

DOCUMENTOS DE TRABAJO IELAT

**Nº 97 – Abril
2017**

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FIRMS: BUNCHING EVIDENCE FROM ARGENTINA**



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EN ESTUDIOS LATINOAMERICANOS ·IELAT·

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DERECHOS RESERVADOS CONFORME A LA LEY

Impreso y hecho en España
Printed and made in Spain
ISSN: 1989-8819

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EVASION vs. REAL PRODUCTION RESPONSES TO TAXATION AMONG FIRMS: BUNCHING EVIDENCE FROM ARGENTINA¹

Ana Gamarra Rondinel²

Abstract:

A key idea in public economics is that optimal tax policies and tax instruments can ensure production efficiency even in second-best environments. This theoretical prediction has been widely accepted and put into practice in developed and developing countries. Yet, it has been derived from models that ignore tax evasion. Once enforcement constraints are acknowledged, some studies suggest that –contrary to the theoretical prediction – production efficiency is no longer the centerpiece of the model while instead revenue efficiency becomes more relevant. This paper analyzes empirically such trade-off between revenue and production efficiency in the choice of tax instruments in Argentina. We use a production inefficient tax policy, the simplified tax regime, which affects firms’ behavior on compliance and real output. Using the bunching approach and administrative tax data covering all corporate income tax returns for the years 1997-2011, we show that the asymmetric bunching in Argentina represents intensive and extensive margin responses. Incorporating turnover evasion in an optimal tax model, we find that in Argentina the trade-off is not as clear as in Pakistan because bunching could be the result of less compliance.

Keywords: Tax evasion, SMEs, bunching approach, simplified tax regime, corporate taxation.

¹ This paper is part of the master thesis written with a view to obtaining the academic degree of Master 120 en Sciences Économiques, Finalité Approfondie in the Ecole d’économie de Louvain, Université catholique de Louvain and in the Département des Sciences économiques, Université de Namur. Obtained the qualification of outstanding

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I. INTRODUCTION

In the last decades, globalization and market liberalization have exacerbated poverty and inequality in developing countries. As a result, additional domestic revenue has become necessary in order to finance development and poverty reduction. Indeed, as Besley and Persson (2013, p.2) claim, “tax lies at the heart of state development”.

In Latin America, governments generally rely more on indirect taxation and resource revenue than on direct taxation. The Value Added Tax (henceforth “VAT”) and non-tax revenues are the primary sources of revenue collection³. The presence of large informal economies is in fact one of the causes of this dependence on indirect taxation; since it results in income tax revenue being insignificant and the tax base being highly concentrated in a few large firms⁴. Furthermore, the economic growth witnessed by Latin American countries over the last decade and half has given rise to an entrepreneurship spirit, leading to the creation of numerous small and medium enterprises (henceforth “SMEs”). In the literature of tax design, these enterprises are classified as a ‘hard-to-tax’ sector⁵. Although this sector represents an important contribution to the national economy, the tax revenue generated raised by it is very low, due to the large informality.

In this thesis, we argue that the taxation of SMEs is an important aspect of, and can help to explain, the relation between informality, tax evasion and domestic revenue mobilization in developing countries. We will address questions such as: does a cost-benefit analysis reveal it is worth taxing this sector? What should be the optimal tax structure of a country with numerous SMEs and limited tax capacity? The above-mentioned relation presents a challenge to both academic economists and policy practitioners in developing countries, hence we hope to contribute to the academic debate and inform policy.

The broad literature on optimal taxation mainly relies on the production efficiency theorem of Diamond and Mirrlees (1971), which suggests that tax systems should be aimed at maintaining full production efficiency even in second-best environments. The policy recommendation that follows from this is to avoid taxes on turnover, trade and intermediate inputs that distort production efficiency. However, although this recommendation is relevant to developed countries, the theoretical framework on which it is based ignores the numerous issues faced by developing countries, such as imperfect enforcement, limited tax capacity, informality and tax evasion. Recent studies – such as that of Kleven *et al.* (2016) – show that in environments with limited tax capacity, third-best policies are more suitable, even though they imply revenue creation at the expense of production efficiency. The objective of this study is to analyze

³ Along 1990 and 2009, the revenue collected by the VAT was around half of the tax revenue in Argentina; whereas the non-tax revenue was 12%. Based on the ICTD Government Revenue Dataset (ICTD GRD, 2014).

⁴ According to Schneider *et al.* (2010), the shadow economy in Argentina during 1997-2007 represented 25.3%GDP. Moreover, only 0.1% of firms remit 49% of tax revenue in Argentina (International Tax Dialogue, 2007).

⁵ Over our period of study (1997-2011), large firms account for around 0.2% of total registered taxpayers in the corporate income tax structure; while, medium firms account for 67.6% and small firms account for 32.2%. Based on the Federal Administration of Public Revenue of Argentina (AFIP).



empirically such a trade-off between revenue and production efficiency in the choice of tax instruments in a developing country, namely Argentina. In order to do this, we explore a production inefficient tax policy called the Simplified Tax Regime (henceforth “SR”), according to which firms are taxed either on their profits or turnover depending on which tax liability is larger⁶. This policy is based on the idea that a larger tax base is more difficult to evade. It was implemented in 1998 in Argentina with two purposes: to fight informality and to reduce evasion, or in tax policy jargon, to transform “ghosts” into taxpayers and “icebergs” into fully taxpayers⁷.

