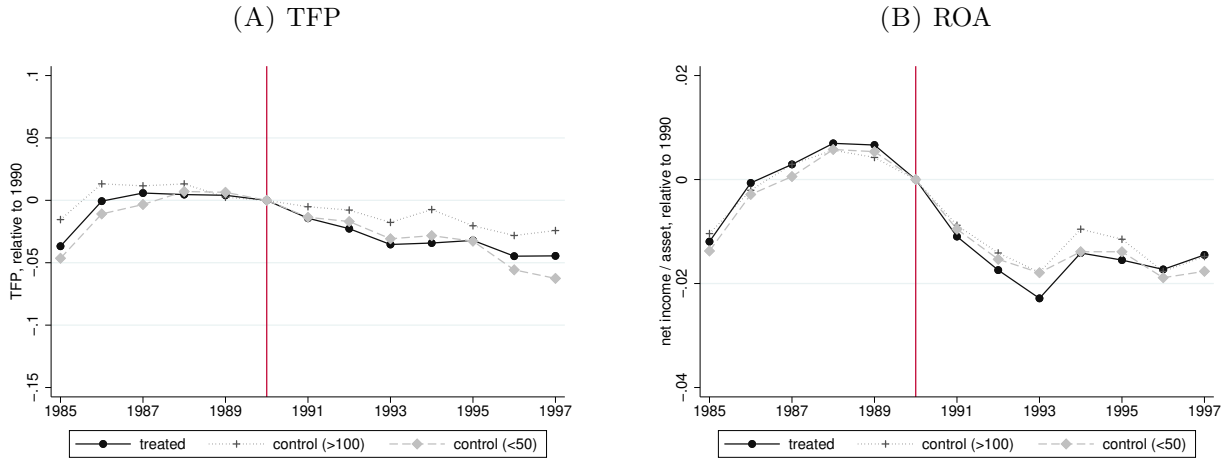


Note: The profit share is defined as the ratio of a firm's accounting net income to its value-added. The taxe share is defined as the ratio of a firm's corporate taxes to its value-added. All the ratios are defined only for firms with positive value-added. Each year, we compute the difference between a firm's outcome and its outcome in 1990. The figure reports the average of these relative shares for each group over time. Treated firms have between 55 and 85 employees in 1989 and 1990 (dark solid dots). Control (>100) are firms with between 120 and 300 employees in 1989 and 1990 (dotted dark grey crosses). Control (<50) are firms with between 35 and 45 employees in 1989 and 1990 (dashed light grey diamonds). Go back to main text

FIGURE 13: Investment rate by treatment status

Note: The investment rate is defined as capital expenditures in tangible assets normalized by the gross value of tangible assets. Each year, we compute the difference between a firm's investment ratio and its investment ratio in 1990. The figure reports the average of this relative investment ratio for each group over time. Treated firms have between 55 and 85 employees in 1989 and 1990 (dark solid dots). Control (>100) are firms with between 120 and 300 employees in 1989 and 1990 (dotted dark grey crosses). Control (<50) are firms with between 35 and 45 employees in 1989 and 1990 (dashed light grey diamonds). Go back to main text

FIGURE 14: Total Factor Productivity and Return on Asset (ROA), by treatment status



Note: TFP is firms' total factor productivity computed using the method of Ackerberg et al. (2015). It is computed separately for each 2-digit industry using the NAF classification measured in 1990. Return on Assets correspond to pre-tax income over net assets. Each year, we compute the difference between a firm's TFP and its TFP in 1990 (similarly for the ROA). The figure reports the average of this relative value for each treatment group over time. Treated firms have between 55 and 85 employees in 1989 and 1990 (dark solid dots). Control (>100) are firms with between 120 and 300 employees in 1989 and 1990 (dotted dark grey crosses). Control (<50) are firms with between 35 and 45 employees in 1989 and 1990 (dashed light grey diamonds). Go back to main text

References

Ackerberg, D. A., K. Caves, and G. Frazer (2015): "Identification properties of recent production function estimators," *Econometrica*, 83, 2411–2451.

Aghion, P., A. Bergeaud, and J. Van Reenen (2021): "The Impact of Regulation on Innovation," Working Paper 28381, National Bureau of Economic Research.

Askenazy, P., T. Breda, F. Moreau, and V. Pecheu (2022): "Do French companies under-report their workforce at 49 employees to get around the law?" Institut des Politiques Publiques halshs-03693461, HAL.

Bell, L. A. and D. Neumark (1993): "Lump-sum Payments and Profit-sharing Plans in the Union Sector of the United States Economy," *The Economic Journal*, 103, 602–619.

Berger, D., K. Herkenhoff, and S. Mongey (2022): "Labor Market Power," *American Economic Review*, 112, 1147–93.

Blasi, J. R., R. B. Freeman, C. Mackin, and D. L. Kruse (2008): "Creating a Bigger Pie? The Effects of Employee Ownership, Profit Sharing, and Stock Options on Workplace Performance," Working Paper 14230, National Bureau of Economic Research.

Briand, A. (2021): "Participation, Intéressement et Épartgne Salariale en 2019: Hausse des bénéficiaires de primes," Tech. Rep. 46, DARES Résultats.

Cahuc, P. and B. Dormont (1997): "Profit-sharing: Does it increase productivity and employment? A theoretical model and empirical evidence on French micro data," *Labour Economics*, 4, 293–319.

DARES (2008): "La Participation, l'Intéressement et l'Epargne Salariale en 2007," Tech. rep., DARES Premiere Syntheses Information.

DiNardo, J. and D. S. Lee (2004): "Economic Impacts of New Unionization on Private Sector Employers: 1984–2001*," *The Quarterly Journal of Economics*, 119, 1383–1441.

Doucouliagos, H., P. Laroche, D. L. Kruse, and T. D. Stanley (2020): "Is Profit Sharing Productive? A Meta-Regression Analysis," *British Journal of Industrial Relations*, 58, 364–395.

FitzRoy, F. and K. Kraft (1987): "Cooperation, Productivity, and Profit Sharing," *The Quarterly Journal of Economics*, 102, 23–35.

Garicano, L., C. Lelarge, and J. Van Reenen (2016): "Firm Size Distortions and the Productivity Distribution: Evidence from France," *American Economic Review*, 106, 3439–79.

Gormsen, N. and K. Huber (2014): "Corporate Discount Rates," Tech. rep.

Jäger, S., B. Schoefer, and J. Heining (2021): "Labor in the Boardroom," *Quarterly Journal of Economics*.

Journal Officiel (1990): "LOI n° 90-1002 modifiant l'ordonnance n° 86-1134 du 21 octobre 1986 relative à l'intéressement et à la participation des salariés aux résultats de l'entreprise et à l'actionnariat des salariés," .

Kim, E. H. and P. Ouimet (2014): "Broad-based Employee Stock Ownership: Motives and Outcomes," *Journal of Finance*.

Kline, P., N. Petkova, H. Williams, and O. Zidar (2019): "Who profits from patents? rent-sharing at innovative firms," *Quarterly Journal of Economics*.

