Taxing Business Wealth or Profits? Evidence from German Wealth Taxation

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Abstract

I study how taxing business wealth affects firms, workers, and local economic activity. Until 1998, the German local business tax was levied on both profits and book-value capital. Exploiting cross-municipality variation in the size of the resulting wealth-tax cut, I find that a 0.1 percentage point larger reduction increased equipment investment by about 5 percent and wages by 0.3–0.5 percent, with no long-run effect on employment. Entry rose disproportionately among lower-productivity firms, leading to a decline in average productivity in more exposed regions. Using a sufficient-statistics framework disciplined by these empirical elasticities, I show that profit taxation generates lower marginal welfare costs than book-wealth taxation under plausible parameter values. The results highlight that stock- and flow-based capital taxes operate through distinct margins and have different implications for incidence, selection, and efficiency.

Keywords: capital taxation, corporate taxation, investment, labor demand

JEL-Classification: D22, H22, H25, H32, H71, J23, J31

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1 Introduction

Wealth taxation has re-emerged in policy debates as governments search for ways to raise tax revenue from capital, yet the real effects of wealth taxes on businesses remain poorly understood. A central conceptual distinction in public finance is between taxes on the stock (wealth or property taxation) and taxes on the flow, such as corporate income or capital-income taxes. A growing empirical literature has examined how profit taxation and depreciation rules affect firms' investment and labor demand[1]. Yet we have little reduced-form evidence on how taxing the capital stock itself affects firm behavior and labor-market outcomes. Recent theoretical and quantitative work shows that (book-)wealth and profit taxes can diverge sharply once firms differ in profitability (Guvenen et al., 2023, 2024), but reduced-form evidence remains scarce.[2]

This chapter addresses this gap in the existing literature by evaluating the impact of a tax on firm-level book wealth. I take advantage of the unique setting of the German business tax system. Before 1998, the German local business tax (LBT) was levied on two distinct tax bases: profits and the book-value of the business. Although the tax base and liability criteria were set at the federal level, each of the more than 10,000 municipalities had the autonomy to determine the local tax rate. In 1998 the LBT was reformed, and the tax on the business wealth was removed, making it solely based on profit thereafter. Because local tax rates varied widely, firms across Germany experienced substantially different tax cuts, which I exploit in a difference-in-differences design.

Two features make this setting especially informative. First, the tax is levied at the firm level, so variation in tax exposure maps directly into firms' capital and labor decisions, avoiding the incidence and measurement challenges that arise when wealth taxes are assessed on individuals. Second, the relevant tax base, book-value business wealth, is closely aligned with how business wealth is treated in practice: market values are typically unavailable for non-listed firms, so wealth-tax systems rely on accounting-based or formula-based measures. A book-wealth tax therefore captures a policy-relevant form of taxation and provides a sharp conceptual contrast to profit taxation, since market-value taxation would mechanically capitalize expected future profits and thus move closer to an income-tax base.[3]

[1] See, for example, Fuest et al. (2018); Ohrn (2018); Giroud and Rauh (2019); Curtis et al. (2021); Link et al. (2024). See Fuest and Neumeier (2023) for a review of the literature.

[2] Gaillard and Wangner (2022) is another paper studying optimal wealth taxation in a general equilibrium model. Bjørneby et al. (2023) study a wealth tax in Norway and find positive effects of the tax on employment growth. Jakobsen et al. (2020, 2024) study the effect of wealth taxes on individual-level wealth accumulation and on migration. Brülhart et al. (2022), Ring (2025) and Londoño-Vélez and Avila-Mahecha (2025) study similar questions for Switzerland, Norway and Colombia. See Scheuer and Slemrod (2021) for a comprehensive overview of the earlier literature on wealth taxation and Bastani and Waldenström (2020, 2023) for a overview on different types of capital taxes. Becker (2021) has analyzed the theoretical implications of book-wealth taxation for corporate tax avoidance.

[3] While market-value taxation of business wealth is conceptually appealing, it is rarely implemented in prac-

I combine the fine-grained municipality-level variation with data on investment, profits, employment, and wages. This approach makes it possible to estimate the effects of book-value wealth taxation on firm outcomes before and after the tax reform. To interpret these reduced-form effects and clarify the economic mechanisms, I develop a simple theoretical model that distinguishes how book-wealth and profit taxation affect investment, wages, and entry. The model also provides a sufficient-statistics mapping that enables the comparison of the marginal welfare costs of the two tax instruments.

Firms facing larger cuts in the wealth-based component of the tax increased investment in machinery and equipment. A 0.1 percentage point larger tax cut—roughly one standard deviation—raised investment by about five percent in the manufacturing sector. Because the book-wealth tax applies to a broad capital base, statutory changes translate into sizable semi-elasticities. To make the magnitude comparable to the corporate-tax literature, I express the estimates in terms of changes in the user cost of capital. The implied cost-of-capital elasticity of investment is approximately 4.5, which lies near the upper end of recent estimates for profit-tax and investment-incentive reforms (Link et al., 2024; Ohrn, 2018).

Firms exposed to larger tax cuts also increased wages. A 0.1 percentage point larger reduction in the wealth tax raised wages by about 0.3 to 0.5 percent. Expressed in user-cost terms, this effect is similar in magnitude to wage elasticities estimated for profit-tax reforms (Fuest et al., 2018; Gstrein et al., 2025). In contrast, I find no statistically significant long-run effects on employment, suggesting that workers captured part of the gains through higher wages rather than through differential job creation. Profits increased as well. A 0.1 percentage point larger tax cut raised gross profits by roughly 0.1 percent and net profits by about 0.3 percent. While part of the increase reflects the mechanical reduction in tax liabilities, the rise in gross profits indicates that the reform likely also expanded productive capacity.

I next examine aggregate effects at the district level. Entry increases in response to the wealth-tax cut: a 0.1 percentage point larger reduction raises the number of new firms by about 1.3 percent. The increase is concentrated among firms in the bottom two quintiles of the productivity distribution (measured by plant-specific wage premia following Abowd et al., 1999), leading to a decline in average productivity in more exposed districts. This pattern is consistent with recent theoretical work showing that book-value wealth taxes disproportionately reduce returns for lower-productivity entrepreneurs, thereby affecting selection into entry (Guvenen et al., 2023, 2024). Moreover, I find that more profitable firms respond more strongly to profit-tax changes, while less profitable firms react more strongly to the book-wealth tax. To-

tice because firm values are difficult to observe outside public equity markets. Most wealth tax systems therefore rely on accounting measures or formula-based valuations. A tax on book-value capital can be viewed as one endpoint on a spectrum of wealth taxation schemes, with market-value taxation at the other. Section 3.1 describes business wealth valuation in countries with wealth taxes in more detail.

gether, these results show that corporate tax design shapes not only factor demand but also the productivity composition of firms.

The identifying assumption is that, absent the reform, municipalities with higher and lower pre-reform tax rates would have followed similar trends. I provide several pieces of evidence supporting this assumption. Event-study estimates show parallel pre-trends prior to 1998, and the results are robust to the inclusion of extensive controls and fixed effects. I also conduct placebo tests exploiting institutional features of the reform. In the former East German states, the book-wealth component of the tax was never implemented, and certain sectors were not subject to the tax even in West Germany. In both cases, I find no differential developments between high- and low-tax municipalities. Finally, investment in buildings and land, assets not affected by the book-wealth tax, shows no differential response. Together, these tests support a causal interpretation of the estimates.

Finally, I combine the reduced-form evidence with a simple theoretical framework that blends a spatial-equilibrium model of local tax incidence (Suárez Serrato and Zidar, 2016) with the heterogeneous-profitability mechanisms in Guvenen et al. (2023). The model serves two purposes. First, it clarifies how book-wealth and profit taxation affect firms through distinct channels. Second, it provides a sufficient-statistics mapping from empirically estimated wage, profit, and revenue elasticities to marginal welfare costs.

The two instruments operate differently. A book-wealth tax raises the marginal cost of holding capital and therefore directly distorts the capital stock. Through capital–labor complementarity, this distortion lowers wages and primarily affects the intensive margin of production. By contrast, a profit tax reduces after-tax returns and falls partly on infra-marginal rents. Its distortion operates more strongly through location and entry responses, while generating smaller intensive-margin distortions for existing firms.[4] As a result, the incidence differs: wealth taxes place relatively more burden on workers via wage adjustments, whereas profit taxes burden firm owners more heavily through reduced rents and mobility responses. The welfare trade-off between the two instruments therefore reflects, in part, a trade-off between taxing labor income and taxing firm profits.

Using the empirical elasticities, the sufficient-statistics formula implies that profit taxation is the more efficient instrument for raising revenue in this setting. Its marginal welfare cost is lower for most empirically plausible parameter values. The ranking reverses only when the social weight on firm owners is high or when the effects on wages and profits are implausible. In the German setting studied here, neither condition holds, implying that book-wealth

[4]This distinction parallels the policy debate between lowering statutory corporate income tax rates—often motivated by concerns about profit shifting and firm mobility—and expanding investment incentives such as accelerated depreciation, which primarily reduce effective marginal tax rates and stimulate capital accumulation (Auerbach and Hassett, 1992; Devereux and Griffith, 1998, 2003).

taxation is a relatively costly way to raise revenue.

Contribution to the Literature: This chapter contributes to three strands of the public finance literature. First, it contributes to the empirical literature studying the real effects and incidence of corporate taxation on investment, wages, employment, and profits (Auerbach, 2006; Suárez Serrato and Zidar, 2016; Fuest et al., 2018; Giroud and Rauh, 2019; Link et al., 2024; Lichter et al., 2025).[5] A related body of work analyzes how depreciation allowances and investment incentives affect capital accumulation (Zwick and Mahon, 2017; Eichfelder and Schneider, 2018; Ohrn, 2018; Criscuolo et al., 2019; Curtis et al., 2021). I contribute to these literatures by providing new reduced-form evidence on the effects of taxing business wealth directly. Exploiting a large cross-municipality reform, I show that eliminating a book-value wealth tax increased equipment investment and wages but had limited effects on employment. Second, the chapter relates to the emerging theoretical literature emphasizing the distinction between stock-based and flow-based capital taxation (Gaillard and Wangner, 2022; Boar and Midrigan, 2023; Guvenen et al., 2023, 2024; Schjelderup and Zoutman, 2024). These models highlight that wealth and profit taxes can diverge sharply when firms differ in profitability or face financial frictions. I provide empirical evidence supporting these mechanisms. The reform led to disproportionately higher entry of lower-productivity firms and stronger investment responses among lower-profitability establishments. These findings are consistent with the use-it-or-lose-it logic of Guvenen et al. (2023) and show that corporate tax design can shape the productivity composition of active firms. Third, I contribute to the literature on optimal corporate and capital taxation by providing the first reduced-form welfare comparison of book-wealth and profit taxation using a sufficient-statistics approach (Saez and Stantcheva, 2018; Swonder and Vergara, 2024, 2025)[6]. While much of the optimal corporate tax literature relies on structural dynamic models, I provide a transparent welfare benchmark that directly maps empirically estimated wage, profit, and revenue elasticities into marginal welfare costs. This approach complements structural analyses by offering a reduced-form framework disciplined by observed behavioral responses. By studying a firm-level tax on book-value capital, I isolate a form of wealth taxation that is empirically relevant and conceptually most distinct

[5] See Fuest and Neumeier (2023) for a recent review of the literature on corporate income taxation.

[6] See also the foundational results in Chamley (1986) and Judd (1985), which establish a zero long-run optimal tax on capital income under frictionless infinite-horizon settings with homogeneous returns and no firm-level distortions. Subsequent work shows that positive optimal capital taxes can arise once one allows for heterogeneity, incomplete markets, or transitional dynamics (Aiyagari, 1995; Straub and Werning, 2020). Importantly, much of this literature studies taxes on passive savings in representative-agent or Mirrleesian frameworks and abstracts from firm-level investment decisions and general-equilibrium wage responses (Kopczuk and Slemrod, 2006). Corporate taxation differs conceptually in two respects. First, it operates at the firm level and directly affects investment, entry, and the wage-setting environment, linking capital taxation to labor-market incidence. Second, corporate profits constitute a large share of top incomes and may not be fully taxed under individual income taxation, providing a distinct redistributive role for corporate taxes. For these reasons, the zero-capital-tax result does not directly address the optimal design of corporate tax instruments or the choice between stock- and flow-based taxation.

from profit taxation, providing clean evidence on the distinction between stock and flow taxation.

Section 2 outlines a theoretical model that clarifies how profit taxation and book wealth taxation differ. Section 3 describes the German business tax system. Section 4 discusses the data on investment and employment. Section 5 describes the empirical strategy, Section 6 shows the main results, and Section 7 shows heterogeneity and validity tests. Section 8 discusses the effects on the composition of firms. Section 9 discusses how the empirical results relate to the relative welfare costs of both taxes. Section 10 concludes.

2 Theoretical Framework

This section develops a spatial-equilibrium framework that links local corporate taxation to outcomes for workers and firm owners and delivers the sufficient statistics used in the empirical welfare comparison. The framework yields closed-form elasticities of wages, profits, and tax revenue with respect to two local policy instruments: a profit tax τ_c^p and a book-wealth tax τ_c^k. These elasticities are the only empirical inputs required to compute the marginal welfare cost per euro of revenue raised. Full derivations and extensions are provided in Appendix A.

The model builds on the spatial-equilibrium framework of Suárez Serrato and Zidar (2016, 2024), but is adapted to the present setting in three ways. First, I introduce a tax on the stock of book-value capital alongside the profit tax. This requires modeling the user cost of capital explicitly and tracing how each instrument affects the user-cost component versus firm profits. Second, I allow for imperfect deductibility of capital costs through a parameter $\kappa_k \in [0, 1]$. This captures the empirically relevant fact that not all financing costs, most notably the opportunity cost of equity, are deductible, so that even profit taxes affect the user cost of capital. Third, the framework is used to express the effects of both taxes on wages and profits relative to their revenue consequences, which allows for a direct comparison of marginal welfare costs under alternative distributional weights.

The goal of the model is not to estimate a fully structural heterogeneous-firm economy or to provide a unique welfare ranking that depends on a specific set of assumptions. Rather, the framework serves two complementary purposes. First, it provides a transparent mapping from a small set of empirically estimable reduced-form elasticities to the objects required for local welfare analysis. Second, it clarifies the economic channels through which profit and book-wealth taxes differ: namely, their relative effects on rents, user costs, entry and selection, and labor-market adjustment. While these channels are embedded here in a spatial-equilibrium model with imperfect firm and worker mobility, the resulting welfare comparison is not tied to this specific structure and could be implemented in alternative settings using the same

sufficient-statistics logic.

The remainder of this section summarizes the key ingredients of the framework and presents the resulting elasticities. Appendix A contains the full setup, proofs, and extensions, including a parsimonious treatment of financial frictions that scales the user cost of capital and relates the model to the use-it-or-lose-it mechanism emphasized by Guvenen et al. (2023).

2.1 Environment

I consider a set of local labor markets indexed by $c \in \mathcal{C}$. Goods markets and the supply of financial capital are national, while labor markets are local. Establishments are monopolistic competitors facing CES demand and operating a Cobb–Douglas production technology in labor ℓ_{jc}, capital k_{jc}, and intermediate inputs M_{jc}:

$$y_{jc} \;=\; B_{jc}\,\ell_{jc}^{\gamma} k_{jc}^{\delta} M_{jc}^{1-\gamma-\delta}, \qquad \mu \equiv \left(1 + 1/\varepsilon^{PD}\right)^{-1},$$

where $\varepsilon^{PD} < -1$ denotes the product-demand elasticity and μ is the constant markup. Productivity is given by

$$B_{jc} = \bar{B}_c + \zeta_{jc}$$

where $\bar{B}_c$ captures location-specific fundamentals and ζ_{jc} is an establishment-specific component that is i.i.d. type-I extreme value. This structure generates smooth entry, exit, and selection across locations.

In each location c, establishments choose inputs and prices p_{jc} to maximize after-tax profits, taking as given the local wage w_c, the national interest rate ρ, national intermediate-input prices p_v, a deductibility parameter κ_k, and local tax instruments: a profit tax τ_c^p and a book-wealth tax τ_c^k:

$$\pi_{jc} = \max_{l_{jc}, k_{jc}, x_{v,jc}, p_{jc}} (1-\tau_c^p)\left(p_{jc}y_{jc} - w_c l_{jc} - \int_{v\in J} p_v x_{v,jc} dv\right) - \left((1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k\right) k_{jc},$$

Local corporate taxation affects firms through the profit tax τ_c^p and the capital-stock tax τ_c^k. As shown in Appendix A.3.1, both instruments map into the user cost of capital,

$$\tilde{\rho}_c \;=\; \frac{(1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k}{1-\tau_c^p},$$

where $\kappa_k \in [0,1]$ governs the degree of deductibility of capital costs. Intuitively, κ_k can be interpreted as the share of capital financed through deductible sources such as debt. When

$\kappa_k = 1$, both taxes drop out of $\tilde{\rho}_c$ and capital accumulation is undistorted. The profit tax then acts as a pure rent tax. In the empirically relevant case $\kappa_k < 1$, both instruments affect investment incentives, but in different ways.

Location choice for firms and workers follows a logit structure with dispersion parameters σ^F (firms) and σ^W (workers). For workers, idiosyncratic location tastes imply a local labor-supply elasticity (see Appendix A.2 for full derivations)[7]:

$$\varepsilon^{LS} = \frac{1}{\sigma^W},$$

and for firms, idiosyncratic location shocks generate a labor-demand elasticity

$$\varepsilon^{LD} = -\left(1 + \frac{\gamma}{\sigma^F}\right),$$

which aggregates substitution, scale, entry, and selection effects (see Appendix **??** and in particular **??**). Intuitively, a lower σ^W makes local labor supply less responsive to wage differences, while a lower σ^F makes firm entry and exit across locations more responsive to tax-induced changes in profitability.

Two key channels. A change in τ_c^p operates through two mechanisms: (i) a profit-wedge effect (it directly reduces the after-tax share of profits), and (ii) a user-cost effect through $\tilde{\rho}_c$ when $\kappa_k < 1$ (because capital costs are not fully deductible). By contrast, a change in τ_c^k affects outcomes only through the user cost. Both taxes therefore operate via scale, substitution, and entry/selection, but the mechanisms differ. This distinction is central for the welfare comparison.

2.2 Equilibrium responses

To characterize local responses to small policy changes, I work with log elasticities. For any outcome x, define

$$\dot{x}^p = \partial \ln x / \partial \ln(1 - \tau_c^p) \qquad \dot{x}^k = \partial \ln x / \partial \ln \tau_c^k)$$

so that $\dot{x}^p$ measures the percentage change in x following a one-percent increase in the net-of-profit-tax rate $(1 - \tau_c^p)$, while $\dot{x}^k$ measures the response to a one-percent increase in the

[7] In contrast to Suárez Serrato and Zidar (2016) the labor supply elasticity does not depend on housing market parameters. That is because, I abstract from housing-market feedbacks for two reasons. This simplification is innocuous for two reasons: (1) The primary role of the model is the comparison between the two taxes. Given the wage elasticities of both taxes, the housing market feedback is the same and drops out in the comparison. (2) Empirically, the tax reform I study did not have substantial employment effects, suggesting that worker mobility played a relatively small role.

capital-stock tax rate τ_c^k.

Solving for local labor-market equilibrium using the labor-supply elasticity ε^{LS} and the macro labor-demand elasticity ε^{LD} yields the following wage elasticities (see Appendix A.4 for derivations):

$$\dot{w}_c^p = \frac{-\frac{1}{(\varepsilon^{PD}+1)\sigma^F} - 1 + \frac{\delta}{\sigma^F}\left(1 - \frac{\kappa_k \rho}{\tilde{\rho}_c}\right)}{\varepsilon^{LS} - \varepsilon^{LD}}, \tag{1}$$

$$\dot{w}_c^k = -\frac{\frac{\delta}{\sigma^F}\, s_k}{\varepsilon^{LS} - \varepsilon^{LD}}, \quad s_k \equiv \frac{(1-\kappa_k)\tau_c^k}{(1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k}. \tag{2}$$

These expressions summarize how local wages react to small changes in the two tax instruments, holding taxes in all other locations fixed. For the profit tax, the numerator combines three forces. The first term ($1/[(\varepsilon^{PD}+1)\sigma^F]$) captures firm entry and exit induced by changes in after-tax profitability. The second term reflects the direct reduction in surplus available for labor. The third term captures the user-cost channel that arises when capital costs are not fully deductible ($\kappa_k < 1$), so that a change in τ_c^p affects investment and scale. For the capital-stock tax, by contrast, the wage response operates exclusively through the user cost of capital and is governed by the capital share δ and by s_k, which measures the sensitivity of the user cost to τ_c^k. In both cases, wage adjustment is scaled by the difference between labor supply and labor demand elasticities.

Profit elasticities combine the direct tax wedges and the induced change in labor costs:

$$\dot{\pi}_c^p = 1 \underbrace{-\delta\left(\varepsilon^{PD}+1\right)}_{\text{Capital wedge}} + \underbrace{\delta\left(\varepsilon^{PD}+1\right)\frac{\kappa_k\rho}{\tilde{\rho}_c}}_{\text{Deductibility effect}} + \underbrace{\gamma\left(\varepsilon^{PD}+1\right)\dot{w}_c^p}_{\text{Labor costs}}, \tag{3}$$

$$\dot{\pi}_c^k = \underbrace{\delta\left(\varepsilon^{PD}+1\right)\frac{(1-\kappa_k)\tau_c^k}{(1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k}}_{\text{Capital wedge}} + \underbrace{\gamma\left(\varepsilon^{PD}+1\right)\dot{w}_c^k}_{\text{Labor costs}}. \tag{4}$$

For the profit tax, profits respond through three channels: the mechanical increase in the net-of-tax rate, the induced change in the user cost of capital, and changes in labor costs. For the capital-stock tax, profits are affected only through the user-cost channel and the resulting wage adjustment. As a result, profit responses are typically much larger for τ_c^p than for τ_c^k, whereas wage responses tend to be larger for τ_c^k. Note that $\varepsilon^{PD} < -1$ so that the capital wedge enters negatively for τ_c^k and positively for τ_c^p, since we are studying a τ_c^k hike and a cut τ_c^p in this framework.

2.3 Revenue elasticities and marginal-welfare cost

Let profit-tax revenue be given by $R_p = \tau_c^p \Pi$ and capital-stock-tax revenue by $R_k = \tau_c^k K$, where Π denotes pre-tax profits and K the capital-stock tax base. A change in either tax affects both revenue components, because the two tax bases are linked through investment, scale, and selection. I therefore work with total revenue elasticities that account for both own-base and cross-base responses.

Formally, define $\dot{R}_p^p$ and $\dot{R}_k^k$ as the own-base elasticities of profit-tax and capital-tax revenue, and $\dot{R}_p^k$ and $\dot{R}_k^p$ as the corresponding cross-base elasticities. Total revenue elasticities are given by

$$\dot{R}_p^{tot} \;=\; r_p \dot{R}_p^p + (1 - r_p)\dot{R}_p^k, \qquad \dot{R}_k^{tot} \;=\; r_p \dot{R}_k^p + (1 - r_p)\dot{R}_k^k \tag{5}$$

where r_p denotes the share of profit-tax revenue in total local business tax revenue. These expressions capture the fact that a marginal change in one instrument affects the entire local tax base, not only the base it directly targets. Appendix **??** provides the full derivation in terms of model primitives.

I define the local marginal welfare cost per euro of revenue raised by tax instrument $T \in p, k$ as

$$W_T(\theta) \;=\; -\frac{(1-\theta)\,\dot{w}^T + \theta\,\dot{\pi}^T}{\dot{R}_T^{tot}}, \qquad T \in \{p, k\}, \tag{6}$$

where $\theta \in [0, 1]$ is the welfare weight placed on local firm owners. When $\theta = 0$, the planner values only workers' income. For $\theta = 1$, only local firm profits enter welfare. The numerator aggregates the incidence of the tax on workers and firm owners, while the denominator scales this by the associated revenue response.

Equation (6) highlights that the welfare ranking of the two instruments depends on three objects: (i) how strongly each tax affects wages, (ii) how strongly it affects profits, and (iii) how much revenue it raises net of behavioral responses. Importantly, none of these objects requires knowledge of the full structural model. Given estimates of wage, profit, and revenue elasticities, the welfare comparison follows directly. Equations (1) through (6) therefore constitute the sufficient-statistics backbone of the incidence and welfare analysis in Section 9.

2.4 Comparative statics and discussion

This subsection interprets the welfare comparison by highlighting the economic forces that determine the relative efficiency of profit and book-wealth taxation. The goal is not to provide an exhaustive analysis of all model parameters, but to clarify which primitives matter empirically and why.

User-cost distortions and deductibility: A central determinant of the welfare ranking is the extent to which taxes distort the user cost of capital. When capital costs are largely deductible (κ_k close to one), the profit tax operates primarily as a levy on infra-marginal rents and generates limited distortions to investment and wages. In contrast, a book-wealth tax directly raises the cost of holding capital and distorts investment even when statutory rates are low. This asymmetry explains why, in the empirically relevant case of imperfect deductibility, capital-stock taxation tends to generate larger wage responses and higher welfare costs per euro raised.

Entry and selection: A lower σ^F (more elastic firm location) raises the macro labor-demand elasticity in absolute value, $|\varepsilon^{LD}| = 1+\gamma/\sigma^F$, and makes entry and exit more sensitive to tax-induced changes in profitability. Through s_k and the terms in $1/\sigma^F$ in (1)–(5), this magnifies the user-cost channel of both taxes: wages become more responsive, the capital-stock tax base K becomes more elastic, and $\dot{R}_k$ falls. The amplification is stronger for τ_c^p when $\kappa_k < 1$, because the profit tax affects both the profit wedge and the user cost, whereas the capital-stock tax operates only through the latter.

Profitability and Rents: The parameter ε^{PD} governs the level of operating profits (net of labor and capital costs) and therefore the amount of location-specific rents available for taxation. A higher value of ε^{PD} (i.e. less negative) implies larger equilibrium profits for infra-marginal firms. This matters differently for the two instruments. When firms earn large economic profits, a profit tax falls relatively more heavily on owners, while a capital tax falls more on workers. Thus, the relative burden on workers versus owners depends on how much of local profits represent true rents.

Financial frictions and heterogeneity: Introducing financial frictions further sharpens the distinction between the two instruments. Lower profit taxes disproportionately benefit high-productivity or financially constrained firms with high marginal returns to capital, allowing them to expand and accumulate capital more rapidly. Lower capital-stock taxes, by contrast, relax constraints primarily for firms with large existing capital stocks and lower profitability. This logic parallels the use-it-or-lose-it mechanism emphasized by Guvenen et al. (2023) and helps rationalize the heterogeneous investment responses observed in the data.

Distributional considerations: Finally, the welfare ranking depends on how social welfare trades off worker earnings against firm profits. Because profit taxes primarily affect profits while capital-stock taxes affect wages more strongly, placing greater weight on firm owners favors capital taxation, while placing greater weight on workers favors profit taxation.

Taken together, the model clarifies why taxes on capital stocks and taxes on profits operate through fundamentally different margins. These differences are central for interpreting the

empirical results and for evaluating the efficiency and distributional consequences of alternative corporate tax instruments.

3 Institutional Setting

I estimate the effects of book-wealth taxation by exploiting the unique institutional setting of the German local business tax. In the following subsection 3.1 I will summarize the main features of the German business tax system. In Section 3.2 I discuss the 1998 reform of the local business tax.