We begin our analysis by presenting a simple theoretical framework based on the model of Best *et al.* (2014), which we extend by introducing turnover evasion, in order to account for the Argentinean context. The optimality conditions of this model suggest that, in countries with limited tax capacity, it may be desirable to deviate from full production efficiency in order to increase compliance. To evaluate this theoretical prediction, we use administrative data from the Federal Administration of Public Revenue (AFIP, in Spanish) covering the tax returns of all firms subject to corporate income tax between 1997 and 2011. Although it is quite rich, this dataset has two drawbacks: first, it is not micro-level data, and second, it does not represent firms in the simplified regime. To overcome these limitations, we adjust the estimation strategy of Best *et al.* (2014) while maintaining the core idea that the simplified regime gives rise to non-standard kink points, due to the joint and discontinuous change of the tax rate and the tax base at a cutoff. As the authors suggest, such kinks influence the behavior of firms in terms of compliance and real production differently, and give rise to an excess mass around the kink.

There are three main findings. First, the introduction of the policy provides SMEs with an additional incentive to reduce their turnover (‘legally’ or ‘illegally’) and to comply with costs. As a result, we observe bunching among those firms in all periods, but more pronounced in 1997 and 1998 (respectively the year before and the year of the introduction of the policy). Second, we find that in Argentina this phenomenon is mostly the result of evasion responses. Indeed, given the speed of reaction, the observed bunching around zero and the significant bunching in 1997 and 1998 is far more likely a consequence of evasion responses rather than of real output responses, as previous studies suggest (Mosberger 2016; Lediga *et al.* 2016). Third, in line with existing research (Devereux *et al.* 2012; Dekker *et al.* 2016), bunching is asymmetric around a profit rate of 0.09. This provides strong evidence that firms respond to the taxation component of the policy. Taken together, these three findings suggest that when

⁶ They were first introduced in the 1970s in Latin America to deal with the difficulty to apply the VAT to small taxpayers. Later, in the 1990s (1997, in Brazil and 1998, in Argentina) were expanded to the rest of the continent, except in Venezuela, Panama and El Salvador. Nowadays, there are three types of simplified tax regimes: ones that replace the income tax, others that replace the VAT and others that replace both plus social security contributions (applied only in Argentina, Brazil and Uruguay). The criterion of qualification is mainly the turnover; although some regimes have additional objective parameters as physical area, electricity bill and number of employees. Some countries have more than one regime as Bolivia (3), Chile (5), Mexico (3), Uruguay (2) and Peru (2). The universe of taxpayers covered is: self-employed, and micro and small unincorporated enterprises mainly in the commercial and service sectors. Finally, the tax calculation commonly used is a monthly fixed quota.

⁷ Kanbur and Keen (2014) divide the population of taxpayers by different forms of compliance and non-compliance. Among the later we can find “ghosts” and “icebergs”. The former is the invisible taxpayer who should be registered for tax purposes but do not, hence is outside the tax net. While, the later is a registered taxpayer who illegally misreport their costs and/or output in order to reduce her tax liability.



turnover evasion is taken into account, the revenue efficiency of the policy is not as straightforward as the theory suggests.

This paper draws upon the broad literature of firms’ behavioral responses to taxes (Kopczuk and Slemrod 2006; Munk 1978), the recent bunching literature (Saez 2010; Chetty *et al.* 2011; Kleven 2016; Kleven and Waseem 2013) and the studies of optimal taxation of firms with limited tax capacity (Emran and Stiglitz 2005; Gordon and Li 2009; Kanbur and Keen 2014; Dharmapala *et al.* 2011; Keen 2007; Keen 2012; Boadway and Sato 2009; Abramovsky *et al.* 2014). We believe our contributions to the literature are threefold. First, this paper provides direct empirical evidence on firms’ margin responses to a widespread and questionable policy in Latin America with scarce quantitative evidence. An overview of the literature indicates that the majority of the existing work is based on developed countries; few studies analyze the relation between informal firms, evasion and taxation in developing countries. Indeed, Kleven and Waseem (2013) were the first to extend the literature to a developing country using administrative data and notches, although their method was ill-suited for extensive margin responses. In line with our study, Carrillo *et al.* (2014) examined the effect of third-party reporting in Ecuador and concluded that when the tax limitations of developing countries are considered, policies such as third-party reporting or simplified tax regimes alone are ineffective for reducing tax evasion.

Second, we contribute to the nascent literature that uses a bunching approach to estimate firm responses to tax changes, an approach which is the object of a controversy in the public economics literature. As Saez (1999) points out, the majority of studies focus on the effect of marginal tax rates in the context of personal income tax (henceforth “PIT”), and little attention has been paid to the corporate income tax (henceforth “CIT”). For instance, Saez (2010) uses the density distribution of earnings of self-employed and wage earners to study the effect of marginal tax rates of PIT in the U.S.. In a similar vein, Chetty *et al.* (2011) study the discontinuous change in the PIT base in four groups of the population (married women vs. single men and military vs. teachers), by calculating for each individual the distance between taxable income and the top tax threshold, and using the density distribution of this distance. By contrast to these studies, we compare the marginal changes in tax rate and tax base of two different regimes, the general regime and the simplified regime. We use an indicator of profitability (namely the profit rate) to both capture discontinuous changes and exploit three types of modifications (on the turnover tax rate, on the profit tax rate and on the tax base). Third, we differ from Best *et al.* (2014) in three aspects: (i) we do not assume *a priori* that bunching represents evasion responses, (ii) we give a crucial role to turnover evasion and (iii) we are less optimistic than Best *et al.* (2014) with regards to the potential of the simplified tax regime, in that contrary to the results they obtained with Pakistan our results suggests skepticism towards the idea that a broader tax base significantly reduces evasion. Overall, three factors make our work a relevant contribution to the tax design literature: the topicality of the subject, the analytical approach used and the social implications of the policies discussed.