Knez, M. and D. Simester (2001): "Firm-Wide Incentives and Mutual Monitoring at Continental Airlines," *Journal of Labor Economics*, 19, 743–72.

Kruse, D. L. (1992): "Profit Sharing and Productivity: Microeconomic Evidence from the United States," *The Economic Journal*, 102, 24–36.

Lasserre, G. (1968): "La Participation des Salariés aux fruits de l'expansion des entreprises," *Revue d'économie politique*, 78, 70–86.

Lazear, E. P. (1990): "Job Security Provisions and Employment," *The Quarterly Journal of Economics*, 105, 699–726.

Lee, D. and A. Mas (2012): "Long-Run Impacts of Unions on Firms: New Evidence from Financial Markets, 1961-1999," *Quarterly Journal of Economics*.

Levinsohn, J. and A. Petrin (2003): "Estimating Production Functions Using Inputs to Control for Unobservables," *Review of Economic Studies*, 70, 317–341.

Matsa, D. (2019): "Capital Structure and a Firm's Workforce," *Annual Review of Financial Economics*.

Midrigan, V. and D. Xu (2022): "Finance and Misallocation: Evidence from Plant-Level Data," *American Economic Review*.

Neiman, B. (2014): "The Global Decline of the Labor Share," *The Quarterly Journal of Economics*, 129, 61–103.

OECD (1995): "Profit Sharing in OECD Countries," Employment Outlook, 139-169., OECD.

Olley, G. S. and A. Pakes (1996): "The Dynamics of Productivity in the Telecommunications Equipment Industry," *Econometrica*, 64, 1263–1297.

Piketty, T., E. Saez, and G. Zucman (2018): "Distributional National Accounts: Methods and Estimates for the United States," *The Quarterly Journal of Economics*, 133, 553–609.

Prendergast, C. (1999): "The Provision of Incentives in Firms," *Journal of Economic Literature*, 37, 7–63.

Stansbury, A. and L. H. Summers (2020): "The Declining Worker Power Hypothesis: An explanation for the recent evolution of the American economy," Working Paper 27193, National Bureau of Economic Research.

Wadhwani, S. and M. Wall (1990): "The Effects of Profit-Sharing on Employment, Wages, Stock Returns and Productivity: Evidence from UK Micro-Data," *The Economic Journal*, 100, 1–17.

Weitzman, M. L. (1986a): *The Case for Profit-Sharing*, London: Palgrave Macmillan, 14–41.

——— (1986b): "Macroeconomic Implications of Profit Sharing," *NBER Macroeconomics Annual*, 1, 291–335.

Wooldridge, J. (2009): "On estimating firm-level production functions using proxy variables to control for unobservables," *Economics Letters*, 104, 112–114.

A Proofs

This section proves the three predictions of Section 3. At date 1, accounting profits, in the absense of profit-sharing, are given by:

$$(1-\tau)(F(k,l)-wl-\delta k-r_d d)$$

These ex-RSP accounting profits are the ones used in the RSP formula, which is thus:

$$RSP=\gamma\times([(1-\tau)(F(k,l)-wl-\delta k-r_d d)]-\rho e)$$

Given our assumption on the wage incidence of profit-sharing:

$$RSP=\frac{\gamma}{(1-\gamma\lambda(1-\tau))}\times([(1-\tau)(F(k,l)-w^*l-\delta k-r_d d)]-\rho e)$$

The corporate income tax the firm has to pay is simply:

$$\mathcal{T}=\tau(F(k,l)-wl-\delta k-r_d d-RSP),$$

since RSP is tax-deductible.

The cash-flow to equity holders at date 1 are:

$$F(k,l)-wl+(1-\delta)k-(1+r_d)d-T-RSP$$

We can simplify these cash-flow to equity holders:

$$\begin{aligned}
& F(k,l)-wl+(1-\delta)k-(1+r_d)d-T-RSP \\
= \quad & F(k,l)-wl-\delta k-r_d d+k-d-T-RSP \\
= \quad & (1-\tau)\left(F(k,l)-wl-\delta k-r_d d\right)+k-d-(1-\tau)RSP \\
= \quad & (1-\tau)\left(F(k,l)-w^*l-\delta k-r_d d\right)+k-d-(1-\tau)(1-\lambda)RSP \\
= \quad & (1-\tau)\left(1-\tfrac{\gamma(1-\tau)(1-\lambda)}{1-\gamma\lambda(1-\tau)}\right)\left(F(k,l)-w^*l-\delta k-r_d d\right)+e\left(1+\tfrac{\gamma(1-\tau)(1-\lambda)}{1-\gamma\lambda(1-\tau)}\rho\right) \\
= \quad & (1-\tau)\left(\tfrac{1-\gamma(1-\tau)}{1-\gamma\lambda(1-\tau)}\right)\left(F(k,l)-w^*l-\delta k-r_d d\right)+e\left(1+\tfrac{\gamma(1-\tau)(1-\lambda)}{1-\gamma\lambda(1-\tau)}\rho\right)
\end{aligned}$$

The NPV of the project for equity holder is thus:

$$\begin{aligned}
(1+r_e)NPV &= CFE-(1+r_e)e \\
&= (1-\tau)\left(\frac{1-\gamma(1-\tau)}{1-\gamma\lambda(1-\tau)}\right)\left(F(k,l)-w^*l-\delta k-r_d d\right)+e\left(\frac{\gamma(1-\tau)(1-\lambda)}{1-\gamma\lambda(1-\tau)}\rho-r_e\right)
\end{aligned}$$

Introduce now $\Delta=r_e-5\%$. Then:

$$(1+r_e)NPV = \left(\frac{1-\gamma(1-\tau)}{1-\gamma\lambda(1-\tau)}\right)\left((1-\tau)\left[F(k,l)-w^*l-\delta k-r_d d\right]-r_e e\right)-e\left(\frac{\gamma(1-\tau)(1-\lambda)}{1-\gamma\lambda(1-\tau)}\right)\Delta$$

Let r be such that: $rk=(1-\tau)r_d d+r_e e$. Then:

$$(1+r_e)NPV = \left(\frac{1-\gamma(1-\tau)}{1-\gamma\lambda(1-\tau)}\right)(1-\tau)\left\{F(k,l) - w^*l - \left(\delta + \frac{r}{1-\tau}\right)k\right\} - e\left(\frac{\gamma(1-\tau)(1-\lambda)}{1-\gamma\lambda(1-\tau)}\right)\Delta$$

Assume d/k (and thus e/k) is fixed so that r_d and r_e can be considered fixed (i.e., independent of k). Let $e = \phi k$. Then:

$$(1+r_e)NPV = \left(\frac{1-\gamma(1-\tau)}{1-\gamma\lambda(1-\tau)}\right)(1-\tau)\left\{F(k,l) - w^*l - \left(\delta + \frac{r}{1-\tau}\right)k\right\} - \phi\Delta\left(\frac{\gamma(1-\tau)(1-\lambda)}{1-\gamma\lambda(1-\tau)}\right)k$$

Obviously, labor is simply fixed by the first-order condition: $F_l(k,l) = w^*$. The capital stock is determined through the following FOC:

$$F_k(k,l) = \delta + \frac{r}{1-\tau} + \phi\Delta\frac{\gamma(1-\lambda)}{1-\gamma(1-\tau)}$$

$\frac{r}{1-\tau}$ corresponds to the standard cost of capital. $\phi\frac{\Delta}{1-\tau}\frac{\gamma(1-\tau)(1-\lambda)}{1-\gamma(1-\tau)}$ corresponds to the increase in the cost of capital due to the difference between r_e, the cost of equity capital, and 5%, the cost assumed in the regulatory formula.

