Oxford University
Centre for
Business Taxation

Do better entrepreneurs avoid more taxes?

October 2015

WP15/17

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Working paper series | 2015

SAID BUSINESS SCHOOL
UNIVERSITY OF OXFORD

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June 2015

Abstract

In this paper, we estimate why some firms strongly react to avoidance incentives given by non-linear taxes and regulations while others don't. We measure avoidance using a kinkpoint in the French corporate income tax schedule and a notch in exposure to French labor regulation. We find that firm profitability is a strong predictor of avoidance: income tax elasticities are 30% bigger among firms in the top quintile of ROA than among firms in the bottom quintile; employment declines induced by the regulation notch are more than twice as big among the former group of firms as among the latter. Going further, we find that tax elasticities reflect in great part the speed of tax code learning by firms and that more profitable firms learn faster. We also find that firms' avoidance strategies are much more developed when management is more sophisticated and ownership structures are more concentrated. Overall, we conclude that a large part of firm heterogeneity in the strength of reaction to taxes and regulations reflects differences in the quality of governance rather than differences in firm technologies.

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1 Introduction

An efficient tax system should make sure that taxpayers react as little as possible to the introduction of a tax, for reasons of both welfare and revenue-raising efficiency. Following this insight, the empirical literature in taxation focuses on estimating tax elasticities (Saez, Slemrod & Giertz, 2012). Because the motives of individuals are diverse and hard to rationalize ex ante, the recent literature on personal taxes has focused on estimating reduced form elasticities based on non-linearities in tax schedules (Saez, 2010; Kleven & Waseem, 2013). An even more recent literature has used similar methods to estimate corporations' responses to the tax system (Devereux, Liu & Loretz, 2014; Almunia & Lopez-Rodriguez, 2014). The question remains however whether those parameters reflect the optimal reaction of individuals and companies to the tax system. It is now recognized that individuals suffer from optimization costs and behavioral biases that imply much lower tax elasticities than their actual preferences would suggest (Chetty, 2012, 2015). In this paper, we ask whether firms suffer from similar inefficiencies that lead them to react too little to a given tax system. We posit that firms that are poorly managed, in terms of their inability to deliver a high return on the assets under management, are also less likely to optimize their behavior with respect to taxes.

To provide evidence in support of this hypothesis, we measure tax optimization using two specific features of the French tax system. First of all, small independent businesses are eligible to a reduced marginal corporate tax rate for declared incomes below a unique threshold, which creates a kink in the corporate tax schedule for those firms. Secondly, firms that employ more than 50 employees must set up and finance various committees and profit-sharing systems on behalf of their employees; we characterize this feature of social legislation as the equivalent of a tax notch (Garicano, Lelarge & Van Reenen, 2013). While such features of tax systems have already been used to estimate elasticities, we can dig far more into the heterogeneity of tax responses thanks to the richness of French firm-level data.

Investigating those two very different forms of avoidance incentives helps our analysis in several respects. The corporate income tax kink is located at around 38,000 euros on an annual basis, so it primarily affects small business ventures. The employment regulation notch affects much bigger and established firms. Therefore, using those two aspects of the French business environment strengthens the external validity of our results. Those two experiments also allow us to investigate complementary aspects of our research question. The quality of management in small firms can be equated with the degree of sophistication of the entrepreneur, which we measure on several dimensions using a large-scale survey on entrepreneurs' biographical background. On the other hand, firms with around 50 employees are already complex organizations with significant diversity in ownership structures. Therefore, the employment regulation notch allows for an exhaustive investigation of the impact of ownership quality on regulatory avoidance.

In line with the existing literature, we document strong income and employment bunching reactions to tax kinks and notches faced by French companies. More importantly, we uncover a very strong heterogeneity in firms' reactions. Firms that have a significantly lower profitability than their peers are much less likely to adjust their declared income and their employment level so as to avoid exposure to higher tax rates. Firms hiring 46 to 49 employees have a return on assets which is 25% higher than 50-to-53-employee firms. Similarly, those companies with taxable income located just at the kink in marginal tax rates have a level of return on assets which is 5% higher than normal, even though most firms with such level of income have not chosen it for tax reasons. We use both static bunching regressions (as in Saez (2010)) and dynamic bunching regressions (as in Marx (2015)) in order to precisely account for and confirm this effect of profitability on avoidance.

Are those results driven by “bad” entrepreneurs' failures to optimize taxes or is it that the technology of those firms leads them to avoid taxes less? Besides controlling for technological characteristics such as industry fixed effects, productivity or financial soundness, one direct way to answer this question is to analyze tax code learning by firms, which we can do thanks to the French institutional context and the quality of the tax data at our disposal. Since the reduced marginal corporate income tax rate was introduced in 2001 and tax filers must self-assess their tax liability, we are able to distinguish quick and slow learners of the progressivity of the new schedule. Not surprisingly, we find that quick learners bunch at kinkpoints more intensively in the early period after the tax reform, yet slow learners catch up and eventually bunch as much as quick learners. This suggests that there is a learning dimension to tax optimization that is independent of owners' core preferences and technologies. What is more, this inability to quickly incorporate changes in the tax code is shown to be strongly correlated with features of poorly-run ventures: firms whose profitability is lagging and those whose founder received no specific training before starting the company are more often among slow tax learners.

Importantly, the impact of poor management on tax optimization is not just temporary and limited to those periods when tax codes and social regulations significantly evolve. By 2004-2007, when the progressivity of the corporate tax was firmly established, there were still very significant differences between firms in the amount of tax optimization. In particular, we show that the amount of schooling received by the entrepreneur significantly increases the chances that corporate income is bunched at the kinkpoint: the tax elasticity implied by bunching is close to zero for entrepreneurs without any diploma.

Those correlations between management performance and tax optimization are suggestive, but their causality is questionable as the determinants of performance are diverse and impossible to control for exhaustively. Since our hypothesis is that profitability triggers avoidance because this index of performance reflects the quality of governance, we directly test whether the quality of governance structures affects governance. Ownership structure in particular has been shown to be an essential determinant of firm performance in general (Anderson and Reeb, 2003), and management quality in particular (Bloom, Van Reenen, 2007), so we conclude our work by investigating the direct impact of ownership on tax optimization. Our main finding is that firms choosing to have 49 employees rather than 50 employees are much more likely to be owned by few shareholders or a family. Likewise, small firms bunching at the corporate income tax kink are much more likely to be owned by one individual or just a few. We believe this is further proof that good managers, driven by motivated owners, are more likely to practice tax and regulatory avoidance.

The implications of those findings for taxation systems are twofold. First of all, since tax avoiders are among the most profitable entities while non-avoiders are among the least profitable, it follows that firm selection based on profitability, i.e. the entry of profitable firms and the exit of unprofitable ones, may in the long run drive tax and regulation elasticities upwards and make tax revenue raising less efficient unless other simultaneous developments, such as increasing transparency and better tax collection technologies, counteract this force. Secondly, our results show that in practice corporate taxation does not treat firms equally: efficiently managed firms react more strongly to taxes and regulations, which may entail a significant macroeconomic efficiency cost if part of those reactions involves real declines in activity and if profitable firms generate more positive spillovers to the rest of the economy.

This paper is related to several strands of the literature on business taxation. The contribution that is closest to ours is by Zwick and Mahon (2014). They analyze the determinants of the take-up of a tax refund for corporate losses offered to US small businesses. They document that in spite of a very generous tax credit, a majority of eligible firms choose not to apply for it. However, when firms hire expert tax preparers, they become much more likely to file for the tax refund. Their main conclusion is that firms may widely differ in their ability to optimize taxes. Our paper makes a similar claim but we try to understand better why some firms are poor tax optimizers. It could be that understanding the tax system is costly (which the cost of hiring a good tax preparer should reflect) or it could be that poor corporate tax optimizers are just poor optimizers in other dimensions, which should be reflected in the operating profitability of firms and the characteristics of firm governance. This last hypothesis is exactly what we test and confirm in this paper. Our paper also relates to a contribution from Kleven & Saez (2015) on the role that firms' management practices play in the efficiency of tax systems. They claim that as organizations become more complex they need to rely on extensive book-keeping, which in turn makes it harder to avoid large tax liabilities. We suggest instead that better management may be a double-edged sword from the point of view of tax collectors: it could increase the transparency of firms' operations, but it could also boost the aggressiveness of firms when it comes to optimizing tax payments.

The remainder of the paper is as follows. Section 2 presents the underlying theoretical framework and the French institutional context. Section 3 describes our empirical strategy. Section 4 introduces our data set and the variables used in the analysis. Section 5 presents the results of our analysis. Section 6 concludes.

2 Theoretical Framework and Institutional Context

Our primary goal is to document the heterogeneity of firms' ability to optimize taxes and regulations. Our approach is to analyze firms' decisions when faced with sharp incentives to avoid taxes and regulations due to nonlinearities (the so-called kinks and notches) in tax schedules and labor regulations. Under conditions that we will elaborate on in this section, we can use firms' reactions to those incentives as a measure of their optimizing ability. In order to understand our approach, we will start with a description of the French institutional specificities that we will use. We will then provide a theoretical discussion on how firms should behave with respect to those features of the French tax and regulatory systems. This will allow us to investigate whether more profitable firms should behave differently with respect to the tax system.

2.1 The French Corporate Income Tax Kink

The first institutional feature of the French economy that we will consider here is the presence of a "kink" in the corporate tax schedule, a taxation feature that has already been thoroughly analyzed in the British case (Devereux et al., 2014). In France, before the fiscal year 2001, the rate of the corporate income tax was uniform in the range of positive tax incomes, around 33 % since the early nineties. In early 2001, a gradual switch to progressivity in the tax schedule was announced: for tax exercises opened in 2001, there would be a reduced 25 % marginal rate for tax incomes between 0 and €38,120, and the regular 33 % rate above €38,120; starting with fiscal year 2002, the reduced tax rate would further be decreased to 15%. Access to this reduced rate was however limited to independent SMEs, which means that eligible firms must have less than €7.6 million in annual sales and must be owned by a limited set of individuals. This tax schedule has not changed in either real or nominal terms since then. Raspiller (2008) estimates that about 86 % of all French corporations representing a third of business employment belong to those criteria, so it comes as no surprise that the reduced rate led to foregone tax revenues equalling around 5 % of total corporate tax revenues.

From the eligible firms' point of view, the progressive tax schedule introduces a substantial change in the marginal tax rate that they face at the €38,120 threshold: the net-of-tax income share decreases by more than 20 %.[2] Such a salient kinkpoint sets the French corporate tax apart from other countries with progressive corporate taxes. For instance, in the US, there are as many as eight different corporate income tax brackets for the federal corporate tax alone, to which must be added the state-level corporate tax schedules. In the UK, the marginal tax rate increases at several brackets and both those brackets and corresponding tax rates have frequently changed since 2001. In addition, there is in the British case a substantial incentive for entrepreneurs to shift their take-home revenue from dividends to salary as the tax rate on wages may be close to the tax rate on dividends (see Devereux et al., 2014). There is little incentive of this sort in France as wages are themselves subject to very heavy payroll taxes (typically around 40%, over and above personal income taxes) down to the first euro[3].

Given that the tax kinkpoint has remained at the exact same nominal level since 2002, there has been a very strong incentive to manage taxable income so as to maximize exposure to the reduced tax rate. In particular, firms should try to bunch around the €38,120 threshold in terms of their taxable income. Indeed, when one looks in figures 1, 2 and 3 at the distribution of

[2] On top of that, net-of-corporate-tax income may be further taxed as part of the personal income tax (in case of a dividend distribution) or as part of the capital gains tax. This will not affect our methodology and conclusions, however.

[3] There are reductions in payroll tax rates for low wage levels, but wages given to employers are not eligible to those. According to Devereux et al. (2014), the wedge between tax rates on entrepreneurial income as salary and entrepreneurial income as dividend is much smaller in the UK, between 10 and 17 percentage points.

taxable income for fiscal years 2001, 2004 and 2007, this optimization behavior is strikingly visible and increasing as the kinkpoint becomes well-known.

What is important for us is that such bunching behavior should reflect firms' willingness and/or ability to avoid the corporate tax. To see this, let's assume first that firms face a proportional tax rate τ but can avoid taxes by declaring income $\tilde{y}$ when their true income is y, at a cost equal to $c*(y- \tilde{y})^2/2$. At the optimum, firms should choose to declare $\tilde{y}^{opt}(\tau) = y - (\tau/c)$. True income y is a random variable with a continuous density, so $\tilde{y}^{opt}(\tau)$ also has a continuous density. Let's switch now to a progressive tax system with two marginal rates τ and τ' such that τ' < τ with a change from τ' to τ at kinkpoint k. It is easy to see that for firms that draw y such that:

$$k + (\tau'/c) < y < k + (\tau/c)$$

the optimal solution now is to declare $\tilde{y} = k$. This creates a spike in the distribution of declared income, whose size increases as the cost of avoidance c decreases.