3.1 Business Taxation in Germany before and after 1998

German firms are potentially subject to three different taxes: the corporate tax (CIT), the personal income tax (PIT), and the local business tax (LBT). Which taxes apply depends on the legal form of the firm. Corporate firms (Kapitalgesellschaften) are subject to the CIT, while non-corporate firms (Personengesellschaften) are subject to the PIT. Both legal forms are liable for the LBT.[8] The tax rates for the CIT and the PIT are set at the federal level. For the LBT, tax bases and liability criteria are also set at the federal level, while tax rates are set autonomously by the municipalities. For firms present in multiple municipalities, profits are distributed according to formula apportionment based on the wage sum.

Currently, the CIT, the PIT, and the LBT are all based on firm profits. In 1997, the CIT generated a revenue of 17 billion euros, while the LBT raised almost 25 billion euros. Accordingly, the LBT is the most important tax on businesses in Germany. Before 1998 the LBT included the firm's capital stock as a secondary tax base in West Germany. For the purpose of this tax, the capital stock was defined as equity adjusted by certain additions and deductions. Hence, I also use the term book value of the business for this quantity, as it is closely approximated by the value of all assets minus debts. The goal was to tax the capital that is available to the firm in the long term. The full computation can be found in Table B.3 in Appendix B.[9] Accounting-based valuation of business wealth is not unique to the German local business tax. In practice, recurrent net wealth taxes typically rely on formula-based assessments for private business

[8] The public sector and many agricultural firms are exempted from the LBT. In addition, specific professions such as lawyers, pharmacists, accountants, doctors, or journalists are also exempted under certain conditions.

[9] In general, this calculation equals the sum of capital assets and current assets for a firm financed by equity. For a debt-financed firm, the tax base will be lower because the debt is (partially) subtracted from the tax base. As an example, consider two firms, A and B. A is fully financed by equity and has assets of 1 million euros. Then the tax base will be 1 million euros. Firm B is 50% debt financed and also has assets of 1 million euros. Equity for firm B is 500,000 EUR. To calculate the tax base, equity and half of long-run debt are summed up. Firm B's tax base is then 750,000 EUR. Hence, debt financing is preferable from a tax perspective, as is the case in most corporate tax systems in the world.

equity because market values are rarely observable for non-listed firms. [10]

In the following, I will refer to the LBT on profit as LBTP and the LBT on capital as LBTC. The local tax rates are set in the following manner: The municipal government sets the local scaling factor (LSF). In the next step, the LSF is multiplied by the basic rate, which is set by the federal government. It was 5% for the LBTP (lowered to 3.5% in 2008). For the LBTC it was 0.2% before 1998 and 0% after the tax was abolished in 1998. Multiplying the LSF by the basic rate yields the local business tax rate: LSF $\times$ Basic Rate LBTP $= \tau^p$ and LSF $\times$ Basic Rate LBTC $= \tau^k$. Table 1 demonstrates the LBT system before and after 1998 using the example of Munich. For Munich, the LSF was set at 490% in 1997 and 1998. The LBTP does not feature an allowance in most cases, but the LBTC had an allowance of 120,000 DM (about 61,000 EUR). Taking a firm with a book-wealth of 1 million EUR and 100,000 EUR in profit, one can calculate effective tax rates (total LBT payments as a share of profit). The effective tax rates are highly dependent on the ratio of profit to capital and can even exceed 100%. This is not uncommon for a tax on stocks rather than flows.

Table 1: Calculation of LBT in Munich 1997 and 1998

	1997		1998	
Local Scaling Factor	490%		490%	
Tax base	Profit	Capital	Profit	Capital
Basic Rate	5%	0.2%	5%	0%
Tax rate	24.5%	0.98%	24.5%	0%
Tax base (Amount)	100,000	1,000,000	100,000	1,000,000
Tax Payment	24,500	9200	24,500	0
ETR	33.7%		24.5%	

The LBT system in the former East German states differed slightly from the West German system. While the taxation of profits was the same in East and West after reunification, the LBTC was not collected in the former East German states.[11] Hence, the basic rate on capital in the East German states was 0% throughout the whole period, and the tax reform of 1998 did not affect them.

[10] For example, Swiss cantons value unlisted shares for wealth-tax purposes using standardized valuation guidance (often referred to as the "practitioners' method"), combining accounting-based substance values with earnings-based components rather than traded market prices. Norway similarly assesses unlisted shares based on firms' underlying assets as recorded in balance sheets, and recent evidence indicates that such assessed values can differ substantially from transaction prices (Skar et al., 2025). Spain's wealth tax rules likewise rely on the last approved balance sheet and, when audited values are unavailable, apply explicit fallback formulas that use book values and capitalized profits. Taken together, these institutional features underscore that book- or formula-based business-wealth taxation is a central empirical object for understanding how wealth taxes affect firms.

[11] They did, however, receive compensation for the reduced revenue collected through the LBT. The tax was not introduced in East Germany because policymakers were worried that it would burden the East German economy too much.

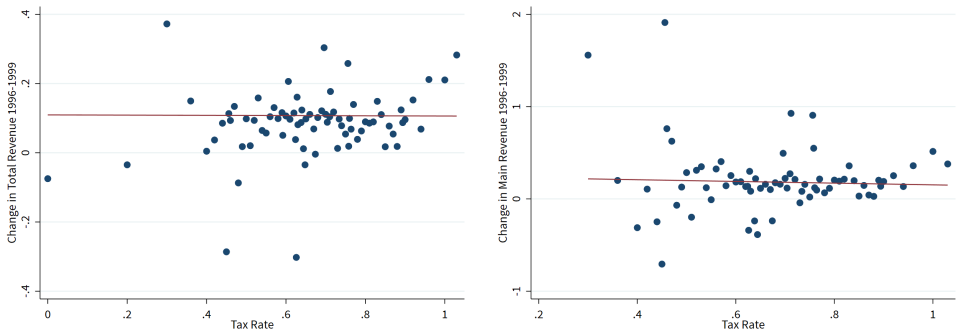
3.2 Abolition of LBT on the book-wealth

The book-wealth component of the LBT was last collected in 1997. The law to abolish the tax was passed in early 1997 by the conservative/liberal coalition government. The last assessment date of the book-wealth was January 1st, 1997. I consider 1997 as the year when treatment starts, since firms could begin responding to the tax change then, even though the tax was formally abolished on January 1st, 1998. The tax was abolished because it was considered harmful to growth and employment (Bundesministerium der Finanzen, 1999). In terms of revenue, the LBT is the most important tax on business income in Germany. In 1997, it generated a revenue of almost 25 billion euros. The LBTC was responsible for 18.8% of the total LBT revenue in West Germany. This underlines that the LBTC was an important part of the business tax system in Germany.

Accordingly, the municipalities were compensated for the lost revenue by receiving a share of the VAT revenue. In aggregate, this actually overcompensated them for the lost revenue (Bundesministerium der Finanzen, 1999). Figure 1 shows the correlation between the LBTC rate in 1996 and the change in municipal tax revenue. The figure on the left shows total local tax revenue, and the figure on the right focuses only on LBT and VAT revenue, as these two revenue sources were the only ones affected by the reform. Both figures indicate that there was no correlation between the size of the tax cut and the subsequent development of tax revenue (the point estimates are close to zero and very insignificant). This suggests that the compensation of municipalities was successful and changes in tax revenue should not confound the estimated effects of the reform. Figure D.4 also shows that there were no strong adjustments in LBT rates around the reform. As there were no strong effects on revenue, there was also little pressure on municipalities to change their tax rates. Furthermore, in Figure D.5 I also estimate a dynamic difference-in-differences specification of tax changes on the size of the tax cut. This exercise shows that there was no difference in tax changes after 1998 for municipalities that experienced higher or lower tax cuts.

Two groups provide natural falsification tests. First, the five East German states never implemented the book-wealth component after reunification, so firms there faced $\Delta\tau^K = 0$. Second, agriculture, the public sector, and certain liberal professions were exempt nationwide. Estimating the same specifications on these samples yields null effects, bolstering the credibility of the identification strategy. Taken together, the historical dual-base design, the abrupt 1998 abolition, and the quasi-fixed LSFs supply a clean source of exogenous variation in the cost of capital—variation that the subsequent empirical sections exploit to uncover the real effects of taxing business wealth.

Figure 1: Correlation between the change in total municipal tax revenue between 1996 and 1999 and the LBTC tax rate in 1996



Data: Statistical Offices of the Federal States. *Notes:* The left panel refers to total municipal tax revenue consisting of LBT, property tax, VAT, and income tax. The right panel only refers to the LBT and the VAT.

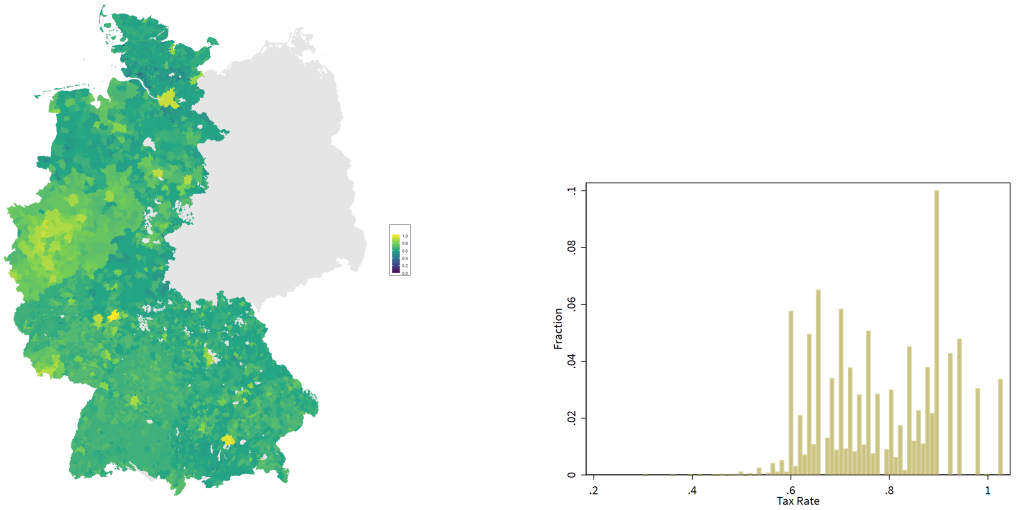
4 Data

I combine data on the LSFs with administrative firm-level data on investment, employment, and wages. I present the data in detail in the following subsections.

4.1 Data on Municipalities

In the empirical section, I use the variation of the LSF and the abolition of the book-wealth component in the LBT to identify the effects of book-wealth taxation. The data from the Statistical Offices of the 16 German states contain information on the local tax rates and revenues of the municipalities. Figure 2 shows the tax rates for the LBTC in 1996, one year before the tax was abolished. The left panel displays the geographical variation, and the right panel displays the variation in a histogram. In West Germany, the tax rate varied mostly between 0.6% and 1%, although there are some outliers with tax rates around 0.2%. The average tax rate in West Germany was 0.78% (weighted by the tax base) with a standard deviation of 0.12%. In contrast, the tax was not collected in East Germany, represented by the greyed-out part in the map. The left part of Figure 2 shows the variation across West Germany. In the empirical section, I will mainly use the variation across West Germany. I exploit the fact that the tax was never collected in East Germany for placebo tests. Figure D.4 shows the fraction of municipalities that kept their LSF constant in each year. It indicates that there was no disproportionate reaction around the abolition of the LBTC in 1997. Approximately 90% of municipalities keep their LSF constant each year, while 10% of municipalities change them. The right panel in Figure D.4 shows the average size of the change in the LSF. Once again, the years 1997 and 1998 are no outliers, with an average increase of 1.5 percentage points. Nevertheless, I control for tax changes in all empirical specifications.

Figure 2: Local business capital tax in 1996



Statistical Offices of the Federal States. *Notes:* The left panel displays the geographical variation of the LBTC rate across Germany in 1996. The right panel presents the same variation in a histogram.

4.2 Data on Investment

To study the firm investment response, I use data on firm investment from the ifo Investment Survey (IVS-IND, 2020). The ifo Investment Survey (IVS) is a representative survey of incorporated firms in the German manufacturing sector and has a panel structure, which makes it possible to track firms over time. The survey has been conducted biannually (spring and fall) since 1955. Among other variables, the firms report their realized investment for the previous year. I average the values reported in spring and fall if they differ. Link et al. (2024) use the IVS to study the effect of LBT changes on investment. They show that the data are representative of the German manufacturing sector.

4.3 Data on Employment and Wages

To analyze the effects on the labor market, I use the establishment history panel of the Institute for Employment Research (Ganzer et al., 2022a,b) and the IAB establishment panel (Bächmann et al., 2023).[12] It is a panel data set of a 50% sample of all establishments in Germany based on administrative social security data. Therefore, civil servants and self-employed individuals are not observed. Marginal workers are not observed consistently throughout the sample. All other categories of workers are fully covered by the data, corresponding to about 80% of all employed individuals in Germany. It includes very detailed information on employment and wages. Therefore, it can be used to study the impact on the labor market in more detail. The wage data is censored at the social security contribution limit. Hence, I cannot observe very

[12]The data access was provided via remote data access.

high wages, as these wages are set to the contribution limit. I show in Appendix Table D.8 that my results are robust to using the median instead of the mean wage (since the contribution limit is always far above the median wage). My sample starts in 1992 for West Germany and 1993 for East Germany. My sample ends in 2006. The lowest level of the geographic identifier in the data is the district level. Therefore, all analysis based on the employment data uses the weighted average of the LBTC rate on the district level.

The data also contain measures for plant-specific wage premia (AKM plant fixed effects). These premia are estimated following the methodology developed by Abowd et al. (1999). In the German context, Card et al. (2013) use the data to analyze the role of wage premia for the development of inequality and Dauth et al. (2022) use them to study the role of assortative matching between high-quality workers and plants on spatial inequality. The AKM effects represent a measure of productivity that is consistent with a variety of models of the labor market. I use these plant-specific wage premia as a measure of plant productivity.

4.4 Data on Profits and Tax Payments

Finally, I use the local business tax statistics (Gewerbesteuerstatistik) to estimate effects on profits and tax payments. The data cover the universe of taxpayers liable for the LBT and include variables on gross profits, deductions, and (before the abolition of the LBTC) business capital (Forschungsdatenzentrum der Statistischen Ämter der Länder, 2015). The universal coverage and accurate data on profits and capital are the great assets of this data set. Unfortunately, it also has some disadvantages. The data are only available starting in 1995, and they are only available triennially. Additionally, it is impossible to follow tax-paying units over time because there are no consistent identifiers in the data. Therefore, I adjust my empirical strategy to reduce the impact of these disadvantages (more details in Section 5).

4.5 Sample Restrictions

This section briefly describes the steps taken to obtain a comparable sample over time and across different data sets. I establish three main sample restrictions.

Balanced Sample: First, baseline regressions are always conducted on a balanced panel of establishments that are present throughout the complete observation period (1992-2006).[13] This makes it possible to track plants for five years before the reform and to measure effects ten years after the policy change. A balanced panel also avoids concerns about changes in the composition of the sample of plants. The estimates based on the balanced panel should be

[13] This is not the case for the specifications based on the local business tax statistics as it is not possible to link establishments over time in that dataset.

interpreted as the effect on existing firms. Effects on firm entry and exit will be discussed in detail in Section 8.

Location Changes: Second, baseline regressions are performed on samples of establishments that did not change location between 1992 and 2006 and are located in West Germany. Again, this is done to avoid concerns about changes in the composition of plants and sorting of plants. Although the identifiers of the plants remain the same, it is often unclear whether the plant is actually a continuation of the previous plant. By removing location-changing plants, I sidestep these concerns. The estimates are focused on incumbent firms that do not move in response to the tax. Empirically, location changes are relatively infrequent, occurring only in less than 3% of plants during the whole period of 1992 to 2006. Section 8 shows results for exit and entry of plants.

Non-liable Firms: Third, I remove all plants that operate in sectors that are generally not liable to the LBT. These are mining, energy, agriculture, the public sector, and certain types of (professional) services. The reform did not affect these firms. A sample including these plants will be used as a placebo test in Section 7.3.

4.6 Descriptive Statistics

This section presents descriptive statistics for the municipality and firm data. Table C.4 shows the descriptive statistics for West German municipalities. Panel A shows unweighted estimates. The mean LSF in 1996 was 325%, which corresponded to a mean LBTC rate of 0.65% and a mean LBTP rate of 16.3%. The LBTC rate ranged from 0.2% to 1.03%. On average, municipalities received €2.9 million in LBT revenue, ranging from -23 000 euros (because of loss carry-over) to more than 1 billion euros. On average, municipalities had a population of 8400, ranging from 11 to 3.4 million (Berlin). In Panel B the statistics are weighted by the tax base of the LBT to give a larger weight to more economically significant municipalities. The average LSF in 1996 was 389%. This LSF yielded an LBTC rate of 0.78% and a LBTP rate of 19.4%. The average LBT revenue was €197 million.

Table C.5 displays the descriptive statistics of the establishments. Panel A presents the statistics for the investment data based on the IVS-IND (2020).[14] The firms included in the IVS-IND (2020) data have an average of almost 1,800 employees and invest approximately 22 million euros per year. The IVS is generally representative of the German manufacturing sector (Link et al., 2024). Panel B presents the descriptive statistics of the labor market data. My baseline sample includes almost 2.5 million establishment-year observations. The average establish-

[14] As noted in Section 4.2, the results based on the administrative data have not yet been released by the Statistical Offices.

ment has 25 employees and pays an average daily wage of 88 euros. The sample is distributed relatively evenly across industries. 29% of establishments are in manufacturing. 26.5% operate in retail and wholesale trade. 28.5% are in services, and the remaining establishments operate in construction and restoration. Hence, the labor market data cover a much wider part of the economy than the investment data. In particular, it covers many smaller firms and firms outside of manufacturing. Panel C displays the descriptive statistics for the local business tax statistics in 1995. The tax statistics cover the largest number of plants, since they also cover plants without any employees in the social security system. This yields more than one million plants in 1995. On average, these plants had gross profits of almost €85,000. The average (unweighted) effective LBT rate was slightly above 10.33 %. About 89% of the taxes paid were for the LBTP, and 11% were due to the LBTC.

Figure C.3 shows additional descriptive statistics based on the local business statistics. The figure in the top left shows the number of plants that had positive LBTC payments (in red) and LBTP payments (in blue). For both types of taxes, trade (wholesale and retail) accounted for the largest number of firms that paid the taxes. For the LBTC, construction and manufacturing sectors have the next largest number of affected firms. For the LBTP, construction, commercial services, manufacturing, and hospitality are the next largest sectors. The figure in the top right displays the average amount of capital per plant in each industry. The banking and three manufacturing sectors had the largest book-wealth per plant. Real estate, traffic, commercial services, and trade had medium levels of capital, while firms in the hospitality sector had very low levels of capital. Finally, the bottom figure displays the share of the total LBT liability that is due to the LBTC. This basically combines profitability and capital intensity to derive a measure of the exposure to the LBTC for each industry. The LBTC burden accounts for between 2.5% and more than 16% of the total LBT burden. Banking, traffic, real estate, and commercial services have the highest share of their tax liability due to the LBTC. The manufacturing sectors only have intermediate exposure to the LBTC, since they have a large book-wealth and high profits. The share of LBTC in the total LBT burden is the lowest in hospitality and construction. Due to the broad definition of capital used for the tax, a broad range of sectors was affected by the LBTC and not just individual industries such as manufacturing or real estate.

5 Empirical Strategy

This section explains how the abolition of the LBTC in 1998 translates into an econometric design that identifies its causal impact on investment, wages, and firm entry. After a short conceptual recap, I discuss the identifying variation, introduce the baseline specification and treatment metric, and describe the cost-of-capital re-scaling that makes the estimates compa-

rable with studies on profit taxation.

5.1 Identification framework

Before 1998 every West German municipality levied an LBTC at a rate τ_c^k proportional to the book value of business wealth. The reform set the federal basic rate for this component to zero, while leaving the profit-based component unchanged. Because municipalities kept their local scaling factors almost completely fixed (see Figures D.4 to D.6 in the Appendix), the statutory rate cut $\Delta\tau_c^k \equiv \tau_{c,1996}^k$ varied mechanically with pre-reform tax rates. Firms thus experienced a sharp, once-and-for-all reduction in the user cost of capital whose magnitude was predetermined by location. Conditional on smooth pre-trends—an assumption assessed below—this setting yields a credible difference-in-differences (DiD) design.

5.2 Baseline specification

Let i index establishments, c their 1996 location (municipality or district when finer geography is unavailable), and t calendar year. The main estimation equation reads

$$Y_{ilt} = \alpha_i + \lambda_t + \sum_{s \neq 1996} \beta_s \, \mathbf{1}\{t = s\} \, \Delta\tau_{c,1996}^k + \mathbf{X}_{ict}\gamma + \varepsilon_{ict}, \tag{7}$$

where Y_{ilt} is log investment, log average wages, log employment, or any other outcome of interest. The establishment fixed effect α_i absorbs time-invariant differences across plants, while λ_t captures common macro trends. Time-varying controls $\mathbf{X}_{ict}$ include the profit-tax rate and, in robustness checks, state-year and industry-year dummies to allow for differential business-cycle exposure. The coefficients β_s trace out the entire dynamic path relative to the pre-reform year 1996. The pre-1997 coefficients provide a direct visual check of pre-trends, which could hint at a violation of the parallel trends assumption. Standard errors are clustered at the municipality level throughout.

Because the book-wealth component was collected for the last time in fiscal year 1997, plants could already adjust that year. I therefore define $s = 1997$ as the first post-treatment period. When a single average effect is desired, I collapse (7) to a conventional DiD by estimating the following specification:

$$Y_{ilt} = \alpha_i + \lambda_t + \beta \, \mathbf{1}\{t \geq 1997\} \, \Delta\tau_{c,1996}^k + \mathbf{X}_{ict}\gamma + \varepsilon_{ict}, \tag{8}$$

5.3 Using Industry-Level Variation

The statutory rate $\Delta\tau_c^k$ captures location-specific variation. A firm located in location c thus enjoys an immediate annual cost saving of $\Delta\tau_c^k \times K^{\text{book}}$. Treatment intensity enters the empirical analysis in two complementary ways. At the establishment level, each plant inherits the $\Delta\tau_c^k$ of its 1996 municipality. Year-specific dummies interact with this predetermined rate in the panel regressions. At the industry–municipality level of the tax-return data, I compute an effective pre-reform rate

$$\text{E-LBTC}_{sc} = \frac{\text{Capital-tax payments}_{sc}}{\text{Taxable profits}_{sc}},$$

computed for each sector–location cell sc. The rate is relative to taxable profits to make it basically interpretable like a standard effective corporate income tax. Replacing $\Delta\tau_c^{\text{k}}$ by $\Delta\text{E-LBTC}_{sc,1996}$ lets the specification exploit cross-industry heterogeneity in exposure while retaining the same difference-in-differences logic. Both variants deliver numerically similar estimates, underscoring that the results are not driven by differences in industry composition.

Because municipalities rarely adjust their LSFs (fewer than ten percent do so in any given year), the book-wealth tax cut is effectively once-and-for-all. Parallel-trend diagnostics in Section 7.3 confirm that pre-reform outcome trajectories were similar across high- and low-rate municipalities.

5.4 Scaling to the user cost of capital

The theoretical framework maps the local profit tax τ_c^p and the book-wealth tax τ_c^k into the user cost of capital,

$$\tilde{\rho}_c \;=\; \frac{(1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k}{1-\tau_c^p},$$

where ρ is the national interest rate and $\kappa_k \in [0,1]$ is the deductibility share of capital costs. A central object in the empirical analysis is the response of outcomes to changes in the user cost, $\partial \ln Y / \partial \ln \tilde{\rho}_c$, rather than to the statutory tax rates themselves.

To compare the two instruments on a common scale, I first characterize how they move $\ln \tilde{\rho}_c$. Appendix A.8 provides the full derivations, calibration, and robustness checks. For fully equity financed investments, a one percentage point higher τ_c^k moves $\ln \tilde{\rho}_c$ approximately eleven times more than a one percentage point increase in τ_c^p. As deductibility becomes more generous, the impact of the profit tax on the cost of capital shrinks further. Because the two instruments have very different mechanical effects on $\tilde{\rho}_c$, I report all main results both in terms of the statutory capital-stock tax and in terms of the user cost. This makes it possible to compare the effects of τ_c^k to the literature on profit-tax reforms, bonus-depreciation episodes,

or investment tax credits, which are typically reported as elasticities with respect to the user cost of capital.

5.5 Profit Tax Specification

For a comparison of effects with profit taxation, I also estimate a specification that also includes leads and lags of LBTP changes as an outcome of interest. I use the following specification:

$$Y_{ict} = \alpha_i + \lambda_t + \sum_{j=-\underline{j}+1}^{\overline{j}} \gamma_j \Delta\tau^p_{c,t-j} + \sum_{s\neq 1996} \beta_s \, \mathbf{1}\{t=s\} \, \Delta\tau^k_{c,1996} + \mathbf{X}_{ict}\gamma + \varepsilon_{ict}, \tag{9}$$

where the $\hat{\gamma}_j$ capture the estimates of interest that measure the dynamic causal effects before ($j < 0$) and after ($j \geq 0$) treatment with $\overline{j}$ lags and $\underline{j}$ leads of the treatment variable. The event study terms in $\Delta\tau^p_{c,t-j}$ capture the treatment as a change in the LBT rate in year $t-j$ and location l relative to the year $t-j-1$ triggered by a change in the local scaling factor. This setup basically adds a standard distributed lag model (Schmidheiny and Siegloch, 2023) on top of the analysis in specification 7 and makes it possible to jointly estimate the effects of LBTP and LBTC changes.

6 Results

This section presents the main findings. First, I discuss the effects of the tax cuts on capital investment. Next, I measure the effects on wages, employment, and profits. Finally, I provide a variety of validity tests supporting the identification approach.

6.1 Capital Investment Response

Panels (a) and (b) of Figure 3 show the effect of the tax cut on investment and the capital stock. They plot the coefficients β_t and their 95 percent confidence intervals. The coefficients are estimated from the model described in equation 7 based on the IVS-IND (2020) data. They show the effect of a 1 percentage point higher tax cut relative to the common trend. A 0.1 percentage point higher tax cut corresponds closely to the standard deviation of tax rates. Hence, a one percentage point change is rather large (the highest LBTC rates were 1.03%). The figure indicates that firms responded strongly to the tax cut and increased investment. The effect reaches its peak in 2000 before decreasing slightly. Since the sample is rather small, the effects in the later years are no longer statistically significant. Nonetheless, the point estimates remain elevated compared to the pre-period.

Panel A of Table 2 displays the corresponding DiD estimates. The estimates are statistically

significant for total investment and investment in equipment and machines. Adding state $\times$ year fixed effects increases the size of the estimates and their significance further. The estimates suggest a semi-elasticity of about 50 for total investment, which is very large. Adjusting the semi-elasticities by the effect of τ_c^k on CoC (see Section A.8), I obtain a semi-elasticity of $50/11 = 4.5$. This estimate is relatively high and towards the upper end of the recent estimates. Link et al. (2024) find an investment semi-elasticity of 3 in the German local business tax setting. Zwick and Mahon (2017) also report a semi-elasticity of 3 in the US setting. Ohrn (2018) finds a semi-elasticity of 4.7 when studying a specific deduction for the manufacturing sector in the US. My CoC-adjusted estimate falls within this range. A broader comparison across outcomes is provided in Section 6.5.