B Additional Tables and Figures

TABLE B.1: Robustness check: winsorizing variables at the 2.5% and 97.5%

	(1) $\mathbb{1}_{\{\text{Profit-sharing}>0\}}$	(2) $\frac{\text{Profit-sharing}}{\text{Value-added}}$	(3) $\frac{\text{Wage}}{\text{Value-added}}$	(4) $\frac{\text{Tot. compensation}}{\text{Value-added}}$	(5) $\frac{\text{Profits}}{\text{Value-added}}$	(6) $\frac{\text{Taxes}}{\text{Value-added}}$	(7) Investment Rate	(8) TFP Ackerberg-Caves-Frazer
Panel A: Relative to large control								
Treatment x Post	0.3638***	0.0049***	0.0026	0.0073***	-0.0059**	-0.0013	-0.0002	-0.0081
	(0.0096)	(0.0002)	(0.0023)	(0.0022)	(0.0027)	(0.0008)	(0.0044)	(0.0052)
Panel B: Relative to small control								
Treatment x Post	0.2540***	0.0040***	0.0032	0.0075***	-0.0065***	-0.0012	-0.0076*	-0.0022
	(0.0073)	(0.0001)	(0.0021)	(0.0021)	(0.0024)	(0.0008)	(0.0043)	(0.0047)
Panel C: Relative to both groups								
Treatment x Post	0.3043***	0.0044***	0.0029	0.0074***	-0.0063***	-0.0013*	-0.0043	-0.0049
	(0.0075)	(0.0002)	(0.0019)	(0.0019)	(0.0022)	(0.0007)	(0.0037)	(0.0043)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.53	0.54	0.55	0.54	0.32	0.56	0.16	0.86
Observations	132,589	130,954	130,122	130,102	130,974	130,974	130,363	128,682

Note: This table reproduces the main analysis when variables are winsorized, instead of trimmed, at the 2.5% and 97.5%. $\mathbb{1}_{\{\text{Profit-sharing}>0\}}$ is a dummy variable equal to 1 if a firm reports a strictly positive amount of profit-sharing on its income statement. $\frac{\text{Tot. compensation}}{\text{Value-added}}$ is the ratio of firms' wage bill plus profit-sharing to its value-added. $\frac{\text{Profits}}{\text{Value-added}}$ is the ratio of firms' net income to its value-added. $\frac{\text{Taxes}}{\text{Value-added}}$ is the ratio of firms' corporate income taxe to its value-added. All the ratios are defined only for firms with positive value-added. Investment rate is defined as capital expenditures in tangible assets normalized by the gross value of tangible assets. TFP stands for "Total Factor Productivity". It is computed using the method designed by Ackerberg et al. (2015). Firms' TFP is computed separately for each 2-digit industry using the NAF classification measured in 1990. Treatment is a dummy variable equal to one if firms have between 55 and 85 employees in 1989 and 1990. Post is a dummy variable equal to one after 1990, the introduction of the reform. We estimate the following equation using OLS:

$$Y_{icst} = \alpha_i + \delta_{ct} + \mu_{st} + \beta^T \mathbb{1}_{\{i \in \text{Treated}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \beta^C \mathbb{1}_{\{i \in \text{Control}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \epsilon_{icst}$$

α_i corresponds to firm fixed-effects, δ_{ct} to county-by-year fixed-effects, and μ_{st} to industry-by-year fixed-effects. Panel A reports β^T when the large control is the reference group. Panel B reports β^T when the small control is the reference group. Panel C reports β^T when both small and large firms are used as controls. The large control group consists of firms with between 120 and 300 employees in 1989 and 1990. The small control group consists of firms with between 35 and 45 employees in 1989 and 1990. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

TABLE B.2: Type I and type II errors using the regulatory Formula

	$\mathbb{1}_{\{\text{Formula=0}\}}$	$\mathbb{1}_{\{\text{Formula>0}\}}$
$\mathbb{1}_{\{\text{Profit-sharing=0}\}}$	0.39	0.03
$\mathbb{1}_{\{\text{Profit-sharing>0}\}}$	0.13	0.45

Note: $\mathbb{1}_{\{\text{Profit-sharing>0}\}}$ is a dummy variable equal to 1 if a firm reports a strictly positive amount of profit-sharing on its income statement. $\mathbb{1}_{\{\text{Formula>0}\}}$ is a dummy variable equal to 1 if a firm's regulatory formula is positive. Formula corresponds to the minimal amount of profit-sharing that should be paid by firms according to the rule defined by the law. We find consistent results for 84% of firms: 39% have a negative formula and don't pay profit-sharing while 45% have a positive formula and pay some profit-sharing. Only 13% of firms have a negative formula and still pay some profit-sharing while 3% of firms have a positive formula but don't pay any profit-sharing. The variables are computed for all firms with employment between 100 and 300 over the period 1992-1997. Go back to main text

TABLE B.3: Robustness check: balanced sample of firms

	$\mathbb{1}_{\{\text{Profit-sharing}>0\}}$	$\frac{\text{Profit-sharing}}{\text{Value-added}}$	$\frac{\text{Wage}}{\text{Value-added}}$	$\frac{\text{Tot. compensation}}{\text{Value-added}}$	$\frac{\text{Profits}}{\text{Value-added}}$	$\frac{\text{Taxes}}{\text{Value-added}}$	Investment Rate	TFP Ackerberg-Caves-Frazer
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Relative to large control								
Treatment x Post	0.3995***	0.0052***	0.0008	0.0057***	-0.0033	-0.0016*	0.0074*	-0.0063
	(0.0118)	(0.0002)	(0.0022)	(0.0021)	(0.0023)	(0.0009)	(0.0042)	(0.0056)
Panel B: Relative to small control								
Treatment x Post	0.2909***	0.0040***	0.0027	0.0071***	-0.0039*	-0.0008	-0.0036	-0.0050
	(0.0091)	(0.0002)	(0.0021)	(0.0020)	(0.0020)	(0.0009)	(0.0041)	(0.0050)
Panel C: Relative to both groups								
Treatment x Post	0.3407***	0.0046***	0.0019	0.0064***	-0.0036*	-0.0012	0.0015	-0.0056
	(0.0094)	(0.0002)	(0.0018)	(0.0018)	(0.0019)	(0.0008)	(0.0036)	(0.0045)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.54	0.50	0.58	0.58	0.37	0.55	0.15	0.88
Observations	89,993	87,186	85,628	85,624	86,282	85,415	85,827	84,634