In fact, following a method drawn from Saez (2010) that we will detail *supra*, one can use the estimated amount of bunching at kinkpoints to precisely pin down the elasticity of declared income to (one minus) the tax rate. This metric has the big advantage of summarizing all the potential tax avoidance mechanisms firms have at their disposal under one single figure. It has also been shown by Feldstein (1999) that this elasticity is a sufficient statistic for the deadweight loss caused by a tax. For example, an elasticity of declared income to (one minus) the tax rate that is equal to one means that the reduction in the tax base caused by an increase in the tax rate will exactly offset the revenue gains from such a decision. However, the observed spike in declared income may reflect not just the actual costs of avoidance but also the optimization capabilities of entrepreneurs. To see this, let us consider a slight modification of the above model where a share λ of entrepreneurs is simply not aware of the new progressive schedule and declares its income as if the older uniform tax rate τ was still in place. The new schedule would then also lead to a spike in density at the kink, but the actual number of people bunching to k would be only a fraction (1- λ) of what would obtain if all firms were aware of the optimization potential, independently of what the actual costs of avoidance represent for the entrepreneurs.

In the rest of the paper, we will investigate whether firms' operating profitability can account for part for the observed heterogeneity in corporations' tendency to bunch income at kinks. If this were to be the case, it could either be because more profitable firms are led by knowledgeable managers who are, among other things, more informed about their tax options (in our model, they have a lower λ) or because their technological cost of avoidance is lower (in our model, they have a lower c). This last hypothesis includes the possibility that more profitable firms are also wealthier and more able to hire good tax preparers. We will provide further tests to disentangle those hypotheses in the empirical section.

2.2 The French Labor Regulation Notch

The other feature of the French economy that we analyze in this paper relates to labor regulation. In France, once a firm reaches an employment level of 50, it is subject to a whole set of new obligations[4]: employers must create a profit-sharing savings account so that employees will receive a significant share of the company's profits; two different committees representing employees shall be set up and funded in order to a) monitor work conditions within the firm b) organize regular discussions between the board of directors and employee representatives; any significant layoff decision must now be formalized under a well-publicized plan including economic justifications for the layoff and the provision of re-employment options to workers made redundant.

From the point of view of the entrepreneur, crossing this employment threshold clearly entails additional costs in a discrete manner, so the 50-employee mark can definitely be considered as a tax notch. There is however substantial disagreement in the existing literature over the magnitude and shape of this tax. The 50-employee threshold has been generating lots of policy briefs in France over the last decade. One of the most influential reports, by Attali (2008), used reports from employers' associations and concluded that crossing the threshold would cost about 4% of the total wage bill on an annual basis. Later reports (most notably, Pierron, Richer, 2014) have disputed this number based on major accounting inconsistencies but also on the biased nature of employer reports. One should also keep in mind that the regulations may generate direct benefits for the firm: better work conditions, better dialogue with workers, greater employee motivation, so 4% is very likely an upper bound, even from the employer point of view. Academic debates have rather evolved around the shape of those costs: Gourio and Roys (2014) argue that crossing the threshold primarily generates a one-off sunk cost, while Garicano et al. (2013) take the view that the regulations mostly generate recurring costs for the firm.

[4] A good summary of the regulations kicking in at the 50-employee threshold can be found in Ceci-Renaud & Chevalier (2011) and Garicano et al. (2013).

Either way, what is not disputable is that firms strongly react to the tax notch if one judges by the shape of the employment distribution over the years 1996 to 2007 (figure 4). There are about three times as many firms with 49 employees as firms with 50 employees; this discontinuity in the density of firms can only be reasonably explained by the 50-employee notch. What kind of economic model can account for such a strong reaction? Existing papers on the topic (Gourio & Roys, 2014; Garicano et al., 2013; Almunia, 2013) have all been using the Lucas (1978) model of firm size distribution as a starting base for their analysis. In this model, entrepreneurs draw managerial talent α and the production function is:

$$Y = \alpha * f(n)$$

with n the chosen amount of workers and f an increasing and concave function of n. Regardless of the shape of the regulation costs, one can show that there is a lower bound $\underline{\alpha}$ and an upper bound $\bar{\alpha}$ such that any manager with talent located between those two bounds will decide to move to the 49-employee level due to the regulation. There will therefore be a large density spike at 49. Managers with talent $\bar{\alpha}$ and above will hire significantly more than 50 employees so there should also be a "hole" in the distribution of employment just after 50 employees.

Judging by the shape of the distribution of employment in figure 4, the Lucas model cannot fully account for the actual density of employment levels: there are too many firms just at 50 employees. Previous papers have justified this either by measurement error (Garicano et al., 2013), the sunk cost nature of the regulation (Gourio & Roys, 2014) or frictions in adjusting employment levels to the optimum (Almunia, 2013). We propose a new explanation based on the inability of many entrepreneurs to fully take into account the cost of labor regulations for their firm. Most of the consequences of reaching 50 employees have been in place for a very long time (as far back as 1946), so it is unlikely that any entrepreneur is left unaware of the existence of the tax notch at 50. However, as shown by current policy debates, the magnitude and shape of those regulatory costs is very uncertain, so it could very well be that over-optimistic entrepreneurs underestimate the costs associated with having more than 50 employees. In that sense, the quality of governance should take some part in explaining why so many firms employ just a few more than 50 employees despite the associated surge in labor costs.

In the empirical analysis, we will test whether more profitable firms are less likely to cross the labor regulation threshold. Just as in the case of corporate income tax bunching, it could be that more profitable firms are more financially able to hire good labor lawyers so as to make sure they grasp the full cost of the new labor regulations kicking in at the 50-employee mark. Our discussion of the optimal behavior around the notch provides additional insights into why profitability matters: firms located at the notch should be particularly productive if the Lucas model of firm size is to be taken seriously; bunching firms should also be in a growth rather than decline stage if one takes into account the sunk cost hypothesis. Both of these "technological" explanations may directly link employment bunching to high profitability.

Other current explanations for bunching at the notch or the lack thereof (measurement error, employment adjustment costs, heterogeneity in the cost of labor regulations) do not clearly correlate with whether a firm is highly profitable or not. The only remaining sensible hypothesis then for a link between profitability and bunching is that badly performing managers underestimate the cost of labor regulations. As a result, poorly profitable firms with low quality of governance are less likely to react to the labor tax notch by adjusting their employment downwards.

3 Empirical Strategy

The literature on the estimation of core tax elasticities using non-linearities in tax schedules has taken off in the last decade. Saez (2010) has proposed a methodology to estimate excess bunching at kinkpoints and relate it to the underlying tax elasticities. Kleven and Waseem (2013) have introduced a similar framework for the estimation of excess bunching at notches. While we make use of many intuitions from this literature, we have to take a pragmatic approach for our question is slightly different: we are not primarily interested in pinning down the average *level* of tax and regulation elasticities; we try instead to understand how those elasticities vary across firms, in particular depending on their profitability.

Existing applications of the bunching methodology to the corporate world (Devereux et al., 2014; Almunia, Lopez-Rodriguez, 2014; Garicano et al., 2013) pay attention to heterogeneity simply by estimating elasticity levels in sub-samples sorted according to discrete variables such as industry. One important problem with this approach is that it does not control for potential omitted factors. Given that our main variable of interest is profitability, we need to be able to control for time and industry fixed effect and other firm characteristics to assess the robustness of our results. Unfortunately, state-of-the-art non-parametric estimations of counterfactual distributions in absence of kinks and/or notches (as in Chetty et al. (2011) and Kleven &

Waseem (2013)) do not allow for regression-style controls[5]. In order to be able to control for omitted variables, we will adapt the parametric method proposed by Saez (2010) to study the corporate income tax kink and use the dynamic bunching estimation method proposed by Marx (2015) to study the labor regulation notch. We proceed to the description of those estimation procedures in what follows.

3.1 Estimation of Taxable Corporate Income Elasticity Using Kinks

Saez (2010) shows that in the presence of a kink in the tax schedule leading to a low marginal tax rate *τ'* below income level *k* and a high marginal tax rate *τ* above income level *k*, the elasticity of declared income with respect to the net-of-tax share of declared income is equal to:

$$\varepsilon = \frac{b}{k.\log\left(\frac{1-\tau'}{1-\tau}\right)} \quad (1)$$

where *b* is the excess mass *B* of companies declaring income *k* under the progressive tax schedule over $h_0(k)$, the counterfactual density of firms declaring income *k* in the absence of tax progressivity[6]. The only element that needs to be estimated is the excess mass *b*. To do so, we closely follow the methodology used in Saez (2010). The intuition for the estimation procedure can be summed up in a simple graph that we show in figure 5. The first step consists in defining a range of values *[k - w; k + w]* towards which taxpayers bunch under the progressive tax schedule. *w* is a bandwidth parameter that should be chosen after a visual assessment of the distribution of taxable income so as to capture the full excess mass of firms[7]. Once this has been done, one must assess what the density of taxable income in *[k - w; k + w]* would have looked like in the absence of a kink. Two simplifying assumptions are in order:

• **A1:** The counterfactual density of declared income h_0 can be linearly approximated around the kink k, so it has a trapezoid shape in the interval *[k - 2w; k +2 w]*. This entails only a small under-estimation bias as long as h_0 has little convexity around *k* and *w* is small.

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[5] Those methods do not allow either for the estimation of the impact of a *continuous* variable on tax elasticities, just as a simple OLS regression would. Our estimation approach will allow it.

[6] It should be noted that this formula makes a number of simplifying assumptions: there should be only a small change in marginal tax rates at the kink and the density of declared income should be continuous around *k* in the absence of tax progressivity.

[7] There is to our knowledge no rigorous choice procedure for the bandwidth parameter. This is why one necessary step is to check for the sensitivity of the estimates to significant changes in the bandwidth level.

• **A2:** The presence of a kink has a negligible impact on the observed taxable income density in the intervals *[k - 2w; k - w[* and *]k + w; k + 2w]*. This entails only a small over-estimation bias as long as the tax kink is not too large and the taxable income elasticity is close to 0.

These assumptions guarantee that the mass of taxpayers situated in *[k - w; k + w]* under the counterfactual density h_0 can be estimated by the sum of the observed masses H^- and H^+ of taxpayers situated in the intervals *[k - 2w; k - w[* and *]k + w; k + 2w]*. As a consequence, subtracting H^- and H^+ from the mass H^b observed in the bunching interval *[k - w; k + w]*, one obtains an estimate of the number of bunchers *B*. Finally, dividing the sum of the masses H^- and H^+ by *2w*, one obtains an estimate of the counterfactual density at the kinkpoint $h_0(k)$. The resulting elasticity estimate is:

$$\hat{\varepsilon} = \frac{2w}{k.\log\left(\frac{1-\tau'}{1-\tau}\right)} \times \left[\frac{1}{1 - \frac{\hat{H}}{\widehat{H^+} + \widehat{H^-} + \hat{H}}} - 2\right] \tag{2}$$

Note that $\frac{\hat{H}}{\widehat{H^+}+\widehat{H^-}+\hat{H}}$ is just the empirical probability $\hat{P}$ that a firm falls in *[k - w; k + w]* conditional on being in *[k - 2w; k + 2w]*. This means it can be estimated, in the subsample of observations with income in *[k - 2w; k + 2w]*, by a linear probability model including some parameters of interest T_i and some controls X_i:

$$P_i = \alpha + \beta T_i + \gamma X_i + \epsilon_i \tag{3}$$

Through the nonlinear transformation in (2), one can then use the estimates from (3) to estimate a firm-specific elasticity:

$$\varepsilon_i = \mathrm{f}(X_i, T_i) = \frac{2.bw}{k.\log\left(\frac{1-\tau'}{1-\tau}\right)} \times \left[\frac{1}{1 - [\alpha + \beta T_i + \gamma X_i + \epsilon_i]} - 2\right] \tag{4}$$

From this, we derive an average elasticity estimate (when (3) just has a constant on the right-hand side) but also marginal effects of T_i on ε_i, controlling for X_i (when (3) is fully developed). In the rest of the analysis, T_i will typically represent some index of profitability or governance quality, X_i will include year and industry fixed effects, and other firm characteristics. Standard errors are obtained via the delta method and clustered at the level of the firm.

3.2 Estimation of Bunching Induced by the Labor Regulation Notch

The parametric method outlined above for the estimation of bunching at kinks is unfortunately unfit for the analysis of bunching at tax notches. The main reason is that it can no longer be assumed that the density of observed tax base just to the right of the notch resembles the counterfactual density in the absence of nonlinear taxes (assumption A2). This is because notches provide much stronger incentives to avoid the post-notch zone (Kleven & Waseem, 2013). As a result, information further away from the notch must be used to identify the counterfactual distribution of the tax base. In this case, only non-parametric methods based on the fitting of long polynomials (as in Chetty et al., 2011) can deliver credible identification.