The rest of this paper is structured as follows. The next section introduces the theoretical framework used for analyzing the trade-off between revenue and production efficiency. In



section III, we discuss the relevant institutional background and describe the data we use in the empirical analysis. Section IV explains the empirical strategy used in estimating firms’ behavioral responses. In section V, we present our results from the bunching evidence and bunching estimation. Section VI deals with some experiences of the impact of the policy. Finally, section VII briefly concludes.



II. THEORETICAL FRAMEWORK

The purpose of this section is to develop a conceptual framework within which will be examined the trade-off between production and revenue efficiency in the presence of tax evasion. We begin with a brief review of Best *et al.* (2014) who model this trade-off for Pakistan, we then take this model as our baseline model and propose two extensions to make it compatible with the Argentinean setting.

2.1 The trade-off in the Best *et al.* (2014) framework

Best *et al.* (2014) use a static model of optimal taxation of firms with no uncertainty. In a partial equilibrium framework with no inputs and only one final good, firms choose how much output y to produce and the costs to report to the tax administration \hat{c} . We assume firms can *only* over-report their costs $\hat{c} > c(y)$ in order to reduce their reported profits (and therefore tax liability). The tax liability depends on firms’ output and reported costs: $T(y, \hat{c}) = \tau[y - \mu\hat{c}]$, where μ is the tax base parameter which determines the tax regime the firm belongs to, either to the simplified tax regime with a turnover tax base ($\mu = 0$) or to the general regime with a pure profit tax base ($\mu = 1$). Misreporting entails costs $g(\hat{c} - c(y))$, which correspond for instance to the risk of being audited, the fine paid when the firm is caught by the tax administration, the productivity losses from operating in cash, the costs of not keeping accurate accounting books or the costs from changing the production process to eliminate verifiable evidence (Kopczuk and Slemrod 2006; Best *et al.* 2014). These costs are convex with the level of tax evasion⁸. Also, profits depend positively on after-tax income and negatively on reported costs. Moreover, we assume a small open economy where firms are price-takers; hence we normalize the price of the final good so that turnover and output are identical⁹. As a result, we have the true after-tax profit: $\pi(y, \hat{c}) = y - c(y) - \tau[y - \mu\hat{c}] - g(\hat{c} - c(y))$ and the reported after-tax profit: $\hat{\pi}(y, \hat{c}) = y - \hat{c} - \tau[y - \mu\hat{c}]$. The optimization problem of a representative firm is therefore:

$$m_{y, \hat{c}} \pi(y, \hat{c}) = y - c(y) - \tau[y - \mu\hat{c}] - g(\hat{c} - c(y))$$

F :

$$\frac{d}{dy} = 0 \rightarrow c'(y) = 1 - t \left(\frac{1-\mu}{1-t} \right) = 1 - t_E \quad \dots (1)$$

$$\frac{d}{d\hat{c}} = 0 \rightarrow g'(\hat{c} - c(y)) = t_l \quad \dots (2)$$

⁸ As a result, we have three possible cases: no misreporting ($\hat{c} - c(y) = 0$), over-reporting ($\hat{c} - c(y) > 0$) and under-reporting ($\hat{c} - c(y) < 0$). Is not unreasonable to think that firms under-report costs; in fact Carrillo *et al.* (2014) show that when the audit probability is a decreasing function of the profit rate, firms under-report revenues and costs in order to ‘look small’ and, hence avoid being audited. Note that in our case, the SR affects firms’ size because it gives incentives to firms to stay small indefinitely and/or to reduce their size in order to benefit from the regime. However, firms modify their size through misreporting as long as the tax payment is larger or equal to the costs of misreporting. If the costs of misreporting are too large, then firms will prefer to not misreport and will reveal their true costs and/or turnover. Is obvious that the larger the firm, the lower the costs of misreporting (in proportional terms).

⁹ Therefore, net income can be referred to as profits and gross income as turnover or output. The profit tax is thus over net income while the turnover tax is over gross income.



where, $t \left(\frac{1-\mu}{1-t} \right)$ is the effective marginal tax rate (t_E).

The first of these expressions determines the real output level. Note that the effective tax rate reduces the marginal return to real output. It is a distortionary tax which creates a wedge and which depends on the statutory tax rate and the tax base; $\frac{dt_E}{d\tau} \geq 0, \frac{dt_E}{d\mu} \leq 0$. An increase of the tax rate ($\Delta\tau > 0$) or a larger tax base ($\Delta\mu < 0$) raises the effective tax rate, which in turn reduces the marginal return of real output and, hence decreases firms' real output level.

The second expression determines the level of evasion and it is increasing in statutory tax rate and in tax base. Indeed, an increase of the tax rate ($\Delta\tau > 0$) or a narrower tax base ($\Delta\mu > 0$) raises the marginal return of misreporting ($\Delta t_l > 0$) which in turn give more incentives to firms to evade by over-reporting costs¹⁰.

When firms are subject to the general regime, they are taxed on their profits ($\mu = 1$) and the statutory tax rate is the profit tax. Equations (1) and (2) become: $c'(y) = 1, g'(\ell - c(y)) = \tau_\pi$. We observe in the first expression that the wedge disappears, so that a firm's production decision is undistorted. The second expression implies that firms have an incentive to evade in the general regime because the marginal return of misreporting is the profit tax.