6.2 Wage response

Panels (c) and (d) of Figure 3 summarize the main findings for the impact on wages. They plot the coefficients β_t and their 95 percent confidence intervals. The coefficients are estimated from the model described in Equation 7. The figure in Panel (c) uses the basic variation of LBTC at the regional level. The figure in Panel (d) adds the industry-level variation described in Section 5.3. The basic specification includes establishment FE, district FE, and year $\times$ district type FE. The other specifications subsequently add pre-treatment controls, state-year FE, and sector-year FE. The estimates show that firms exposed to higher tax cuts increased wages relative to the pre-period and less exposed firms. The effect is not distinguishable from zero in the years from 1992 to 1996 (pre-period) and becomes immediately detectable in 1998 after the abolition of the LBTC. More and less treated establishments followed similar trends before the abolition of the LBTC. This provides support for the (untestable) parallel trends assumption.

After the tax cuts, wages increased for five years relative to less exposed firms. After five years, wages remain elevated, but do not increase further. Hence, the main adjustment occurs within five years. Before and after, more and less exposed firms evolve in parallel. Furthermore, the effect is economically significant: a 1 percentage point larger tax cut led to 3%-5% higher average wages after five years. This implies a long-run semi-elasticity of 3 to 5. This is large compared to existing evidence on the effects of corporate taxation, but a direct comparison of semi-elasticities is not very informative. As explained above, a 1 percentage point increase in the tax on book-wealth increases the cost of capital much more than a 1 percentage point increase in the corporate income tax (see Section A.8). The CoC adjustment, described in A.8, yields a wage semi-elasticity of about 0.27 to 0.45. The elasticity estimates in D.10 are between 0.017 and 0.04. Scaling this elasticity by the CoC adjustment (basically multiplying be 10, see Appendix A.8) we get 0.17 to 0.4. This is similar but slightly smaller than the comparable estimates from Fuest et al. (2018) and Gstrein et al. (2025).

The estimates that also use the industry-level variation are slightly smaller, but the insignificant pre-trend and immediate increase after the tax cut remain the same. The smaller size of the estimates can be explained by the larger mean and standard deviation of the treatment variable when also using the variation on the industry level. Panel B of Table 2 shows the corresponding difference-in-differences estimates with different combinations of control variables. I sequentially add more demanding controls, and the estimates remain statistically significant and sizable. Appendix Table D.11 shows the difference-in-differences estimates when also using industry variation. The estimates are very stable and statistically significant for all specifications. The specification in the sixth column is particularly interesting. In this specification, I control for District $\times$ Year fixed effects. This is only possible in this specification because the industry LBTC variable generates variation across and within each district. Hence, I am able to non-parametrically control for district-specific shocks. Even with these very demanding controls, the coefficient remains very stable and highly significant.

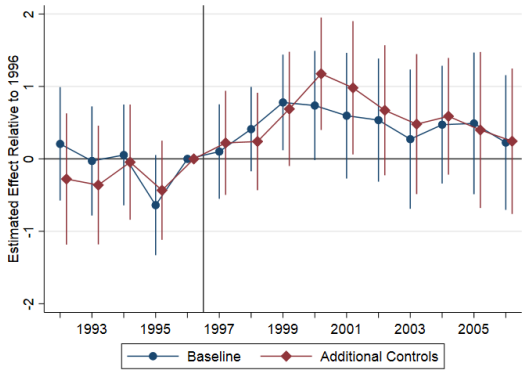
6.3 Employment response

Panel C of Figure 3 displays the effects on full-time employment. The coefficients are again estimated from the model in equation 7. In the specifications without state-year FE, employment increases after the tax cut, but drops soon after. In the medium to long run, the effect on employment is indistinguishable from zero. After adding state-year FE, employment does not increase after the tax cut and remains indistinguishable from zero for the full post-period. Table 2 also shows the DiD estimates for employment for different combinations of control variables. In the more demanding specifications, there are no detectable long-run effects over the full post-period. When also including industry-level variation, the results remain the same: the estimates are largely insignificant and close to zero. Hence, incumbent firms did not expand in response to the tax cut. Interpreting the results through the lens of the model outlined in Section 2, wage gains accompanied by only small employment responses point towards relatively inelastic labor supply (small ε^{LS}). Furthermore, the impact of the tax changes the composition of firms by allowing marginal firms to survive. These firms might be able to remain solvent in the regions with the larger tax cut, while they might exit the market in the regions with lower tax cuts. Such a change in the composition of firms might mask some of the effects on labor demand. I will investigate changes in composition more in Section 8. Nevertheless, workers in incumbent firms were able to capture part of the tax cut through higher wages. Because of increased investment, they might have become more productive. Alternatively, the German labor market institutions might have made it possible for workers to bargain and obtain a share of the tax cut.

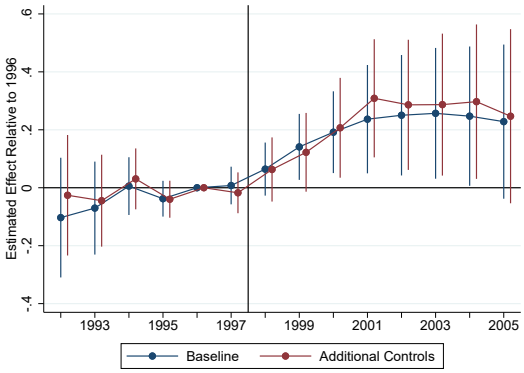
Figure 3: Dynamic effect of the tax cut on investment, wages and employment

Effect on Investment and Capital

(a) Investment

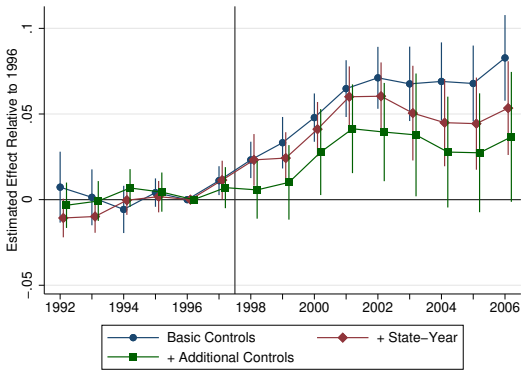


(b) Capital Stock

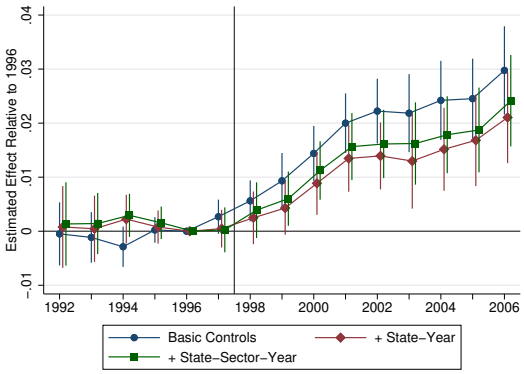


Effect on Wages

(c) Regional Variation

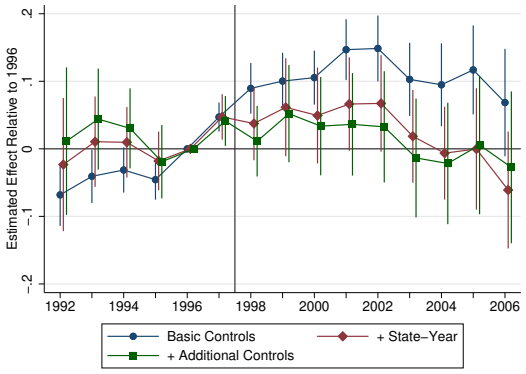


(d) Industry Variation

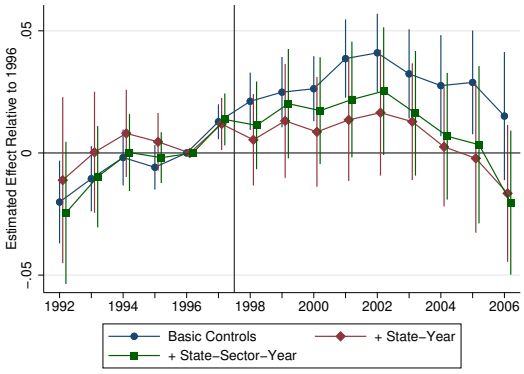


Effect on Employment

(e) Regional Variation



(f) Industry Variation



Notes: This graph plots the point estimates β_t and the corresponding 95% confidence intervals from the event study model described in Equation 7. In Panels (a) and (b), the dependent variable is investment in equipment and machines and the capital stock. The dependent variable in Panels (c) and (d) is the establishment-level average wage. The dependent variable in Panels (e) and (f) is establishment-level employment. All regressions include plant, district, and district type $\times$ year fixed effects. All regressions control for changes in the LBTP rate. Standard errors are clustered on the district level. *Source:* Own calculations using data from the Statistical Offices of the Federal States, IVS-IND (2020) and Establishment History Panel (Panels (c)-(f)).

6.4 Effects on Profits

Finally, I estimate the effect of the tax reform on gross and net profits. Table 3 reports the DiD estimates for the effect on profits. Net profits increase by about three percent in response to a one percentage point larger tax cut. Gross profits also increase by about 1.5 percent, suggesting real economic responses in line with the investment and wage responses. These effects are robust to the inclusion of state- and district-level trends. Figure D.13 also shows the event study estimates for the dynamic effect of the tax cut.

Table 2: DiD estimates investment, mean full-time wages, and full-time employment

Panel A:	Log Capital Investment			
	Total		Machinery	
Post × Δ LBTC	0.510*	0.714**	0.556*	0.756**
	(0.302)	(0.334)	(0.284)	(0.314)
Municipality FE	✓	✓	✓	✓
Establishment FE	✓	✓	✓	✓
Industry × Year FE	✓	✓	✓	✓
State × Year FE		✓		✓
Observations	9,398	9,394	9,399	9,395
Panel B:	**Labor Market**			
	Log Mean FT Wage			
Post × Δ LBTC	0.0514***	0.0448***	0.0247**	0.0446***
	(0.00988)	(0.00816)	(0.0110)	(0.00766)
	Log FT Employment			
Post × Δ LBTC	0.138***	0.0325	0.00158	0.0290
	(0.0259)	(0.0451)	(0.0499)	(0.0441)
Tax Change Controls	✓	✓	✓	✓
District FE	✓	✓	✓	✓
Establishment FE	✓	✓	✓	✓
District type FE × Year FE	✓	✓	✓	✓
Pre-Treatment Controls		✓	✓	✓
State × Year FE		✓	✓	✓
Industry × Year FE	✓	✓	✓	✓
Population Category × Year FE			✓	
Industry × State × Year FE				✓
Observations	2,462,460	2,462,460	2,462,460	2,462,460

Notes: This table displays estimates from DiD regressions of log investment (Panel A), log full-time wages and log full-time employment (Panel B) on the size of the tax cut as described in Equation 8. All regressions control for changes in the LBTP rate. LBTC refers to the local business capital tax in 1996. Standard errors in parentheses are clustered at the municipality (Panel A) or district (Panels B) level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *Source:* Own calculations based on data from the Statistical Offices of the Federal States, IVS-IND (2020) and Establishment History Panel.

Panel A in Figure D.13 shows the event study estimates for the dynamic effect on average effective tax rates (AETRs) and gross and net profits. Since the data are only available every three years and only start in 1995, I can only plot the effects for the years 1998, 2001, 2004,

Table 3: DiD estimates for the effect on profits

	Log Net Profit		Log Gross Profit	
Post × Δ LBTC	0.0345***	0.0311***	0.0139***	0.0103**
	(0.00510)	(0.00477)	(0.00437)	(0.00407)
Tax Change Controls	✓	✓	✓	✓
Municipality × Industry FE	✓	✓	✓	✓
Industry × Year FE	✓	✓	✓	✓
State × Year FE	✓		✓	
District × Year FE		✓		✓
Observations	399,615	399,615	399,615	399,615

Notes: This table displays estimates from DiD regressions of log net and gross profits on the size of the tax cut as described in Equation 8. All regressions control for changes in the LBTP rate. LBTC refers to the local business capital tax in 1996. Standard errors in parentheses are clustered at the municipality level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Local Business Tax Statistics.

and 2007, with 1995 as the base year. Net profits increase by almost four percent. This effect is very stable over time, as it is largely driven by the mechanical effect of lower taxes. Hence, the average effective tax rates decrease by almost two percentage points. Panel B shows the effect on total LBT payments. Tax payments decrease by about 13%, since the slight increase in gross profits is not enough to counteract the lower tax rates. Unfortunately, the data do not allow for an estimation of pre-trends, as no pre-1995 data are available. An alternative approach providing support for the identification strategy in this setting would be to look at post-trends. In the event studies for investment, wages, and employment, estimates stabilize after about 2001, and the variables evolve similarly for lower and higher tax locations from there on. The same is true for the event studies on profits and tax payments: the estimates are extremely stable in the post-period, and there is no indication that higher- or lower-tax municipalities evolve differently. The only difference comes from the jump between 1995 and 1998. This provides support for a causal interpretation of these event study estimates. Appendix Figure D.14 also shows the results of an alternative event study specification. This specification uses only the variation in exposure within a municipality and across industries. Therefore, it can include a municipality × year FE and ensure that the effect is not driven by municipality-specific trends. Even this much more demanding specification yields very similar results for net profits and AETRs. The effect on gross profits is very close to zero in this specification.

The effects on profits also directly link to the effects on tax revenues. For the comparison of profit and book-wealth taxation in Section 9 it is necessary to empirically estimate the effects of the two taxes on tax revenue, in addition to the effects on wages and profits. The results for the semi-elasticities of tax payments are shown in Table D.15 in the appendix. The results indicate a decline in total LBT revenues of about 13% for a one percentage point change in the LBTC. Compared to existing estimates for profit taxation, the response of profits and tax revenues to the book-wealth tax is substantially smaller, a contrast summarized in Table 4.

6.5 Empirical Magnitudes and Relation to the Literature

This section summarizes the empirical effects of the abolition of the book-wealth component of the local business tax and relates the estimated magnitudes to the existing literature on profit taxation. Table 4 provides a consolidated comparison across outcomes, expressed in terms that are comparable to standard estimates in the corporate-tax literature.

Across all outcomes, the empirical responses to the book-wealth tax are economically large in terms of raw semi-elasticities. However, direct comparisons of statutory semi-elasticities are not informative because a one percentage point change in the book-wealth tax implies a substantially larger change in the user cost of capital than a one percentage point change in the profit tax. Once the estimates are scaled by the implied change in the user cost of capital, the investment and wage responses to book-wealth taxation are broadly in line with existing estimates for profit taxation.

For investment, the CoC-adjusted semi-elasticity of approximately 4.5 lies within the range of recent estimates for profit taxation, which typically fall between 3 and 5. This places the investment response to book-wealth taxation at the upper end of the distribution but well within the range documented in the literature. The strong response reflects the broad tax base of the book-wealth tax, which mechanically amplifies the effect of statutory rate changes on the user cost of capital. For wages, the CoC-adjusted elasticities range from 0.2 to 0.4, which is similar to the estimates reported by Fuest et al. (2018) and Gstrein et al. (2025). Despite the absence of long-run employment effects, workers capture a meaningful share of the gains from the tax cut through higher wages, consistent with partial shifting of capital taxes onto labor.

In contrast, the responses of profits and tax revenue differ markedly between book-wealth and profit taxation. While the profit tax elasticities reported in the literature are large—reflecting the sensitivity of reported profits and tax bases to profit taxation—the corresponding elasticities for the book-wealth tax are substantially smaller. Gross profits respond only modestly, and the elasticity of tax revenue with respect to the book-wealth tax is below one in absolute value. This pattern reflects the fact that the book-wealth tax primarily distorts the capital stock and production decisions, rather than directly taxing infra-marginal rents.

Taken together, the estimates highlight a key distinction between stock-based and flow-based capital taxes. Book-wealth taxation generates strong intensive-margin responses in investment and wages but comparatively weak tax revenue feedback effects, whereas profit taxation leads to larger tax-base and revenue elasticities. These differences in empirical magnitudes are central for the welfare comparison conducted in Section 9, which maps the estimated wage, profit, and revenue elasticities into the marginal welfare cost of the two tax instruments.

Table 4: Comparison of estimates to the literature

	Wealth tax	**Profit tax estimates from the literature**		
Outcome	CoC-adjusted	Estimate	Type	Sources
Investment	4.5	3 to 5	Semi-Elasticity	Ohrn (2018); Link et al. (2024) Zwick and Mahon (2017)
Wages	0.2 to 0.4	0.23 to 0.5	Elasticity	Fuest et al. (2018); Gstrein et al. (2025)
Profits	0.2 to 0.26	1.5 to 2.3	Elasticity	Suárez Serrato and Zidar (2016, 2024); Gstrein et al. (2025)
Tax Revenue	0.94	3.1 to 3.9	Elasticity	Suárez Serrato and Zidar (2016, 2024); Gstrein et al. (2025)

Notes: This table compares the estimated responses to the book-wealth component of the German local business tax to corresponding estimates for profit taxation from the literature. For the wealth tax, reported magnitudes are scaled by the implied change in the user cost of capital (CoC) associated with a one percentage point change in the book-wealth tax rate, as described in Appendix A.8. This adjustment makes the estimates comparable to standard profit-tax elasticities. Reported ranges for profit taxation summarize estimates from the cited studies. Investment responses are reported as semi-elasticities, while wage, profit, and tax-revenue responses are reported as elasticities with respect to the net-of-tax rate. All (semi-)elasticities are reported in absolute value. *Source:* Own calculations based on data from the Statistical Offices of the Federal States, the Establishment History Panel and Local Business Tax Statistics.

7 Heterogeneity and Robustness

This section studies how the effects of the tax reform vary across firms and provides additional evidence supporting the identifying assumptions. Guided by the conceptual framework in Section 2, I first examine heterogeneity in capital responses across firms with different profitability, financing conditions, and demand environments. I then analyze heterogeneity in wage responses. Finally, I present a set of placebo and robustness tests.

7.1 Heterogeneity - Capital Response

To bring the theoretical predictions to the data, I exploit a unique module of the ifo Investment Survey that is fielded each autumn to roughly 2,000 German manufacturing firms. In this module, firms are asked to evaluate how their investment activity was affected by different factors.[15]

For every factor, the respondent chooses a point on a 5–point Likert scale that ranges from strong inducement (value 1) to strong negative influence (value 5). The four factors that matter most for the present study are: (i) the firm's financing situation, (ii) its profitability, (iii) demand conditions, and (iv) the domestic economic policy environment.

Coding of treatment groups. For each factor, I sort firms into three equally sized categories according to their average responses in the years before treatment. I then interact these dummies with the size of the plant-specific book-wealth tax cut $\Delta\tau_k$ and, separately, with the size of the profit-tax change $\Delta\tau_p$ in the extended event-study specification (Equation 9). This specification makes it possible to jointly estimate the effects of profit and book-wealth taxa-

[15]The exact question reads: "Our domestic investment activities were - or will be - **positively** or **negatively** influenced in the current (next) year by the following factors."

tion. The coefficients then trace out the dynamic response of the capital stock for groups of firms that ex ante reported a favorable, neutral, or unfavorable assessment of the respective investment driver.

Link to the conceptual framework. In the model sketched in Section 2, the capital tax τ_c^k shifts the cost schedule and therefore bites harder when resources are scarce, whereas the profit tax τ_c^p lowers expected returns and is therefore more impactful when upside potential is large. Profitability and demand, which raise the marginal return, should thus amplify the τ_c^p elasticity but be less important for the τ_c^k elasticity.

Restricted access to finance or a weak internal liquidity position have two different effects in the model. First, they magnify the impact of the taxes on the cost of capital $\tilde{\rho}_c$, which increases the efficiency cost of τ_c^k relatively more, as τ_c^k only works through $\tilde{\rho}_c$ while τ_c^p also partly works through the direct effect on profits. Second, the taxes also affect the tightness of the financial constraint through their impact on net retained earnings. Here, τ_c^p is particularly harmful for high-profitability firms.

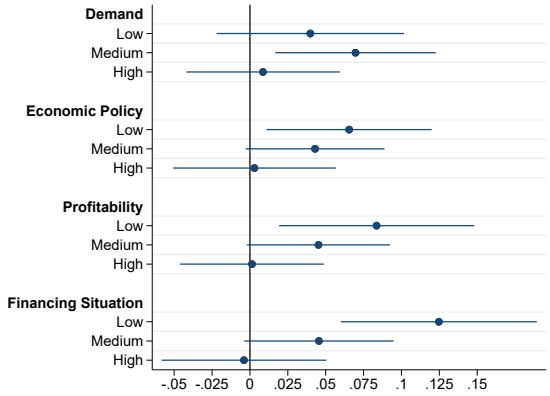
Empirical results: Panels (a) and (b) in Figure 4 confirm these predictions. Firms that describe their profitability as high display almost twice the capital–stock elasticity with respect to the profit tax than firms in the low group, while their response to the book–wealth tax is negligible. The pattern is exactly reversed for the financing question: plants that report a tight financing situation increase their capital stock by roughly 12 percent after a one-percentage-point cut of τ_c^k, whereas their reaction to the profit-tax change is muted. Firms that report a good financing situation respond more strongly to the profit tax, while their response to the book-wealth tax is close to zero.

The results are similar for the remaining two survey dimensions. When plants perceive demand to be strong, they are sensitive to the profit tax but largely indifferent to the book-wealth tax, under weak demand, the opposite holds. A good economic policy environment, finally, might make the profit tax more salient and the LBTC tax less so, which might be related to how the two taxes treat upside and downside risk asymmetrically. Panels (a) and (b) of Figure D.15 show how the effects vary by firm size. The effects do not vary strongly by size or growth rates. Hence it appears that the stark heterogeneities in Figure 4 are not merely driven by differences between larger and smaller (or growing and shrinking) firms.

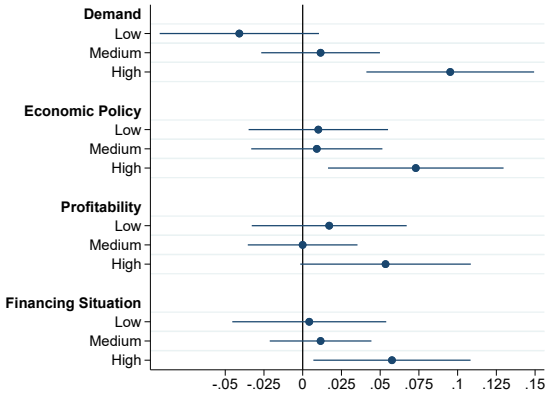
Overall, the evidence indicates that the capital-stock elasticities vary systematically with the economic primitives identified by the model. High-return, well-capitalized plants respond to the profit tax. Low-profit, finance-constrained, and risk-exposed plants respond to the book-wealth tax. These patterns show that seemingly similar taxes lead to very different margins of adjustment, and therefore to effects in very different subsets of the firm distribution.

Figure 4: Heterogeneity of Effect on Capital Stock

(a) Book-wealth tax



(b) Profit Tax



Notes: This graph plots the point estimates β_t interacted with heterogeneity dummies and the corresponding 95% confidence intervals from the event study model described in Equation 7. The dependent variable is always the firm level capital stock. In Panels (a) and (b), firms are split into groups according to their financing situation, profitability, demand situation, and economic policy environment. All regressions include plant, municipality, and state × year fixed effects. Standard errors are clustered on the district level.*Source:* Own calculations based on data from the Statistical Offices of the Federal States, IVS-IND (2020).

Taken together, the evidence indicates that the capital-stock elasticities vary systematically with the economic primitives identified by the model. High-return, well-capitalized plants respond to the profit tax. Low-profit, finance-constrained, and risk-exposed plants respond to the book-wealth tax. These patterns show that seemingly similar taxes lead to very different margins of adjustment, and therefore to effects in very different subsets of the firm distribution.

7.2 Heterogeneity - Wage Response

I next examine heterogeneity in wage responses along three dimensions: plant size, wage level, and productivity.[16] Table D.6 shows that wage gains are concentrated in smaller establishments and in plants with higher wages and productivity. The stronger response in smaller firms is consistent with financial constraints: these firms may benefit disproportionately from the relaxation of liquidity pressures following the tax cut. The larger wage response in more productive plants is less expected and may partly reflect compositional effects. In particular, the tax reform increased entry and survival of lower-productivity firms, which could mechanically dampen observed wage growth at the lower end of the distribution. I explore these compositional channels in more detail in Section 8.

Additional results indicate that wage effects are similar for single-plant and multi-plant firms

[16]The social security data include measures for plant-specific wage premia. These premia are estimated following the methodology developed by Abowd et al. (1999) and are consistent with total factor productivity (TFP) in a range of different models (Dauth et al., 2022).

(Appendix Table D.10), and that, within establishments, wage gains are larger at the top of the wage distribution. Appendix Table D.8 and Appendix Figure D.9 document that the effects are strongest at the 75th percentile, while effects at the 25th percentile are small and statistically insignificant. This suggests that within each firm, higher-wage workers have benefited more from the tax cut. This could again be due to the higher bargaining power of these workers. For example, Risch (2024) finds that a tax change for business owners was passed on to workers, but only workers in the top 30% of the earnings distribution. The finding contrasts with Fuest et al. (2018) who find that the effect of an LBT change is smaller for higher wage workers than for lower wage workers.[17]

Figure D.11 shows that the results are very similar when restricting the selection of states that are included in the analysis [18] The main analysis assumes that the effect of the tax cut is linear in the size of the tax cut. In Figure D.12, I show how the effect of the tax cut varies by the size of the tax cut. I estimate the event study model with indicator variables for the size of the tax cut interacted with the year fixed effects. As expected, the effects are large for the larger tax cuts. This provides evidence that the assumption of linearity is likely unproblematic.

7.3 Validity Tests

This subsection provides additional evidence supporting the identifying assumption that, absent the reform, firms in high- and low-tax municipalities would have followed parallel trends. The event study graphs in Figure 3 indicated that the higher and lower tax regions developed similarly before the tax cuts. This makes it plausible that these areas would also have continued to develop similarly if the tax reform had not happened. This assumption is untestable, but I exploit two placebo groups that were not affected by the abolition of the book-wealth tax: firms in sectors exempt from the local business tax[19] and firms located in East Germany, where the book-wealth component was never implemented.[20] For both groups, I compute

[17]These results also indicate that the estimates are robust to using the median wage instead of the mean wage. The censoring of wages at the contribution limit seems to have no substantial impact (as it does not affect median wages). Appendix Figure D.9 also shows the corresponding point estimates of the dynamic DiD specification when using the 25th, 50th, and 75th percentile wages as dependent variables. The dynamics of the wage changes are very similar to the main specification with mean wages.

[18]The tax setting behavior varies across states. In particular, North Rhine-Westphalia (NRW), the most populous state, generally has the highest tax rates. Figure D.11 shows that the point estimates for a sample restricted to the state of NRW are the same as for the overall sample or for a sample that drops all observations from NRW. Hence, the results are not driven by some peculiarity of NRW.

[19]Certain high-skilled services such as lawyers, doctors, accountants, or journalists, the public sector and agriculture.

[20]While the LBT on profits was implemented the same way in East Germany, the introduction of the LBT on the capital stock was delayed after reunification and then never implemented (more details in Section 3.1). Hence, for these firms, nothing changed in the 1998 tax reform. Because of the design of the LBT, I can still calculate a hypothetical LBTC rate for each of those non-liable firms. The East German municipalities still set an LSF for the LBTP that can be used to calculate a counterfactual LBTC rate if the LBTC was actually implemented in East

hypothetical exposure measures and estimate the same event-study specifications as in the baseline analysis.

Figure D.8 in the Appendix shows that for both placebo groups, the estimated effects on wages and employment are small, statistically insignificant, and exhibit no systematic post-reform divergence between higher and lower tax locations. In contrast, the corresponding estimates for liable firms show clear and persistent effects. Table D.12 confirms these patterns in difference-in-differences specifications. Finally, I conduct two additional placebo tests. First, I examine building investment, which was not subject to the book-wealth tax, and find no significant response. Second, I re-estimate the investment effects for East German firms and find no detectable impact. These results indicate that the baseline estimates are not driven by general investment trends or macroeconomic shocks and provide further support for a causal interpretation of the findings.