Note: This table reproduces the main analysis on a balanced sample of firms observed between 1985 and 1997. $\mathbb{1}_{\{\text{Profit-sharing}>0\}}$ is a dummy variable equal to 1 if a firm reports a strictly positive amount of profit-sharing on its income statement. $\frac{\text{Tot. compensation}}{\text{Value-added}}$ is the ratio of firms' wage bill plus profit-sharing to its value-added. $\frac{\text{Profits}}{\text{Value-added}}$ is the ratio of firms' net income to its value-added. $\frac{\text{Taxes}}{\text{Value-added}}$ is the ratio of firms' corporate income taxe to its value-added. All the ratios are defined only for firms with positive value-added. Investment rate is defined as capital expenditures in tangible assets normalized by the gross value of tangible assets. TFP stands for "Total Factor Productivity". It is computed using the method designed by Ackerberg et al. (2015). Firms' TFP is computed separately for each 2-digit industry using the NAF classification measured in 1990. Treatment is a dummy variable equal to one if firms have between 55 and 85 employees in 1989 and 1990. Post is a dummy variable equal to one after 1990, the introduction of the reform. We estimate the following equation using OLS:

$$Y_{icst} = \alpha_i + \delta_{ct} + \mu_{st} + \beta^T \mathbb{1}_{\{i \in \text{Treated}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \beta^C \mathbb{1}_{\{i \in \text{Control}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \epsilon_{icst}$$

α_i corresponds to firm fixed-effects, δ_{ct} to county-by-year fixed-effects, and μ_{st} to industry-by-year fixed-effects. Panel A reports β^T when the large control is the reference group. Panel B reports β^T when the small control is the reference group. Panel C reports β^T when both small and large firms are used as controls. The large control group consists of firms with between 120 and 300 employees in 1989 and 1990. The small control group consists of firms with between 35 and 45 employees in 1989 and 1990. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

TABLE B.4: Robustness check: dividing the treatment group into two subgroups

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$\mathbb{1}_{\{\text{Profit-sharing}>0\}}$	$\frac{\text{Profit-sharing}}{\text{Value-added}}$	$\frac{\text{Wage}}{\text{Value-added}}$	$\frac{\text{Tot. compensation}}{\text{Value-added}}$	$\frac{\text{Profits}}{\text{Value-added}}$	$\frac{\text{Taxes}}{\text{Value-added}}$	Investment Rate	TFP Ackerberg-Caves-Frazer
Panel A: bigger treatment group against large control								
Treatment x Post	0.3400***	0.0044***	0.0024	0.0068***	-0.0067***	-0.0031***	0.0002	-0.0071
	(0.0112)	(0.0002)	(0.0022)	(0.0021)	(0.0024)	(0.0009)	(0.0043)	(0.0055)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.44	0.45	0.57	0.57	0.34	0.55	0.17	0.80
Observations	73,344	69,114	67,929	68,049	68,439	68,584	68,780	67,102
Panel B: smaller treatment group against small control								
Treatment x Post	0.2337***	0.0031***	0.0028	0.0064***	-0.0036**	-0.0014**	-0.0018	0.0021
	(0.0074)	(0.0001)	(0.0018)	(0.0018)	(0.0019)	(0.0007)	(0.0035)	(0.0044)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.46	0.41	0.53	0.53	0.33	0.54	0.15	0.76
Observations	111,777	108,914	104,258	104,109	104,988	104,888	104,013	103,085

Note: This table reproduces the main analysis for two subgroups of treated firms. Panel A compares treated firms with employment between 70 and 85 to control firms with employment between 120 and 300, measured in 1990. Panel B compares treated firms with employment between 55 and 69 to control firms with employment between 35 and 45, measured in 1990. Panel A and Panel B display the results of two separate regressions. $\mathbb{1}_{\{\text{Profit-sharing}>0\}}$ is a dummy variable equal to 1 if a firm reports a strictly positive amount of profit-sharing on its income statement. $\frac{\text{Tot. compensation}}{\text{Value-added}}$ is the ratio of firms' wage bill plus profit-sharing to its value-added. $\frac{\text{Profits}}{\text{Value-added}}$ is the ratio of firms' net income to its value-added. $\frac{\text{Taxes}}{\text{Value-added}}$ is the ratio of firms' corporate income taxe to its value-added. All the ratios are defined only for firms with positive value-added. Investment rate is defined as capital expenditures in tangible assets normalized by the gross value of tangible assets. TFP stands for "Total Factor Productivity". It is computed using the method designed by Ackerberg et al. (2015). Firms' TFP is computed separately for each 2-digit industry using the NAF classification measured in 1990. Treatment is a dummy variable equal to one if firms have between 55 and 85 employees in 1990. Post is a dummy variable equal to one after 1990, the introduction of the reform. We estimate the following equation for each subsample of interest using OLS:

$$Y_{icst} = \alpha_i + \delta_{ct} + \mu_{st} + \beta^T \mathbb{1}_{\{i \in \text{Treated}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \epsilon_{icst}$$

α_i corresponds to firm fixed-effects, δ_{ct} to county-by-year fixed-effects, and μ_{st} to industry-by-year fixed-effects. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

TABLE B.5: Semi-elasticity of profits and taxes to profit-sharing at the firm level

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$\frac{\text{Profits}}{\text{Value-added}}$		$\frac{\text{Taxes}}{\text{Value-added}}$		$\frac{\text{Profits}}{\text{Value-added}}$		$\frac{\text{Taxes}}{\text{Value-added}}$	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Panel A: Profit-Sharing Dummy								
$\mathbb{1}_{\{\text{Profit-sharing}>0\}}$	0.0538***	-0.0137***	0.0238***	-0.0042**				
	(0.0010)	(0.0053)	(0.0004)	(0.0020)				
Panel B: Profit-sharing to value-added ratio								
$\frac{\text{Profit-sharing}}{\text{Value-added}}$					3.5778***	-1.3055***	1.9958***	-0.4681***
					(0.0564)	(0.4075)	(0.0282)	(0.1573)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cragg Donald F stat		7,277		7,319		3,971		3,995
Kleibergen Paap F stat		1,683		1,687		975		976
Observations	123,538	123,538	123,542	123,542	120,562	120,562	120,461	120,461

Note: This table provides the semi-elasticity of the net-income share (respectively the tax share) to profit-sharing at the firm level. $\mathbb{1}_{\{\text{Profit-sharing}>0\}}$ is a dummy variable equal to 1 if a firm reports a strictly positive amount of profit-sharing on its income statement. $\frac{\text{Profits}}{\text{Value-added}}$ is the ratio of firms' net income to its value-added. $\frac{\text{Taxes}}{\text{Value-added}}$ is the ratio of firms' corporate income taxes to its value-added. $\frac{\text{Profit-sharing}}{\text{Value-added}}$ is the ratio between the amount of profit-sharing paid by a firm and its value-added. Column (1), (3), (5) and (7) use OLS estimations. Column (2), (4), (6) and (8) instrument profit-sharing using the interaction between a Treatment dummy, equal to one if the firm has between 55 and 85 employees in 1989 and 1990, and a Post dummy equal to one after 1990. The semi-elasticity is estimated using a two-stage least squares procedure. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