Almunia (2013) uses this method to estimate French firms' reactivity to the 50-employee notch. There are however several reasons that make this approach impractical for our purpose. As already mentioned, estimation methods based on the non-parametric identification of counterfactual distributions do not allow for covariates and can only uncover heterogeneity in elasticities through subsample sorts. Another issue is that it is difficult to infer counterfactual densities of employment from the observed ones when bunching is in large part repeated across the years. The problem has been recently raised by Marx (2015): as years go by, repeat bunchers stay at 49 employees while initially similar firms that chose not to bunch keep growing at a steady rate; as a result, the hole in the distribution at 50 gets bigger and bigger over time. This leads to an overestimation of the amount of bunching at the notch, the magnitude of which depends on the number of repeat bunchers. In Figure 6, we bin the employment distribution into 4-employee intervals and plot the likelihood that firms stay in the same employment bin after one and five years. The amount of repeated bunching is striking: firms' likelihood of remaining at the same employment level increases by 15 percentage points for firms located just below the regulation notch. Importantly, this effect does not disappear over time as the magnitude of repeated bunching is similar over a horizon of one or five years.

In this context, it is very appropriate to use the dynamic bunching estimation suggested by Marx (2015)[8]. Static bunching estimation, which has been used so far, consists in estimating how firms distort their employment *level* to avoid the regulation; dynamic bunching estimation is about estimating how firms distort their employment *growth* to avoid the regulation. Consider e_{it} the employment level of firm i in year t and g_{it} the absolute growth in employment levels between t and $t+1$. For every firm i with initial employment e_{it} there is a growth bound $\underline{g_{it}}$ above which the firm will be subject to the labor regulation the following year. Due to bunching, there will be too few firms with growth just above $\underline{g_{it}}$ and too many firms with growth just below. In

[8] The estimation of the dynamics of firm size around labor regulation notches has already been proposed by Ceci-Renaud & Chevalier (2011) and Schivardi & Torrini (2008). Contrary to Marx (2015), their approach does not easily allow for heterogeneity in firm behavior.

order to identify those firms that should have grown by more than $\underline{g_{it}}$ but decided to grow by less than this, one needs to estimate a counterfactual growth $\widetilde{g_{it}}$ conditional on having reached employment level e_{it}.

The procedure laid out by Marx (2015) to estimate this counterfactual growth starts with binning the data into intervals of absolute growth of size *wg* and intervals of initial employment level of size *we*[9]. In Figure 7, we provide an illustration of the identification using three different cases for three different levels of initial employment. For every initial employment bin, there is a growth bin that leads firms into the zone that straddles the notch, i.e. where firms need to make the choice of bunching or not by fine tuning their growth path. This "marginal" future employment zone should be where most of the bunching takes place[10]. We call firms belonging to the initial employment and growth bins leading them into that "marginal" zone (the green trajectories in Figure 7) the *treated* firms. Some firms might be so afraid of the regulation that they choose their growth bin in order to avoid the notch, yet this choice leads their future employment level slightly below the marginal bunching zone. Other firms might be so oblivious to the notch that they choose a growth bin leading their employment level slightly above the marginal bunching zone. In both cases (represented as the red trajectories in Figure 7), such firms are likely to have very specific and unlikely random characteristics, which is why we exclude them from the analysis[11]. All the other firms (represented as the blue trajectories in Figure 7) are considered as not treated because their growth bin a) does not lead them to a situation in which they need to fine tune their growth level in order to avoid the regulations b) would still have been chosen in the absence of a notch; hence, we call those firms the *counterfactual* firms.

Further illustration of the identification is given in figure 8, where we focus on firms growing by 5 to 9 employees. Treated firms are represented by the green markers: those ones will jump to the zone between 46 and 53 employees in which they will have to make a *local* decision, i.e. grow on the lower end of the 5-to-9 growth interval in order to avoid the notch. Counterfactual firms (in blue markers) are used in a quadratic fitting exercise to guess how the local growth of firms in the treated group would have behaved in the absence of a notch. In the more general case, counterfactual firms help build a counterfactual growth path for treated firms not only

[9] In the rest of the paper, we choose tight bandwidths, with wg = 5 and we = 4. Results are insensitive to slightly larger bandwidths.
[10] Judging by figure 4, the zone between 46 and 53 employees is appropriate. While this is a large interval, choosing a slightly smaller bunching window does not affect our results.
[11] We also exclude firms whose growth interval includes stagnation between t and t+1 because treated firms in the interval are already bunching in t and likely have very special characteristics.

when they share a similar growth bin (say, growing the firm by between 5 and 9 employees) but also when they share the same initial employment level (say, between 41 and 44 employees)[12]. The underlying identification assumption is that growth conditional on a certain growth interval does not evolve discontinuously with initial employment in the absence of a notch. Figure 8 gives graphic evidence for the validity of this assumption in the specific case of firms growing by 5 to 9 employees. If the identification assumption is valid, then by comparing treated firms' employment growth conditional on belonging to a certain growth bin to that of counterfactual firms belonging to the same growth bin, and controlling for the effect of initial size, we can estimate the causal effect of the notch on employment decisions. The corresponding econometric specification is as follows:

$$g_{it} = \alpha + \beta T_{it} + \sum_{k=1}^{K} \gamma_k Emp_{it}^k + \sum_{a=\underline{a}}^{\overline{a}} \sum_{k=0}^{K} \delta_{ak} Emp_{it}^k \times D(a)_{it} + \epsilon_{it} \tag{5}$$

where Emp_{it} is initial employment level and $D(a)_{it} = 1\{g_{it} \in [a, a + wg[\}$ is an indicator for growth falling within one of the absolute growth ranges of width wg between $\underline{a}$ and $\overline{a}$. If there is substantial bunching, β should be significantly negative and reflect the average employment loss from being exposed to the bunching decision. Specification (5) cleanly allows for the analysis of heterogeneity in bunching as interactions of variables X_{it} such as profitability or governance quality with the treatment variable T_{it} can be included. It should also be noted that the main identification assumption can be tested for all growth intervals at once using placebo outcomes. The idea is that if the identification assumption holds, then using specification (5) with past outcomes of interest instead of g_{it} should not provide significant estimates for β. Table 1 in the appendix shows that none of those placebo tests yield significant treatment estimates.

3.3 Accounting For the Effect of Profitability on Tax Optimization

Assuming we find a positive effect of firm profitability on the sensitivity to taxes, the underlying mechanism remains undetermined. Our theoretical discussion *infra* has made it clear that profitability may drive avoidance for three different reasons: profitable firms might have more available funds for the hiring of tax preparers and labor law specialists; this would be the "financing constraints" hypothesis for our results. Productive firms' operations might be more flexible so their level of activity, either in terms of net income or employment, may be more scalable. On the same line, our theoretical discussion of the 50-employee labor regulation notch

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[12] In this particular example, only those firms having initial employment level between 41 and 44 and growth between 5 and 9 *simultaneously* will face a bunching decision and, as such, will be considered treated.

concluded that bunching firms should be more productive than typical firms of similar size in an environment without a notch, and that they are more likely to be in a growth rather than decline stage. There is, in other words, a pure "technological" explanation for the fact that profitable firms are more sensitive to taxes. Finally, we have put forward an original hypothesis, which is that firms are more likely to be both active with respect to taxes and profitable if they are led by motivated and knowledgeable entrepreneurs. This is what we call the "governance" hypothesis.

Financing constraints are known to be an elusive concept in empirical work, but the corporate finance literature has come up with a number of proxies over the last thirty years[13]. If such constraints explain part of the link between avoidance and profitability, we should expect that firms with good financial indicators, such as the ability to pay dividends, high cash holdings or a low leverage level, are more likely to practice avoidance *conditional* on profitability. Technological explanations for avoidance are very diverse and it is difficult to come up with a synthetic measure of avoidance "friendliness". However, some common industry characteristics, such as the amount of third-party reporting involved by firms' business sector (Almunia & Lopez-Rodriguez, 2014), are known to affect the potential for avoidance. This is why we will pay attention to controlling for industry fixed-effects in our regressions. At the firm-level, given our theoretical discussions on optimal avoidance behavior, it is important to control for the level of TFP when investigating the impact of profitability on avoidance. It should however be kept in mind that the estimation of TFP can only be realistically done when firms are not too small. This is why we will only be able to control for productivity when we investigate bunching at the labor regulation notch, since the typically affected firms will have at least 20 employees, while the corporate income tax kink primarily affects much smaller firms.

To some extent, if the impact of profitability on avoidance remains very significant even after controlling for financial and technological factors, it is likely to reflect hypotheses on tax elasticities that go beyond simple neo-classical models of avoidance, such as the quality of decision-making within the firm. Yet, in order to make this "governance" hypothesis more convincing, it is important to test for it directly. The ideal test is one in which we can directly measure whether managers are actually fully aware of the tax schedule they are facing. It turns out this is something we can measure in the case of the corporate income tax because in France corporate filers need to self-declare both their tax base and their expected tax liability. This

[13] An early references in that literature is Fazzari et al. (1988). More recent work includes, among others, Farre-Mensa & Ljungqvist (2014).

means we can measure how long it takes before awareness of a tax avoidance opportunity translates into actual avoidance. Yet, more importantly, this allows us to test more precisely the link between profitability and the taxation “literacy” of entrepreneurs. Finally, in order to make the “governance” hypothesis more credible, it is important to rely less on an index of profitability, which might remain a black box concept even after controlling for technological and financial factors, and more on direct measures of general governance quality. In this respect, when they are measurable, biographical characteristics that proxy for entrepreneurial sophistication, such as education and training, should have a direct impact on avoidance. Relatedly, the ownership structure, i.e. whether the firm is owned by just a few individuals (or a family) or it has a very diverse ownership base, should greatly matter for managers’ incentives to know their tax exposure well enough to engage into tax optimization.

4 Data and Descriptive Statistics

Our main source of data is the corporate tax files sent by French firms to tax authorities for years 1996 to 2007[14]. These files contain the company's accounts, together with information on the corporate tax liability of the firm. These files are sent to the French statistical agency (INSEE) right after initial reception by tax authorities. INSEE then turns this data into a dataset called BRN-RSI (also often known as FICUS) for research purposes[15], which we use in this paper. Almost all business entities are covered in this dataset: there were more than two million companies covered in 2007. From that single source, we build two different samples since our empirical strategy is based on two distinct discontinuities of the French tax system.

4.1 Income Tax Kink Sample

The first sample uses the kinkpoint in the corporate tax schedule as a source of identification. It is the result of the following filters:

• Fiscal years 2004 to 2007. This is to make sure the progressive tax schedule has been in place for enough time to trigger some avoidance mechanisms.

• Independent firms below €7.6 million in sales that are subject to the corporate income tax. Only those firms are eligible to the reduced tax rate. The data source for the definition of independence is the LIFI (Liaisons Financieres) dataset from INSEE.

[14] Similar data for later years is unfortunately not accessible for research purposes.
[15] See for example Bertrand et al. (2007).

• Corporate taxable income is comprised between €8,000 and €75,000. This includes a large window around the kink and allows for a clean measurement of entrepreneurs' awareness of the new tax schedule.

As a result, this sample is made of around 820,000 firm-year observations. Table 1 presents some descriptive statistics for all French firms in the sample. One interesting feature of the data is that we can check whether tax filers know about their eligibility to a reduced tax rate. The reason is that firms must declare both their taxable income and their expected tax liability. By comparing those two items present in our data, we can determine whether firms assume that they face a uniform or a progressive tax schedule. Figure 9 plots the distribution of corporate taxable income depending on whether firms are aware of progressivity or not. One can quickly notice that, as expected, uninformed filers simply do not bunch their income at the 38,000-euro kinkpoint at all. Not surprisingly either, the percentage of uninformed filers steadily decreased over time: from 18.3% in 2001, when progressivity was introduced, it went down to 7.8% in 2002 and then slowly declined to less than 3% of filers in 2007. Given the low proportion of uninformed filers, we should expect them to have very salient characteristics with respect to the rest of the population. In terms of firm demographics, our sample is mostly comprised of very small firms: only 12 % of them have more than 10 employees and 50 % have less than 3. Yet, most of those firms have been in place for a significant time, as half of them are at least 8 years old.

We also introduce our main financial variables. Our primary index of profitability is the operating return on assets, defined as EBITDA over total assets. The typical firm has a return between 10 and 15% during the sample period. Accounting profitability may not always be very meaningful for such small firms, which is why we also look at future bankruptcy rates, with a horizon of three years, as an alternative index of performance[16]. Bankruptcies are low-frequency events (2.7% of the sample), but they most often reflect large existing deficiencies in operating performance. Finally, since our aim is to distinguish the effect of the economic quality of a firm from its financial health, we introduce an index of financial constraints based on insights from the empirical corporate finance literature (Fazzari et al. (1988), Almeida et al. (2004), Hadlock and Pierce (2010), Farre-Mensa and Ljungqvist (2014), Barrot (2015)). The index starts from value 1 and it increases by one unit every time a firm belongs to the upper half of its 2-digit industry peers in a given year for the following variables: one minus leverage

[16] We track bankruptcy events using the INSEE-SIRENE register of corporations' demographic events.

ratio, ratio of cash holdings to assets, firm age and book asset value[17]. By construction, the index is centered around 3 but it shows significant variation as 20% of firms have an index value of either 1 or 5.