Conversely, when firms are subject to the simplified tax regime, they are taxed on their turnover ($\mu = 0$) and the statutory tax rate is the turnover tax, hence equations (1) and (2) become: $c'(y) = 1 - t_y, g'(\ell - c(y)) = 0$. In this case, a wedge distorts the production decision of firms by reducing the marginal return to real output; on the other hand, firms get no benefits from misreporting costs.

The model specifies a government which can only raise revenue by taxing firms. This is not an unreasonable assumption in developing countries where, due to high administrative costs, income taxes are often concentrated on CIT¹¹. The government sets the tax base μ and the tax rate τ in the presence of tax evasion in order to maximize welfare under the constraint of collecting a revenue R . This simple model does not include the behavior of households. It is assumed that the only individuals in the economy are the firms' owners, whose consumption depends on the after-tax profits obtained. Maximizing welfare is thus equivalent to maximizing the aggregate consumption or after-tax profit, subject to an exogenous revenue requirement R . The optimization problem of the government is:

¹⁰ For example, if the government improves its tax capacity by increasing the number of inspections or the amount of fines, then it becomes more costly for a firm to evade. In the 2004 reform, the Argentinean tax administration introduced a fine (100 - 3 000 pesos) plus the precautionary closing of the business in case of tax evasion. Five years later, in the 2009 reform, the fine was modified to 50% of the single tax. In the model, these policy changes would translate into higher costs of evasion.

¹¹ The empirical evidence suggests that low fiscal capacity countries rely heavily on taxation of firms. For example, in Argentina CIT revenue represents 65% of the tax income revenue, while PIT represents only 31% (mean over 1990-2010; based on the ICTD Government Revenue Dataset (ICTD GRD, 2014)).

$$m_{t,\mu} W = \pi(y, \hat{c})$$

$$s : R \leq T(y, \hat{c})$$

Where, $T(y, \hat{c}) = \tau[y - \mu\hat{c}]$

$$L: \pi(y, \hat{c}) + \lambda(T(y, \hat{c}) - R)$$

$$F :$$

$$\frac{d}{d} = 0 \rightarrow \lambda \geq 1$$

$$\frac{d}{d} = 0 \rightarrow \lambda \geq 1$$

Where λ denotes the (endogenous) marginal costs of public funds (intuitively, it is the ‘price’ the government faces to collect revenue in order to finance public expenditure).

In this setting, the government has two instruments for tax policy, the tax rate and the tax base. From this model Best *et al.* (2014) state the following optimal tax rules:

- Lemma 1: When there is perfect enforcement, then the optimal tax base is $\mu = 1$.

Proof: Perfect enforcement implies no evasion, so firms report their true costs $\hat{c} = c(y)$ and $g(0) = 0$. The optimization problem of firms becomes: $m_y \pi(y) = y - c(y) - \tau[y - \mu(y)]$ where the result is an efficient output decision: $c'(y) = 1$. Consequently, with perfect tax enforcement the theorem of Diamond and Mirrless (1971) holds, full production efficiency is maintained with $\mu = 1$ and a pure profit tax.

- Proposition 1: When there is imperfect enforcement, then the optimal tax base is $\mu = 0$.

Proof: With imperfect tax enforcement, firms have an incentive to misreport $\hat{c} > c(y)$ even though it entails some cost $g(\hat{c} - c(y)) > 0$. In such context, the firms’ optimization problem is: $m_{y,\hat{c}} \pi(y, \hat{c}) = y - c(y) - \tau[y - \mu\hat{c}] - g(\hat{c} - c(y))$. This results in an inefficient output decision $c'(y) = 1 - t_y$. Consequently, firms deviate from optimality but have no incentives to misreport.

Proposition 1 is a generalization of the optimal tax rule (Lemma 1) in the presence of tax evasion, it captures the trade-off between production and revenue efficiency in the choice of the tax base and reflects the notion that “a broader base is harder to evade” (Best *et al.* 2014, p.2). From a policy perspective, if the revenue efficiency concern is stronger than the production efficiency concern, then it is socially optimal to switch to turnover tax (i.e. broadening the tax base) $\mu = 0$. As a result, the production wedge increases, producing a second-order welfare loss, while the evasion rate decreases, leading to a first-order welfare gain. Conversely, if the production efficiency concern is stronger than the revenue efficiency concern it will be socially optimal to choose a profit tax, by setting $\mu = 1$. In this case, firms’ real output decision is



undistorted, but this is at the expense of evasion. The first case appropriately describes the case of developing countries with imperfect tax enforcement and weak tax capacity, while the later approximates the reality of a developed country.

2.2 Extension

2.2.1 Turnover evasion

In the baseline model it was assumed that firms could only over-report costs¹². In this section we extend the model to allow for turnover evasion. The extension is justified by the idea that Argentinean firms have strong incentives to under-report turnover because is the main criterion of qualification and categorization in the simplified tax regime. Firms can over-report costs $\hat{c} > c(y)$ and under-report output $\hat{y} < y$, and both of these entail costs $g(\hat{c} - c(y), y - \hat{y})$. In this setting, firms choose how much output y to produce, as well as the output \hat{y} and costs \hat{c} reported to the tax administration. The optimization problem of the representative firm can thus be written:

$$m_{\hat{y}, \hat{c}} \pi(\hat{y}, \hat{c}) = y - c(y) - \tau[\hat{y} - \mu\hat{c}] - g(\hat{c} - c(y), y - \hat{y})$$