TABLE B.6: Robustness check: alternative definitions of TFP

	(1) Olley-Pakes	(2) Olley-Pakes (ACF correction)	(3) Wooldridge (2009)	(4) Levinsohn-Petrin (wage)	(5) Levinsohn-Petrin (ACF correction)	(6) Ackerberg-Caves-Frazer (wage)
Panel A: Relative to large control						
Treatment x Post	-0.0087*	-0.0068	-0.0088*	-0.0060	-0.0031	-0.0049
	(0.0047)	(0.0043)	(0.0051)	(0.0047)	(0.0104)	(0.0062)
Panel B: Relative to small control						
Treatment x Post	-0.0034	-0.0013	-0.0042	-0.0039	0.0003	0.0003
	(0.0043)	(0.0040)	(0.0046)	(0.0043)	(0.0093)	(0.0061)
Panel C: Relative to both groups						
Treatment x Post	-0.0058	-0.0038	-0.0063	-0.0048	-0.0012	-0.0020
	(0.0039)	(0.0036)	(0.0042)	(0.0039)	(0.0085)	(0.0054)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.90	0.82	0.95	0.97	0.77	0.98
Observations	122,198	122,195	122,168	122,206	106,788	122,212

Note: This table reproduces the main analysis using alternative definitions of total factor productivity (TFP). Firms' TFP is computed separately for each 2-digit industry using the NAF classification measured in 1990. It is estimated using: Olley and Pakes (1996) methodology (column (1)), Olley and Pakes (1996) methodology with Ackerberg et al. (2015) correction (column (2)), Wooldridge (2009) methodology (column (3)), Levinsohn and Petrin (2003) methodology using the wage bill as a free input instead of employment (column (4)), Levinsohn and Petrin (2003) methodology with Ackerberg et al. (2015) correction (column (5)), and Ackerberg et al. (2015) methodology using the wage bill as a free input instead of employment (column (6)). Treatment is a dummy variable equal to one if firms have between 55 and 85 employees in 1989 and 1990. Post is a dummy variable equal to one after 1990, the introduction of the reform. We estimate the following equation using OLS:

$$Y_{icst} = \alpha_i + \delta_{ct} + \mu_{st} + \beta^T \mathbb{1}_{\{i \in \text{Treated}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \beta^C \mathbb{1}_{\{i \in \text{Control}\}} \times \mathbb{1}_{\{t \geq 1991\}} + \epsilon_{icst}$$

α_i corresponds to firm fixed-effects, δ_{ct} to county-by-year fixed-effects, and μ_{st} to industry-by-year fixed-effects. Panel A reports β^T when the large control is the reference group. Panel B reports β^T when the small control is the reference group. Panel C reports β^T when both small and large firms are used as controls. The large control group consists of firms with between 120 and 300 employees in 1989 and 1990. The small control group consists of firms with between 35 and 45 employees in 1989 and 1990. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

Table B.7: Heterogenous effect on exposed firms

	(1) $\mathbb{1}_{\{\text{Profit-sharing}>0\}}$	(2) $\frac{\text{Profit-sharing}}{\text{Value-added}}$	(3) $\frac{\text{Wage}}{\text{Value-added}}$	(4) $\frac{\text{Tot. compensation}}{\text{Value-added}}$	(5) $\frac{\text{Profits}}{\text{Value-added}}$	(6) $\frac{\text{Taxes}}{\text{Value-added}}$	(7) Investment Rate	(8) TFP Ackerberg-Caves-Frazer
Panel A: Relative to large control								
Treatment x Post	0.2004***	0.0011***	0.0024	0.0031	-0.0024	-0.0004	0.0025	-0.0051
	(0.0124)	(0.0002)	(0.0027)	(0.0026)	(0.0029)	(0.0007)	(0.0052)	(0.0068)
Treatment x Post x $\mathbb{1}_{\{\frac{\text{Formula}_{pre}}{\text{Value-added}}>\text{Median}\}}$	0.3266***	0.0074***	-0.0023	0.0051	-0.0061	-0.0027**	0.0058	-0.0029
	(0.0185)	(0.0003)	(0.0037)	(0.0035)	(0.0039)	(0.0013)	(0.0070)	(0.0093)
Panel B: Relative to small control								
Treatment x Post	0.1730***	0.0019***	0.0013	0.0032	-0.0006	-0.0004	-0.0047	-0.0015
	(0.0088)	(0.0001)	(0.0024)	(0.0024)	(0.0026)	(0.0007)	(0.0051)	(0.0060)
Treatment x Post x $\mathbb{1}_{\{\frac{\text{Formula}_{pre}}{\text{Value-added}}>\text{Median}\}}$	0.1624***	0.0032***	0.0023	0.0062*	-0.0068*	-0.0032**	-0.0004	-0.0042
	(0.0142)	(0.0002)	(0.0035)	(0.0034)	(0.0036)	(0.0013)	(0.0069)	(0.0085)
Panel C: Relative to both groups								
Treatment x Post	0.1850***	0.0015***	0.0019	0.0032	-0.0014	-0.0004	-0.0014	-0.0032
	(0.0094)	(0.0001)	(0.0022)	(0.0021)	(0.0024)	(0.0006)	(0.0045)	(0.0054)
Treatment x Post x $\mathbb{1}_{\{\frac{\text{Formula}_{pre}}{\text{Value-added}}>\text{Median}\}}$	0.2371***	0.0051***	0.0002	0.0057*	-0.0065**	-0.0030***	0.0024	-0.0036
	(0.0147)	(0.0003)	(0.0031)	(0.0030)	(0.0033)	(0.0011)	(0.0060)	(0.0077)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.54	0.51	0.57	0.57	0.35	0.58	0.16	0.87
Observations	132,360	127,597	123,482	123,469	124,301	124,343	123,605	122,087