In terms of governance characteristics, we are restricted by the lack of data on the ownership of such small firms. One source of information is the legal form chosen by firms, observed in 2001 where available or at the earliest available date otherwise. The EURL form provides the LLC status but is restricted to just one shareholder; the SARL form is an LLC with at least two shareholders and large veto rights provided to each shareholder; the SA form is the typical corporation format: there should be at least 8 shareholders and shareholders cannot block decisions unless they reach a majority of voting power. Going from the former status to the latter, ownership concentration clearly declines while managerial discretion picks up, so we can use legal form as an index of the quality of governance[18]. It is clearly the intermediary status, the SARL, which dominates all other types, with a frequency of about 86 %. This means we unfortunately do not have large ownership variation when using this variable. We can however bring additional detail on the subsample of firms whose founder was surveyed upon firm creation by INSEE, as part of the SINE (Systeme d'Information sur les Nouvelles Entreprises) program. This survey sampled a fourth of all new business creators in the years 1994, 1998, 2002 and 2006. The questionnaire contains many questions about the personal background of the entrepreneurs but at the same time we can match the corresponding firm ID to our corporate tax file. The downside is that the proportion of firms in our initial sample whose founder was surveyed is limited to about 2.5%. Besides the loss of statistical power, this also means that we need to restrict ourselves to survey questions that were consistent across all survey waves such as age, gender, education, whether the entrepreneur received specific training on how to run a business and whether he received public subsidies. As one can judge from table 1, business creators from our sample are mostly males (about 80% of observations); a minority of them (30%) has a college degree but an even smaller share (8%) has no diploma at all. Few of them have received a specific training (27%) or a public subsidy (22%) upon creation. To the extent that those personal characteristics proxy for entrepreneurial biases and/or sophistication, they should help us assess the validity of the "governance" hypothesis for explaining tax avoidance.

[17] We do not include the payment of dividends in this index because our sample contains too many small firms for which dividend payments are not measured.

[18] Other legal forms are in a minority (about 3% of the sample) and cannot provide a clear assessment of governance quality so we leave them out when we consider this variable.

To give a first sense of the regression results to come, we plot in figure 10 the average profitability levels (in terms of last year's return on assets) for each level of current taxable income. There is clearly an abnormally high level of profitability for firms located just at the kink (i.e. 38,000 euros), with an excess return close to 0.75 percentage points. The differential level of profitability of the corresponding bunchers has to be significantly higher than this however, since only a minority of firms declaring 38,000 euros are drawn there because of the kink in marginal tax rates. In other words, in order to give a precise number, static bunching regressions as suggested above are required.

4.2 Labor Tax Notch Sample

The second sample uses the notch in exposure to labor regulations as a source of identification. It is the result of the following filters:

• Fiscal years 1996 to 2007.

• Total employment is comprised between 20 and 100 full-time equivalent employees. We obtain the employment variable from the corporate tax files, just as in Garicano et al. (2013). This source is only one of several ways to measure employment and it's highly debated whether the definition according to the corporate tax form fits the definition provided by labor law (Ceci-Renaud, Chevalier, 2011). For our purposes, this measure has the advantage of being the only one that is self-declared to public authorities, so it is most likely to reflect the employment measure that managers try to optimize.

As a result, this sample is made of around 915,000 firm-year observations. Table 2 presents some descriptive statistics for all firms in the sample (panel A), for firms whose employment level is between 46 and 49 employees (panel B) and between 50 and 53 employees (panel C). Given that this sample includes much bigger firms than the corporate income tax kink sample, it is not surprising that those firms tend to be old (17 years on average) and have lower average profitability (ROA is around 7% on average). Bankruptcy frequencies are fairly high, at 4.6% over a three-year horizon, but this may reflect the impact of the 2001-2002 recession. The labor share of value added is higher than in national accounts, at around 84%, but capital-intensive firms also tend to reach a very high scale and are likely under-represented in a sample with no firms above 100 employees.

Since firms in this sample are of more significant size there is more data available to describe their ownership structure. Using the DIANE dataset produced by Bureau Van Dijk, we construct three proxies. One variable measures whether the last name of the current CEO is shared with the name of the company. This has been shown to predict very strongly the likelihood that a firm is owned by a founder willing to let his heirs run the firm in the future (Bach, Serrano-Velarde, 2015). However, many firm owners have dynastic preferences and yet they do not give their name to the company, which is why only 20% of firms are classified as family firms using this metric. Starting in 2002, data on the identity of board members becomes available for firms registered as SA and SAS. From this, we define a firm with family board control as having at least two family members (i.e. sharing the same last name) in either the board or the top management. This raises significantly the proportion of family firms, as about two-thirds of firms fall into this category. Finally, the number of board members itself generally indicates a lower bound for the number of significant shareholders of a company. Even though 50 employees is still relatively small, the typical firm of that size has at least four different board members.

Panel B and panel C allow for a first comparison between regulation optimizers, located just below the 50-employee threshold, and non-optimizers, located just above that threshold. The former have significantly higher profitability (by about 24%), just as we hypothesized initially. There is a similarly large difference in terms of the probability of future bankruptcy. However, at the same time bunchers also have significantly higher TFP (by about 5 percentage points), just as has been shown by Garicano et al. (2013)[19]. Since TFP also directly affects profitability, we will need to make sure that the "technological" reasons for bunching do not underlie the positive impact of profitability on bunching. On the other hand, there does not seem to be any significant difference in terms of financial constraints.

Going beyond the effect of profitability, it seems that ownership characteristics play a significant role in bunching behavior around the labor regulation notch. Bunchers are 15 to 20% more likely to be family firms than non-bunchers, in a consistent way across definitions. Those firms also have slightly tighter boards. This may further confirm the "governance" hypothesis that firms with a strong profit motive, because they are led by highly motivated owners, are also more aggressive optimizers with respect to taxes and regulations. However, as already discussed above, one should bear in mind that the static analysis of bunching probably suffers from important biases in our context. Before jumping to definite conclusions, it is therefore important to analyze results from dynamic bunching estimations.

[19] In order to maximize the number of firms with measurable productivity, we do not use methods such as Levinsohn-Petrin (2003) to measure TFP in an unbiased way. Syverson (2011) shows that results obtained with LP or with a simple Solow OLS approach (that we use here to measure TFP) are generally very similar.

5 Results

Descriptive statistics already gave the sense that profitability and governance quality were important drivers of tax and regulatory avoidance. In this section, we will provide more formalized results using regression techniques. This will allow us to provide more precise estimates as well as control for various confounding factors.

5.1 Income Tax Bunching Regressions

Table 3 presents results from regressions of taxable income elasticities (using the formula in equation (4)) on profitability. Column 1 provides the average elasticity over the period 2004-2007, which is equal to 0.213. This number is of the same magnitude as in the British case analyzed using a similar method by Devereux et al. (2014). All other columns investigate the impact of profitability controlling for industry and year fixed-effects as well as size and the level of financial constraints faced by firms. Judging by columns 2 to 5, a one-standard deviation increase in the operating return on assets increases the tax elasticity by about 0.014 units. The effect is statistically very significant but lacks economic significance. However, columns 6 and 7 show that the effect is highly non-linear: firms in the top quintile of profitability have an elasticity about 30% bigger than firms in the bottom quintile; firms that will eventually go bankrupt in the next three years, i.e. extreme underperformers, have an elasticity three times smaller than the average. Including financial constraints in the regressions does not improve explanatory power so it is unlikely that profitability increases avoidance just because profitable firms also tend to be richer and can afford to pay for expensive tax preparers. Results are also insensitive to the choice of bandwidth around the kink (see columns 8 and 9), so the choice of a parametric estimation of the counterfactual distribution does not seem to cause any first-order bias.

That the effect of profitability on avoidance is highly nonlinear may not be surprising given that the tax schedule still remains very simple after the 2001 reform introducing progressivity: all firms but the very bad performers should find the new schedule easy to understand and take it into account in their computation of expected tax liability. At the same time this simplicity means that avoidance can easily be tracked by tax authorities; this may prevent all but the most sophisticated firms from making large tax savings out of the new progressivity. In table 4, we aim to measure this perceived simplicity as we analyze the determinants and consequences of being aware of the progressivity of the corporate income tax schedule. Panel A provides estimates of the effect of progressivity awareness on tax elasticities. From column 1, we see that having known the existence of progressivity for at least a year increases the chances of bunching at the kink by about 50%, yet column 2 suggests that having known the schedule for more than two years does not provide any further incentives to bunch. This means that it does not take more than a year before firms can make the most of the introduction of progressivity. Column 5 investigates the effect of firm age: each additional year of existence decreases tax elasticities by about 0.003. This negative effect suggests that learning new dimensions of the tax code is easier when firms have been set up recently. One likely explanation here is that new firms generally draw their production and management methods from the most recent guidelines[20], so it is easier for them to make the most of recent tax loopholes.

Does better knowledge of the tax system explain part of the observed relationship between profitability and tax elasticities? To see this, we look in table 4, panel B, at the impact of profitability on whether firms are aware of progressivity or not. Columns 1 to 4 show that a one-standard deviation increase in ROA translates into a 20% lower chance of not knowing about tax progressivity (relative to the average probability). As shown in columns 5 and 6, the effect is again highly non-linear and mostly comes from the fact that bottom performers are especially likely not to know about progressivity. This is not surprising given the low proportion (3.6%) of firms with no awareness of tax progressivity. Yet, this clearly shows that extremely bad performers do not react much to tax incentives in great part because they lack information about the tax system.

Table 5 investigates more directly the impact of the quality of firm governance on tax elasticities (panel A) and tax awareness (panel B). Ownership, as proxied by the legal form chosen by the firm, has a first-order impact: firms with a unique shareholder (EURL) are bunching at the corporate income tax kink twice as much as firms with many weak shareholders (SA) (panel A, columns 1 & 2); the latter are also much more likely to be unaware of the existence of progressivity (panel B, columns 1 & 2). In other words, the degree to which managers have incentives to do whatever is best for the firm matters for both the amount of information gathered on tax systems and the willingness to take advantage of it.

Using a reduced sample, we can investigate beyond incentives provided by the governance structure and look directly at the effect of managerial qualities (table 5, panels A and B, columns 3 to 8). Younger entrepreneurs are more likely to know about progressivity, which may reflect that they learned how to do business very recently. At the same time, youth does not seem to predict more bunching than average. Similarly, having followed courses on how to set up a

[20] See Luttmer (2007) for a structural estimation of this productivity "edge" of entering firms.

business, or having received public subsidies for creating a business, improves the chances that one knows about progressivity, but it does not make one more likely to bunch at the kinkpoint. On the other hand, entrepreneurs' education (college degree vs. none) and gender (female vs. male) are strong predictors of bunching but do not lead to greater awareness about tax progressivity. Taken together, those results can further explain the high non-linearity of the impact of profitability on tax avoidance: the worst firms do not react to tax incentives because they lack basic information on the tax system; younger entrepreneurs, as well as entrepreneurs who receive business training or deal with public entities providing subsidies are less likely to lack such information, but they are not particularly well-equipped to engage into active optimization. Basic information is indeed not enough to make significant gains out of tax non-linearities; it also requires entrepreneurial sophistication, often embedded in entrepreneurs' personal traits such as gender[21] and education.

5.2 Labor Notch Bunching Regressions

Table 6 shows the baseline results of the estimation of dynamic bunching around the 50-employee labor regulation notch. Column 1 in panel A indicates the average size of the bunching-induced reduction in firm employment: when firms are locally exposed to the temptation to bunch, they reduce their employment by about 0.26 employees. Given that in 2007 there were more than 8,000 firms with 46 to 53 employees, this means that the existence of the labor regulation notch causes the loss of about 2,100 jobs. This small absolute number is in line with other dynamic estimations (Ceci-Renaud & Chevalier, 2011; Gourio & Roys, 2014). It is an order of magnitude lower than estimations made by Garicano et al. because we focus on local bunching decisions and because we only take into account the short-term effect of the bunching decision on employment[22].

What column 2 in panel A shows is that more profitable firms react much more to the notch: a one-standard deviation increase in ROA implies a 25% bigger decline in employment relative to the average bunching response to the labor regulation threshold. Column 3 in panel A shows that accounting for the independent impact of total factor productivity on the tendency to bunch does little to explain the impact of profitability. Similarly, other columns show that more profitable firms do not bunch more primarily because they are less financially constrained and

[21] Female entrepreneurs have for example been shown to make fewer forecast errors (Arabsheibania et al., 2000).
[22] As discussed above, taking into account global responses to the notch and long-run effects of bunching requires much more structure in the estimation method and is inappropriate for the purpose of documenting the heterogeneity in bunching precisely.

can hire good labor lawyers (panel A, column 4) or because less profitable firms are more likely to be bunching from above the notch (i.e. in decline) and have already paid the sunk costs linked with being subject to labor regulations (panel A, column 5). Taking into account all those confounding factors together (panel A, column 6) slightly reduces the impact of profitability but the latter effect remains at a very high level, both statistically and economically. Panel B in table 6 reveals that the effect of profitability is in fact highly non-linear: firms located between the 20^{th} percentile of profitability and the 100^{th} have similar reactions to the labor regulation notch; firms in the bottom quintile of performance (column 1) and firms that will go bankrupt in the next three years (column 2) proceed to employment reductions about two to three times smaller in order to avoid labor regulations.