$F \quad :$

$$\frac{d}{d\hat{y}} = 0 \rightarrow g'_{\hat{y}} = \tau \quad \dots (1)$$

$$\frac{d}{d\hat{c}} = 0 \rightarrow g'_{\hat{c}} = \tau, \quad \dots (2)$$

Similarly to the baseline model, equation (1) determines the level of turnover evasion while equation (2) dictates the level of costs evasion. Both are increasing in statutory tax rate but only equation (2) is affected positively by the tax base. Moreover, firms in the general regime ($\mu = 1$) have the same incentives to evade in turnover and in costs because the marginal return of misreporting is the profit rate: $g'_{\hat{y}} = g'_{\hat{c}} = \tau\pi$. This result is reasonable in the general regime, where evasion in costs and/or in turnover reduces reported profits and hence tax liability. On the other hand, firms in the simplified regime ($\mu = 0$) only have an incentive to under-report turnover: $g'_{\hat{y}} = \tau_y, g'_{\hat{c}} = 0$.

In this extended model, the government’s optimization problem (and hence the result derived from it) remains the same: $\lambda \geq 1$.

To conclude, the introduction of turnover evasion to the baseline model does not contradict our previous results; on the contrary, it is helpful in furthering our understanding of the problem. Indeed, with this simple extension we captured the idea that firms under-report turnover irrespective of the tax regime to which they are subject, while they have more incentives to evade in the general regime than in the simplified regime because $0 < \tau_y < \tau\pi$.

¹² The original assumption based on Best *et al.*'s (2014, p.4) idea that “it may be easier to fabricate costs than to conceal revenues”.



2.2.2 Single tax

In this second extension we assume a fixed fee rather than a turnover tax. This is to reflect the fact that in the simplified regime Argentinean firms pay a fixed fee called single tax, which is determined by the tax administration and depends on the category to which the firm belongs (see Table AVIII). The single tax thus depends positively on the reported turnover $\theta(y)$. The optimization problem for a representative firm with cost evasion *only* is:

$$m_{y,\ell} \pi(y, \ell) = y - c(y) - \mu_1 \theta(y) - \mu_2 \tau [y - \ell] - g(\ell - c(y))$$

$F \quad :$

$$\frac{d}{dy} = 0 \rightarrow c'(y) = \frac{1 - \mu_1 \theta'_y - \mu_2 \tau}{1 - \mu_2 \tau} \quad \dots (1)$$

$$\frac{d}{d\ell} = 0 \rightarrow g'_\ell = \mu_2 \tau \quad \dots (2)$$

Turnover evasion is now introduced to see if there are any significant changes in the results. Note that in this case the single tax $\theta(y)$ is decreasing in the turnover evasion. The optimization problem for a representative firm with turnover and cost evasion is:

$$m_{y,\ell} \pi(y, \ell) = y - c(y) - \mu_1 \theta(y) - \mu_2 \tau [y - \ell] - g(\ell - c(y), y - y)$$

$F \quad :$

$$\frac{d}{dy} = 0 \rightarrow g'_y = \mu_1 \theta'_y + \mu_2 \tau \quad \dots (3)$$

$$\frac{d}{d\ell} = 0 \rightarrow g'_\ell = \mu_2 \tau \quad \dots (4)$$

When there is only cost evasion (equation 1 and 2), firms in the general regime ($\mu_1 = 0, \mu_2 = 1$) maintain full production efficiency and over-report costs: $c'(y) = 1, g'_\ell = \tau_\pi$, while firms in the simplified regime ($\mu_1 = 1, \mu_2 = 0$) deviate from production efficiency and report costs truthfully: $c'(y) = 1 - \theta'_y, g'_\ell = 0$. When there is turnover and costs evasion (equation 3 and 4), firms in the general regime ($\mu_1 = 0, \mu_2 = 1$) evade in turnover and costs: $g'_y = g'_\ell = \tau_\pi$, while firms in the simplified regime ($\mu_1 = 1, \mu_2 = 0$) only under-report turnover: $g'_\ell = 0, g'_y = \theta'_y$. In both cases, the government chooses the tax rate τ and the tax base μ_1, μ_2 to maximize welfare subject to the revenue requirement: $R \leq \mu_1 \theta(y) + \mu_2 T(y, \ell)$ when there is only costs evasion or $R \leq \mu_1 \theta(y) + \mu_2 T(y, \ell)$ when there is turnover and costs evasion. The result from the government's optimization problem in both cases remains the same: $\lambda \geq 1$. Therefore, this extension leads to the same predictions of the baseline model. Consequently, whether a single tax or a turnover tax is used should not alter the main insights of the model.

This theoretical framework gives qualitative predictions on the optimal taxation of firms under the presence of tax evasion. In the empirical section, the quantitative implications of such predictions will be examined by exploiting a production inefficient tax policy in Argentina, namely the simplified tax regime.

III. INSTITUTIONAL BACKGROUND AND DATA

3.1 Corporate taxation in Argentina

CIT is a crucial source of revenue in Argentina, as it raises 4.4% of GDP, which represents about 29% of all central tax revenues¹³. The tax system is residence-based and the current CIT rate is 35%. In the period under study there were 132 298 firms in the General Regime (GR) filing tax returns each year and 1 561 711 active firms registered in the Simplified Regime (SR) each year (Table AI). Despite these numbers, the revenue collected in the SR is insignificant in Argentina’s tax system: it accounts for only 3% of CIT revenue and 1% of total tax revenue (mean over 1998 to 2011)¹⁴.