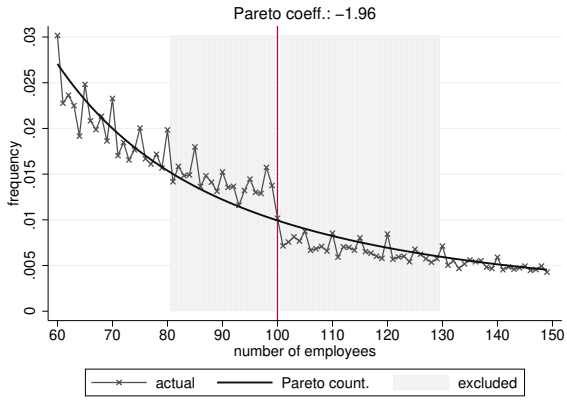
Note: $\mathbb{1}_{\{\text{Profit-sharing}>0\}}$ is a dummy variable equal to 1 if a firm reports a strictly positive amount of profit-sharing on its income statement. $\frac{\text{Tot. compensation}}{\text{Value-added}}$ is the ratio of firms' wage bill plus profit-sharing to its value-added. $\frac{\text{Profits}}{\text{Value-added}}$ is the ratio of firms' net income to its value-added. All ratios are defined only for firms with positive value-added. Investment rate is defined as capital expenditures in tangible assets normalized by the gross value of tangible assets. TFP stands for "Total Factor Productivity". It is computed using the method designed by Ackerberg et al. (2015). Firms' TFP is computed separately for each 2-digit industry using the NAF classification measured in 1990. Treatment is a dummy variable equal to one if a firm has between 55 and 85 employees in 1989 and 1990. Post is a dummy variable equal to one after 1990, the introduction of the reform. $\mathbb{1}_{\{\frac{\text{Formula}_{pre}}{\text{Value-added}}>\text{Median}\}}$ is a dummy variable equal to one when a firm's average pre-reform ratio of profit-sharing formula over value-added is above its in-sample median value. We estimate the following equation using OLS:

$$\begin{aligned} Y_{icst} \quad = \quad & \phi^T \mathbb{1}_{\{\frac{\text{Formula}_{pre}}{\text{Value-added}}>\text{Median}\}} . \mathbb{1}_{\{i\in\text{Treated}\}} . \mathbb{1}_{\{t\geq 1991\}} + \phi^C \mathbb{1}_{\{\frac{\text{Formula}_{pre}}{\text{Value-added}}>\text{Median}\}} . \mathbb{1}_{\{i\in\text{Control}_l\}} . \mathbb{1}_{\{t\geq 1991\}} \\ & + \xi^T \mathbb{1}_{\{i\in\text{Treated}\}} . \mathbb{1}_{\{t\geq 1991\}} + \xi^C \mathbb{1}_{\{i\in\text{Control}_l\}} . \mathbb{1}_{\{t\geq 1991\}} + \mu_1 \mathbb{1}_{\{\frac{\text{Formula}_{pre}}{\text{Value-added}}>\text{Median}\}} . \mathbb{1}_{\{t\geq 1991\}} \\ & + \alpha_i + \delta_{ct} + \mu_{st} + \omega_{icst} \end{aligned}$$

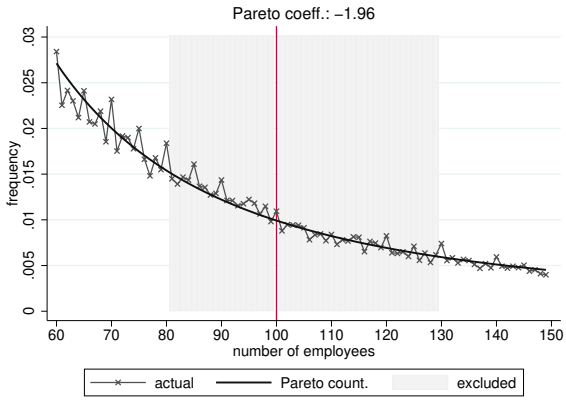
α_i corresponds to firm fixed-effects, δ_{ct} to county-by-year fixed-effects, and μ_{st} to industry-by-year fixed-effects. Panel A reports ξ^T and ϕ^T when the large control is the reference group. Panel B reports ξ^T and ϕ^T when the small control is the reference group. Panel C reports ξ^T and ϕ^T when both small and large firms are used as controls. The large control group consists of firms with between 120 and 300 employees in 1989 and 1990. The small control group consists of firms with between 35 and 45 employees in 1989 and 1990. Standard errors (in parenthesis) are clustered by firm. ***, **, and * indicate statistical significance at the 1%, 5% and 10% confidence level. Go back to main text

FIGURE B.1: Distribution of employment around the 100 employee threshold with Pareto counterfactual

(A) Pre-reform (1985-1989)

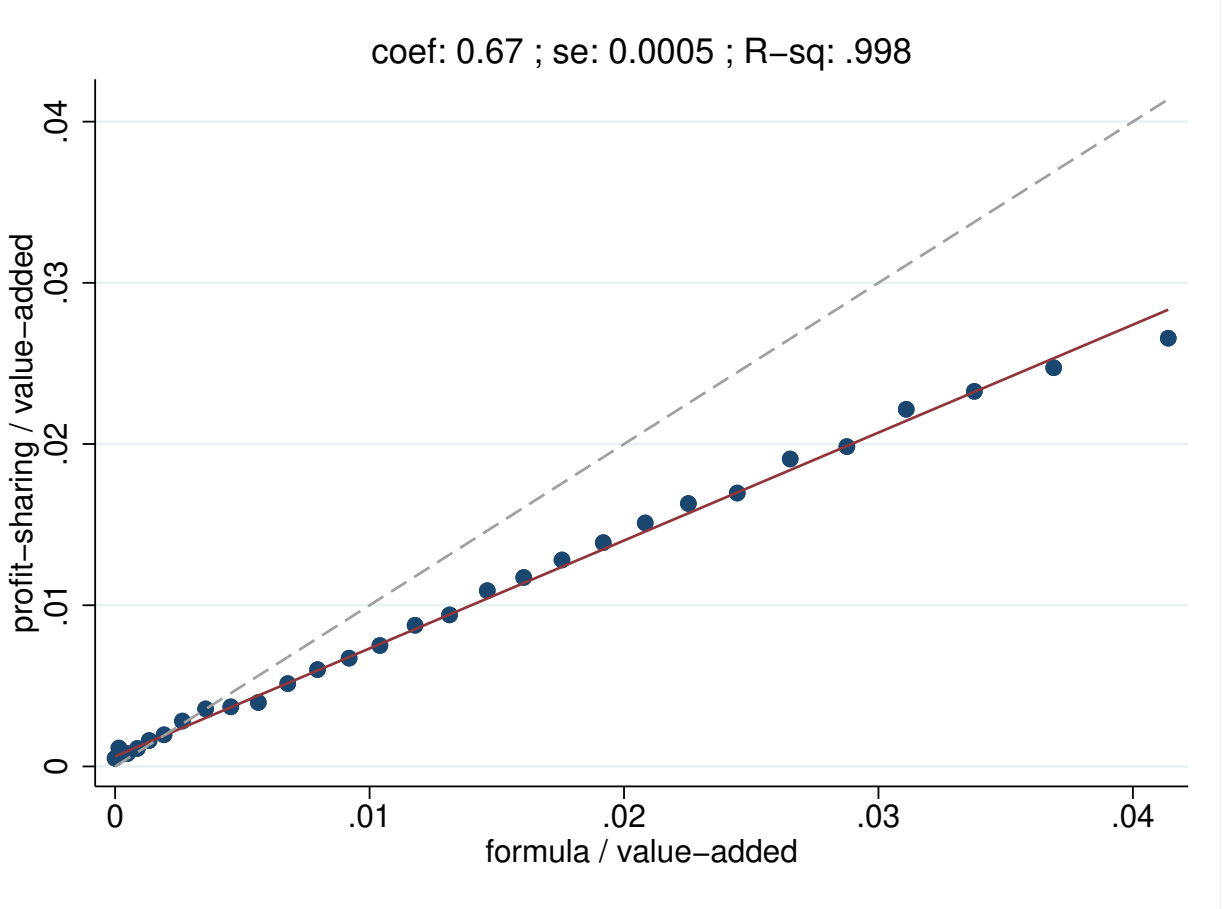


(B) Post-reform (1992-1997)