Table 7 investigates directly whether differences in governance quality can explain why little profitable firms have such muted reactivity to the labor regulation notch. It turns out that family ownership, measured either in terms of board control (columns 1 and 2) or in terms of firm eponymy (columns 3 and 4), triggers employment reductions 40 to 70% bigger than in non-family firms. Firms with bigger boards, and therefore more shareholders, are less likely to bunch but the effects are very imprecisely estimated. Those results suggest that firms in which managers have more high-powered incentives to run a profitable firm are also among the ones most likely to try to avoid costly labor regulations. Other potential explanations for bunching, such as differences in productivity, firm life cycle or financial soundness, do not explain the very large impact of ownership structure that we uncover here. Finally, contrary to the case of the corporate income tax kink, firm age does not seem to play a significant role in the intensity of regulatory avoidance (columns 7 and 8). This may reflect the fact that the labor regulation threshold has been in place for such a long time that all firms, whatever their generation, should be aware of its existence.

To summarize those results, it is clearly the case that very poorly performing firms in terms of their economic operations also do not anticipate the costs of labor regulations as well as better-performing firms. This lack of concern for regulatory costs seems to be partly driven by the lack of managerial incentives coming from ownership concentration to do whatever is best for firm value.

6 Conclusion

In this paper, we showed that, just as individuals may make sub-optimal decisions with respect to taxes, firms might differ in their ability to optimize tax and regulatory systems. Importantly, those differences can be related to differences in overall operating profitability, implying that the quality of management in running firm operations strongly correlates with the ability and willingness to make the most out of complex taxes and regulations. This effect of profitability does not primarily come from better productive technologies or from higher financial capacity to hire personnel specialized in taxes and regulations. Rather, profitable firms' aggressiveness in tax optimization seems to be coming from the quality of their governance, either because of a concentrated ownership structure or of the sophistication of managers running those firms.

Those results suggest that tax collection efforts are affected by the general quality of corporations' management. However, it is not clear to what extent recurring improvements in management quality generate difficulties for tax collection. One particularly important question is whether or not tougher competition, which has been shown to improve management quality (Bloom, Van Reenen, 2007), provides greater ability to game taxes and regulations. Another implication of our results is that good firms may cut their activities more in order to avoid regulations and taxes. This might be particularly costly if good firms generate positive spillovers in the rest of the economy. Unfortunately, we have not been able to measure whether the avoidance responses we have documented consist more of real responses, shifting across bases or pure evasion, but answering this question seems a natural way to prolong our research.

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8 Figures

Figure 1: French firms' bunching at tax kinkpoint upon introduction of progressivity

This graph describes the density of corporate taxable income in fiscal year 2001 for firms eligible to tax progressivity. The source of the data is the SUSE corporate tax file. Taxable income is in thousands of nominal euros, rounded to the closest thousandth.

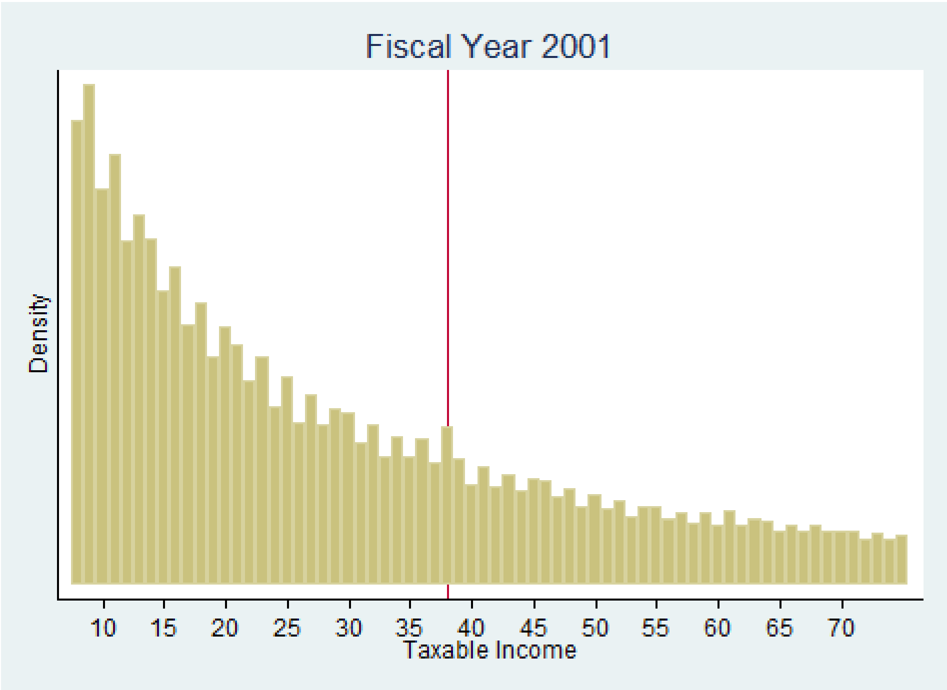


Figure 2: French firms' bunching at tax kinkpoint three years after tax reform

This graph describes the density of corporate taxable income in fiscal year 2004 for firms eligible to tax progressivit. The source of the data is the SUSE corporate tax file. Taxable income is in thousands of nominal euros, rounded to the closest thousandth.

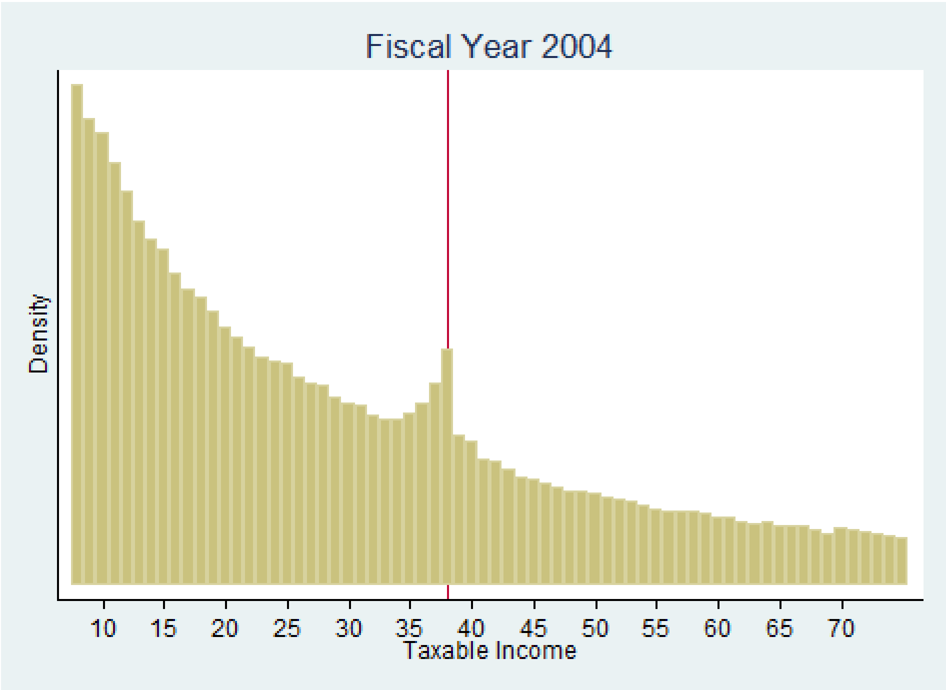


Figure 3: French firms' bunching at tax kinkpoint 6 years after tax reform

This graph describes the density of corporate taxable income in fiscal year 2007 for firms eligible to tax progressivity. The source of the data is the SUSE corporate tax file. Taxable income is in thousands of nominal euros, rounded to the closest thousandth.

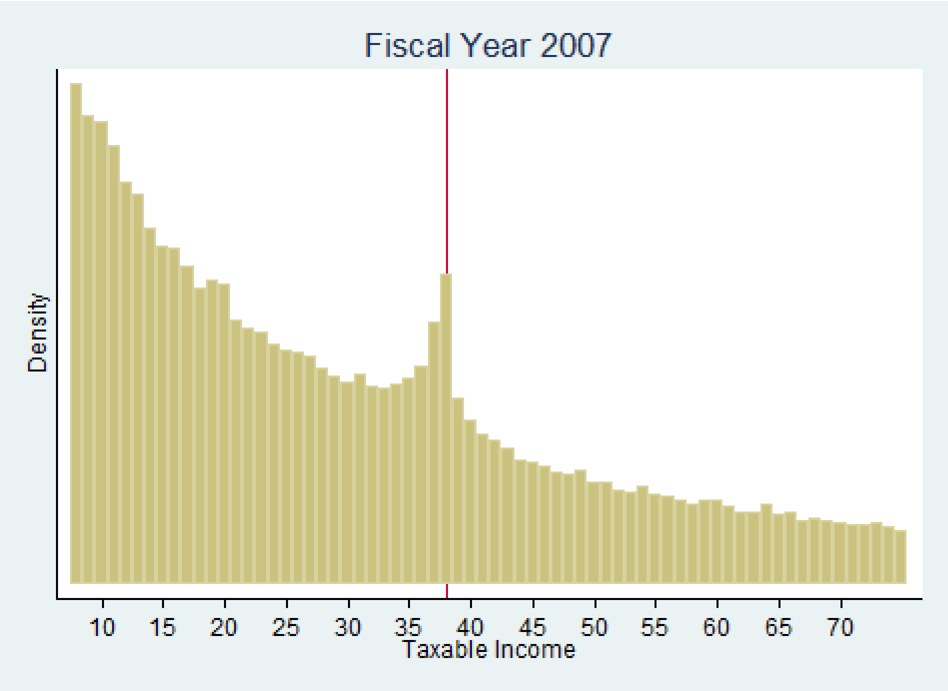


Figure 4: French firms' bunching at labor regulation notch

This graph describes the density of corporate taxable income for all French businesses active between 1996 and 2007. The source of the data is the SUSE corporate tax file. Employment corresponds to the full-time equivalent number of employees in each firm in a given year.