The introduction of the SR in November 1998 had two purposes: to fight informality (first motivation) and to reduce tax evasion (second motivation). This scheme is one of the few in Latin America that links informality, taxation and social protection¹⁵. It consists of a single tax composed by two components: a monthly tax which replaces income tax (PIT and CIT) and VAT, and a social security component that includes retirement benefits and health coverage. To keep the model simple, we ignore the social security contributions and focus only on the monthly tax and the CIT¹⁶. The SR classifies firms in eight categories (A-H) depending on their reported turnover and each category has a different monthly tax (see Table AII). Importantly, in order to follow the methodology of Best *et al.* (2014), we transform the single tax to a turnover tax, so that the turnover tax obtained is the minimum amount that a firm allocated in the lowest category (category A) can pay¹⁷. However, when comparing categories, the turnover tax of category A is in fact the highest turnover tax in proportional terms, suggesting certain regressivity in the SR (as mentioned in the reports of the tax administration).

The idea of the SR is to give incentives to small taxpayers to voluntarily comply with their tax obligations by offering access to a retirement plan and to health insurance, and by minimizing the costs of compliance. These small taxpayers are self-employed workers, unincorporated small businesses such as cooperatives, and irregular societies of up to three members. The main rules of the SR are as follows. Once a taxpayer has adhered to the SR, a minimum period of permanence (one calendar year) is required. Also, when the firm wishes to withdraw from the SR, it has to fulfill the tax and social security obligations imposed by the GR at the latest on the first day of the month following the withdrawal. To be eligible, the highest turnover obtained

¹³ Mean over 1997-2011, based on the ICTD Government Revenue Dataset (ICTD GRD, 2014).

¹⁴ Nevertheless, the SR of Argentina collects the second highest revenue among SRs in Latin America (after Brazil’s simplified tax regime, SIMPLES) (ILO, 2014).

¹⁵ Since 2004, the SR contains complementary special regimes for specific ‘hard-to-tax’ sectors, namely: (i) the Regime of Social Inclusion and Promotion of Independent Work, (ii) the Simplified Regime for Effectors of Local Development and Social Economy, (iii) the Special Regime for Workers Associated to Labor Cooperatives and (iv) the Simplified Regime for Domestic Service Workers.

¹⁶ So we use the terms “single tax” and “monthly tax” interchangeably throughout the paper.

¹⁷ The turnover tax is the single tax (annual) divided by the lowest and highest annual turnover base of each category; thus, we have a minimum and a maximum turnover tax in each category. To follow as close as possible the methodology of Best *et al.* (2014), we choose the minimum turnover tax from the lowest category (category A).



from the principal activity in the previous year should not exceed the limit established by the tax administration (see Table AII). Other requirements for eligibility are that the firm has to meet some objective parameters (see Table AII), it cannot be an importer, it cannot reclaim credits on inputs. In addition, the firm must report its turnover and objective parameters regularly in order to confirm they meet the requirements¹⁸. On the other hand, a firm in the SR is not required to fill any tax return because it is excluded from VAT and CIT, nor is it required to keep accounting books.

During the period under study, there were three reforms affecting either or both of the two regimes. The first reform (December 1998) increased the profit tax rate from 33% to 35%, the second reform (July 2004) raised the single tax of the highest categories in the SR and the third reform (December 2009) broadened the tax base of the SR (see Table AII). The second and third reforms introduced additional modifications that are deliberately ignored in order to focus on the changes of the tax rate and the tax base. Table AI (Panel A) shows the variations in profit tax rate, turnover tax rate and tax base over the period under study. Similarly to Best *et al.* (2014), we exploit these variations in our empirical analysis. For practical reasons, we divide the period under study based on the policy and the three reforms identified:

Table I: Tax rates and kink points

Period	1997	1998	1999/2003	2004/2009	2010/2011
τ_y (min.)	-	0.033	0.033	0.033	0.020
τ_y (total,min.)	-	0.066	0.066	0.088	0.11
τ_π	0.33	0.33	0.35	0.35	0.35
$\tau_y(m \ .)/\tau_\pi$	-	0.1	0.09	0.09	0.05
$\tau_y(t \ , m \ .)/\tau_\pi$	-	0.2	0.18	0.25	0.31

Note: τ_y (min.) refers to the monthly tax and τ_y (total,min.) refers to the monthly tax plus social security contributions.

3.2 Data

The analysis is based on administrative data from the Federal Administration of Public Revenue (AFIP, in Spanish). It covers all CIT returns for the period 1997-2011¹⁹. It is worth highlighting that our dataset contains *only* firms filing the CIT returns, i.e. only firms in the GR²⁰. A clarification on the terminology is useful at this point. Before the introduction of the policy, the

¹⁸ Originally, this was every tax year, but since 2004, firms must report these every four months (May, September and January).

¹⁹ In Argentina, the tax year coincides with the calendar year, i.e. it runs from January 1 to December 31. However, the last day for firms to present their CIT returns to the tax administration is the June 30. Note that we do not consider the tax year 2001 because the observations were not sufficient. Indeed, in 2001, the tax administration modified the format of the tax returns. Another reason for excluding the tax year 2001 is that the Argentinean economy suffered of a deep recession (“corralito”) in that year.

²⁰ Note that electronic filing (Presentación de DDJJ y Pagos) is optional for all firms; but around 97% of firms used this method from 2006 to 2010 (CIAT, <http://www.ciat.org/index.php/es/productos-y-servicios/ciatdata/anexos-estadisticos.html>) which ensures less measurement error in the data, as highlighted by Best *et al.* (2014).