Note: This figure shows the share of firms by employment count for firms with more than 60 employees and less than 150 employees, compared to a Pareto distribution. Panel A corresponds to the pre-reform years (1985-1989); Panel B to the post-reform years (1992-1997). The Pareto distribution is estimated separately for each sub-period on firms with employment between 60-80 and 130-150. Firm's employment count comes from tax files. Go back to main text

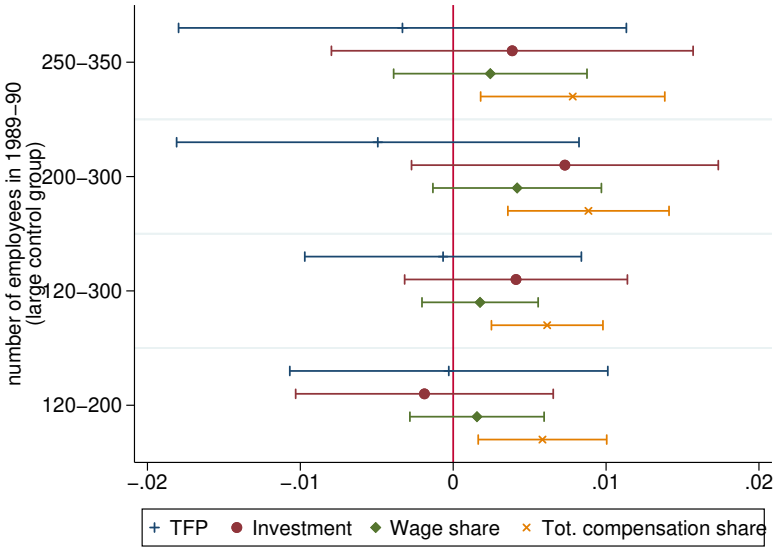
FIGURE B.2: Measurement Error in the Regulatory Formula



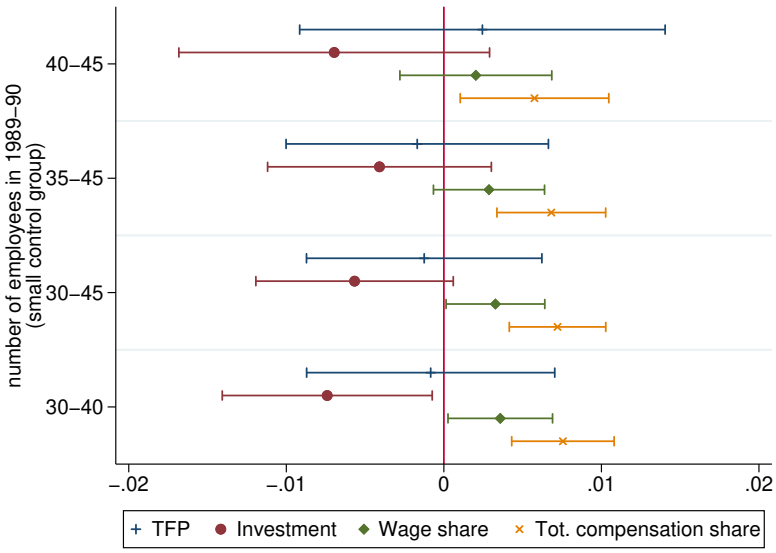
Note: This figure reports a binscatter plot of firms' profit-sharing against the regulatory formula, normalized by value-added. The sample corresponds to firms with more than 50 employees and less than 300 employees between 1992-1997, i.e. the sample of firms in the post-reform period that are required to share profits with their employees. The x-axis corresponds to 30 bins of the regulatory formula for profit-sharing reconstituted using the tax files and normalized by the firm value-added. The y-axis corresponds to the average amount of profit-sharing actually paid, normalized by value-added. Go back to main text

FIGURE B.3: Robustness check: definition of the control groups

(A) Large control



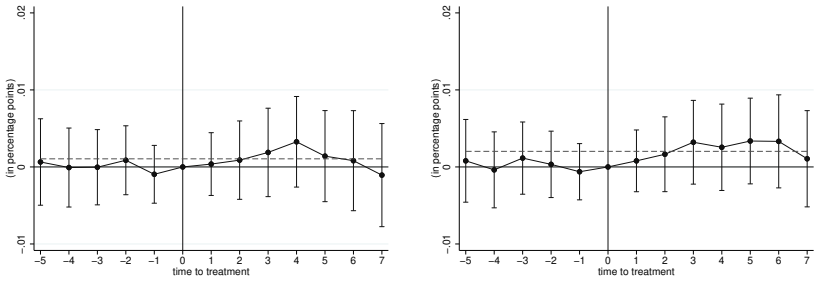
(B) Small control



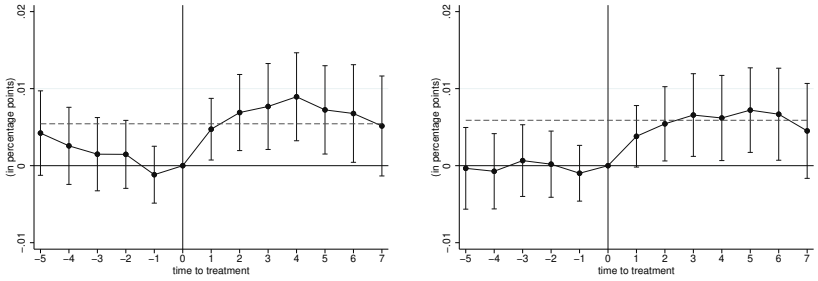
Note: This figure plots β_T from equation 4 for various definitions of the control groups. Panel A reports the coefficients for the impact of profit-sharing on wage share, total compensation share, investment and TFP using the large control group as a reference. Panel B does the same, but uses the small control group as a reference. The total compensation share is the ratio of firms' wage bill plus profit-sharing to its value-added. Investment rate is defined as capital expenditures in tangible assets normalized by the gross value of tangible assets. TFP stands for "Total Factor Productivity". It is computed using the method designed by Ackerberg et al. (2015). Firms' TFP is computed separately for each 2-digit industry using the NAF classification measured in 1990. Go back to main text

FIGURE B.4: Event-study: wage share, total compensation share, profit share and tax share