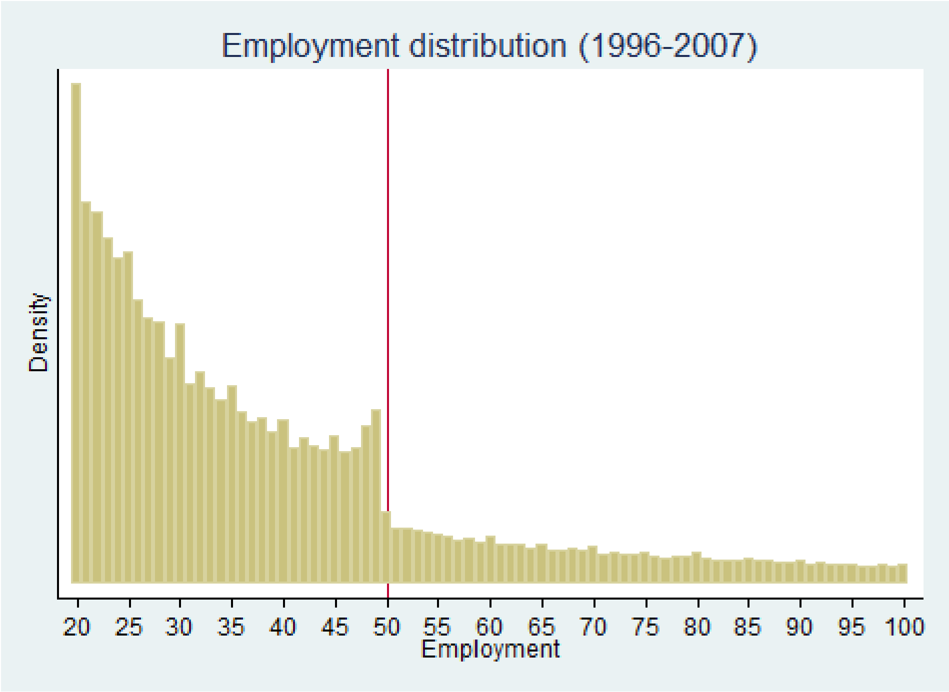


Figure 5: Parametric estimation of bunching at tax kinkpoint

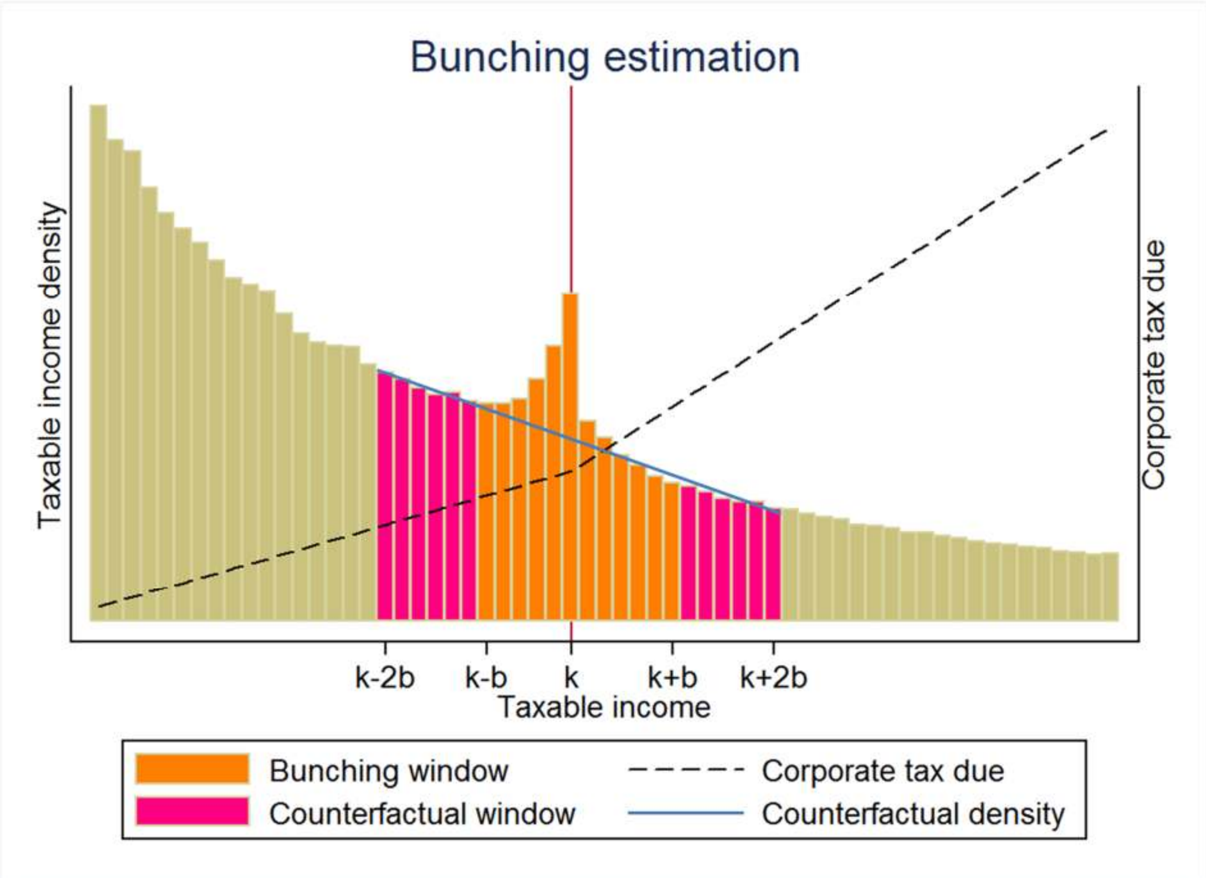
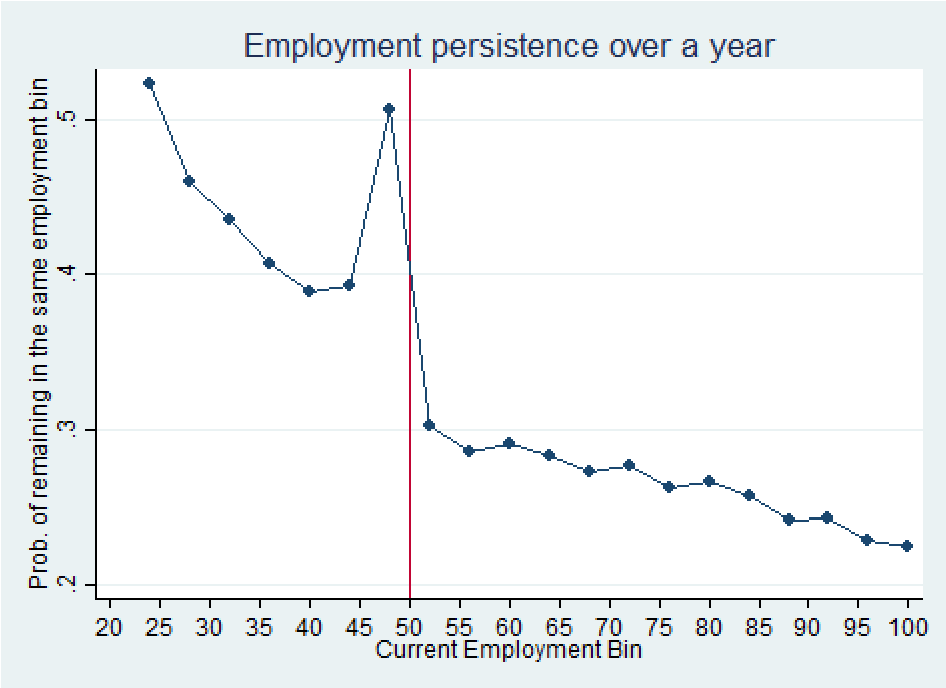


Figure 6: Persistence of corporations' employment level across the years

These graphs describe the likelihood of current employment remaining at the same level over one and five years, respectively. Each employment bin has an employment interval of size 4. The source of the data is the SUSE corporate tax file for years 1996 to 2007. Employment corresponds to the full-time equivalent number of employees in each firm in a given year.



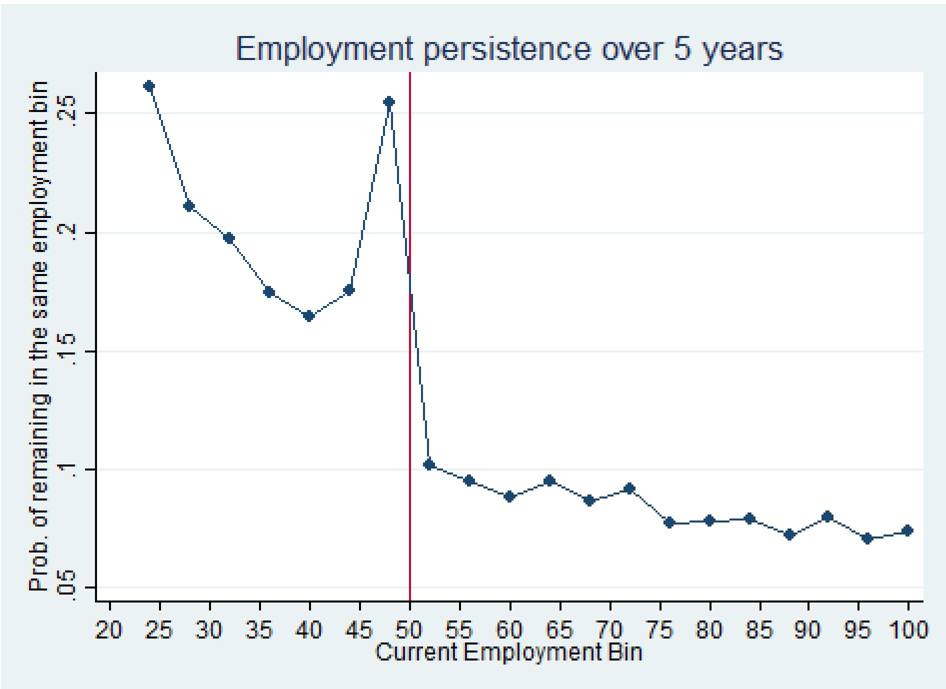


Figure 7: Identification of dynamic bunching at labor regulation notch

Arrowed trajectories correspond to different observations. Green trajectories correspond to treated firms, i.e. firms that will have to choose to bunch or not within the local area they are falling into as a result of their growth trajectory (which we call the marginal bunching zone because its tight interval includes the labor regulation notch). Red trajectories correspond to firms whose growth path makes them closely avoid the marginal bunching zone, reflecting either that they are extremely sensitive to bunching incentives or that they are extremely insensitive to those incentives. Those firms are excluded from the analysis because they will not bunch within the local area they fall into but at the same time their growth path might have been different in absence of a notch. Blue trajectories correspond to counterfactual firms, i.e. firms that do not have to choose to bunch or not within the local area they are falling into and at the same time would have chosen the same growth path in the absence of the notch.

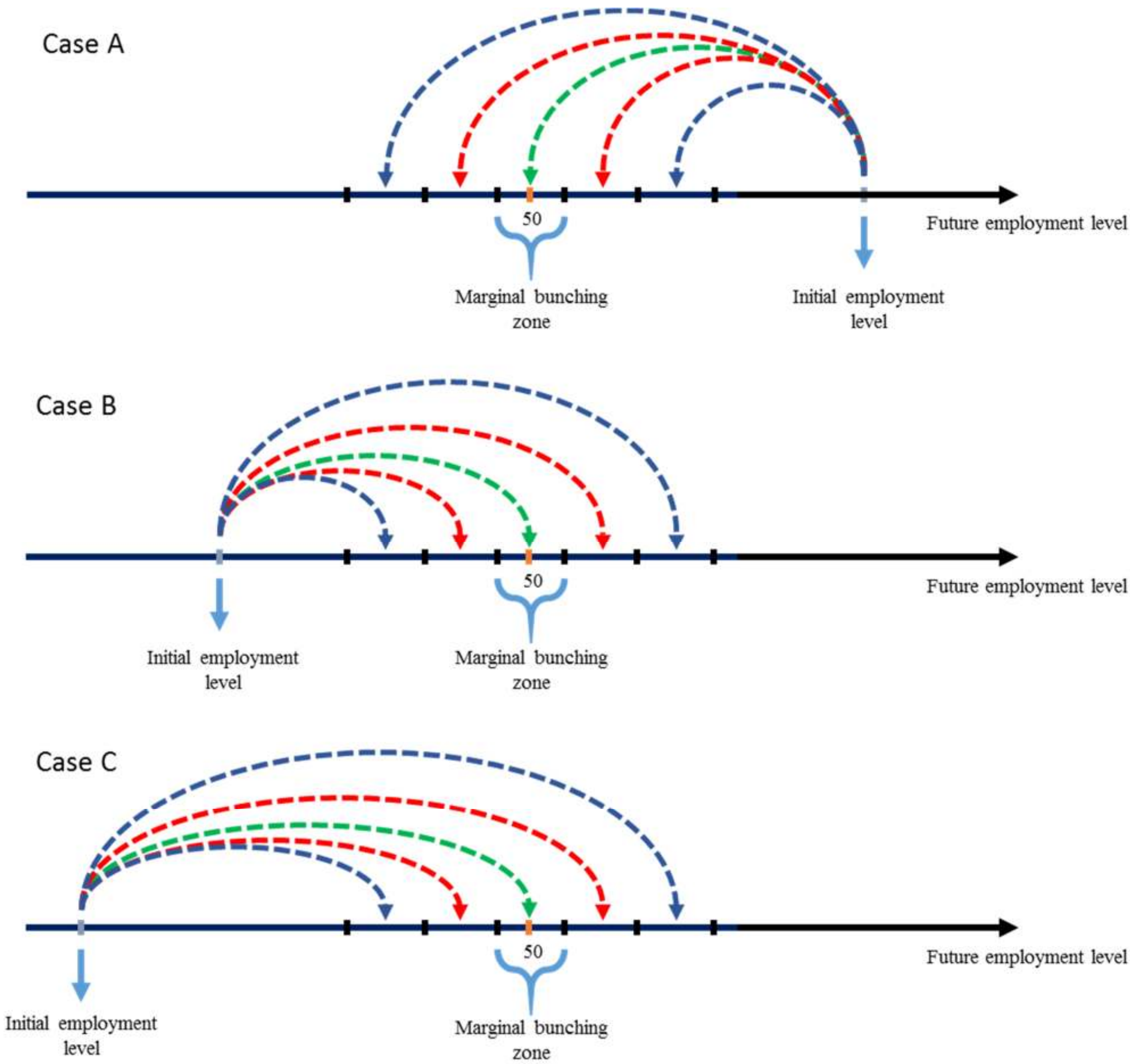


Figure 8: Dynamic bunching estimation: an illustration

The graph shows the growth of employment from the current year t to the next year t+1 as a function of current employment level (binned with an interval of size 4). The corresponding sample consists of firms with employment growing by 5 to 9 employees. The green marker is the one for which growth by 5 to 9 employees implies being located in the marginal bunching zone (i.e. 46 to 53 employees) in year t+1. The conditional average growth of these firms is a bit less than 6.25 additional employees, which is significantly less than the counterfactual growth interpolated using a quadratic fit from firms with higher and lower current employment levels (the blue markers), excluding firms whose current employment level implies being very close to the marginal bunching zone next year (the red markers). The difference is interpreted as a measure of bunching due to the labor regulation notch: some firms that approach the notch reduce their employment to stay below it, and therefore conditional average growth is less than predicted.