8 Effects on the Regional Level

This section moves from incumbent plants to regional equilibrium outcomes. Aggregating the social-security data to the district level, I show that the book-wealth tax cut increased entry, especially among low-productivity plants, reducing average productivity, while employment remains largely unchanged. I first document regional effects on wages and employment, then study extensive-margin responses, and finally the productivity composition.

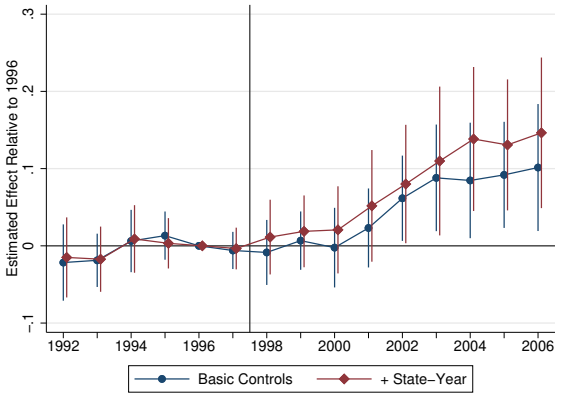
Figure 5 shows the results of the event study specification on the regional level. Panels A.1 and A.2 show that wages rise modestly while employment remains close to zero at the district level, mirroring the establishment-level results. Next, we extend the results by investigating the effect on the entry of new plants and changes in productivity. Panel B.1 displays the effect of the tax cut on the number of new plants being opened in each district. Once again, pretrends are flat, suggesting that lower- and higher-tax regions developed similarly before the tax cut. After the tax cut, the number of newly entering plants increases quickly and peaks at a 20 percent higher level after about four years. It then remains elevated at that level. Hence, a larger book-wealth tax cut leads to increases in entry.

Panel B.2 displays the effect on employment-weighted average plant productivity (measured by AKM firm fixed effects). Before the tax cut, the trends of higher and lower tax regions are parallel. After the tax cut, productivity decreases in the districts that experienced a larger tax cut. The average AKM wage premium decreases by about 2.5 to 5 log points. Table 5 displays the corresponding DiD estimates on the regional level. Panel B shows how the effect of the tax

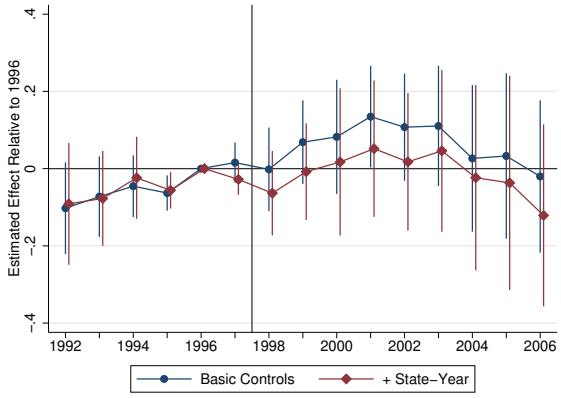
Germany. This makes it possible to estimate β_t from Equation 7 also for East Germany and for non-liable firms in West Germany.

Figure 5: Dynamic effect of the tax cut on the regional level

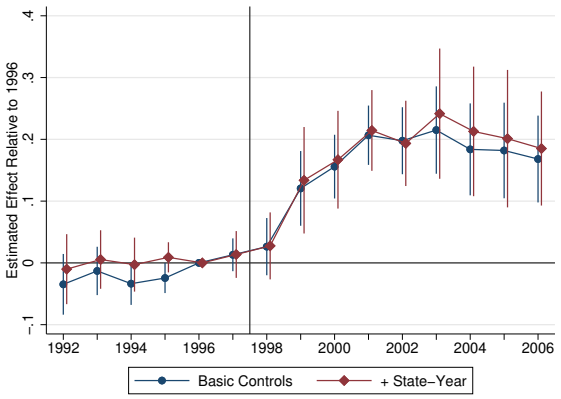
(a) Panel A.1: Effect on Wages



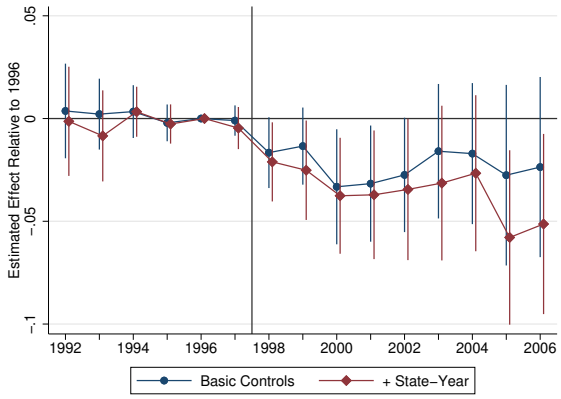
(b) Panel A.2: Effect on Employment



(c) Panel B.1: Effect on Entry



(d) Panel B.2: Effect on Productivity



Data: Statistical Offices of the Federal States and Establishment History Panel. *Notes:* This graph plots the point estimates β_t and the corresponding 95% confidence intervals from the event study model described in Equation 7. All regressions include plant, district, and district type × year fixed effects. All regressions control for changes in the LBTP rate. The estimates in red additionally include state × year fixed effects. Regressions are weighted by average district employment. Standard errors are clustered on the district level.

cut on entry varied across the productivity distribution. While entry increased by more than 30 percent for lower productivity plants (first and second quintiles of the TFP distribution), it increased much less (or even decreased) for higher productivity plants. This suggests that book-wealth taxation shapes the productivity composition of plants. This pattern matches the selection mechanism in Guvenen et al. (2023, 2024): a tax on the capital stock is relatively more distortionary for low-profitability entrepreneurs, shifting entry toward the lower end of the productivity distribution when the tax is reduced.

Table 5: DiD on the Regional Level

Panel A:	Labor Market				
	Employment	Wage	Entry	Exit	Productivity
Post × Δ LBTC	0.0332	0.0598**	0.132***	0.0500	-0.0254**
	(0.0616)	(0.0295)	(0.0270)	(0.0478)	(0.0122)
Panel B:	Entry by Productivity				
	Low	Mid-Low	Mid	Mid-High	High
Post × Δ LBTC	0.360***	0.318***	0.0946***	-0.0507	0.121***
	(0.102)	(0.104)	(0.0306)	(0.0659)	(0.0438)
Tax Change Controls	✓	✓	✓	✓	✓
District FE	✓	✓	✓	✓	✓
District type FE × Year FE	✓	✓	✓	✓	✓
State × Year FE	✓	✓	✓	✓	✓
Observations	4845	4845	4845	4845	4845

Data: Statistical Offices of the Federal States and Establishment History Panel. *Notes:* This table displays estimates from DiD regressions as described in Equation 8. Each estimate comes from a different specification. The dependent variables in Panel A are log employment, log wages, the log number of plants entering and exiting, and productivity. The dependent variables in Panel B are the log number of plants entering by productivity quintile. All regressions control for changes in the LBTP rate and the controls detailed below the coefficient estimates. LBTC refers to the local business capital tax in 1996. Standard errors in parentheses are clustered at the district level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Appendix Table D.17 provides some further evidence. It shows the effects of the LBTC tax cut, but also the effects of changes in the log net of tax rate of the LBTP. Interestingly, the effects on productivity go in opposite directions. As mentioned above, the LBTC tax cuts led to lower average productivity. In contrast, the higher log net of tax rate for the profit component leads to increased productivity. When looking at entry by productivity group, it becomes clear that a different composition of entrants is not driving this result (as those effects are insignificant). Instead, a lower profit tax makes it easier for high-productivity firms to accumulate more capital and grow quickly, which increases the employment-weighted productivity. This provides further support for the mechanism described in the model by Guvenen et al. (2023). In particular, it shows that lower book-wealth taxes lead to increased entry (mostly by lower productivity firms), while lower profit taxes allow more productive firms to grow more quickly. This highlights the different implications of both taxes for aggregate productivity.

9 Incidence and Welfare

This section combines the expressions derived in Section 2 with the empirical incidence estimates to compare the marginal welfare cost (MWC) of raising revenue through the profit tax τ_c^p versus the book-wealth (capital-stock) tax τ_c^k. Appendix **??** provides the analytical derivations. Here, I (i) describe how the required elasticities are obtained and mapped into the welfare formulas, (ii) explain the implementation, and (iii) present the empirical welfare comparison and its sensitivity to key inputs.

Both instruments raise revenue but affect wages, profits, and the tax base through different margins. A profit tax primarily reduces the net return to entrepreneurship and therefore generates comparatively large profit responses. A book-wealth tax increases the marginal cost of holding any unit of capital and mainly operates through the user cost of capital, generating stronger distortions of the capital stock and, in turn, wages. These differences matter because the MWC aggregates the incidence on workers and firm owners according to the social welfare weight placed on owners, $\theta \in [0, 1]$:

$$\mathcal{W}_T(\theta) = -\frac{(1-\theta)\,\dot{w}^T + \theta\,\dot{\pi}^T}{\dot{R}_T^{tot}}, \tag{10}$$

where $\dot{w}^T$, $\dot{\pi}^T$, and $\dot{R}_T^{tot}$ denote semi-elasticities of wages, profits, and total tax revenue with respect to tax $T \in \{p, k\}$.[21] This formula, relying solely on the effect on wages, profits, and revenues, is quite similar to recent formulas for optimal corporate taxation derived by Swonder and Vergara (2024, 2025).

9.1 Elasticities and calibration

The welfare comparison requires estimates of the wage elasticity, the profit elasticity, the revenue elasticity, and the value of θ. For the capital-stock tax τ_c^k, I estimate the relevant semi-elasticities in Section 6. Table 2 implies wage semi-elasticities between -2.5 and -5 (equivalently, wage elasticities between -0.019 and -0.037 when scaled by the average LBTC rate of 0.74%). Table 3 implies profit elasticities between -0.022 and -0.026 (semi-elasticities between -3 and -3.5). Finally, the reform reduced total local business tax payments: the revenue semi-elasticity with respect to τ_c^k is $\dot{R}_k^{tot} \approx -13$ (elasticity ≈ -0.096), as shown in Table D.15 and Figure D.13.

For τ_c^p, I draw on existing evidence for wages and profits and use my setting to benchmark the profit response. The results of Fuest et al. (2018) and Gstrein et al. (2025) show wage

[21] Throughout, $\dot{x}^T \equiv \partial \log x / \partial T$ and $\dot{R}_T^{tot} \equiv \partial \log R^{tot} / \partial T$. The minus sign in (10) ensures that $\mathcal{W}_T(\theta)$ is interpreted as a welfare cost per euro of additional revenue.

elasticities around 0.5. For profits, Gstrein et al. (2025) find elasticities in the range 1.5 to 2.3. My own difference-in-differences estimate in Table D.16 yields profit elasticities between 1.6 and 1.8, in line with these findings and consistent with Suárez Serrato and Zidar (2016). The full set of empirical ranges is summarized in Table A.2, and the mapping between parameters and calibration exercises is shown in Table A.1. In Appendix A.6.2 I also show an alternative approach of quantifying the effect on profits based on employment, wage, and productivity elasticities. The approach produces very similar results to the reduced form estimates.

9.2 Implementation

I implement the welfare comparison in two complementary exercises. First, I use the structural expressions from Section 2 to illustrate how the MWC of each instrument varies with the key primitives that govern incidence and behavioral responses (e.g., factor shares, product-market competition, and mobility). This step is purely illustrative: it does not use the reduced-form incidence estimates and instead varies parameters such as γ, δ, ε^{PD}, σ^{F}, σ^{W}, ε^{LS}, ρ, and κ_k over empirically plausible ranges. Appendix A.6.1 and Figures A.1–A.2 summarize the resulting comparative statics. Second, I replace the theoretical incidence objects with the empirical semi-elasticities for wages, profits, and revenue documented above. At this stage, the welfare calculation depends only on the baseline tax-system parameters (the statutory rates τ_c^p and τ_c^k and deductibility κ_k) and on the distributional weight θ, in addition to the empirical elasticities. This yields a transparent reduced-form welfare comparison that does not require committing to the full set of structural parameters.

9.3 Results

The central results of the welfare comparison are shown in Figure 6. In the data, the two welfare costs cross at approximately $\theta \approx 0.45$. When θ is below this level (greater weight on workers), the profit tax produces lower welfare costs. When θ is higher, the capital-stock tax becomes relatively more efficient. This pattern is consistent with the use-it-or-lose-it mechanism (Guvenen et al., 2023), which increases the social value of relieving owners' financial constraints through lower τ_c^p. Nevertheless, even with this channel, the distortion to capital created by τ_c^k remains substantial, limiting the extent to which the mechanism can overturn the dominance of τ_c^p.

Varying the baseline LBTC rate has almost no effect on the welfare ranking. Over the entire range of values considered, the marginal welfare cost of the capital-stock tax remains above that of the profit tax. This reflects the fact that τ_c^k acts directly on the user cost of capital and therefore generates sizable distortions even at low levels. Varying the baseline τ_c^p has substantial implications for the welfare comparison. As τ_c^p rises, the profit tax becomes increasingly

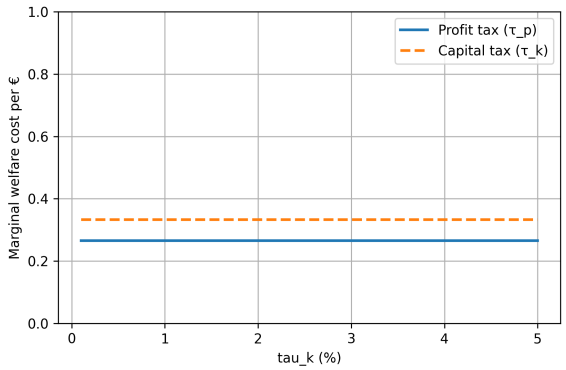
distortionary. For values around 22%, the two instruments generate almost identical welfare costs, and at higher values the capital-stock tax becomes preferable. This suggests that if revenue needs are sufficiently large and the profit tax is already high, shifting some of the burden toward the capital-stock tax can be efficient.

Figure 7 assesses sensitivity to the empirical inputs by varying $\dot{w}^p$, $\dot{w}^k$, $\dot{\pi}^p$, $\dot{\pi}^k$, and $\dot{R}_k^{tot}$ over the ranges in Table A.2. The qualitative conclusion is stable: across most empirically plausible ranges, the profit tax has the lower marginal welfare cost. The ranking flips only when the wage response to τ_c^k is close to zero or the profit response to τ_c^p is sufficiently large.

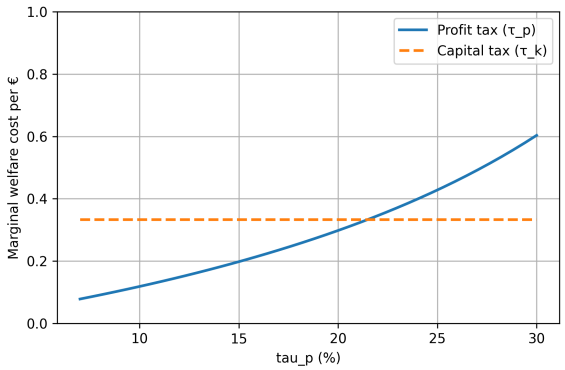
Overall, the welfare costs of the two taxes differ systematically, and both could be efficient under certain theoretical primitives. In the German setting studied here, however, the profit tax emerges as the more efficient instrument for raising marginal revenue. The model provides a transparent link between reduced-form elasticities and welfare outcomes, so that different elasticities, different tax-system parameters such as κ_k, or different distributional weights can overturn the ranking in other settings. An example is the environment emphasized by Guvenen et al. (2023), in which firm profits are extremely important for relaxing financing constraints and increasing profitability. The empirical elasticities I estimate do not support this view in the German setting. The framework is intentionally transparent: different empirical incidence estimates, different tax-system parameters such as κ_k, or different distributional weights can overturn the ranking in other environments.

Figure 6: Marginal Welfare Cost of τ_c^p and τ_c^k: Different Parameters

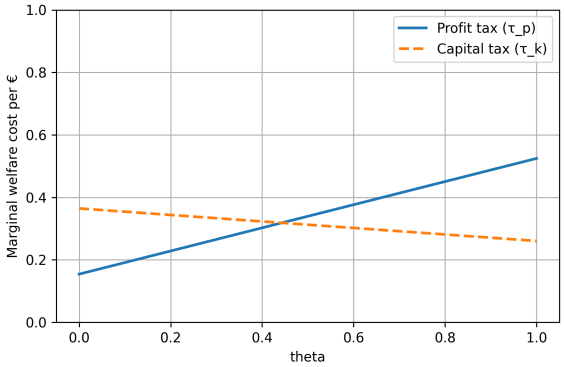
(a) τ_c^k



(b) τ_c^p



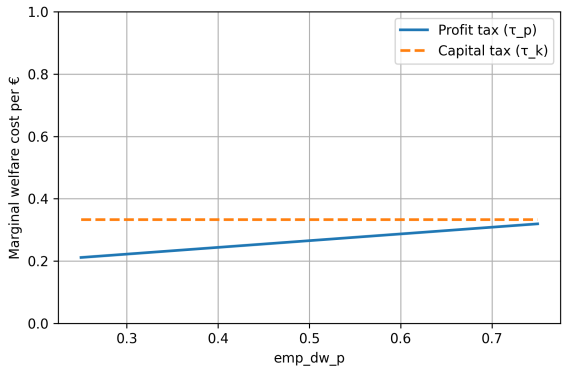
(c) θ



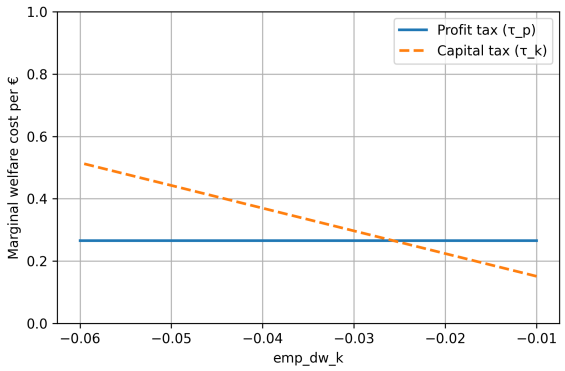
This figure shows the marginal welfare cost per euro of revenue for the profit tax τ_c^p (solid line) and the capital-stock tax τ_c^k (dashed line) as key baseline parameters vary. Panel (a) varies the statutory LBTC rate τ_c^k, and Panel (b) varies the profit-tax rate τ_c^p. Panel (c) varies the distributional weight θ placed on firm owners in equation (10). The comparison uses the fully empirical incidence estimates and revenue elasticities from Section 9. Higher values indicate higher marginal welfare cost.

Figure 7: Marginal Welfare Cost of τ_c^p and τ_c^k: Different Elasticities

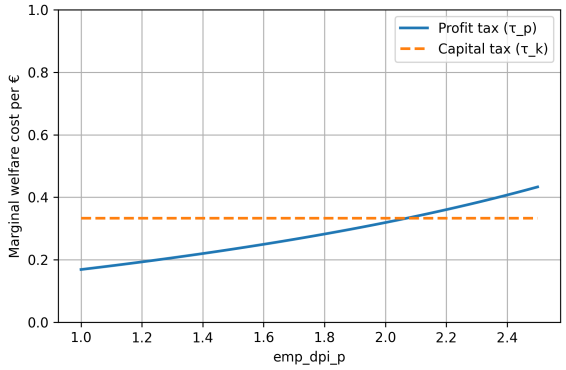
(a) $\dot{w}^p$



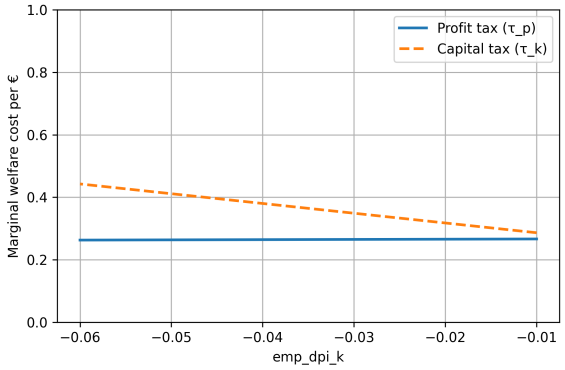
(b) $\dot{w}^k$



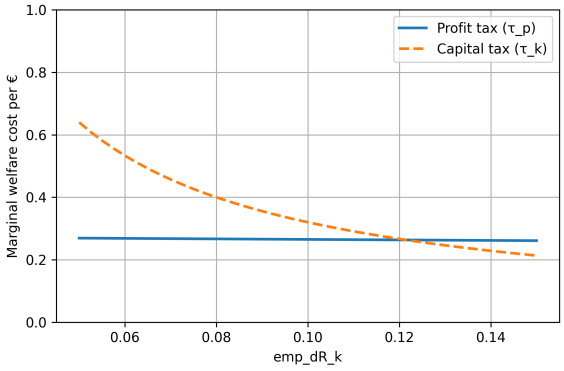
(c) $\dot{\pi}^p$



(d) $\dot{\pi}^k$



(e) $\dot{R}^k$



This figure reports the marginal welfare cost per euro of revenue for the profit tax τ_c^p (solid line) and the capital-stock tax τ_c^k (dashed line) as the empirical incidence elasticities are varied over the ranges documented in Section 9. Panels (a) and (b) vary the wage elasticities $\dot{w}^p$ and $\dot{w}^k$, respectively. Panels (c) and (d) vary the profit elasticities $\dot{\pi}^p$ and $\dot{\pi}^k$. Panel (e) varies the revenue elasticity $\dot{R}^k$. The exercise illustrates how sensitive the welfare comparison is to alternative empirical estimates of incidence. Across most empirically plausible ranges, the profit tax remains the more efficient instrument.

10 Conclusion

This chapter studies the real effects of book-value wealth taxation using a unique reform of the German local business tax that eliminated a tax on firms' book-value capital. Exploiting cross-municipality variation in the size of the resulting tax cut, I estimate its impact on investment, wages, employment, profits, and firm composition dynamics. Firms more exposed to the reform increased investment in machinery and equipment and raised wages, while there is no robust evidence of long-run employment effects.

Moving from firm-level outcomes to regional equilibrium effects reveals important compositional responses. The tax cut increased firm entry, primarily among low-productivity plants, leading to a decline in average productivity in more exposed districts. In contrast, lower profit taxation is associated with higher productivity, consistent with faster expansion of high-productivity firms. These findings show that stock- and flow-based capital taxes affect different margins of adjustment and can shape the productivity composition of active firms in opposite directions.

To assess the welfare implications, I combine the reduced-form incidence estimates with a simple theoretical framework that delivers transparent sufficient-statistics expressions for the marginal welfare cost of taxation. The empirical welfare comparison indicates that, under empirically plausible elasticities and tax rates, profit taxation is generally the more efficient instrument for raising revenue. The ranking reverses only under extreme assumptions, such as very high welfare weights on firm owners or very high pre-existing profit tax rates, reflecting the strong distortions that stock-based taxes impose on capital accumulation. These findings are directly relevant for contemporary debates on wealth taxation, as business wealth is typically assessed using accounting-based or formula-based measures rather than market values. Understanding how such taxes operate at the firm and regional level is therefore crucial for designing capital tax systems that balance revenue needs with efficiency and growth.

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A Theoretical Background

This appendix lays out the baseline spatial-equilibrium environment used in the paper. The setup follows the structure of Suárez Serrato and Zidar (2016) but (i) removes the residential real-estate block and (ii) introduces a modular user cost of capital that nests alternative tax designs and financial frictions. Throughout, locations are indexed by c, firms/establishments by j, and small changes are expressed in (semi-)elasticities when convenient.

A.1 Geography, markets, and timing

Places and markets. There is a finite set of locations $c \in \mathcal{C}$. Goods markets and the supply of financial capital are national, the labor market is local. Firms choose location and scale, workers choose their location. Housing is omitted, so there is no feedback from local residential rents to labor supply as in Suárez Serrato and Zidar (2016).

Timing. At the beginning of the period, policy parameters $(\tau_{b,c}, \tau_{k,c})$ and local fundamentals are observed. Potential entrants draw idiosyncratic profitability/location shocks and decide where to locate; incumbent and entering establishments choose inputs, taking local factor prices as given. Workers choose locations taking the wage schedule as given. Equilibrium wages clear local labor markets.

A.2 Workers

Preferences and location choice. A unit mass of workers supplies one unit of labor inelastically. Worker i's indirect utility from living/working in location c is

$$U_{ic} \;=\; \ln w_c \;+\; \varepsilon_{ic}, \tag{A.1}$$

where w_c is the local wage and ε_{ic} is an idiosyncratic taste shock that is i.i.d. across (i, c) and distributed Type I Extreme Value with scale parameter $\sigma^W > 0$. With this logit structure, the fraction of workers who choose location c is

$$L_c^S \;=\; \frac{\exp\!\left(\frac{\ln w_c}{\sigma^W}\right)}{\sum_{c' \in \mathcal{C}} \exp\!\left(\frac{\ln w_{c'}}{\sigma^W}\right)}. \tag{A.2}$$

Local labor-supply elasticity (no housing). Holding wages in other locations fixed, the elasticity of local labor supply is

$$\varepsilon_{LS} \;\equiv\; \frac{\partial \ln L_c^S}{\partial \ln w_c} \;=\; \frac{1}{\sigma^W}. \tag{A.3}$$

This is the effective labor-supply elasticity when housing is absent; all labor-supply reallocation operates through idiosyncratic mobility tastes.

A.3 Establishment Problem

Establishments j are monopolistically competitive and have productivity B_{jc} that varies across locations. Establishments combine labor l_{jc}, capital k_{jc}, commercial real estate g_{jc}, and a bundle of intermediate goods M_{jc} to produce output y_{jc} with the following technology:

$$y_{jc} = B_{jc} l_{jc}^{\gamma} k_{jc}^{\delta} M_{jc}^{1-\gamma-\delta}$$

where $M_{jc} \equiv \left(\int_{v \in J} (x_{v,jc})^{\frac{\varepsilon^{PD}}{\varepsilon^{PD}+1}} dv \right)^{\frac{\varepsilon^{PD}}{\varepsilon^{PD}+1}}$ is establishment j 's bundle of goods of varieties v. Goods of all varieties can serve as either final goods for household consumption or as intermediate inputs for establishment production.

In a given location c, establishments maximize profits over inputs and prices p_{jc} while facing a local wage w_c, local rents for commercial real estate r_c^G, national interest rates ρ, national prices p_v of each variety v, local business taxes τ_c^p, local capital tax τ_c^k and deductibility share κ_k subject to the production technology in equation (3) :

$$\pi_{jc} = \max_{l_{jc}, k_{jc}, x_{v,jc}, p_{jc}} (1-\tau_c^p) \left(p_{jc} y_{jc} - w_c l_{jc} - \int_{v \in J} p_v x_{v,jc} dv \right) - \left((1-\kappa_k \tau_c^p)\rho + (1-\kappa_k)\tau_c^k \right) k_{jc},$$

One can show that demand takes the following form:

$$y_{ijc} = I \left(\frac{p_{ijc}}{P} \right)^{\varepsilon^{PD}}$$

where I is the sum of national real income not spent on housing and intermediate good demand from establishments, and P is the price level. Using this expression and substituting it into the profit expression gives:

$$\pi_{ijc} = (1-\tau_c^p) \left(y_{ijc}^{\frac{1}{\mu}} I^{\left(\frac{1}{\varepsilon^{PD}}\right)} - w_c l_{ijc} - \int_{v \in J} p_v x_{v,ijc} dv \right) - \left((1-\kappa_k \tau_c^p)\rho + (1-\kappa_k)\tau_c^k \right) k_{ijc}$$

where the markup $\mu \equiv \left[\frac{1}{\varepsilon^{PD}} + 1 \right]^{-1}$ is constant due to CES demand.