GR was the only regime in the CIT structure, and firms outside of it were informal firms, called “ghosts” in the tax jargon. Thus, firms could only move from the GR to informality and vice versa. Importantly, within the GR there were firms misreporting costs and turnover, colloquially called “icebergs” in the GR.

Since the introduction of the policy, there are two regimes co-existing in the CIT structure, the GR and the SR. Six flows are identifiable: from the GR to the SR and vice versa; from the GR to informality and vice versa, and from the SR to informality and vice versa. Of course, in the SR, there are also firms that under-report turnover, called “icebergs” in the SR. We restrict our analysis to the flow from the GR to the SR because, as explained above, the data relates exclusively the behavior of firms in the GR. Flows between formality and informality, although they provide interesting insights given the first motivation of the policy, are not the focus of this study. Instead, we focus on the second motivation of the policy, namely the reduction of evasion.

For tractability, we selected three variables: turnover, gross profits and taxable income. The information available on the CIT returns includes all kind of balance sheet items such as total costs, total purchases, tax liabilities, total assets, initial and final stocks, etc., but the three aforementioned variables are sufficient for our purposes. Figures AI1 and AI2 identify the variables used in the empirical analysis. In this regard, the calculation of the profit rate (defined as profits as a fraction of turnover) is worth explaining. Indeed, when either the calculated profit (reported turnover minus reported costs) or the reported gross profit are used, the distribution of the profit rate (profits as a share of turnover) is above zero and too on the right of the cutoff even when social security contributions are included. For this reason, the *reported taxable income*²¹ is used in the empirical analysis in order to calculate the profit rate.

In the original data, firms are classified in 17 categories defined by thresholds relating to their reported turnover (see Table AIV), even though all firms are taxed on their profits by a flat tax rate. We take advantage of this format and divide our data in groups according to their eligibility and size²²: all firms (categories[1 – 17]), eligible or small firms (categories[1 – 2]), non-eligible firms (categories[3 – 17]), medium firms (categories[3 – 15]) and large firms (categories[16 – 17]).

Limitations of the data

The data has two limitations that are important to highlight. First, the data only represents firms in the GR, and there is no information about firms in the SR. The next section explains how this limitation is dealt with. Second, the data is not micro-level data, since firms are already grouped in 17 categories based on their turnover, ranged from 0 to more than 500 000 000 pesos (Table AIV). Instead of having the turnover, gross profit and taxable income of “firm i in tax year t ”, the data only contains the turnover, gross profit and taxable income of “all firms in category j ”

²¹ Note that firms report their taxable income as the gross profit increased or decreased by items modifying the tax base, so that the profit tax rate is levied on it.

²² Based on the “Boletín Oficial de la República de Argentina, No. 24/2001”.



for the tax year t ”. In other words, the original data is already binned. If it is assumed that all firms within each category are *homogeneous*, one can calculate the mean value of the turnover, gross profit and taxable income for that category, i.e. those reported by a “representative firm in category j for the tax year t ”.

The fact that the data is binned also entails that the number of observations is limited: there are only 34 observations in each tax year from 1997 to 2000, and 51 observations from 2002 to 2011, i.e. a total of 646 observations for the whole period. The reason for these numbers is that the variable of interest is the profit rate, which is calculated using taxable income and turnover. Now, initially, firms in each of the 17 thresholds could report either positive or negative taxable income (from 1997 to 2000); while after the modification of the format of the tax returns in 2001 (from 2002 to 2011) they could report positive, negative or zero taxable income.

These limitations lead to three significant consequences for the empirical analysis. First, the fact that the data is not completely disaggregated introduces measurement errors in the bunching estimates. Second, as explained in the next section, the empirical density distribution is not completely smooth. Finally, this lack of smoothness and the aggregated nature of the data prevent us from calculating the standard errors using the bootstrapped method by random re-sampling from the estimated residuals, since the number of observations in each tax year is too small.

IV. EMPIRICAL METHODOLOGY

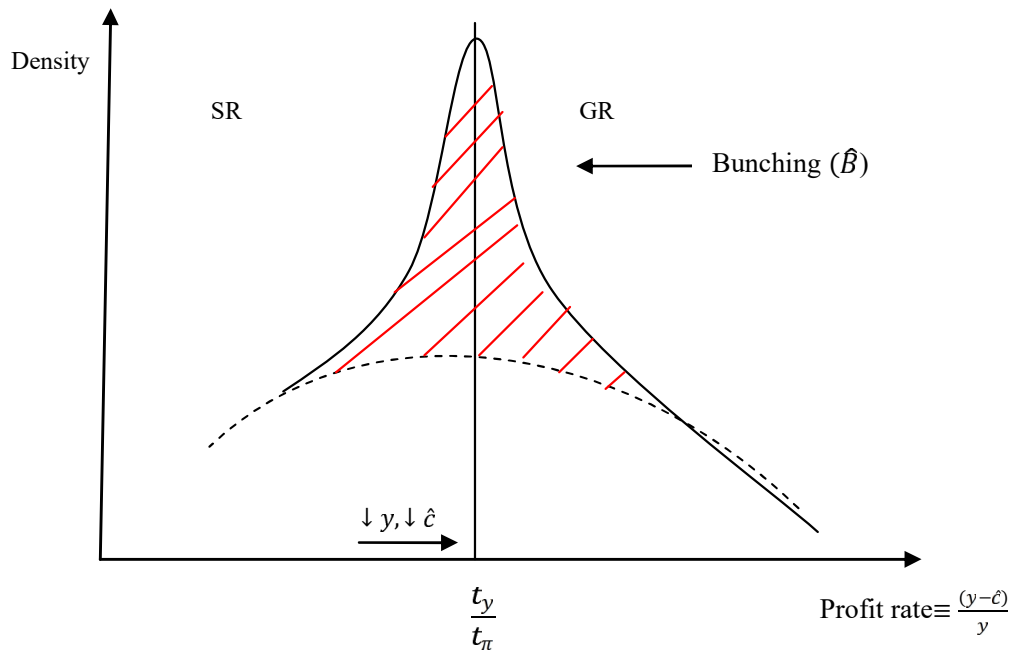
The empirical methodology used here builds on Best *et al.* (2014), but is adapted to account for the two limitations of our data. In this section, we first briefly present the strategy and intuition underlying the approach of Best *et al.* (2014). We then explain how we differ from them in constructing our own empirical methodology, and we describe the intuition that underlies our approach.