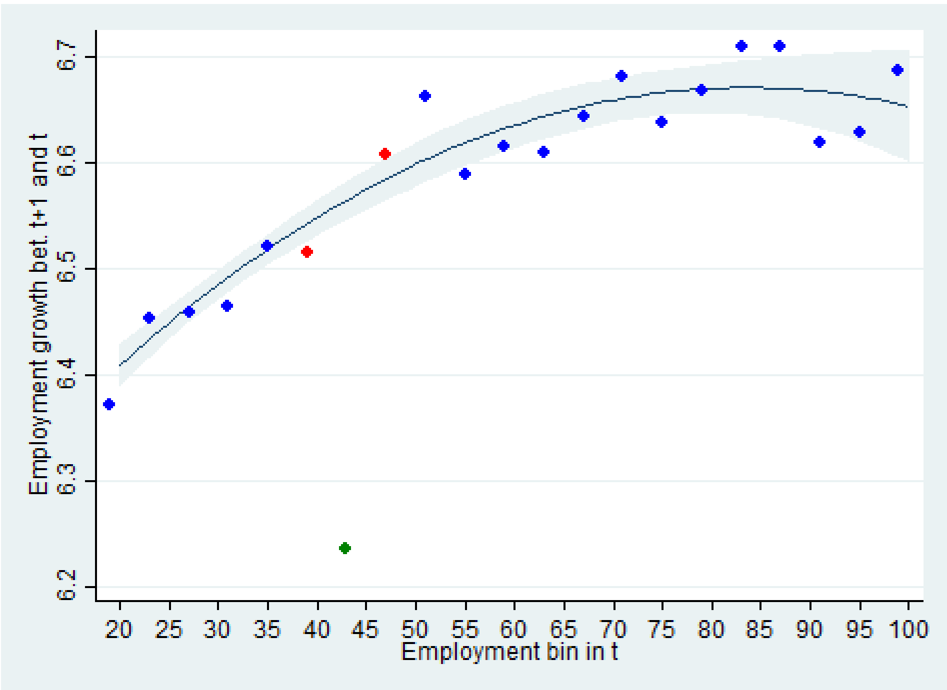


Figure 9: Corporate income tax bunching and filer information

This graph describes the density of corporate taxable income in fiscal years 2004 to 2007 for firms eligible to tax progressivity, depending on whether filers know the existence of the change in marginal tax rates at the 38,000-euro kink. The source of the data is the SUSE corporate tax file. Filer information is assessed by comparing firms' self-declared expected tax liability and their actual tax liability. Taxable income is in thousands of nominal euros, rounded to the closest thousandth.

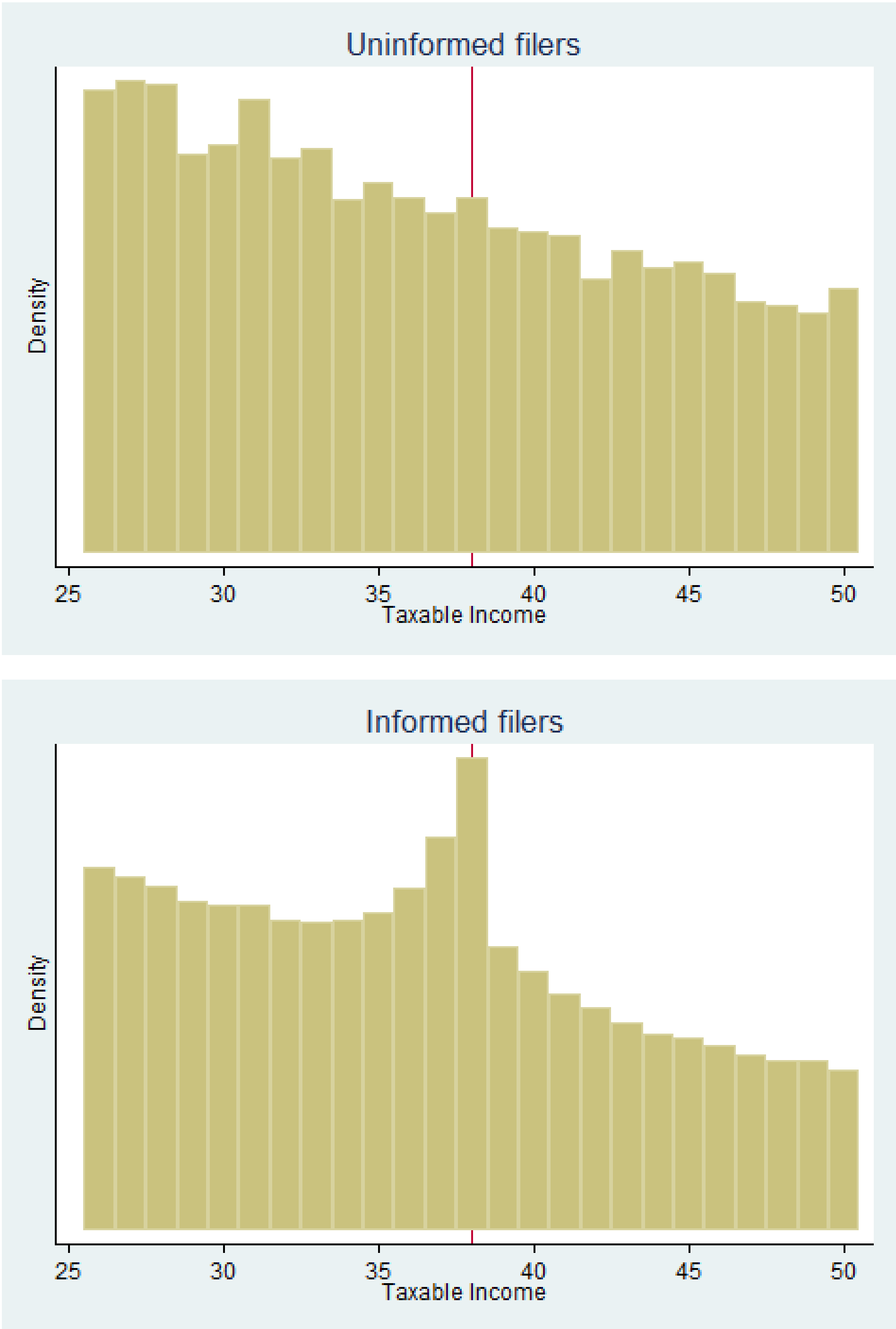
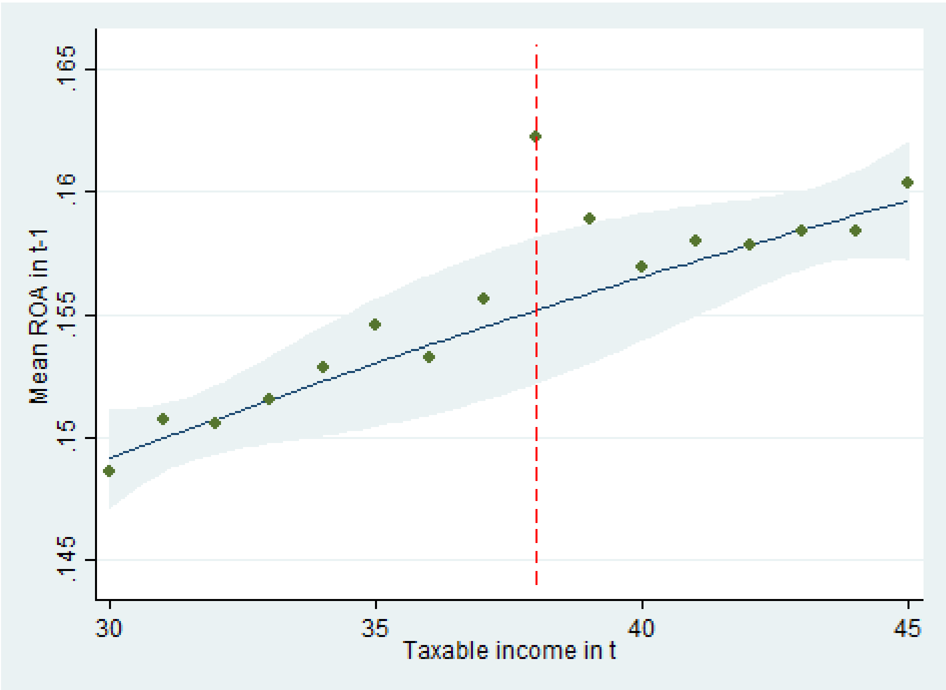


Figure 10: Corporate income tax bunchers' profitability characteristics

This graph plots the mean level of return on assets in year t-1 for each level of taxable income declared in year t. The data source is the SUSE corporate tax data for fiscal years 2004 to 2007. Taxable income is in thousands of nominal euros, rounded to the closest thousandth. A quadratic fit using observations between 30,000 and 33,000 euros as well as between 42,000 and 45,000 euros is performed in order to plot a counterfactual level of profitability around the 38,000-euro kink.



9 Tables

Table 1: Descriptive Statistics – Corporate Income Tax Kink

This table shows descriptive statistics on the sample used for the analysis of the corporate income tax kink. The source of the data is the SUSE dataset for the fiscal years 2004 to 2007, except for founder characteristics, which come from the 1994, 1998, 2002 and 2006 waves of the SINE survey, the bankruptcy rate over the next three years following the observation, which comes from the SIRENE firm register, and the definition of firm independence, which comes from the LIFI dataset. All independent firms subject to the corporate income tax with less than €7.6 million in sales are included. A tax filer is informed if its self-declared tax liability takes into account the progressivity of the tax schedule. ROA is measured the year prior to the observation; it is equal to EBITDA over Total Assets and winsorized at the 1% level. The financial constraints index increases by one unit every time a firm belongs to the upper half of its 2-digit industry peers in a given year for the following variables: one minus leverage ratio, ratio of cash holdings to assets, firm age and book asset value. EURL is a one-shareholder company; SARL is a company with at least two shareholders, with strong veto rights; SA has at least 8 shareholders, with decisions made using majority voting.

	Mean	**s.d.**	**p25**	**p50**	**p75**	**N**
Informed Tax Filer	96.4%					821108
Firm characteristics:						
Employment	5.2	12.8	1	3	6	821108
Age	11.3	10.2	4	8	15	821098
Return on Assets	0.142	0.15	0.055	0.112	0.197	821108
3-year bankruptcy rate	2.7%					821108
Financial constraints index	3.03	1.12	2	3	4	821098
Ownership characteristics:						
Legal form: EURL	8.6%					821108
Legal form: SARL	83.2%					821108
Legal form: SA	4.9%					821108
Founder characteristics:						
Age	45.5	10.4	38	45	53	21735
Female	19.6%					21735
No diploma	8.2%					21735
College degree	31.5%					21735
Management training	27.2%					21735
Subsidies for business creation	22.1%					21735

Table 2: Descriptive Statistics – Labor Regulation Notch

This table shows descriptive statistics on the sample used for the analysis of the labor regulation notch. The source of the data is the SUSE dataset for the fiscal years 1996 to 2007, except for ownership characteristics which come from the DIANE dataset produced by Bureau Van Dijk. In panel A, all firms with current employment between 20 and 100 are included; panel B focuses on firms with 46 to 49 employees while panel C focuses on firms with 50 to 53 employees. ROA is equal to EBITDA over Total Assets and winsorized at the 1% level. The financial constraints index increases by one unit every time a firm belongs to the upper half of its 2-digit industry peers in a given year for the following variables: payment of dividends, one minus leverage ratio, ratio of cash holdings to assets, firm age and book asset value. The labor share is the ratio of wages plus payroll taxes over value added, winsorized at the 1% level. TFP is the Solow residual from a logarithmic regression of value added on employment, fixed assets and year fixed effects run in 4-digit-industry-specific samples. A firm is eponymous if it shares the last name of the current CEO. Family board control is when at least two of the board members and top executives belong to the same family. Remaining variables are defined in table 1.