A.3.1 Deriving FOCs for Capital, Labor and Commercial Real Estate

As in the main text, we abstract from formula apportionment. Suárez Serrato and Zidar (2016) outline how formula apportionment affects the derivations and also show that the impacts are relatively small.

Labor:

$$\frac{y_{ijc}^{\frac{1}{\mu}}}{\mu}\frac{\gamma}{l_{ijc}}I^{(\frac{1}{\varepsilon}PD)} = \underbrace{w_c}_{\tilde{w}_c} \tag{A.4}$$

Capital:

$$\frac{y_{ijc}^{\frac{1}{\mu}}}{\mu}\frac{\delta}{k_{ijc}}I^{(\frac{1}{\varepsilon}PD)} = \underbrace{\frac{(1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k}{1-\tau_c^p}}_{\equiv\tilde{\rho}_c}, \tag{A.5}$$

A.3.2 Deriving Input Factor Demands

We take ratios of the FOCs, then plug them into the production function to obtain expressions for input demand that only depend on output and prices.

Ratios:

$$\frac{k_{ijc}}{l_{ijc}} = \frac{\tilde{w}_c}{\tilde{\rho}_c}\frac{\delta}{\gamma} \quad \frac{M_{ijc}}{l_{ijc}} = \tilde{w}_c\frac{1-\gamma-\delta}{\gamma}$$

Derive input demand for Labor by substituting the ratios into the production function:

$$y_{ijc} = B_{ijc}l_{ijc}^{\gamma}\left(\frac{\tilde{w}_c}{\tilde{\rho}_c}\frac{\delta}{\gamma}l_{ijc}\right)^{\delta}\left(\frac{\tilde{w}_c}{1}\frac{1-\gamma-\delta}{\gamma}l_{ijc}\right)^{1-\gamma-\delta}$$

Rearrange:

$$l_{ijc} = \frac{y_{ijc}}{B_{ijc}}\left[\tilde{w}_c^{\gamma-1}\tilde{\rho}_c^{\delta}\gamma^{1-\gamma}\delta^{-\delta}(1-\gamma-\delta)^{-(1-\gamma-\delta)}\right]$$

For capital:

$$k_{ijc} = \frac{y_{ijc}}{B_{ijc}}\left[\tilde{w}_c^{\gamma}\tilde{\rho}_c^{\delta-1}\gamma^{-\gamma}\delta^{1-\delta}(1-\gamma-\delta)^{-(1-\gamma-\delta)}\right]$$

For intermediate goods:

$$m_{ijc} = \frac{y_{ijc}}{B_{ijc}}\left[\tilde{w}_c^{\gamma}\tilde{\rho}_c^{\delta}\gamma^{-\gamma}\delta^{-\delta}(1-\gamma-\delta)^{(\gamma+\delta)}\right]$$

Substituting the expression for labor into A.4 yields the following equation:

$$y_{ijc}^{\frac{1}{\mu}} I^{\left(\frac{1}{\varepsilon^{PD}}\right)} = y_{ijc}\mu \underbrace{\frac{1}{B_{ijc}}\left[\tilde{w}^{\gamma}\tilde{\rho}^{\delta}\gamma^{-\gamma}\delta^{-\delta}(1-\gamma-\delta)^{-(1-\gamma-\delta)}\right]}_{\equiv c_{ijc}} \tag{A.6}$$

This equation shows that revenues are a markup μ over costs, i.e., $p_{ijc}y_{ijc} = \mu y_{ijc}c_{ijc}$, indicating that prices are a markup over marginal costs c_{ijc}.

A.3.3 Deriving an Expression for Profits

We begin with the following expression for profits in terms of factors:

$$\pi_{ijc} = (1-\tau_c^p)\left(p_{ijc}y_{ijc} - w_c l_{ijc} - \int_{v\in J} p_v x_{v,ijc} dv\right) - \left((1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k\right)k_{ijc}$$

Now we can use A.6 to simplify $p_{ijc}y_{ijc}$.

$$p_{ijc}y_{ijc} = \frac{\mu}{\gamma} l_{ijc}\tilde{w}_c$$

We can also use the input factor ratios derived above to re-arrange the profit equation to only depend on labor:

$$\pi_{ijc} = (1-\tau_c^p)\, l_{ijc}\tilde{w_c}\left(\frac{\mu}{\gamma} - 1 - \frac{1-\gamma-\delta}{\gamma} - \frac{\delta}{\gamma}\right)$$

Substituting for labor and using the definition of product demand yields:

$$\pi_{ijc} = (1-\tau_c)\, I\mu^{\epsilon^{PD}} c_{ijc}^{\epsilon^{PD}+1}(\mu-1)$$

This indicates that profits are a markup over costs where $\mu \geq 1$. Substituting for c_{ijc}, we can express profits as a function of local factor prices, local productivity, and taxes:

$$\pi_{ijc} = (1-\tau_c)\,\tilde{w}_c^{\gamma\left(\varepsilon^{PD}+1\right)}\tilde{\rho}_c^{\delta\left(\varepsilon^{PD}+1\right)} B_c^{-\left(\varepsilon^{PD}+1\right)}\kappa$$

where κ is a constant term across locations. [22]

[22] $\kappa = I\mu^{\varepsilon^{PD}}(\mu-1)\left[\left(\gamma^{-\gamma}\delta^{-\delta}(1-\gamma-\delta)\right)^{-(1-\gamma-\delta)}\right]^{\varepsilon^{PD}+1}$

A.3.4 Establishment Location Choice

Establishments productivity $B_{jc} = \bar{B}_c + \zeta_{jc}$ consists of a common location specific productivity level $\bar{B}_c$ and an idiosyncratic establishment specific productivity level ζ_{jc}, which is i.i.d. type I extreme value. Taking the profit function derived above, the expected value of locating in c is

$$V_{jc}^F = v_c + \zeta_{jc} = \underbrace{\frac{\ln(1-\tau_c)}{-(\varepsilon^{PD}+1)} + \bar{B}_c - \gamma \ln w_c - \delta \ln \tilde{\rho} + \frac{\ln \kappa_1}{-(\varepsilon^{PD}+1)}}_{v_c} + \zeta_{jc}$$

The share of establishments that locates in c is given by:

$$E_c = \frac{\exp(v_c/\sigma^F)}{\sum_{c'} \exp(v_{c'}/\sigma^F)}.$$

where σ^F is the dispersion of the location specific idiosyncratic establishment productivity ζ_{jc} We can now show how firm entry is affected by wage changes:

$$\frac{\partial \ln E_c}{\partial \ln \tilde{w}_c} = -\frac{\gamma}{\sigma^F}$$

and also the elasticity with respect to the tax rates:

$$\frac{\partial \ln E_c}{\partial \ln(1-\tau_c^p)} = -\frac{1}{(\varepsilon^{PD}+1)\sigma^F} + \frac{\delta}{\sigma^F} - \frac{\delta}{\sigma^F}\frac{(1-\tau_c^p)\kappa_k\rho}{(1-\kappa_k\tau_c^p)\rho + \tau_c^k} = -\frac{1}{(\varepsilon^{PD}+1)\sigma^F} + \frac{\delta}{\sigma^F}\left(1 - \frac{\kappa_k\rho}{\tilde{\rho}_c}\right)$$

$$\frac{\partial \ln E_c}{\partial \ln \tau_c^k} = \frac{\partial \ln E_c}{\partial \ln \tilde{\rho}_c}\frac{\partial \ln \tilde{\rho}_c}{\partial \ln \tau_c^k} = -\frac{\delta}{\sigma^F}\frac{(1-\kappa_k)\tau_c^k}{(1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k}$$

A higher profit tax τ_c^p affects entry through two channels: (1) it directly reduces the after-tax share of profits (the $-\frac{1}{(\varepsilon^{PD}+1)}$ term), and (2) it indirectly raises the user cost of capital $\tilde{\rho}_c$ when capital costs are not fully deductible. In contrast, the capital tax τ_c^k influences entry only through this second channel by increasing the effective cost of capital.

A.3.5 Local Labor Demand

Local labor demand depends on the share of establishments that choose to locate in location c (extensive margin) and the average employment of establishments in that location (intensive margin):

$$L_c^d = E_c \times E_\zeta \left[l_{jc}^*(\zeta_{jc}) | c = arg\max_{c'}(V_{jc'}) \right] \tag{A.7}$$

First, we will derive the intensive margin. Start with labor demand:

$$l_{ijc} = \frac{y_{ijc}}{B_{ijc}} \left[\tilde{w}_c^{\gamma-1} \tilde{\rho}_c^{\delta} \gamma^{1-\gamma} \delta^{-\delta} (1-\gamma-\delta)^{-(1-\gamma-\delta)} \right]$$

Substitute in A.6 for y_{ijc}:

$$l_{ijc} = B_{ijc}^{-(\varepsilon^{PD}+1)} \tilde{w}_c^{\gamma\varepsilon^{PD}+\gamma-1} \tilde{\rho}_c^{(1+\varepsilon^{PD})\delta} \kappa_0,$$

where $\kappa_0 = \frac{\mu}{I} \gamma^{-\gamma(\varepsilon^{PD}+1)+1} \delta^{-\delta(\varepsilon^{PD}+1)} (1-\gamma-\delta)^{-(1-\gamma-\delta)(\varepsilon^{PD}+1)}$. Taking into account the productivity draw the intensive margin can be expressed as follows:

$$l_{ijc} = \tilde{w}_c^{\gamma\varepsilon^{PD}+\gamma-1} \tilde{\rho}_c^{(1+\varepsilon^{PD})\delta} \kappa_0 E_\zeta[B_{ijc}^{-(\varepsilon+1)}],$$

where $E_\zeta[B_{ijc}^{-(\varepsilon+1)}] = \exp(-\varepsilon^{PD}-1)\bar{B}_c \underbrace{E_\zeta[\exp(-\varepsilon^{PD}-1)\zeta_{ijc})|c]}_{z_c}$

Putting the intensive and extensive margin together we get labor demand:

$$L_c^D = E_c \times \tilde{w}_c^{\gamma\varepsilon^{PD}+\gamma-1} \tilde{\rho}_c^{(1+\varepsilon^{PD})\delta} \kappa_0 e^{(-\varepsilon^{PD}-1)\bar{B}_c} z_c$$

Malgouyres et al. (2023) show that z_c is related to v_c. The relationship between the conditioning event of firm location in c and the conditional expectation z_c can be expressed as $\Gamma(1+(\varepsilon^{PD}+1)\sigma^F) E_c^{(1+\varepsilon^{PD})\sigma^F}$ where $\Gamma()$ is the gamma function. This implies that as more firms enter the conditional expectation z_c changes, i.e. the mean productivity of firms in c changes.

Taking logs and simplifying:

$$\ln L_c^D = \kappa_2 - \frac{\ln(1-\tau_c)}{(\varepsilon^{PD}+1)\sigma^F} + (\gamma(\varepsilon^{PD}+1-\frac{1}{\sigma^F})-1)\ln\tilde{w}_c - \frac{\ln\mu}{(\varepsilon^{PD}+1)\sigma^F} + \tag{A.8}$$

$$(\delta(\varepsilon^{PD}+1-\frac{1}{\sigma^F}))\ln\tilde{\rho}_c + (-(\varepsilon^{PD}+1)+\frac{1}{\sigma^F})\bar{B}_c + \ln z_c \tag{A.9}$$

From this equation we can obtain the macro elasticity of labor demand:

$$\frac{\partial \ln L_c^D}{\partial \ln \tilde{w}_c} = \underbrace{-1}_{Substitution} + \underbrace{\gamma(\varepsilon^{PD}+1)}_{Scale} - \underbrace{\frac{\gamma}{\sigma^F}}_{Location} - \underbrace{\gamma\left(\varepsilon^{PD}+1\right)}_{Composition} = -\left(1+\frac{\gamma}{\sigma^F}\right) = \varepsilon^{LD} \tag{A.10}$$

which takes into account that $\frac{\partial \ln z_c}{\partial \ln \tilde{w}_c} = -\gamma\left(\varepsilon^{PD}+1\right)$. As noted by Malgouyres et al. (2023) the scale margin cancels out with the compositional margin. Hence the elasticity simplifies to $-\left(1+\frac{\gamma}{\sigma^F}\right)$.

This elasticity combines the average firm's elasticity and the effect of firm entry and exit on labor demand. We can also derive the effect of a profit tax change on local labor demand:

$$\frac{\partial \ln L_c^D}{\partial \ln(1-\tau_c^p)} = \frac{1}{-(\varepsilon^{PD}+1)\sigma^F} + \left((1+\varepsilon^{PD})\delta - \frac{\delta}{\sigma^F}\right)\frac{\partial \ln \tilde{\rho}}{\partial \ln(1-\tau_c^p)} + \frac{\partial \ln z_c}{\partial \ln(1-\tau_c^p)} =$$
$$\frac{1}{-(\varepsilon^{PD}+1)\sigma^F} - \left((1+\varepsilon^{PD})\delta - \frac{\delta}{\sigma^F}\right)\left(1-\frac{\kappa_k\rho}{\tilde{\rho}_c}\right) + (1+\varepsilon^{PD})\delta\left(1-\kappa_k\frac{\rho}{\tilde{\rho}_c}\right) - 1 =$$
$$\frac{1}{-(\varepsilon^{PD}+1)\sigma^F} - 1 + \frac{\delta}{\sigma^F}\left(1-\frac{\kappa_k\rho}{\tilde{\rho}_c}\right)$$

which uses that $\frac{\partial \ln z_c}{\partial \ln(1-\tau_c)} = (1+\varepsilon^{PD})\sigma^F\frac{\partial \ln E_c}{\partial \ln(1-\tau_c)} =$
$(1+\varepsilon^{PD})\sigma^F\left(\frac{\delta}{\sigma^F} - \frac{\delta}{\sigma^F}\frac{\kappa_k\rho}{\tilde{\rho}_c} - \frac{1}{(\varepsilon^{PD}+1)\sigma^F}\right) = (1+\varepsilon^{PD})\delta\left(1-\kappa_k\frac{\rho}{\tilde{\rho}_c}\right) - 1.$

Next, we can also derive the effect of a τ_c^k change on local labor demand:

$$\frac{\partial \ln L_c^D}{\partial \ln \tau_c^k} = ((1+\varepsilon^{PD})\delta - \frac{\delta}{\sigma^F})\frac{\partial \ln \tilde{\rho}}{\partial \ln \tau_c^k} + \frac{\partial \ln z_c}{\partial \ln \tau_c^k} =$$
$$-\frac{\delta}{\sigma^F}\frac{(1-\kappa_k)\tau_c^k}{(1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k}$$

A.3.6 Local Capital Demand

Capital Demand: We can similarly also derive the demand for capital. We start with micro-level capital demand:

$$k_{ijc} = \frac{y_{ijc}}{B_{ijc}}\left[\tilde{w}_c^{\gamma}\tilde{\rho}_c^{\delta-1}\gamma^{-\gamma}\delta^{1-\delta}(1-\gamma-\delta)^{-(1-\gamma-\delta)}\right]$$

Substitute in A.6 for y_{ijc}:

$$k_{ijc} = B_{ijc}^{-(\varepsilon^{PD}+1)} \tilde{w}_c^{\gamma(\varepsilon^{PD}+1)} \tilde{\rho}_c^{\delta(\varepsilon^{PD}+1)-1} \kappa_0,$$

Taking into account the productivity draw as above and putting together the intensive and extensive margin:

$$K_c^D = E_c \times \tilde{w}_c^{\gamma(\varepsilon^{PD}+1)} \tilde{\rho}_c^{\delta(\varepsilon^{PD}+1)-1} \kappa_0 e^{(-\varepsilon^{PD}-1)\bar{B}_c} z_c$$

Taking logs and simplifying:

$$\ln K_c^D = \kappa_2 - \frac{\ln(1-\tau_c)}{(\varepsilon^{PD}+1)\sigma^F} + (\gamma(\varepsilon^{PD}+1-\frac{1}{\sigma^F}))\ln \tilde{w}_c - \frac{\ln \mu_{ic}}{(\varepsilon^{PD}+1)\sigma^F} + (\delta(\varepsilon^{PD}+1-\frac{1}{\sigma^F})-1)\ln \tilde{\rho}_c + (-(\varepsilon^{PD}+1)+\frac{1}{\sigma^F})\bar{B}_c + \ln z_c$$

From this equation we can obtain the macro elasticity of capital demand:

$$\frac{\partial \ln K_c^D}{\partial \ln \tilde{\rho}_c} == -\left(1+\frac{\delta}{\sigma^F}\right) \tag{A.11}$$

Finally, we can also derive the effect of tax changes on capital demand:

$$\frac{\partial \ln K_c^D}{\partial \ln(1-\tau_c^p)} = \frac{1}{-(\varepsilon^{PD}+1)\sigma^F} + \left((1+\varepsilon^{PD})\delta - \frac{\delta}{\sigma^F} - 1\right)\frac{\partial \ln \tilde{\rho}}{\partial \ln(1-\tau_c^p)} + \frac{\partial \ln z_c}{\partial \ln(1-\tau_c^p)} = \frac{1}{-(\varepsilon^{PD}+1)\sigma^F} - 1 + \left(1+\frac{\delta}{\sigma^F}\right)\left(1-\frac{\kappa_k \rho}{\tilde{\rho}_c}\right)$$

where there is an additional effect of of the tax change through $\tilde{\rho}$ compared to compared to the effect on labor ($1+\frac{\delta}{\sigma^F} > \frac{\delta}{\sigma^F}$). The effect of τ_c^k change on capital demand is:

$$\frac{\partial \ln K_c^D}{\partial \ln \tau_c^k} = ((1+\varepsilon^{PD})\delta - \frac{\delta}{\sigma^F})\frac{\partial \ln \tilde{\rho}}{\partial \ln \tau_c^k} + \frac{\partial \ln z_c}{\partial \ln \tau_c^k} = -\left(1+\frac{\delta}{\sigma^F}\right)\frac{(1-\kappa_k)\tau_c^k}{(1-\kappa_k \tau_c^p)\rho + (1-\kappa_k)\tau_c^k}$$

A.4 Market clearing and equilibrium

We characterize the incidence of corporate taxes on wages and profits and relate these effects to the welfare of workers and firm owners. We focus on the welfare of local residents as the policies we study are determined by policymakers with the objective of maximizing local welfare. Because we study small open economies, price changes affect the consumers globally, but the effects on consumer welfare in the local economy is approximately zero. Therefore, the consumer price channel is not relevant for our local welfare analysis.

We denote $\dot{w}_c^p = \partial \ln w_c / \partial \ln(1-\tau_c^p)$ and $\dot{w}_c^k = \partial \ln w_c / \partial \ln(\tau_c^k)$ and similarly for other variables. Assuming full labor force participation, i.e., $L_c^S = N_c$, spatial equilibrium c depends on market clearing in factor markets and output markets, and can be expressed in terms of the expressions for log labor supply (Equation A.2) and log labor demand (Equation A.8).

$$N_c\left(w_c, \bar{A}_c\right) = L_c^D\left(w_c, \rho_c, \tau_c^p, \tau_c^k; \bar{B}_c, z_c\right)$$

This expression implicitly defines equilibrium wages w_c. The market clearing condition implies that

$$\dot{N}_c^p = \varepsilon^{LS}\dot{w}_c^p = \dot{L}_C^D = \frac{\partial \ln L_c^D}{\partial \ln(1-\tau_c^p)} + \frac{\partial \ln L_c^D}{\partial w_c}\dot{w}_c^p$$

where the total labor demand elasticity $\dot{L}_C^D$ depends on a direct effect and effects through wages. Rearranging the equation yields:

$$\dot{w}_c^p = \frac{\frac{\partial \ln L_c^D}{\partial \ln(1-\tau_c^p)}}{\varepsilon^{LS} - \frac{\partial \ln L_c^D}{\partial w_c}} = \frac{\frac{1}{-(\varepsilon^{PD}+1)\sigma^F} - 1 + \frac{\delta}{\sigma^F}\left(1 - \frac{\kappa_k \rho}{\tilde{\rho}_c}\right)}{\varepsilon^{LS} - \varepsilon^{LD}} \tag{A.12}$$

For the capital tax τ_c^k we get:

$$\dot{N}_c^k = \varepsilon^{LS}\dot{w}_c^k = \dot{L}_C^D = \frac{\partial \ln L_c^D}{\partial \ln \tau_c^k} + \frac{\partial \ln L_c^D}{\partial w_c}\dot{w}_c^k$$

Rearranging the equation yields:

$$\dot{w}_c^k = \frac{\frac{\partial \ln L_c^D}{\partial \ln \tau_c^k}}{\varepsilon^{LS} - \varepsilon^{LD}} = -\frac{\frac{\delta}{\sigma^F}\frac{(1-\kappa_k)\tau_c^k}{(1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k}}{\varepsilon^{LS} - \varepsilon^{LD}} \tag{A.13}$$

The effect of $1-\tau_c^p$ on profits is:

$$\dot{\pi}_c^p = 1 \underbrace{-\delta\left(\varepsilon^{PD}+1\right)}_{\text{Capital wedge}} + \underbrace{\delta\left(\varepsilon^{PD}+1\right)\frac{\kappa_k\rho}{\tilde{\rho}_c}}_{\text{Deductibility effect}} + \underbrace{\gamma\left(\varepsilon^{PD}+1\right)\dot{w}_c^p}_{\text{Labor costs}} \tag{A.14}$$

The effect of τ_c^k on profits is:

$$\dot{\pi}_c^k = \underbrace{\delta\left(\varepsilon^{PD}+1\right)\frac{(1-\kappa_k)\tau_c^k}{(1-\kappa_k\tau_c^p)\rho+(1-\kappa_k)\tau_c^k}}_{\text{Increasing capital wedge}} + \underbrace{\gamma\left(\varepsilon^{PD}+1\right)\dot{w}_c^k}_{\text{Reducing labor costs}} \tag{A.15}$$

A.5 Revenue-normalized welfare comparison

Let $t_p \equiv \ln(1-\tau_p)$ and $t_k \equiv \ln \tau_k$. Define

$$\dot{w}^T \equiv \frac{\partial \ln w}{\partial t_T}, \qquad \dot{\pi}^T \equiv \frac{\partial \ln \pi}{\partial t_T}, \qquad \dot{R}_T \equiv \frac{\partial \ln R_T}{\partial t_T}, \qquad T \in \{p,k\}.$$

Local marginal-welfare cost per euro (with local owner share $\theta \in [0,1]$) is

$$\mathcal{W}_T = -\frac{(1-\theta)\,\dot{w}^T + \theta\,\dot{\pi}^T}{\dot{R}_T}. \tag{A.16}$$

Elasticities derived above (reprinted for ease of exposition): With $\tilde{\rho} = \frac{(1-\kappa_k\tau_p)\rho+(1-\kappa_k)\tau_k}{1-\tau_p}$ and $s_k \equiv \frac{(1-\kappa_k)\tau_k}{(1-\kappa_k\tau_p)\rho+(1-\kappa_k)\tau_k} \in (0,1)$:

$$\dot{w}^p = \frac{-\frac{1}{(\varepsilon^{PD}+1)\sigma^F} - 1 + \frac{\delta}{\sigma^F}\left(1-\frac{\kappa_k\rho}{\tilde{\rho}}\right)}{\varepsilon^{LS}-\varepsilon^{LD}}, \qquad \dot{w}^k = -\frac{\frac{\delta}{\sigma^F}\,s_k}{\varepsilon^{LS}-\varepsilon^{LD}},$$

$$\dot{\pi}^p = 1-(\varepsilon^{PD}+1)\delta + (\varepsilon^{PD}+1)\delta\,\frac{\kappa_k\rho}{\tilde{\rho}} + (\varepsilon^{PD}+1)\gamma\,\dot{w}^p, \qquad \dot{\pi}^k = (\varepsilon^{PD}+1)\delta\,s_k + (\varepsilon^{PD}+1)\gamma\,\dot{w}^k.$$

Revenue elasticities. Profit-tax revenue $R_p = \tau_p \Pi$ with pre-tax profits Π implies

$$\dot{R}_p \equiv \frac{\partial \ln R_p}{\partial t_p} = -\frac{1-\tau_p}{\tau_p} + (\dot{\pi}^p - 1). \tag{A.17}$$

Capital-tax revenue $R_k = \tau_k K$ (with K the tax base) implies

$$\dot{R}_k \equiv \frac{\partial \ln R_k}{\partial t_k} = 1 - \left(1+\frac{\delta}{\sigma^F}\right)s_k \tag{A.18}$$

Cross-base effects, where changes in τ_c^p alter τ_c^k revenues and vice versa, are:

$$\dot{R}_p^{\text{tot}} = r_p\,\dot{R}_p + r_k\,\dot{K}^p, \qquad \dot{R}_k^{\text{tot}} = r_p\,\dot{\pi}^k + r_k\,\dot{R}_k,$$

where $\dot{K}^p \equiv \partial \ln K/\partial t_p$ and $\dot{\pi}^k \equiv \partial \ln \Pi/\partial t_k$ and corporate-tax revenue is $R = R_p + R_k$. We define $r_p = \frac{R_p}{R}$ and $r_k = \frac{R_k}{R}$ The elasticities of the tax revenues incorporate the own-base and cross-base responses as the profit responses could be of a substantial magnitude.

Model-implied revenue shares. To incorporate cross-base responses in a way that is consistent with the incidence model, we derive the profit and capital-tax revenue shares from the CES/monopolistic-competition structure.

With constant markup $\mu = \left(1/\varepsilon^{PD} + 1\right)^{-1}$ and Cobb–Douglas technology, variable costs C and revenues py satisfy

$$py = \mu C,$$

and the cost share of capital equals its output elasticity:

$$\frac{\tilde{\rho} k}{C} = \delta \quad \Rightarrow \quad \tilde{\rho} k = \delta C = \frac{\delta}{\mu} py.$$

Pre-tax profits are

$$\Pi = py - C = \left(1 - \frac{1}{\mu}\right) py = \frac{\mu - 1}{\mu} py.$$

Aggregating over establishments, let Y denote total revenue in the local economy. Then

$$\Pi = \frac{\mu - 1}{\mu} Y, \qquad K = \frac{\delta}{\mu \, \tilde{\rho}} Y.$$

The two components of corporate-tax revenue are

$$R_p = \tau_p \Pi = \tau_p \frac{\mu - 1}{\mu} Y, \qquad R_k = \tau_k K = \tau_k \frac{\delta}{\mu \, \tilde{\rho}} Y,$$

so that

$$\frac{R_k}{R_p} = \frac{\tau_k \, \delta}{\tau_p (\mu - 1) \, \tilde{\rho}}.$$

Hence the profit- and capital-tax revenue shares,

$$r_p \equiv \frac{R_p}{R_p + R_k}, \qquad r_k \equiv \frac{R_k}{R_p + R_k},$$

can be written as

$$r_p = \frac{1}{1 + \dfrac{\tau_k \, \delta}{\tau_p (\mu - 1) \, \tilde{\rho}}}, \qquad r_k = \frac{\dfrac{\tau_k \, \delta}{\tau_p (\mu - 1) \, \tilde{\rho}}}{1 + \dfrac{\tau_k \, \delta}{\tau_p (\mu - 1) \, \tilde{\rho}}}.$$

In the main text, I calibrate r_p and r_k directly from local-business-tax data, which automatically incorporates institutional details of the tax bases. The expressions above are useful to interpret these revenue shares in terms of the structural primitives $(\tau_p, \tau_k, \delta, \varepsilon^{PD}, \tilde{\rho})$ and to perform

counterfactual experiments where statutory rates or the user-cost environment change.