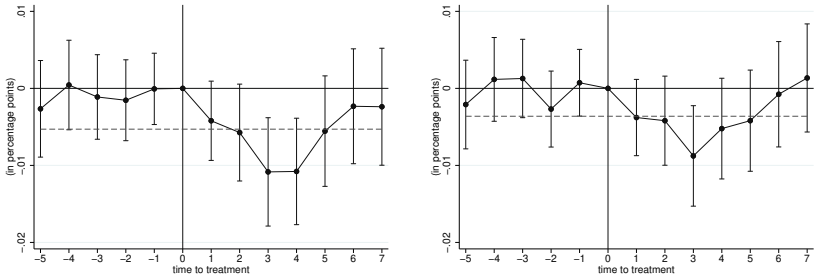
Wage Share (wage/value-added):



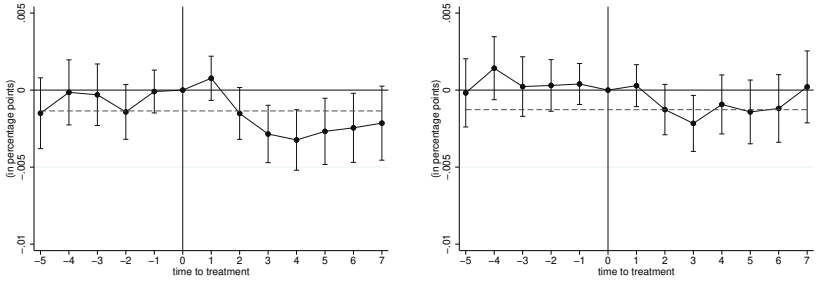
Total Compensation Share ((wage+profit-sharing)/value-added):



Profit Share (net income/value-added):



Tax Share (corporate income tax/value-added):



Panel A: "Large" control firms

Panel B: "Small" control firms

Note: This figure reports event-study plots where we replace the Post dummy in equation (4) by time-to-treatment dummies. We report the coefficients on the time-to-treatment dummies interacted with the treatment dummy, together with their 95% confidence intervals. The left panels correspond to the treatment effect relative to large control firms (firms with between 120 and 300 employees in 1989 and 1990); the right panel relative to the small control firms (firms with between 35 and 45 employees in 1989 and 1990). The dashed grey line reports the difference-in-differences coefficient computed over the whole period. Go back to main text

FIGURE B.5: Capital-labor ratio, by treatment status

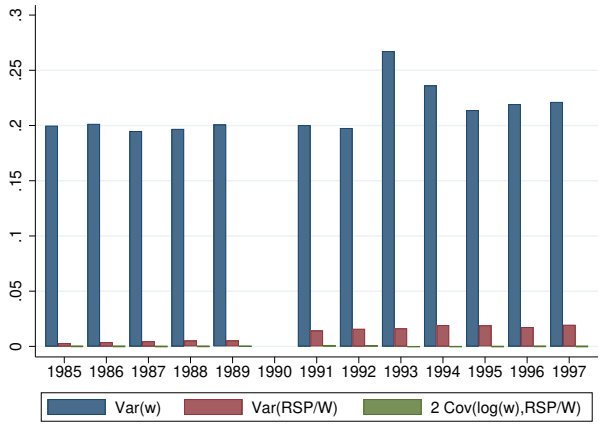
Note: This figure reports for each group size of firms the log of the average capital-labor ratio. The capital-labor ratio is defined as net total assets divided by the number of employees in the firm. Each year, we compute the difference between a firm's capital-labor ratio and its capital-labor ratio in 1990. The figure reports the average of this relative capital-labor ratio for each treatment group over time. Treated firms have between 55 and 85 employees in 1989 and 1990 (dark solid dots). Control (>100) are firms with between 120 and 300 employees in 1989 and 1990 (dotted dark grey crosses). Control (<50) are firms with between 35 and 45 employees in 1989 and 1990 (dashed light grey diamonds). Go back to main text

FIGURE B.6: Persistence of profit-sharing at the firm level

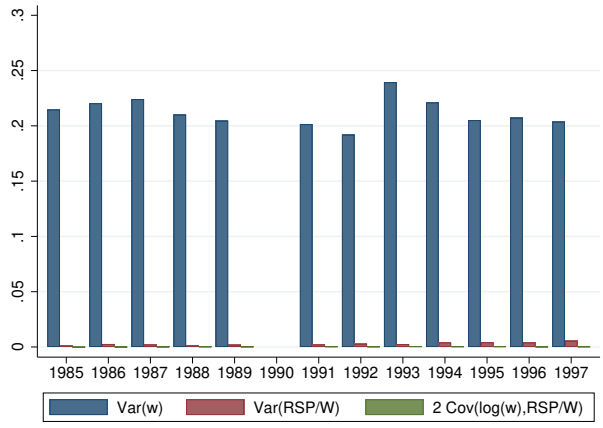
Note: This figure reports for each group size of firms the average probability to have a positive formula in t conditionally on having a positive formula in $t-1$. Treated firms have between 55 and 85 employees in 1989 and 1990 (dark solid dots). Control (>100) are firms with between 120 and 300 employees in 1989 and 1990 (dotted dark grey crosses). Control (<50) are firms with between 35 and 45 employees in 1989 and 1990 (dashed light grey diamonds). Go back to main text

FIGURE B.7: Variance of log total compensation: role of wages vs profit-sharing

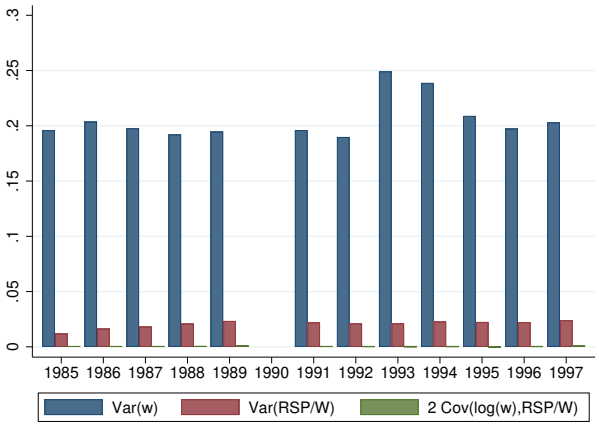
(A) Panel A: Treated Firms



(B) Panel B: "Small" control firms



(C) Panel C: "Large" control firms



Note: This figure reports a decomposition of the variance of log total compensation into the part coming from wages and the part coming from profit-sharing. It uses employee-level data for the period 1985-1997. It relies on the identity:

$$\text{var}\left(\log W\right) = \text{var}\left(\log(w+ps)\right) \approx \text{var}\left(\log w\right) + \text{var}\left(\frac{ps}{w}\right) + 2\text{cov}\left(\log w, \frac{ps}{w}\right)$$

where W is total compensation, w is the wage and ps is the amount of profit-sharing paid to the worker. The Figure reports each one of the three components of the RHS. Panel A focuses on treated firms (between 55 and 85 employees in 1989 and 1990). Panel B focuses on 'small' control firms (between 35 and 45 employees in 1989 and 1990). Panel C uses "large" control firms (between 120 and 300 employees in 1989 and 1990). Go back to main text