Panel A: All firms

	Mean	**s.d.**	**p25**	**p50**	**p75**	**N**
Firm characteristics:						
Employment	39.0	18.4	25	33	47	915865
Age of the firm	17.3	12.4	8	14	25	873052
Return on Assets	0.07	0.139	0.02	0.07	0.13	890010
3-year bankruptcy pr.	4.6%					915865
Financial constraints index	2.4	1.4	1	2	3	845143
Labor share	0.839	0.351	0.681	0.808	0.913	900162
TFP	0.001	0.485	-0.197	0.013	0.233	866652
Ownership characteristics:						
Eponymy of Firm and CEO	20.2%					785198
Family Board Control	64.8%					147295
Nb. of board members	4.8	4.0	2	4	6	147295

Table 2: Descriptive Statistics – Labor Regulation Notch (continued)

Panel B: Employment bet. 46 & 49 employees

	Mean	**s.d.**	**p25**	**p50**	**p75**	**N**
Firm characteristics:						
Employment	47.6	1.1	47	48	49	66178
Age of the firm	18.8	12.5	9	16	27	63230
Return on Assets	0.081	0.128	0.031	0.077	0.136	64968
3-year bankruptcy pr.	3.6%					66178
Financial constraints index	2.8	1.4	2	3	4	62110
Labor share	0.8	0.317	0.652	0.782	0.89	65319
TFP	0.059	0.456	-0.141	0.061	0.28	63582
Ownership characteristics:						
Eponymy of Firm and CEO	20.5%					58584
Family Board Control	68.9%					13123
Nb. of board members	4.6	3.6	2	4	5	13123

Panel C: Employment bet. 50 & 53 employees

	Mean	**s.d.**	**p25**	**p50**	**p75**	**N**
Firm characteristics:						
Employment	51.4	1.1	50	51	52	26104
Age of the firm	18.1	12.9	8	15	26	24809
Return on Assets	0.064	0.138	0.016	0.065	0.124	25418
3-year bankruptcy pr.	4.4%					26104
Financial constraints index	2.6	1.3	2	3	4	24248
Labor share	0.835	0.365	0.671	0.803	0.917	25561
TFP	0.005	0.502	-0.192	0.018	0.24	24630
Ownership characteristics:						
Eponymy of Firm and CEO	16.2%					22542
Family Board Control	60.5%					5228
Nb. of board members	5.1	4.3	3	4	6	5228

Table 3: The impact of performance on taxable income elasticities

Column 1 displays the average elasticity of taxable income in the sample. Each of columns 2 to 9 corresponds to a separate regression and displays the average marginal effects of various variables of interest on the elasticity of taxable income. Taxable income elasticities to (one minus) the tax rate are computed using the estimated probability of bunching in the zone of *k* +/- *w* conditional on taxable income being in *k* +/- *2*w* and the formula in equation (4). Standard errors are clustered at firm-level. ROA quantiles are specific to each 2-digit industry and year. Industry fixed effects are at the 2-digit level. Remaining variables are defined in table 1. The source of the data is the SUSE dataset for the years 2004 to 2007.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	0.213***								
	(0.005)								
Return on Assets		0.097***	0.096***	0.092***	0.093***			0.143***	0.088**
		(0.034)	(0.036)	(0.035)	(0.036)			(0.027)	(0.040)
Log of sales			-0.001		0.001				
			(0.005)		(0.006)				
Fin.constraints				-0.006	-0.007				
				(0.005)	(0.005)				
ROA Q20-Q40						0.011			
						(0.017)			
ROA Q40-Q60						0.035**			
						(0.017)			
ROA Q60-Q80						0.030*			
						(0.016)			
ROA Q80-Q100						0.058***			
						(0.016)			
Bankruptcy in next 3 years							-0.146***		
							(0.039)		
Industry FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bandwidth *w*	4	4	4	4	4	4	4	6	3
Avg. elast. for ref. group:	-	-	-	-	-	0.185	0.216	-	-
Nb. Obs.	192068	192068	190850	192063	190845	192068	192068	277772	149438

Table 4: Consequences and determinants of tax filers' awareness of tax progressivity

Each of columns 1 to 5 in panel A corresponds to a separate regression and displays the average marginal effects of various variables of interest on the elasticity of taxable income. Taxable income elasticities to (one minus) the tax rate are computed using the estimated probability of bunching in the zone of k +/- w conditional on taxable income being in k +/- 2*w and the formula in equation (4). Information variables in panel A measure whether firms are aware of progressivity at the time of income declaration, one year before and two years before. Panel B shows results from an OLS regression of a dummy for awareness of progressivity at the time of income declaration on various variables of interest. ROA quantiles are specific to each 2-digit industry and year. Industry fixed effects are at the 2-digit level. Remaining variables are defined in table 1. Standard errors are clustered at firm-level. The source of the data is the SUSE dataset for the years 2004 to 2007.

Panel A: Income Tax Elasticity Regressions

	(1)	(2)	(3)	(4)	(5)
Filer informed in t	0.217***	0.127**	0.118**	0.141*	
	(0.048)	(0.063)	(0.050)	(0.076)	
Informed in t-1	0.116***	0.149***	0.089**	0.141**	
	(0.039)	(0.053)	(0.042)	(0.064)	
Informed in t-2		0.026	0.030	0.072	
		(0.042)	(0.033)	(0.050)	
Firm age					-0.003***
					(0.001)
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Bandwidth *w*	4	4	6	3	4
Nb. Obs.	124743	81696	116855	63717	192063

Table 4: Consequences and determinants of tax filers' awareness of tax progressivity (cont.)

Panel B: Filer Awareness Regressions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Return on Assets	0.053***	0.040***	0.052***	0.040***			
	(0.002)	(0.002)	(0.002)	(0.002)			
Log of sales		-0.011***		-0.011***			
		(0.000)		(0.000)			
Fin. Constraints			-0.002***	0.000*			
			(0.000)	(0.000)			
ROA Q20-Q40					0.018***		
					(0.001)		
ROA Q40-Q60					0.027***		
					(0.001)		
ROA Q60-Q80					0.031***		
					(0.001)		
ROA Q80-Q100					0.029***		
					(0.001)		
Bankruptcy in next 3 years						-0.013***	
						(0.002)	
Firm age							-0.001***
							(0.000)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Avg. prob. for ref. group:	-	-	-	-	0.943	0.965	-
Nb. Obs.	821108	815784	821098	815774	821108	821108	821098

Table 5: Impact of firm governance on tax optimization and tax filer information

Each of columns 1 to 8 in panel A corresponds to a separate regression and displays the average marginal effects of various variables of interest on the elasticity of taxable income. Taxable income elasticities to (one minus) the tax rate are computed using the estimated probability of bunching in the zone of k +/- w conditional on taxable income being in k +/- 2*w and the formula in equation (4). Panel B shows results from an OLS regression of a dummy for awareness of progressivity at the time of income declaration on various variables of interest. Accounting controls are the logarithm of sales in year t-1 and the financial constraints index in year t-1. All variables used are defined in table 1. Standard errors are clustered at firm-level. The source of the data is the SUSE dataset for the years 2004 to 2007.

Panel A: Impact of ownership and leadership characteristics on tax elasticities

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Legal form: SARL	-0.051***	-0.051***						
	(0.018)	(0.018)						
Legal form: SA	-0.117***	-0.116***						
	(0.028)	(0.029)						
Founder: Age			-0.002					-0.002
			(0.003)					(0.003)
Founder: Female				0.164*				0.159*
				(0.085)				(0.088)
Founder: High school degree					0.209			0.194
					(0.137)			(0.139)
Founder: College degree					0.284**			0.256*
					(0.142)			(0.148)
Founder: Mgt. training						0.007		-0.014
						(0.076)		(0.083)
Founder: Public subsidies							0.081	0.064
							(0.081)	(0.085)
Industry FE	2-digit	2-digit	No	No	No	No	No	1-digit
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Accounting controls	No	Yes	No	No	No	No	No	Yes
Bandwidth *w*	4	4	4	4	4	4	4	4
Avg. elast. for ref. group:	0.273	-	-	0.211	0.042	0.236	0.221	-
Nb. Obs.	185130	184018	5062	5062	5062	5062	5062	5033

Table 5: Impact of firm governance on tax optimization and tax filer information

Panel B: Impact of ownership and leadership characteristics on tax filer information

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Legal form: SARL	-0.004***	-0.002*						
	(0.001)	(0.001)						
Legal form: SA	-0.059***	-0.050***						
	(0.002)	(0.002)						
Founder: Age			-0.000***					-0.000**
			(0.000)					(0.000)
Founder: Female				0.001				0.000
				(0.003)				(0.004)
Founder: High school degree					-0.003			-0.003
					(0.004)			(0.004)
Founder: College degree					-0.008*			-0.004
					(0.005)			(0.005)
Founder: Management training						0.015***		0.007***
						(0.003)		(0.003)
Founder: Public subsidies							0.011***	0.006**
							(0.003)	(0.003)
Industry FE	2-digit	2-digit	No	No	No	No	No	1-digit
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Accounting controls	No	Yes	No	No	No	No	No	Yes
Avg. prob. for ref. group:	0.974	-	-	0.972	0.976	0.968	0.970	-
Nb. obs.	793406	788550	21735	21735	21735	21735	21735	21601

Table 6: Impact of firm profitability on bunching induced by labor regulation notch

Each column in panels A and B corresponds to a separate regression and displays the average effect on growth bet. t and t+1 of being in a growth interval and initial employment zone such that the firm will have to make a local decision whether or not to avoid the labor regulations (i.e. the treatment), interacted with other variables of interest (see equation (5)). Growth intervals are of size 5, while the marginal bunching zone is set between 46 and 53 employees. Each regression includes: growth-interval fixed effects interacted with a quartic polynomial of initial employment, 2-digit industry and year fixed effects. Treatment effects interacted with industry and year fixed effects are included in regressions where indicated. Observations corresponding to "global" bunchers, i.e., firms whose growth path leads them just below 46 employees and just above 53 employees are excluded. Firms whose growth interval corresponds to zero growth between t and t+1 are not included. A declining firm is a firm whose employment goes down between t and t+1. All remaining variables are defined in table 2. Standard errors are clustered at firm-level. The source of the data is the SUSE dataset for the years 1996 to 2007.

Panel A: Baseline regressions of bunching-induced employment growth on profitability

	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	-0.264***					
	(0.012)					
Treatment		-0.498***	-0.376***	-0.440***	-0.462***	-0.293***
#ROA		(0.077)	(0.096)	(0.081)	(0.077)	(0.100)
Treatment			-0.071***			-0.044
#TFP			(0.026)			(0.027)
Treatment				-0.032***		-0.034***
#Fin. Constraints				(0.008)		(0.008)
Treatment					0.102***	0.119***
#Declining Firm					(0.024)	(0.025)
Industry FE	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes	Yes
Nb. Obs.	341036	332604	323092	317952	332604	309733

Table 6: Impact of firm profitability on bunching induced by labor regulation notch (cont.)

Panel B: Alternative regressions of bunching-induced employment growth on profitability

	(1)	(2)
Treatment	-0.187***	
#ROA (Q20-Q40)	(0.033)	
Treatment	-0.202***	
#ROA (Q40-Q60)	(0.033)	
Treatment	-0.207***	
#ROA (Q60-Q80)	(0.033)	
Treatment	-0.220***	
#ROA (Q80-Q100)	(0.032)	
Treatment		0.229***
#Bcy. in 3 years		(0.052)
Treatment		
#ROA		
Industry FE	Yes	Yes
Year FE	Yes	Yes
Avg. treat. effect for ref. group:	-0.142	-0.271
Nb. Obs.	332604	341036

Table 7: Impact of firm governance on bunching induced by labor regulation notch

Each column below corresponds to a separate regression and displays the average effect on growth bet. t and t+1 of being in a growth interval and initial employment zone such that the firm will have to make a local decision whether or not to avoid the labor regulations (i.e. the treatment), interacted with other variables of interest (see equation (5)). Growth intervals are of size 5, while the marginal bunching zone is set between 46 and 53 employees. Each regression includes: growth-interval fixed effects interacted with a quartic polynomial of initial employment, 2-digit industry and year fixed effects. Treatment effects interacted with industry, year fixed effects, and accounting controls such as TFP, employment decline dummy, and financial constraints are included in regressions where indicated. Observations corresponding to "global" bunchers, i.e., firms whose growth path leads them just below 46 employees and just above 53 employees are excluded. Firms whose growth interval corresponds to zero growth between t and t+1 are not included. A medium-sized board has 3 to 5 members; a large board has more than 6 members. All remaining variables are defined in table 2. Standard errors are clustered at firm-level. The source of the data is the SUSE dataset for the years 1996 to 2007.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment	-0.115**	-0.109**						
#Family Board Control	(0.053)	(0.055)						
Treatment			-0.098***	-0.083***				
#Eponymous Firm			(0.030)	(0.031)				
Treatment					0.075	0.067		
#Medium-sized Board					(0.060)	(0.061)		
Treatment					0.118*	0.110		
#Large Board					(0.072)	(0.074)		
Treatment							-0.001*	0.000
#Firm age							(0.001)	(0.001)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Accounting controls	No	Yes	No	Yes	No	Yes	No	Yes
Avg. treat. effect for ref. group:	-0.165	-	-0.262	-	-0.342	-	-	-
Nb. Obs.	54345	51415	294546	277027	54345	51415	326260	309733

Appendix Table 1: Dynamic Bunching Estimation: Placebo Tests

Each column below corresponds to a separate regression and displays the average effect on each outcome named in the first row of being in a growth interval and initial employment zone such that the firm will have to make a local decision whether or not to avoid the labor regulations (i.e. the treatment). See equation (5) for more details. Growth intervals are of size 5, while the marginal bunching zone is set between 46 and 53 employees. Each regression includes: growth-interval fixed effects interacted with a quartic polynomial of initial employment, 2-digit industry and year fixed effects. Observations corresponding to "global" bunchers, i.e., firms whose growth path leads them just below 46 employees and just above 53 employees are excluded. Firms whose growth interval corresponds to zero growth between t and t+1 are not included. All outcome variables are defined in table 2. Standard errors are clustered at firm-level. The source of the data is the SUSE dataset for the years 1996 to 2007.

	(1) Emp. Growth t/t-1	(2) ROA	(3) TFP	(4) Financial Constraints	(5) Eponymous Firm
Treatment	-0.074	-0.000	-0.005	0.012	-0.004
	(0.097)	(0.001)	(0.004)	(0.012)	(0.004)
Industry FE	No	No	No	No	No
Year FE	No	No	No	No	No
Bandwidth	5	5	5	5	5
Nb. Obs.	278009	332604	325010	317952	294546

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