Marginal-welfare cost per euro. Plugging (A.17)–(A.18) into (A.16):

$$\boxed{\mathcal{W}_{\tau_p} = \frac{-(1-\theta)\,\dot{w}^p - \theta\,\dot{\pi}^p}{r_p\left(-\frac{1-\tau_p}{\tau_p} + \dot{\pi}^p - 1\right) + r_k\left(1 + \frac{\delta}{\sigma^F}\right)s_k}, \qquad \mathcal{W}_{\tau_k} = \frac{-(1-\theta)\,\dot{w}^k - \theta\,\dot{\pi}^k}{r_k\left[1 - \left(1 + \frac{\delta}{\sigma^F}\right)s_k\right] + r_p\dot{\pi}^k}.}$$

Equivalence and comparative statics. The two instruments are equally efficient iff

$$\mathcal{W}_{\tau_p} = \mathcal{W}_{\tau_k}. \tag{A.19}$$

Comparative statics follow immediately: A higher κ_k reduces the profit-tax user-cost elasticity $\partial \ln \tilde{\rho}/\partial \tau_c^p$. It also raises s_k, thereby making relatively τ_c^p more efficient. Intuitively, when profit taxation becomes closer to a rent tax (higher deductibility), it distorts capital less. Hence, $\kappa_k \uparrow$ always makes τ_p relatively more efficient and shifts the equality condition (A.19) in favor of the profit tax. A lower σ^F implies more elastic entry. This increases the sensitivity of profits to both taxes, but the effect is stronger for the profit tax because profit taxation directly affects the profit wedge. As a result, $\sigma^F \downarrow$ raises $\mathcal{W}_{\tau_p}$ relative to $\mathcal{W}_{\tau_k}$. When entry is very elastic, the profit tax becomes less efficient because it suppresses the mass of active firms through the entry margin.

Profit taxation dominates when (i) deductibility is high ($\kappa_k \approx 1$), so that τ_p behaves like a rent tax, and (ii) the entry margin is weak (σ^F large), so that profit taxation does not discourage firm entry. In this case, the denominator of $\mathcal{W}_{\tau_p}$ is large (high revenue efficiency), while the numerator is small (little incidence on distortions), making $\mathcal{W}_{\tau_p}$ strictly below $\mathcal{W}_{\tau_k}$. The capital-stock tax dominates when profit taxation becomes sufficiently distortional. This occurs when (i) deductibility is low (κ_k small), so that the profit tax strongly increases the user cost, and (ii) entry is highly elastic (σ^F small), so that the profit tax sharply reduces the mass of firms. In addition, a high baseline τ_p increases the term $-(1-\tau_p)/\tau_p$ in the denominator of $\mathcal{W}_{\tau_p}$, reducing revenue efficiency. In these environments, $\mathcal{W}_{\tau_p}$ grows more quickly than $\mathcal{W}_{\tau_k}$, and τ_k becomes the more efficient revenue instrument.

A higher θ places more weight on profits relative to wages. Since $|\dot{\pi}^p| > |\dot{w}^p|$ in most cases, increasing θ raises $\mathcal{W}_{\tau_p}$ relative to $\mathcal{W}_{\tau_k}$. Thus, $\theta \uparrow$ shifts the equality condition (A.19) toward favoring τ_k. This comparative static underlies the "crossing in θ" documented in the empirical welfare calculations. A higher interest rate ρ reduces the responsiveness of the capital-stock tax relative to the profit tax, lowering s_k strongly. Consequently, larger ρ can shift efficiency toward the capital-stock tax tax. Similarly, a higher baseline profit-tax rate τ_p reduces the revenue efficiency of the profit tax. These comparative statics explain why the welfare ranking

becomes sensitive for high values of τ_p in the empirical exercises.

A.6 Extensions

Our theoretical efficiency comparison follows the standard own-base convention for revenue elasticities. Cross-base effects are second order for the marginal-per-euro ranking and are discussed in revenue-neutral reforms. Appendix A.7 also presents a modular extension with financial frictions that multiplies the user cost by a location- and firm-specific factor. In that extension, both taxes acquire an additional channel through average financial constraints, which we summarize with $\dot{F}_c^p$ and $\dot{F}_c^k$. The empirical section shows how our sufficient-statistics implementation can incorporate these terms without committing to a specific micro-foundation for frictions.

The ranking of $\mathcal{W}_{\tau_p}$ vs. $\mathcal{W}_{\tau_k}$ is governed by three primitives: deductibility κ_k, entry/selection σ^F, and capital intensity δ—and by distributional weights θ. With generous deductibility and moderate entry sensitivity, the profit tax approaches a rent tax and tends to be more efficient; when deductibility is limited and entry is elastic, the capital tax can be marginally cheaper per euro, unless θ is small (worker-weighted welfare), in which case the profit tax can dominate even in the presence of user-cost effects.

A.6.1 Calibration

The marginal–welfare–cost simulations in Section 9 require empirical inputs for the reduced-form elasticities of wages, profits, and tax revenues with respect to the two tax instruments, τ_c^p and τ_c^k. This appendix summarizes the sources and construction of the calibration ranges used in the robustness exercises.

Capital tax τ_c^k: I directly estimate the relevant semi-elasticities in Table 2. To convert semi-elasticities into elasticities, I multiply by the mean statutory capital tax rate, $\tau_c^k = 0.74\%$. For wages, the estimated semi-elasticities range from -0.025 to -0.050, implying elasticities between -0.019 and -0.037. For net profits, Table 2 reports semi-elasticities between approximately -0.030 and -0.035, yielding elasticities between -0.022 and -0.026. The elasticity of LBT revenue with respect to τ_c^k is calibrated at 0.096 (0.13×0.74), based on the revenue responses displayed in Table D.15. These three elasticity ranges define the empirical grid used in the simulations for the capital tax.

Profit tax τ_c^p: For the profit tax, I do not estimate wage elasticities directly but rely on existing quasi-experimental evidence. Both Fuest et al. (2018) and Gstrein et al. (2025) find wage elasticities with respect to corporate profit taxation of around 0.5. For profits, Gstrein et al. (2025) estimate elasticities between 1.5 and 2.3 for the post-2008 period, and my own reduced-

form estimates yield an elasticity of approximately 1.6 (Table D.16). These values define the calibration ranges for $\dot{\pi}^p$ and $\dot{w}^p$ used in Section 9.

Hence, I use the ranges in Table A.2 for the elasticities and the ranges in Table A.1 for the other parameters. The tables also shows which parameters are necessary for which calibration exercise.

Table A.1: Parameters: baselines, ranges, and usage across implementations

Parameter	Baseline	Range in graphs	Step 1	Step 2
Profit tax τ_c^p	0.185	[0.07, 0.30]	✓	✓
Capital tax τ_c^k	0.0074	[0.001, 0.05]	✓	✓
Labor share γ	0.15	[0.10, 0.30]	✓	✗
Capital share δ	0.20	[0.10, 0.35]	✓	✗
Product demand elasticity ε^{PD}	-2.5	$[-1.5, -5.0]$	✓	✗
Interest rate ρ	0.065	[0.03, 0.10]	✓	✓
Deductibility κ_k	0.5	[0, 1]	✓	✓
Welfare weight θ	0.20	[0, 1]	✓	✓
Productivity dispersion σ^F	0.7	[0.05, 5]	✓	✗
Amenity dispersion σ^W	3	[0.5, 5]	✓	✗

Notes: The table reports the baseline parameter values, the ranges used in the comparative-statics figures, and whether each parameter enters the Step 1 (purely theoretical) or Step 2 (fully empirical) welfare implementation. Baseline tax rates correspond to average pre-reform values in the data. Structural parameters $(\gamma, \delta, \varepsilon^{PD})$ are used only in Step 1, which relies on the theoretical incidence formulas. Step 2 uses reduced-form elasticities and therefore does not require these structural primitives. The user-cost level ρ, the deductibility parameter κ_k, and the welfare weight θ enter both steps. Checkmarks indicate inclusion in the respective implementation.

Table A.2: Empirical elasticities used

Object	Baseline	Range	Step 1	Step 2
$\dot{w}^p$	0.50	[0.25, 0.75]	✗	✓
$\dot{w}^k$	-0.035	$[-0.07, -0.01]$	✗	✓
$\dot{\pi}^p$	1.7	[1.0, 2.5]	✗	✓
$\dot{\pi}^k$	-0.025	$[-0.06, -0.01]$	✗	✓
$\dot{R}_k$	0.096	[0.15, 0.05]	✗	✓

Notes: The table summarizes the empirical elasticities used in the welfare calculations. Wage and profit elasticities for the capital-stock tax $(\dot{w}^k, \dot{\pi}^k)$ are estimated in Table 2. Wage and profit elasticities for the profit tax $(\dot{w}^p, \dot{\pi}^p)$ are taken from the existing literature (see Section 9) and supplemented with my own reduced-form estimates for profits in Table D.16. The revenue elasticity $\dot{R}_k$ is obtained from the dynamic profit response in Figure D.13. The Range column reports the intervals used in the robustness exercises in Figure 7. Step 1 uses only wage elasticities, while Step 2 uses all empirical elasticities to implement the fully empirical sufficient-statistics welfare comparison.

Step 1: Parameter Calibration Only I do not use any of the estimated elasticities but only calibrate the parameters:

- $\dot{\pi}^p, \dot{\pi}^k$ come from the baseline model (they depend on $\tilde{\rho}$ and $\dot{w}$).

- Revenue elasticities $\dot{R}_p, \dot{R}_k$ are model-implied.

This step uses tax levels (τ_p, τ_k), technology shares (γ, δ), demand curvature ε^{PD}, user-cost primitives (ρ, κ_k) and welfare weight θ. The firm dispersion parameter σ^F and the labor supply parameter enter only through $\dot{w}$ and $\dot{R}^k$ in the model. In this exercise, I do not incorporate any reduced-form elasticities but instead rely on structural objects for wage, profit, and revenue responses, together with reasonable ranges for γ, δ, ε^{PD}, σ^F, ε^{LS}, ρ, and κ_k. Figures A.1 and A.2 illustrate how the welfare cost of each tax changes as these parameters vary. Figure A.1 shows that the welfare costs of both taxes increase similarly for increases in the output elasticity of capital δ, but slightly more for τ_c^p. The two taxes also look quite similar in ε^{PD}: for both taxes, welfare cost increase as output markets become less competitive, but this driven by different mechanisms. For τ_c^k a less negative ε^{PD} has no impact on the wage elasticity and reduces the profit elasticity, but at the same time it also reduces the tax revenue elasticity. For τ_c^p, the effect comes from a large increase in the wage elasticity that is only slightly counteracted by a lower profit elasticity and higher tax revenue elasticity. A higher output elasticity of labor γ reduces welfare costs for both taxes, as it increases the labor demand elasticity, reducing the adjustment through wages. A low ρ increases the welfare cost of τ_c^k strongly because then the relative increase in financing costs is particularly large. For the mobility parameters: σ^F matters more for τ_c^p and and σ^W matters more for τ_c^k. This reflects that adjustments to τ_c^p happen more through firm mobility while adjustments to τ_c^k happen more through worker mobility. These results show that the model can create very different welfare implications with plausible model parameters. Hence, the reduced-form moments estimated in the previous sections are necessary to discipline the model.

Step 2: Empirical wages, profits, and revenues We also incorporate an empirical capital-tax revenue elasticity $\dot{R}_k^{\text{emp}}$. In this fully empirical step, only the objects that appear directly in the empirical inputs are required. The structural parameters of the model are otherwise not needed. In our figures, we vary $\{\tau_p, \tau_k, \theta, \rho, \kappa_k\}$; the last two matter only if one makes $\dot{R}_k^{\text{emp}}$ a function of the user-cost environment.

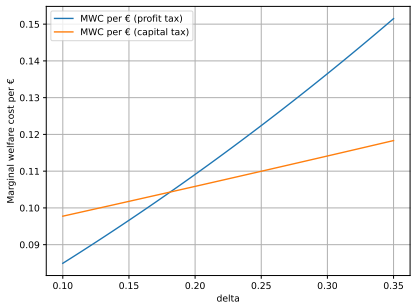
A.6.2 Alternative Quantification of Profit Elasticities

following Suárez Serrato and Zidar (2024) and Malgouyres et al. (2023) we can also quantify the effects on profits through the effects of the tax changes on intensive margin labor demand, wages and productivity. In particular Suárez Serrato and Zidar (2024) show that:

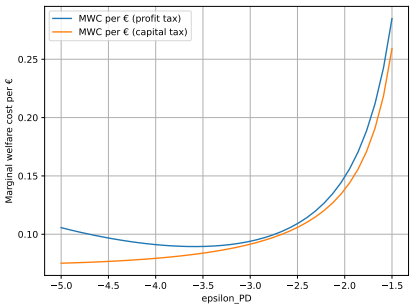
$$\dot{\pi}_c^p = 1 + \dot{\ell}_c^p + \dot{w}_c^p$$

Figure A.1: MWC of τ_c^p and τ_c^k: Different Parameters - Step 1

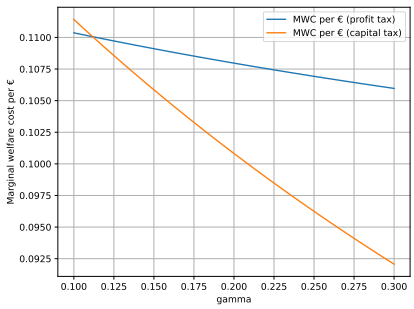
(a) δ



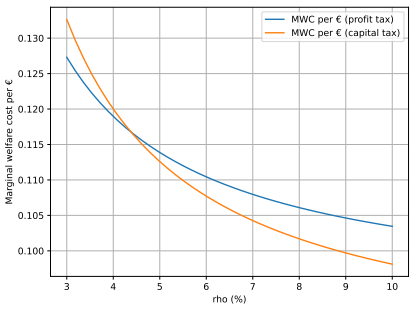
(b) ε^{PD}



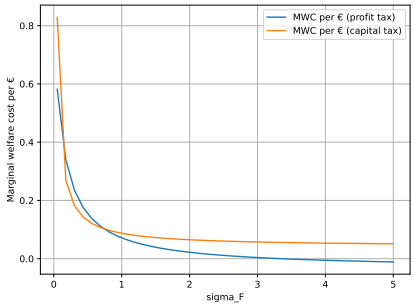
(c) γ



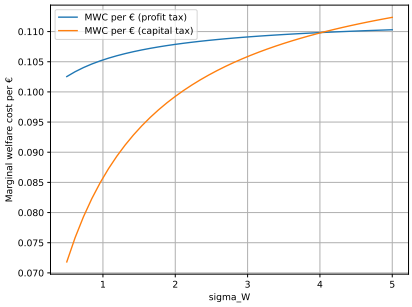
(d) ρ



(e) σ^F



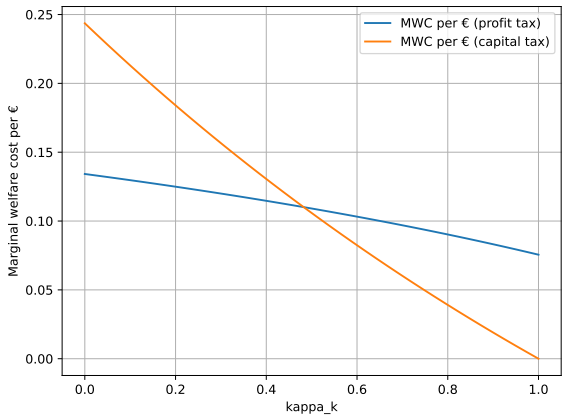
(f) σ^W



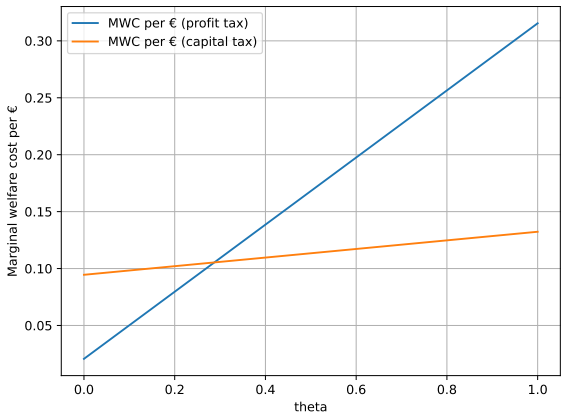
Notes: This figure shows the marginal welfare cost of the profit tax τ_c^p (solid line) and the capital-stock tax τ_c^k (dashed line) when varying key structural parameters in the purely theoretical calibration. The exercise does not use empirical elasticities but relies solely on the model-implied relationships in Appendix A.5. TThe panels vary the output elasticity of labor δ, the elasticity of product demand ε^{PD}, the output elasticity of capital γ, the interest-rate parameter ρ, and the firm- and worker-side elasticities σ^F and σ^W. The figure illustrates how each structural component influences the relative distortionary cost of the two tax instruments.

Figure A.2: MWC of τ_c^p and τ_c^k: Different Parameters - Step 1

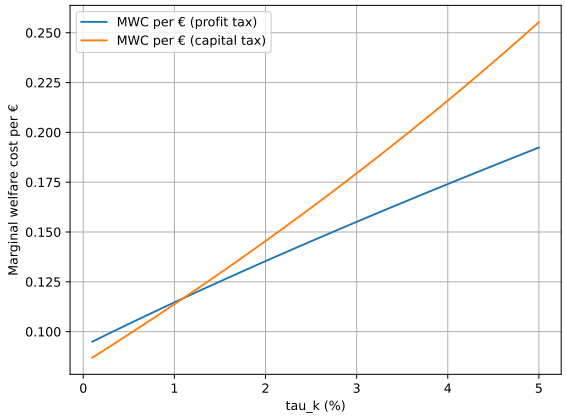
(a) κ_k



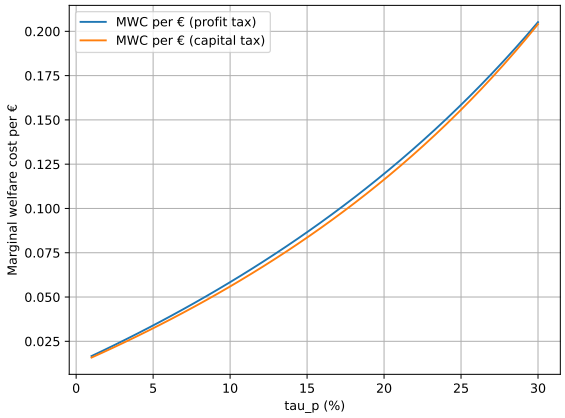
(b) θ



(c) τ_c^k



(d) τ_c^p



Notes: This figure presents additional theoretical comparative statics for the Step 1 calibration. As in Figure A.1, no empirical elasticities are used; instead, the model is evaluated using only structural objects. The panels vary the deductibility parameter κ_k, the welfare weight θ, and the statutory tax rates τ_c^k and τ_c^p. These results illustrate how the baseline tax system and welfare weights shape the theoretical ranking of the two tax instruments before incorporating empirical incidence estimates.

where $\dot{\ell}_c^p$ is the intensive margin labor demand elasticity. Rewriting intensive margin labor demand and taking the derivative with respect to $\ln \tau_c^k$ we can also show that:

$$\dot{\pi}_c^k = \dot{\ell}_c^k + \dot{w}_c^k$$

This fits the results in Table 2 very well. Since I do not find a detectable effect on employment ($\dot{\ell}_c^k \sim 0$) we can just compare $\dot{\pi}_c^k$ and $\dot{w}_c^k$. For wages the effects are between 0.025 and 0.05, for net profits the effects are 0.03 to 0.35, which matches up well with the predicted relationship. Furthermore, we can also show based on Suárez Serrato and Zidar (2024) that

$$\dot{\pi}_c^k = -\dot{z}_c^k$$

should hold, where $\dot{z}_c^k$ is the effect of τ_c^k on average productivity. Looking at Table C.5, productivity declined by about 2.5 percent, which again matches the predicted relationship nicely. This is an indication that the model fits the main mechanisms in the data well.

A.7 Extension: Financial Frictions

In the baseline model, the effective user cost of capital in location c is

$$\tilde{\rho}_c \;=\; \frac{(1-\kappa_k\tau_c^p)\rho + \tau_c^k}{1-\tau_c^p},$$

which only reflects statutory tax wedges and the interest rate. To capture financial frictions in a parsimonious way, we allow the user cost faced by establishment j in location c to depend on the availability of internal funds. We proxy this by the after-tax profit rate per unit of capital, $\pi_{jc}^{\text{aft}}/k_{jc}$, and write

$$\tilde{\rho}_{jc}^{\text{eff}} = \tilde{\rho}_c \cdot G\left(\pi_{jc}^{\text{aft}}, k_{jc}\right), \tag{A.20}$$

where $G(\cdot) \geq 1$ is decreasing in after tax profits of a previous period (exogenous): $\partial G(\cdot)/\partial \pi^{\text{aft}} < 0$. Hence, firms that were previously more profitable have more cash-on-hand to invest. Intuitively, firms with higher after-tax profitability can finance a larger share of investment from retained earnings or at favorable external terms, so their marginal cost of capital is closer to the frictionless benchmark $\tilde{\rho}_c$.

We now log-linearize G around the location-specific average profit rate,

$$\ln \tilde{\rho}_{jc}^{\text{eff}} \approx \ln \tilde{\rho}_c \;+\; \bar{F}_c \;+\; \phi_{jc},$$

where $\bar{F}_c$ is the average financial wedge in location c and ϕ_{jc} is a firm-specific deviation. In

particular, we assume

$$\ln G\Big(\pi_{jc}^{\text{aft}}, k_{jc}\Big) \approx \bar{F}_c \;+\; \phi_{jc}, \qquad E[\phi_{jc} \,|\, c] = 0, \tag{A.21}$$

and, as in the productivity block, we take ϕ_{jc} to be i.i.d. Type I extreme value. Thus, in logs,

$$\ln \tilde{\rho}_{jc}^{\text{eff}} = \ln \tilde{\rho}_c + \bar{F}_c + \phi_{jc}, \tag{A.22}$$

so the deterministic location component of expected profits becomes

$$V_{jc}^F = v_c + \zeta_{jc} + \phi_{jc} = \underbrace{\tfrac{\ln(1-\tau_c^p)}{-(\varepsilon^{PD}+1)} + \bar{B}_c - \gamma \ln w_c - \delta \ln \tilde{\rho}_c - \delta \bar{F}_c + \tfrac{\ln \kappa_1}{-(\varepsilon^{PD}+1)}}_{v_c} + \zeta_{jc} + \phi_{jc}.$$

The term $\bar{F}_c$ summarizes how tight financial conditions are on average in location c. Following the use-it-or-lose-it argument of Guvenen et al. (2023), we assume that $\bar{F}_c$ is endogenous to local tax policy: high-profit, high-productivity firms are more likely to be financing-constrained, and changes in taxes that raise their after-tax profitability relax average constraints. We capture this by defining reduced-form elasticities

$$\dot{F}_c^p \;\equiv\; \frac{\partial \bar{F}_c}{\partial \ln(1-\tau_c^p)}, \qquad \dot{F}_c^k \;\equiv\; \frac{\partial \bar{F}_c}{\partial \ln \tau_c^k}. \tag{A.23}$$

A reduction in the profit tax τ_c^p increases the share of profits that can be retained, which relaxes financing constraints especially for high-productivity firms and reduces the average wedge; this corresponds to $\dot{F}_c^p < 0$. In this sense, the capital tax implements a use-it-or-lose-it discipline on capital: either use capital productively or face a higher effective cost of funds.

Given (A.22), all the expressions for entry, labor demand, and capital demand derived above carry over with the replacement $\ln \tilde{\rho}_c \mapsto \ln \tilde{\rho}_c + \bar{F}_c$. Differentiating with respect to the two tax instruments yields

$$\frac{\partial \ln E_c}{\partial \ln(1-\tau_c^p)} = -\frac{1}{(\varepsilon^{PD}+1)\sigma^F} + \frac{\delta}{\sigma^F}\Big(1 - \tfrac{\kappa_k \rho}{\tilde{\rho}_c} - \dot{F}_c^p\Big),$$

$$\frac{\partial \ln E_c}{\partial \ln \tau_c^k} = -\frac{\delta}{\sigma^F}\Big(\tfrac{(1-\kappa_k)\tau_c^k}{(1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k} + \dot{F}_c^k\Big),$$

and the same additional terms $-\frac{\delta}{\sigma^F}\dot{F}_c^p$ and $-\frac{\delta}{\sigma^F}\dot{F}_c^k$ appear in the elasticities of labor demand and wages. These terms capture the extent to which changes in τ_c^p and τ_c^k relax or tighten financial constraints and thereby offset (or amplify) the mechanical user-cost effects of the two taxes.

Hence, both taxes now also include an additional term that measures how the tax change affects the average level of financial constraints in location c. The same term then also shows up in the effects on labor and capital demand:

$$\frac{\partial \ln L_c^D}{\partial \ln(1-\tau_c^p)} = \frac{1}{-(\varepsilon^{PD}+1)\sigma^F} - 1 + \frac{\delta}{\sigma^F}\left(1 - \frac{\kappa_k \rho}{\tilde{\rho}_c} - \dot{F}_c^p\right) \tag{A.24}$$

$$\frac{\partial \ln L_c^D}{\partial \ln \tau_c^k} = -\frac{\delta}{\sigma^F}\left(\frac{(1-\kappa_k)\tau_c^k}{(1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k} + \dot{F}_c^k\right) \tag{A.25}$$

$$\frac{\partial \ln K_c^D}{\partial \ln(1-\tau_c^p)} = \frac{1}{-(\varepsilon^{PD}+1)\sigma^F} - 1 + \left(1 + \frac{\delta}{\sigma^F}\right)\left(1 - \frac{\kappa_k \rho}{\tilde{\rho}_c} - \dot{F}_c^p\right) \tag{A.26}$$

$$\frac{\partial \ln K_c^D}{\partial \ln \tau_c^k} = -\left(1 + \frac{\delta}{\sigma^F}\right)\left(\frac{(1-\kappa_k)\tau_c^k}{(1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k} + \dot{F}_c^k\right) \tag{A.27}$$

Defining $\dot{\rho}_c^p = \partial \ln \tilde{\rho}_c / \partial \ln(1-\tau_c^p)$ and $\dot{\rho}_c^k = \partial \ln \tilde{\rho}_c / \partial \ln(\tau_c^k)$, we can express all of our main results as a function of $\dot{\rho}_c$ without making any assumptions on the exact structure of $\tilde{\rho}_c$.

$$\dot{w}_c^p = \frac{\frac{1}{-(\varepsilon^{PD}+1)\sigma^F} - 1 - \frac{\delta}{\sigma^F}\left(\dot{\rho}_c^p + \dot{F}_c^p\right)}{\varepsilon^{LS} - \varepsilon^{LD}} \tag{A.28}$$

For the capital tax τ_c^k we get:

$$\dot{w}_c^k = -\frac{\frac{\delta}{\sigma^F}\left(\dot{\rho}_c^k + \dot{F}_c^k\right)}{\varepsilon^{LS} - \varepsilon^{LD}} \tag{A.29}$$

The effect of $1-\tau_c^p$ on profits is:

$$\dot{\pi}_c^p = 1 \underbrace{+\delta\left(\varepsilon^{PD}+1\right)\dot{\rho}_c^p}_{\text{Capital wedge}} + \underbrace{\delta\left(\varepsilon^{PD}+1\right)\dot{F}_c^p}_{\text{Financial Friction}} + \underbrace{\gamma\left(\varepsilon^{PD}+1\right)\dot{w}_c^p}_{\text{Labor costs}} \tag{A.30}$$

The effect of τ_c^k on profits is:

$$\dot{\pi}_c^k = \underbrace{\delta\left(\varepsilon^{PD}+1\right)\dot{\rho}_c^k}_{\text{Increasing capital wedge}} + \underbrace{\delta\left(\varepsilon^{PD}+1\right)\dot{F}_c^k}_{\text{Financial Friction}} + \underbrace{\gamma\left(\varepsilon^{PD}+1\right)\dot{w}_c^k}_{\text{Labor costs}} \tag{A.31}$$

Adding financial frictions to the model adds an additional term to the wage and profit elasticities. Both taxes make financial constraints more severe and are therefore more distortionary under this extension, but their micro-level impact differs. A lower τ_c^p particularly benefits firms with the highest marginal product of capital or the most severe constraints (i.e. firms with high profits relative to their capital). Conversely, a lower τ_c^k particularly benefits the less constrained firms (with higher capital relative to their profits). This is akin to the use-it-or-lose-it mechanism in Guvenen et al. (2023). The model is able to incorporate this mechanism and the empirical analysis will show how it actually looks.

A.8 Scaling to the user cost of capital

The theoretical framework maps the local profit tax τ_c^p and the book-wealth tax τ_c^k into the user cost of capital

$$\tilde{\rho}_c \;=\; \frac{(1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k}{1-\tau_c^p},$$

where ρ is the national interest rate and $\kappa_k \in [0,1]$ is the deductibility share of capital costs. A central object in the empirical analysis is the response of outcomes to changes in the user cost, $\partial \ln Y / \partial \ln \tilde{\rho}_c$, rather than to the statutory tax rates themselves.

To compare the two instruments on a common scale, I first characterize how they move $\ln \tilde{\rho}_c$. Let

$$\eta_k \;\equiv\; \frac{\partial \ln \tilde{\rho}_c}{\partial \tau_c^k}, \qquad \eta_p \;\equiv\; \frac{\partial \ln \tilde{\rho}_c}{\partial \tau_c^p},$$

and, for percentage changes,

$$\varepsilon_k \;\equiv\; \frac{\partial \ln \tilde{\rho}_c}{\partial \ln \tau_c^k}, \qquad \varepsilon_p \;\equiv\; \frac{\partial \ln \tilde{\rho}_c}{\partial \ln(1-\tau_c^p)}.$$

Starting from the definition of $\tilde{\rho}_c$ and using the notation

$$A_c \;\equiv\; (1-\kappa_k\tau_c^p)\rho + (1-\kappa_k)\tau_c^k, \qquad \tilde{\rho}_c = \frac{A_c}{1-\tau_c^p},$$

Appendix A shows that

$$\eta_k = \frac{\partial \ln \tilde{\rho}_c}{\partial \tau_c^k} = \frac{1-\kappa_k}{A_c}, \qquad \varepsilon_k = \frac{\partial \ln \tilde{\rho}_c}{\partial \ln \tau_c^k} = \frac{(1-\kappa_k)\tau_c^k}{A_c} \equiv s_k, \tag{A.32}$$

$$\eta_p = \frac{\partial \ln \tilde{\rho}_c}{\partial \tau_c^p} = -\frac{\kappa_k \rho}{A_c} + \frac{1}{1-\tau_c^p}, \qquad \varepsilon_p = \frac{\partial \ln \tilde{\rho}_c}{\partial \ln(1-\tau_c^p)} = \kappa_k \frac{\rho}{\tilde{\rho}_c} - 1. \tag{A.33}$$

The book-wealth tax affects the user cost only through the numerator A_c, while the profit tax affects both A_c (through deductibility) and the denominator $(1-\tau_c^p)$.

Calibration. To gauge magnitudes, I evaluate these expressions at the average interest rate on business loans in 1997–1998, $\rho = 6.5\%$ (Bundesbank, 2023), an average LBTC rate $\tau_c^k = 0.74\%$, and an average LBTP rate $\tau_c^p = 18.5\%$. For these values,

$$A_c(\kappa_k) = (1-\kappa_k\tau_c^p)\,0.065 + (1-\kappa_k)0.0074, \qquad \tilde{\rho}_c(\kappa_k) = \frac{A_c(\kappa_k)}{1-\tau_c^p},$$

and the semi-elasticities implied by η_k and η_p are:

	$\kappa_k = 0$	$\kappa_k = 0.5$	$\kappa_k = 1$
$\tilde{\rho}_c$	0.089	0.077	0.065
$\eta_k = \partial \ln \tilde{\rho}_c / \partial \tau_c^k$	13.8	7.98	0
$\eta_p = \partial \ln \tilde{\rho}_c / \partial \tau_c^p$	1.23	0.71	0
η_k / η_p	11.26	11.26	-
$\epsilon_k = \partial \ln \tilde{\rho}_c / \partial \ln \tau_c^k$	0.102	0.059	0
$\epsilon_p = \partial \ln \tilde{\rho}_c / \partial \ln(1-\tau_c^p)$	-1	-0.575	0
$\epsilon_k / \lvert\epsilon_p\rvert$	0.102	0.102	-

A one-percentage-point cut in the capital-stock tax (a change $\Delta\tau_c^k = -0.01$) therefore lowers $\ln \tilde{\rho}_c$ by approximately

$$\Delta \ln \tilde{\rho}_c \approx \eta_k \cdot (-0.01),$$

that is, by about 0.14, 0.08, and 0 for $\kappa_k = 0$, $\kappa_k = 0.5$, and $\kappa_k = 1$, respectively. An equal one-percentage-point cut in the profit tax lowers $\ln \tilde{\rho}_c$ by about 0.012, 0.007, and 0 in the same three cases. Mechanically, the capital-stock tax therefore moves the user cost of capital per percentage point of the tax rate roughly 11 times more than the profit tax for all cases where $\kappa_k < 1$. As deductibility becomes more generous, the profit tax becomes increasingly rent-like and its impact on the user cost shrinks.

Scaling empirical elasticities. Because the two instruments have very different mechanical effects on $\tilde{\rho}_c$, I report all results both in terms of the statutory capital-stock tax and in

terms of the ratio of user cost elasticity to τ_c^k and τ_c^p. For any outcome Y and for a reform that primarily moves τ_c^k, I compute a cost-of-capital semi-elasticity as

$$\frac{\partial \ln Y}{\partial \ln \tilde{\rho}_c} = \frac{\partial \ln Y}{\partial \tau_c^k} \Big/ \frac{|\eta_k|}{|\eta_p|},$$

using η_k evaluated at the baseline parameters above. This object is directly comparable to estimates obtained from profit-tax reforms, bonus-depreciation episodes, or investment tax credits, which are typically reported as elasticities with respect to the user cost of capital.

B Additional Institutional Details

The definition of the book-wealth in the LBTC: The regulation for the definition of the tax base is laid out in the following sections: §95 Bewertungsgesetz 1991 and §12 Gewerbesteuergesetz 1991. The tax base for the LBTC was defined according to the assessed value of the business wealth, adjusted for some specific tax provisions. In general, the objective was to assess the value of the assets used in the business under the assumption that the business was fully financed through equity. The value of the business was not assessed according to the market value of the business. In particular, this method of business valuation does not consider discounted future profits. Instead, every asset of the business was evaluated according to the following rule: If an investor bought the business and continued operating it, how much would they value each individual asset? In particular, how much less would the investor be willing to pay for the business if a specific asset was not included in the business?

In practice, this method will generally arrive at the sum of all assets individually valued at market values. From this value, debt is subtracted. The resulting value will generally correspond closely to equity as calculated in the balance sheet. Next, this value is reduced by the assessed value of the real estate belonging to the business. Real estate is already subject to property taxation and, therefore, exempt from the LBTC. The tax base is also reduced by the share of the value that belongs to foreign subsidiaries or domestic subsidiaries that are themselves subject to the tax. Finally, half of the long-run debt that is economically linked to the founding or purchase of the business if it is larger than 50,000 DM is added to the value. As mentioned above, the representative business for the law is fully financed through equity. Adding part of the long-term debt to the tax base is supposed to more closely align the treatment of debt and equity financing. Table B.3 displays the main steps to arrive at the tax base.

Table B.3: Simplified Calculation of LBTC Tax Base

Sign / Result	**Component**
Starting value	Sum of all assets valued individually
−	Sum of all debt
≈ **Equity**	
−	Assessed value of business real estate
−	Sum of assets that belong to foreign subsidiaries
−	Sum of assets that belong to domestic subsidiaries that are themselves subject to the LBTC
+	One half of long-run debt that is economically linked to the founding, purchase, or expansion of the business
+	Provisions that are economically linked to the founding, purchase, or expansion of the business
LBTC tax base	

C Descriptive Statistics

Table C.4: Descriptive Statistics - Municipalities

Municipality characteristics - West German sample				
Panel A: Unweighted				
N = 8,003	Mean	SD	Minimum	Maximum
LSF 1996	325.06	30.18	100	515
LBTC rate 1996	.6501	.0604	.2	1.03
LBTP rate 1996	16.25	1.5090	5	25.75
LBT revenue 1996 (in 1,000€)	2,917.658	26,631.39	-23.86	1,255,781
Population 1996	8,444.81	53,100.95	11	3,425,759
Panel B: Weighted by LBT tax base				
N = 8,003	Mean	SD	Minimum	Maximum
LSF 1996	388.85	60.99	100	515
LBTC rate 1996	.7777	.1220	.2	1.03
LBTP rate 1996	19.44	3.05	5	25.75
LBT revenue 1996 (in 1,000€)	196,692.2	345737.5	-23.86	1255781
Population 1996	260,929.2	418,996.8	11	3,425,759

Source: Own calculations based on data from the Statistical Offices of the Federal States. *Notes:* LSF: Local Scaling Factor, LBTC: Local Business Tax on Capital, LBTP: Local Business Tax on Profit. LBT revenue is in 2015 euros.

Table C.5: Descriptive Statistics - Establishments

Panel A N = 9,990	Investment Data - Baseline Sample	
	Mean	SD
Employees	1,789	9,208
Total Investment	21,914	152,095
Investment Equipment/Machinery	19,116	135,129
LBTC rate 1996	0.74%	.10%
Panel B **N = 2,462,460**	**Labor Market Data - Baseline Sample**	
	Mean	SD
Regular Employees	25.12	206.81
Regular Employees Full Time	22.54	197.36
Average Daily Wage	88.19	35.58
P25 Daily Wage	75.99	30.16
Median Daily Wage	86.08	34.02
P75 Daily Wage	98.06	41.52
Manufacturing	.2913	.4543
Construction	.1586	.3653
Trade	.2650	.4413
Services	.2851	.4514
LBTC rate 1996	0.74%	.11%
LBTC rate 1996 (Industry)	1.82%	.75%
Panel C **N = 1,201,366**	**Tax Statistics - 1995**	
	Mean	SD
Gross Profits	84,794	819,672
Net Profits	76,037	746,487
Tax Payments Capital	963	9,763
Tax Payments Profit	7,794	73,054
Average Effective LBT Rate	10.33%	13.01%

Source: Panel A: ifo Investment survey. Panel B: Establishment History Panel. Panel C: Local Business Tax Statistics. *Notes:* Monetary variables in 2015 euros. Investment variables in 1000 euros. The tax payments in Panel C only include taxation through the LBT system. The federal corporate tax and income tax systems are not taken into account.

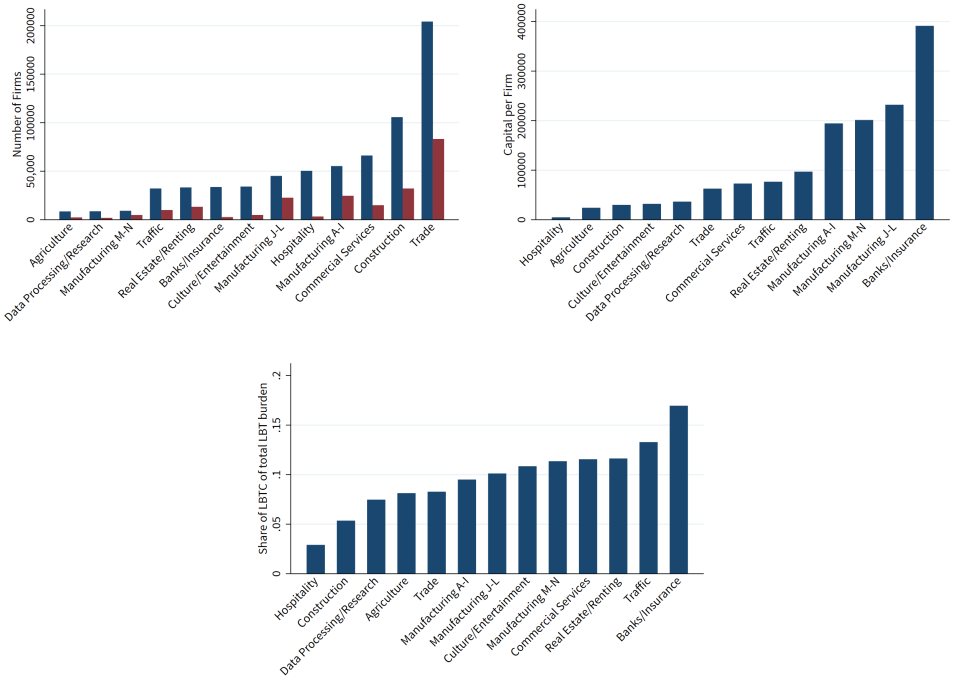


Figure C.3: LBTC exposure by industry

Data: Local Business Tax Statistics 1995. *Notes:* The figure in the top left displays the number of plants that had positive LBTC payments (in red) and LBTP payments (in blue). The figure in the top right displays the average amount of capital per plant in each industry. The bottom figure displays the share of the total LBT liability that is due to the LBTC. Manufacturing A-I covers the lower-tech manufacturing sectors, J-L covers mechanical/electrical engineering and adjacent sectors. M-N covers manufacturing of vehicles.

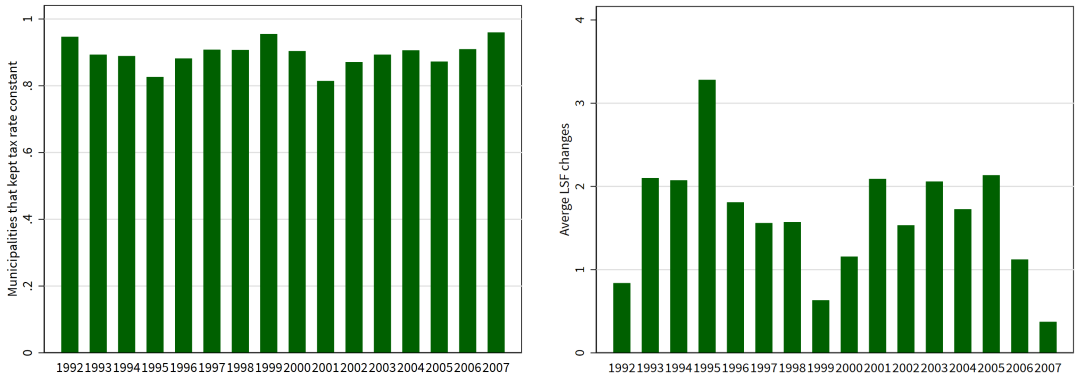


Figure D.4: Local Business Tax changes around the reform

Data: Statistical Offices of the Federal States. *Notes:* The left panel displays fraction of municipalities that keep their LSF constant each year. It shows that the fraction of municipalities is not different in the years around the reform than in other years. The right panel presents the average change of the LSF in each year. The changes in the years from 1996 to 1998 are very comparable to other years.

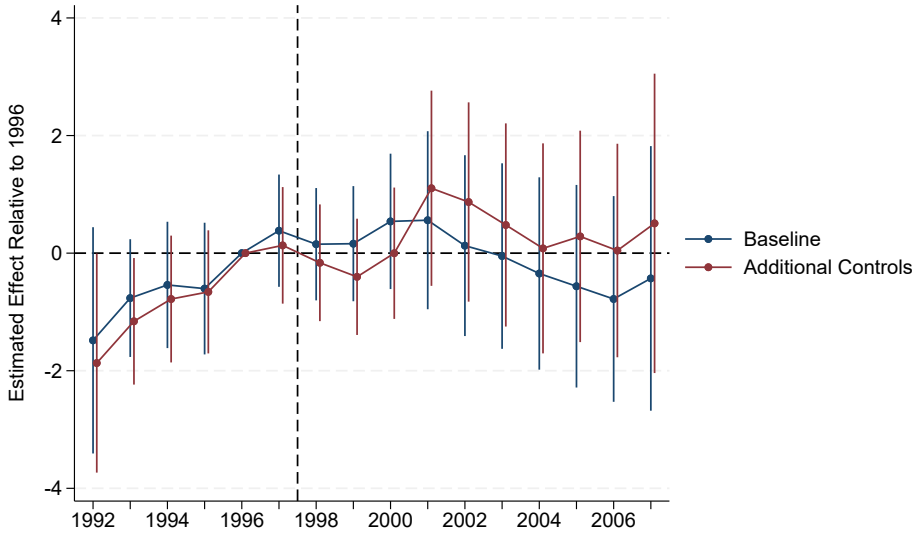


Figure D.5: Local Business Tax changes around the reform

Data: Statistical Offices of the Federal States. *Notes:* This graph plots the point estimates β_t and the corresponding 95% confidence intervals from the event study model described in Equation 7. The dependent variable is a cumulative sum of the number of tax changes that happened between 1992 and 2006. The graph shows that there is no significant relation between the size of the LBTC cut and the number of tax changes in the following years.

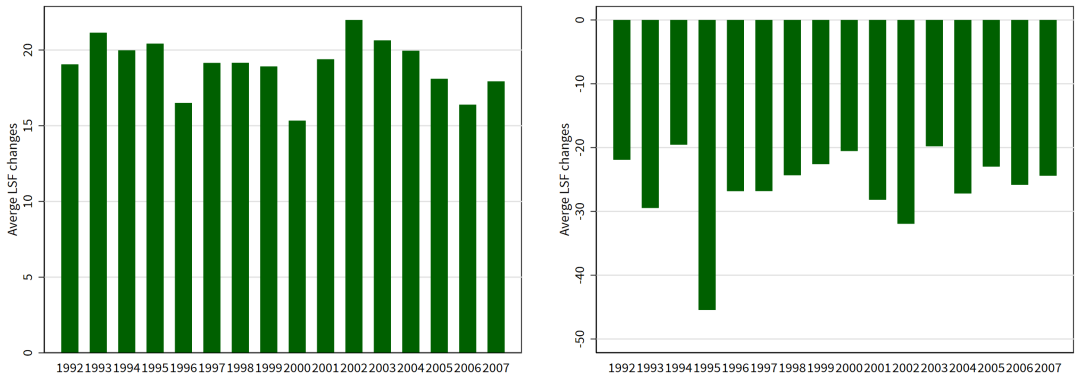


Figure D.6: Local Business Tax changes around the reform

Data: Statistical Offices of the Federal States. *Notes:* The figures display the average size of positive and negative LSF changes around the reform in 1998.

D Additional Results

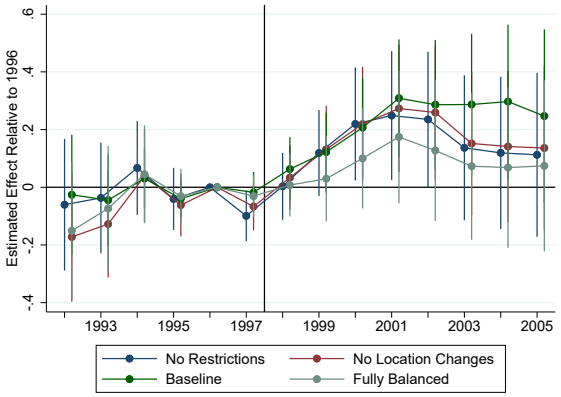
Table D.6: Heterogeneity

Heterogeneity:	Employment	Wages	Productivity
Dependent Variable:	Mean Log FT Wage		
Low × Post × Δ LBTC	0.0265**	-0.0135	-0.0318*
	(0.0115)	(0.0155)	(0.0185)
Low-Mid × Post × Δ LBTC	0.0498***	0.0185	0.0212*
	(0.0146)	(0.0115)	(0.0127)
Mid × Post × Δ LBTC	0.0443***	0.0120	-0.00338
	(0.0155)	(0.0111)	(0.0134)
High-Mid × Post × Δ LBTC	0.00830	0.00983	0.0205*
	(0.0177)	(0.0132)	(0.0121)
High × Post × Δ LBTC	0.00211	0.0787***	0.0683***
	(0.0204)	(0.0140)	(0.0129)
Tax Change Controls	✓	✓	✓
District FE	✓	✓	✓
District type FE × Year FE	✓	✓	✓
Pre-Treatment Controls	✓	✓	✓
State × Year FE	✓	✓	✓
Industry × Year FE	✓	✓	✓
Observations	2462340	2462340	2171025

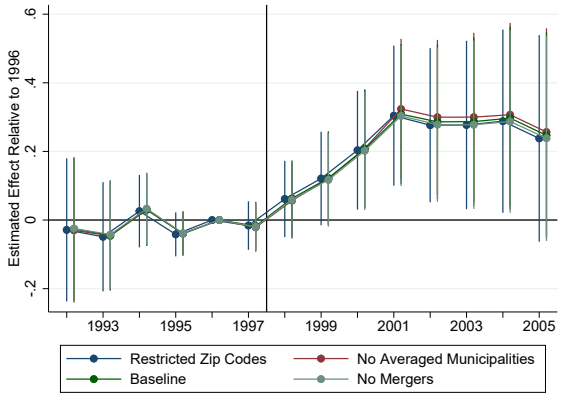
Data: Statistical Offices of the Federal States, Establishment History Panel and Local Business Tax Statistics. *Notes:* This table displays estimates from DiD regressions of log wages on the size of the tax cut interacted with dummies for the quintile of the firm in the employment (first column), wage (second column) and productivity (third column) distribution. All regressions control for changes in the LBTP rate. Standard errors in parentheses are clustered at the district level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure D.7: Robustness: effects on the capital stock

(a) Sample Restrictions 1



(b) Sample Restrictions 2



Notes: This graph plots the point estimates β_t and the corresponding 95% confidence intervals from the event study model described in Equation 7 for firms in West Germany. The dependent variable is the establishment-level log capital stock. All regressions include plant, municipality, state × year fixed effects. All regressions control for changes in the LBTP rate. Standard errors are clustered on the municipality level. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and IVS-IND (2020).

Table D.7: Effect of the tax cut on employment by education level

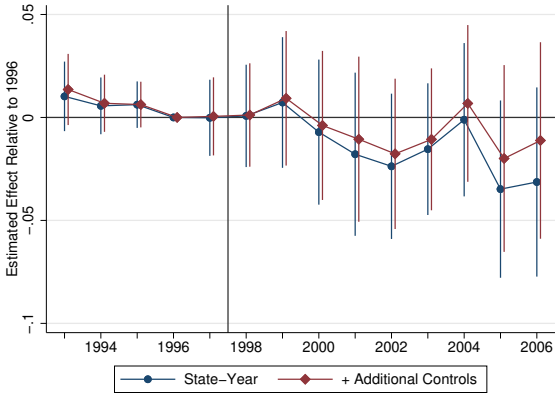
	Share of Employment by Qualification			
	Low	Medium	High	Other
Post × Δ LBTC	0.00477	-0.00493	-0.0000721	0.000230
	(0.00933)	(0.00751)	(0.00522)	(0.00293)
Tax Change Controls	✓	✓	✓	✓
District FE	✓	✓	✓	✓
Establishment FE	✓	✓	✓	✓
District type FE × Year FE	✓	✓	✓	✓
Pre-Treatment Controls	✓	✓	✓	✓
State × Year FE	✓	✓	✓	✓
Observations	2,486,416	2,486,416	2,486,416	2,486,416

Notes: This table displays estimates from DiD regression of education-type employment on the size of the tax cut as described in Equation 8. All regressions control for changes in the LBTP rate. LBTC refers to the local business capital tax in 1996. Standard errors in parentheses are clustered at the district level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Establishment History Panel.

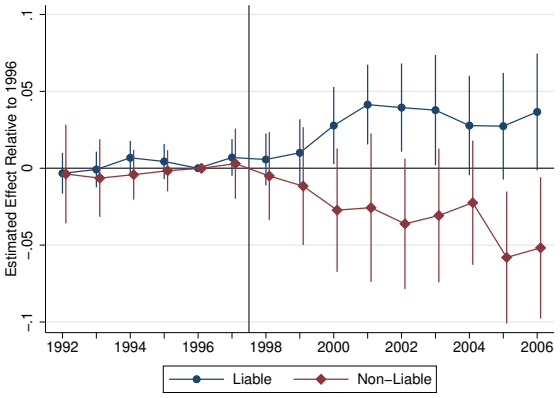
Figure D.8: Placebo Tests: Non-liable and East German firms

Effect on Wages

(a) Non-liable and East

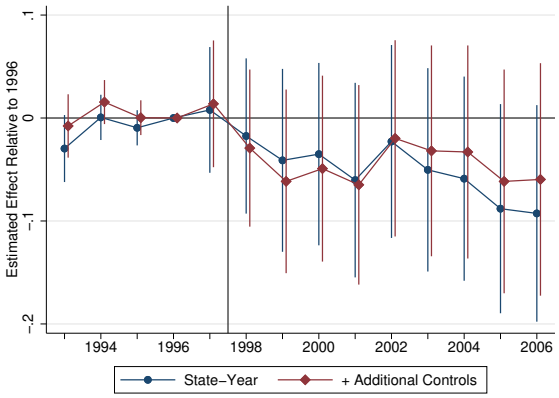


(b) Liable vs Non-liable

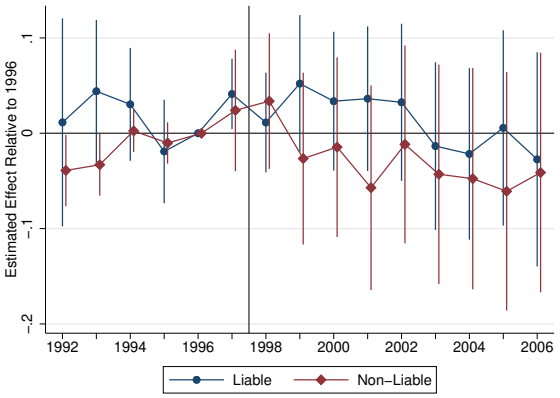


Effect on Employment

(c) Non-liable and East

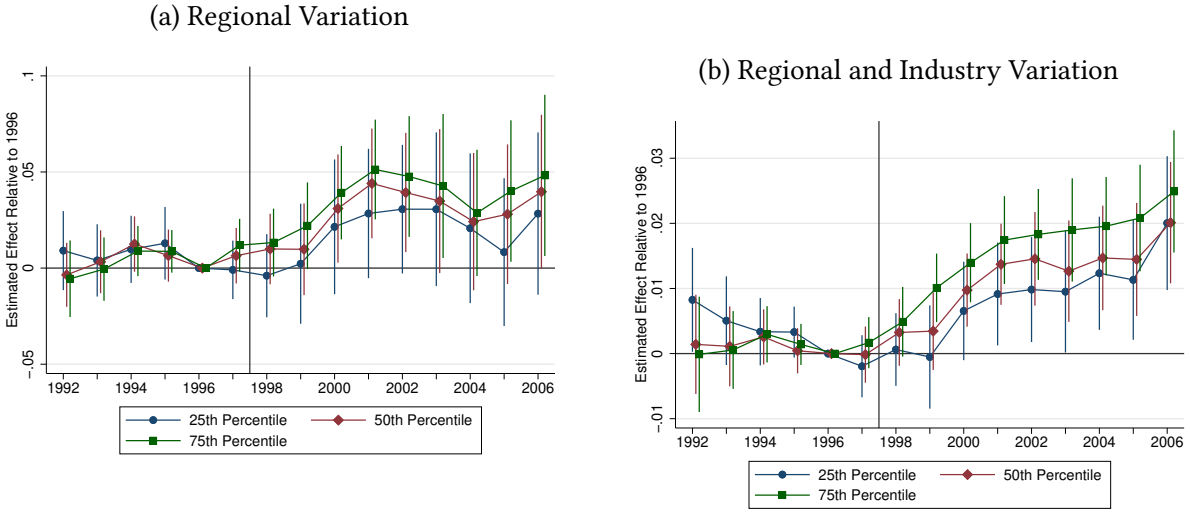


(d) Liable vs Non-liable



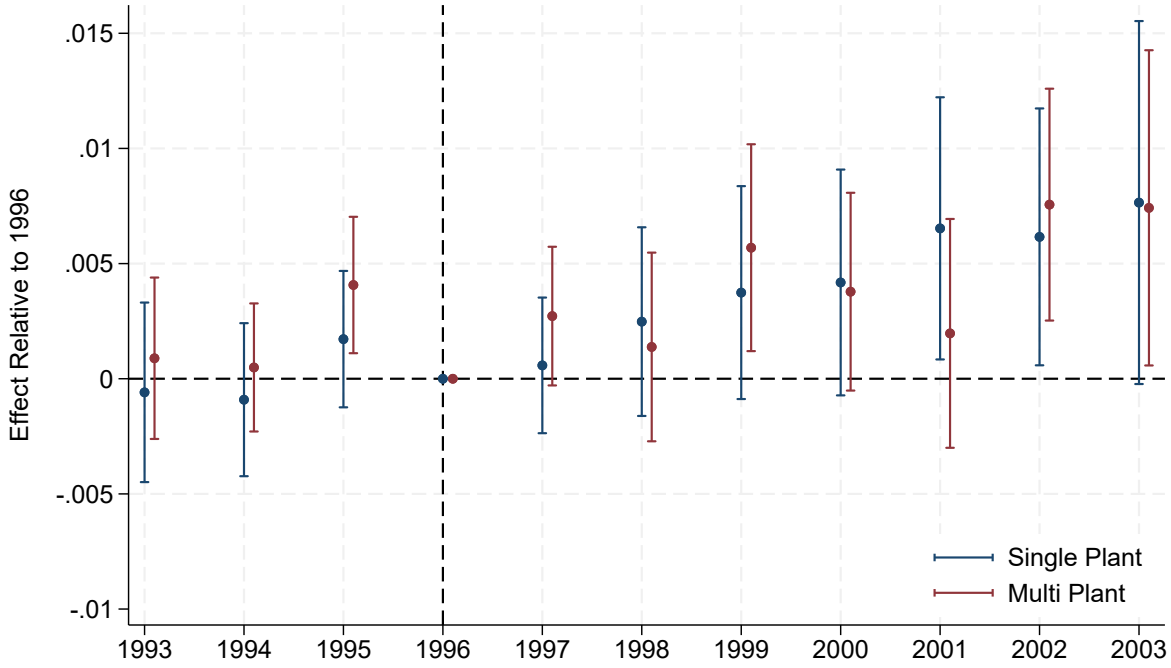
Notes: This graph plots the point estimates β_t and the corresponding 95% confidence intervals from the event study model described in Equation 7 for firms in East Germany. In Panels (a) and (b), the dependent variable is the establishment-level log average wage. In Panels (c) and (d), the dependent variable is the establishment-level full-time employment. All regressions include plant, district, pre-treatment controls, state × year, and district type × year fixed effects. All regressions control for changes in the LBTP rate. In Panels (a) and (c), the estimates in red also include sector × year fixed effects. In Panels (b) and (d) the blue coefficients are for liable plants, while the red coefficients are for non-liable businesses. Standard errors are clustered on the district level. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Establishment History Panel.

Figure D.9: Effect on Wages - By Percentile



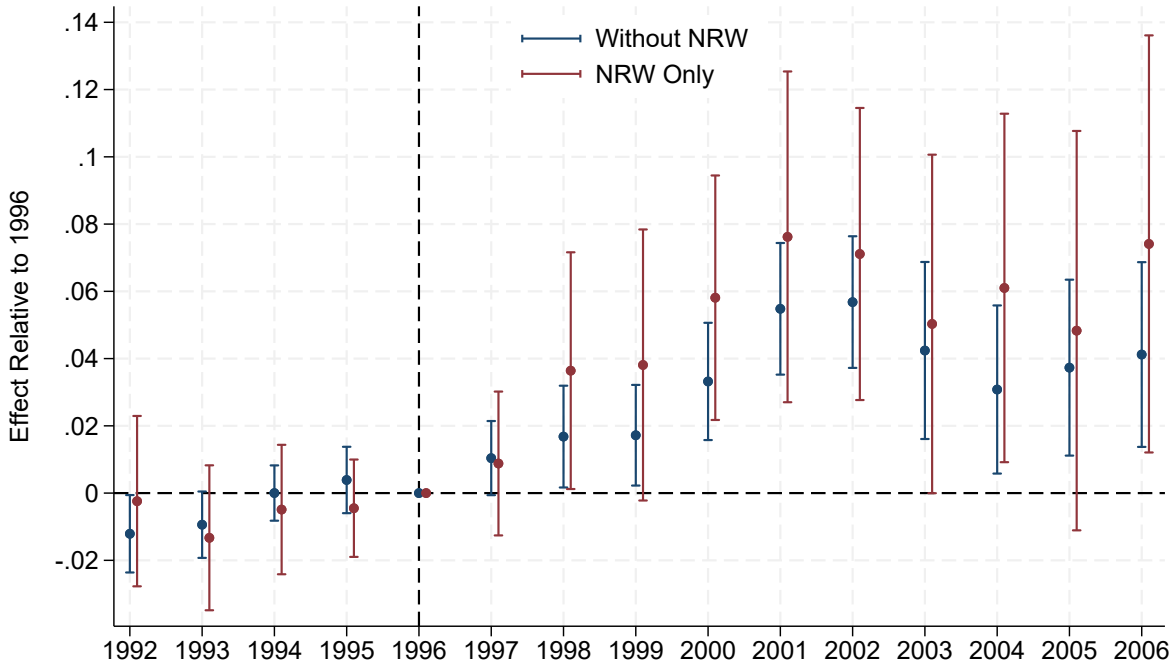
Notes: This graph plots the point estimates β_t and the corresponding 90% confidence intervals from the event study model described in Equation 7. The dependent variable is the establishment-level 25th, 50th, and 75th percentile wage. All regressions include plant, district, and district type × year fixed effects. All regressions control for changes in the LBTP rate. Standard errors are clustered on the district level. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Establishment History Panel.

Figure D.10: Effect on Wages for Single and Multi-Plant Firms



Notes: This graph plots the point estimates β_t and the corresponding 90% confidence intervals from the event study model described in Equation 7. The dependent variable is the establishment-level average wage. The specification is estimated on the sample of the establishment panel. All regressions include plant, district, and district type × year fixed effects. All regressions control for changes in the LBTP rate. Standard errors are clustered on the district level. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Establishment Panel.

Figure D.11: Effect for North Rhine-Westphalia (NRW) and excluding NRW



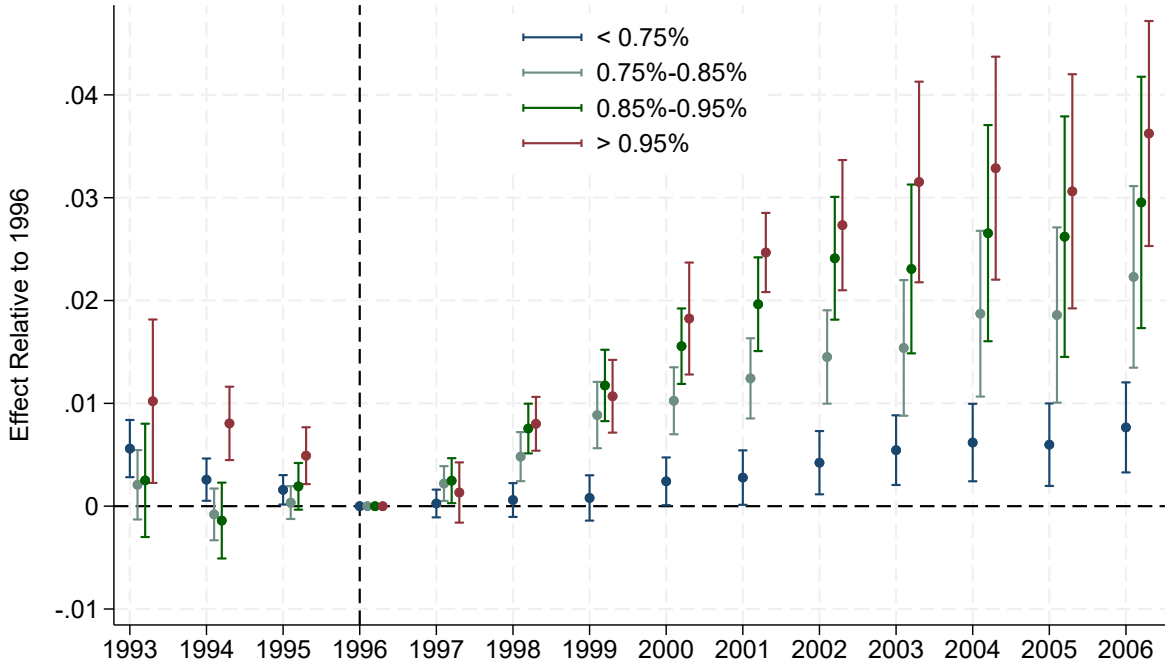
Notes: This graph plots the point estimates β_t and the corresponding 95% confidence intervals from the event study model described in Equation 7. The dependent variable is the establishment-level average wage. The regressions are estimated on data from NRW only (red) or all states except NRW (blue). All regressions include plant, district, and district type × year fixed effects. All regressions control for changes in the LBTP rate. Standard errors are clustered on the district level. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Establishment History Panel.

Table D.8: Effect of the tax cut on Wages throughout the Distribution

	Log Wage FT		
	P25	P50	P75
Post × Δ LBTC	0.00956	0.0230**	0.0322**
	(0.0116)	(0.0117)	(0.0128)
Tax Change Controls	✓	✓	✓
District FE	✓	✓	✓
Establishment FE	✓	✓	✓
District type FE × Year FE	✓	✓	✓
Pre-Treatment Controls	✓	✓	✓
State × Year FE	✓	✓	✓
Observations	2,462,460	2,462,460	2,462,460

Notes: This table displays estimates from DiD regression of full-time wages on the size of the tax cut as described in Equation 8. P25 refers to wages at the 25th percentile in each establishment, P50 to the 50th percentile (median) and P75 to the 75th percentile. LBTC refers to the Local business capital tax in 1996. All regressions control for changes in the LBTP rate. Standard errors in parentheses are clustered at the district level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Establishment History Panel.

Figure D.12: Effect on Wages with discrete treatment



Notes: This graph plots the point estimates β_t and the corresponding 95% confidence intervals from the event study model described in Equation 7. The dependent variable is the establishment-level average wage. The explanatory variables are binary indicators for the size of the tax cut. The omitted category are tax cuts below 0.75%. All regressions include plant, district, and district type × year fixed effects. All regressions control for changes in the LBTP rate. Standard errors are clustered on the district level. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Establishment History Panel.

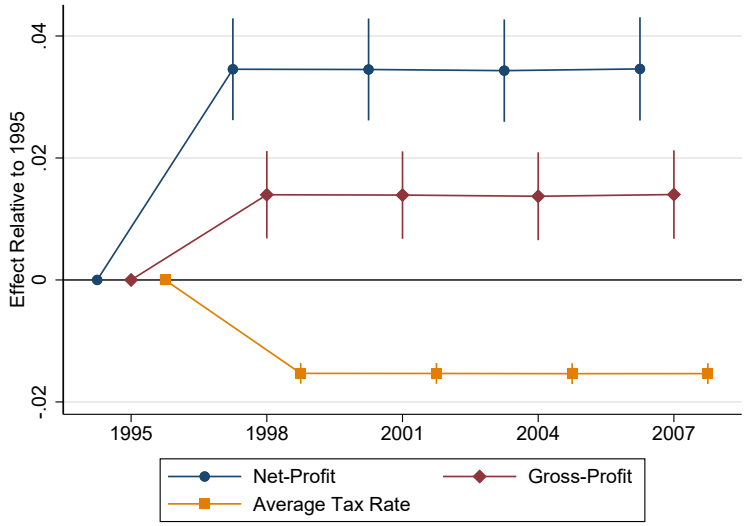
Table D.9: Effect of the tax cut on Wages: Controlling for Composition

	Mean Log Wage FT		
Post × Δ LBTC	0.0247**	0.0274**	0.0330***
	(0.0110)	(0.0110)	(0.0110)
Tax Change Controls	✓	✓	✓
District FE	✓	✓	✓
Establishment FE	✓	✓	✓
District type FE × Year FE	✓	✓	✓
Pre-Treatment Controls	✓	✓	✓
State × Year FE	✓	✓	✓
Education Controls		✓	✓
Age Controls			✓
Observations	2,462,460	2,462,460	2,462,460

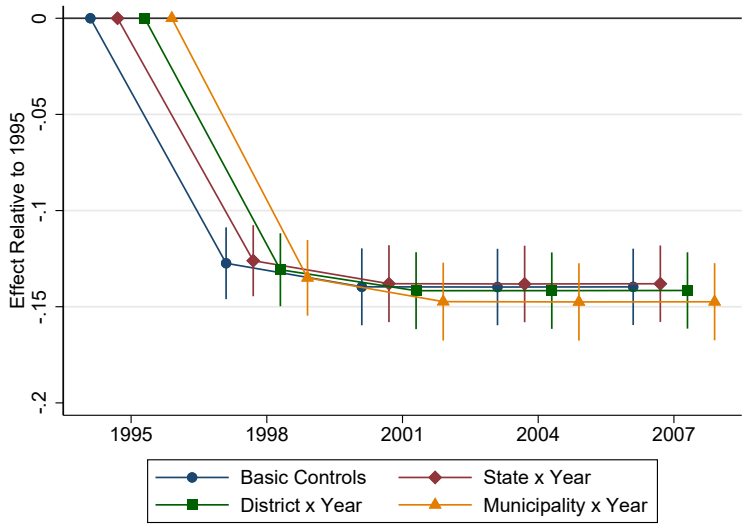
Notes: This table displays estimates from DiD regression of full-time wages on the size of the tax cut as described in Equation 8. Education controls refer to the number of employees with low, medium, and high education. Age controls refer to the number of employees between 15 and 29, 30 and 54, and 55 and older. LBTC refers to the local business capital tax in 1996. All regressions control for changes in the LBTP rate. Standard errors in parentheses are clustered at the district level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Establishment History Panel.

Figure D.13: Dynamic effect of the tax cut on profits and taxes

(a) Panel A: Effect on Profits and AETRs



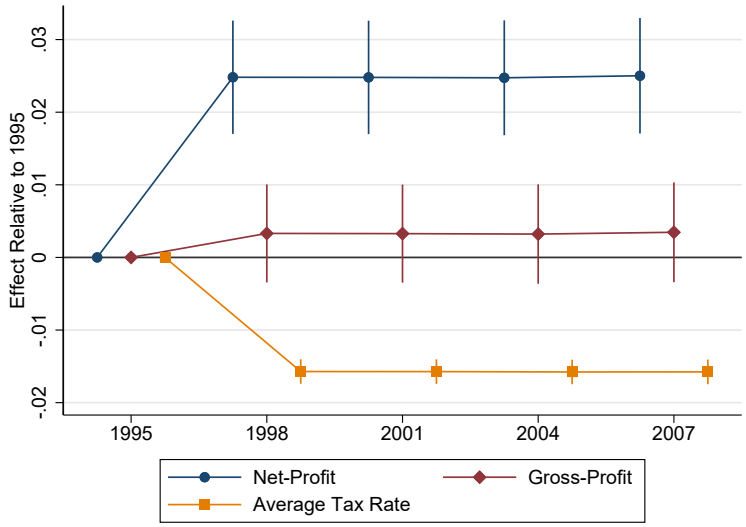
(b) Panel B: Effect on Taxes Paid



Notes: This graph plots the point estimates β_t and the corresponding 90% confidence intervals from the event study model described in Equation 7. The dependent variables in Panel (a) are gross profits, net profits, and the average effective tax rate (AETR). The dependent variable in Panel (b) is sum of LBT payments. Regressions in Panel (a) include municipality × industry, industry × year, state × year, and district type × year fixed effects. Regressions in Panel (b) include municipality × industry, industry × year, district type × year fixed effects, and the fixed effects described in the figure. All regressions control for changes in the LBTP rate. Standard errors are clustered on the municipality level. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Local Business Tax Statistics.

Figure D.14: Dynamic effect of the tax cut on profits and taxes (Using only within-municipality variation based on industries)

(a) Effect on Profits and AETRs - Municipality × Year FE



Notes: This graph plots the point estimates β_t and the corresponding 90% confidence intervals from the event study model described in Equation 7. The dependent variables are gross profits, net profits, and the average effective tax rate (AETR). Regressions include municipality × industry, industry × year, municipality × year, and district type × year fixed effects. All regressions control for changes in the LBTP rate. Standard errors are clustered on the municipality level. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Local Business Tax Statistics.

Table D.10: Elasticity Estimates

Panel A.	Mean Log Wage FT		
Post × Log Δ Log LBTC	0.0394***	0.0329***	0.0170**
	(0.00726)	(0.00663)	(0.00837)
Panel B.	Log Regular Employment		
Post × Δ Log LBTC	0.102***	0.0142	-0.0132
	(0.0203)	(0.0342)	(0.0361)
Tax Change Controls	✓	✓	✓
District FE	✓	✓	✓
Establishment FE	✓	✓	✓
District type FE × Year FE	✓	✓	✓
Pre-Treatment Controls			✓
State × Year FE		✓	✓
Industry × Year FE	✓	✓	✓
Observations	2,486,448	2,486,416	2,486,416

Notes: This table displays estimates from DiD regression of the average full time wage (Panel A) or regular employment (Panel B) on the logarithm of the size of the tax cut as described in Equation 8. All regressions control for changes in the LBTP rate. LBTC refers to the local business capital tax in 1996. Standard errors in parentheses are clustered at the district level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Establishment History Panel.

Table D.11: DiD mean full-time wages and full-time employment - Using Industry Variation

Panel A:	Labor Market				
	Log Mean Wage FT				
Post × Δ LBTC Industry	0.0180***	0.0100***	0.0115***	0.00755**	0.0129**
	(0.00286)	(0.00334)	(0.00275)	(0.00328)	(0.00555)
	Log FT Employment				
Post × Δ LBTC Industry	0.0342***	0.00620	0.0187	-0.00411	-0.0196
	(0.00865)	(0.0162)	(0.0148)	(0.0143)	(0.0160)
Tax Change Controls	✓	✓	✓	✓	
District FE	✓	✓	✓	✓	✓
Establishment FE	✓	✓	✓	✓	✓
District type FE × Year FE	✓	✓	✓	✓	✓
Pre-Treatment Controls		✓		✓	✓
State × Year FE		✓	✓	✓	✓
Industry × Year FE	✓	✓	✓	✓	✓
Industry × State × Year FE				✓	
District × Year FE					✓
Observations	2,462,460	2,462,460	2,462,460	2,462,460	2,462,460

Notes: This table displays estimates from DiD regressions of log full-time wages and log full-time employment on the size of the tax cut as described in Equation 8. All regressions control for changes in the LBTP rate. LBTC refers to the local business capital tax in 1996. Standard errors in parentheses are clustered at the district level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Establishment History Panel.

Table D.12: Liable and Non-Liable Firms

	Log Regular Employment			Mean Log Wage FT		
Post × Δ LBTC	0.0829*	-0.00141	-0.00813	-0.02237*	-0.0215	-0.000486
	(0.0423)	(0.0392)	(0.0356)	(0.0124)	(0.0139)	(0.0135)
Post × Liable × Δ LBTC	-0.00808	0.00529	-0.0143	0.0783***	0.0860***	0.0452***
	(0.0292)	(0.0245)	(0.0239)	(0.0085)	(0.0100)	(0.00996)
Tax Change Controls	✓	✓	✓	✓	✓	✓
District FE	✓	✓	✓	✓	✓	✓
Establishment FE	✓	✓	✓	✓	✓	✓
District type FE × Year FE	✓	✓	✓	✓	✓	✓
Pre-Treatment Controls		✓	✓		✓	✓
State × Year FE		✓	✓		✓	✓
Industry × Year FE			✓			✓
Observations	3,358,290	3,358,290	3,358,290	3,358,290	3,358,290	3,358,290

Notes: This table displays estimates from DiD regressions as described in Equation 8. LBTC refers to the local business capital tax in 1996. Post × LBCT 1996 shows estimates for non-liable firms. The sum of the coefficients Post × LBCT 1996 and Post × Liable × LBCT 1996 is the effect on liable firms. All regressions control for changes in the LBTP rate. Standard errors in parentheses are clustered at the district level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Establishment History Panel.

Table D.13: Placebo: Investment

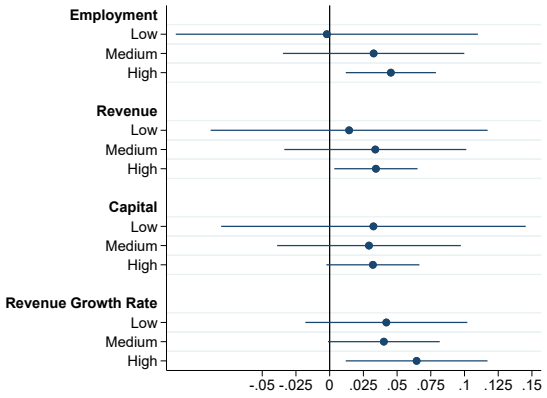
Panel A	Effect on Building Investment	
	Log Investment BL	
Post × Δ LBTC	-0.0754	0.0710
	(0.653)	(0.783)
Observations	9399	9395

Panel A	Effect on Investment: East German States			
	Log Total Investment		Log Investment E+M	
Post × Δ LBTC	-0.0971	0.127	-0.198	0.0186
	(1.125)	(1.083)	(1.128)	(1.081)
Observations	1614	1614	1753	1753
Municipality FE	✓	✓	✓	✓
Establishment FE	✓	✓	✓	✓
Industry × Year FE	✓	✓	✓	✓
State × Year FE		✓		✓

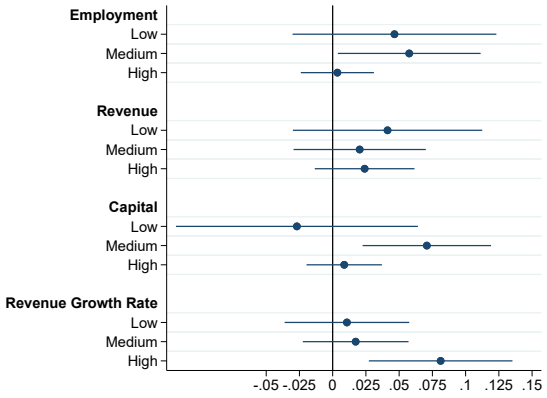
Notes: This table displays estimates from DiD regressions as described in Equation 8. LBTC refers to the local business capital tax in 1996. Panel A displays estimates for investments in buildings and land. Panel B shows estimates for total investment and investment in machines and equipment (E+M) in the East German states. All regressions control for changes in the LBTP rate. Standard errors in parentheses are clustered at the municipality level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and IVS-IND (2020).

Figure D.15: Heterogeneity of Effect on Capital Stock: Size Categories

(a) Book-wealth tax



(b) Profit Tax



Notes: This graph plots the point estimates β_t interacted with heterogeneity dummies and the corresponding 95% confidence intervals from the event study model described in Equation 7. The dependent variable is always the firm level capital stock. In Panels (a) and (b), they are split into groups according to the size of their capital stock, workforce, revenue, and revenue growth. All regressions include plant, municipality, and state × year fixed effects. Standard errors are clustered on the district level.*Source:* Own calculations based on data from the Statistical Offices of the Federal States, IVS-IND (2020).

Table D.14: Effect on Profits and Tax rates

	EATR		Log Net Profit		Log Gross Profit	
Post × Δ LBTC	-0.0151***	-0.0153***	0.0345***	0.0311***	0.0139***	0.0103**
	(0.00103)	(0.00103)	(0.00510)	(0.00477)	(0.00437)	(0.00407)
Observations	399615	399615	399615	399615	399615	399615
Tax Change Controls	✓	✓	✓	✓	✓	✓
Municipality × Industry FE	✓	✓	✓	✓	✓	✓
Industry × Year FE	✓	✓	✓	✓	✓	✓
State × Year FE	✓		✓		✓	
District × Year FE		✓		✓		✓

Notes: Standard errors in parentheses are clustered at the municipality level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Local Business Tax Statistics.

Table D.15: Effect on Tax Payments

	Taxes Paid		
Post × Δ LBTC	-0.131***	-0.132***	0.137***
	(0.0123)	(0.0125)	(0.0130)
Observations	399615	399615	399615
Tax Change Controls	✓	✓	✓
Municipality × Industry FE	✓	✓	✓
Industry × Year FE	✓	✓	✓
State × Year FE		✓	
District × Year FE			✓

Notes: Standard errors in parentheses are clustered at the municipality level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Local Business Tax Statistics.

Table D.16: Effect of $1 - \tau_c^p$ on Profits

	Log Net Profit		Log Gross Profit	
$\Delta \ln(1 - \tau_c^p)$	1.623***	1.754***	0.633***	0.698***
	(0.343)	(0.374)	(0.289)	(0.292)
Observations	81,012	81,012	81,012	81,012
Municipality FE	✓	✓	✓	✓
LBTC Controls	✓	✓	✓	✓
State × Year FE	✓	✓	✓	✓
District × Year FE		✓		✓

Notes: Standard errors in parentheses are clustered at the municipality level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *Source:* Own calculations based on data from the Statistical Offices of the Federal States.

Table D.17: DiD on the Regional Level

		Entry by Productivity				
	Productivity	Low	Mid-Low	Mid	Mid-High	High
Post × Δ LBTC	-0.0254**	0.360***	0.318***	0.0946***	-0.0507	0.121***
	(0.0122)	(0.102)	(0.104)	(0.0306)	(0.0659)	(0.0438)
Net-of-tax-rate LBT	0.408***	0.0172	-0.471	0.0553	-1.163*	-0.212
	(0.141)	(0.665)	(0.599)	(0.349)	(0.668)	(0.482)
Tax Change Controls	✓	✓	✓	✓	✓	✓
District FE	✓	✓	✓	✓	✓	✓
District type FE × Year FE	✓	✓	✓	✓	✓	✓
State × Year FE	✓	✓	✓	✓	✓	✓
Observations	4845	4845	4845	4845	4845	4845

Notes: This table displays estimates from DiD regressions as described in Equation 8. Each estimate comes from a different specification. The dependent variables are productivity and the log number of plants entering by productivity quintile. All regressions control for changes in the LBTP rate and the controls detailed below the coefficient estimates. LBTC refers to the local business capital tax in 1996. Standard errors in parentheses are clustered at the district level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. *Source:* Own calculations based on data from the Statistical Offices of the Federal States and Establishment History Panel.