4.1 Bunching evidence

As stated in the previous section, there was only one regime in the CIT structure before the introduction of the SR (namely the GR), while there were two regimes coexisting (the SR and the GR) after the policy was implemented. This is depicted in the following graph, which clearly shows that firms with a tax liability above certain cutoff belong to the GR while firms with a lower tax liability belong to the SR.

Graph I: Bunching methodology





Source: Best *et al.* (2014, p.30)

Firms are thus taxed either on their profits or their turnover, depending on which tax liability is larger. Following Best *et al.* (2014), this main idea is described by the following equation:

$$T(y, \ell) = m [t_{\pi}(y - \ell), t_y y]$$

Considering a firm at the border between both regimes, both tax liabilities can be equalized²³:

$$t_{\pi}(y - \ell) = t_y y$$

$$\leftrightarrow \hat{t} \equiv \frac{(y - \ell)}{y} = \frac{t_y}{t_{\pi}}$$

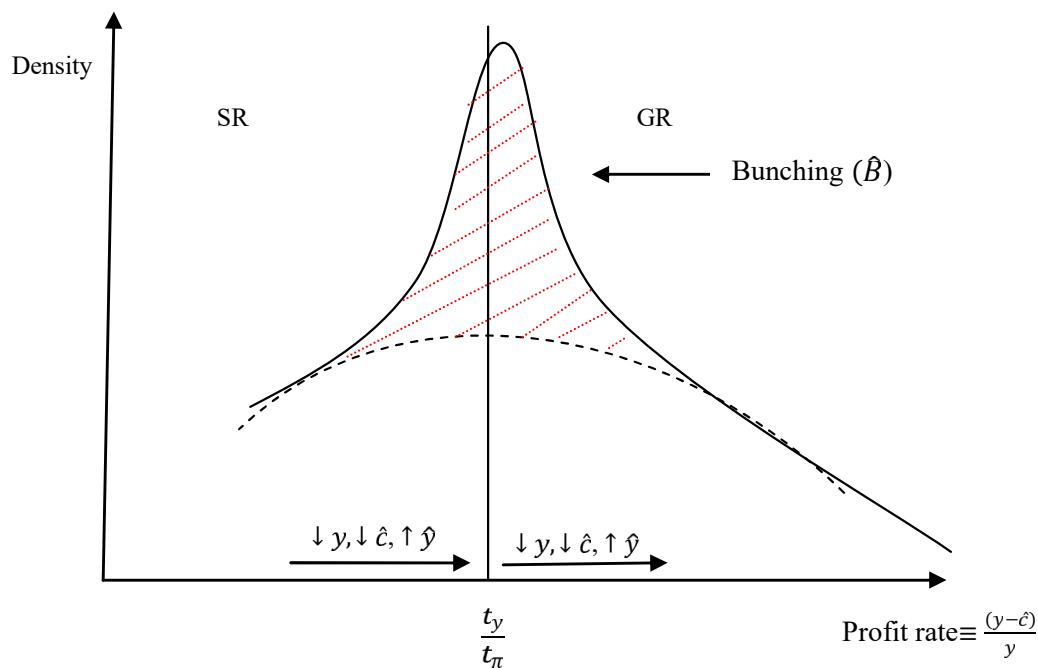
This gives the cutoff separating the two regimes, defined by the ratio between both tax rates being equal to a profit rate (reported taxable income as a share of reported turnover). Based on this simple empirical strategy, Best *et al.* (2014, p.11) argue that the introduction of the SR gives rise to non-standard kink points because of the joint change in the tax rate and the tax base. Under this framework, the introduction of the SR affects firms' decisions on real output and compliance differently, the policy causes an outflow of some firms from the GR to the SR. Once in the new regime, firms decide to produce less and to comply in costs. Both of these changes (under the assumption of diminishing returns to scale) increase their profit rate and thus create bunching at the cutoff. According to Best *et al.* (2014), bunching represents real output

²³ Based on previous studies (Saez 2010; Kleven and Waseem 2013; Best *et al.* 2014), a smooth distribution and homogeneous responsiveness across firms is assumed. In other words, it is assumed that is “there exists a single marginal buncher who reveals the bunching response” (Best *et al.* 2014, p.12). In turn, this allows one to equalize the tax liabilities.

($\Delta y < 0$) and evasion responses ($\Delta \hat{c} < 0$), but mostly evasion responses from firms below the cutoff (intensive margin responses). In fact, the authors go further and argue that the bunching observed is the result of better compliance²⁴.

Unfortunately, the two behavioral responses used by Best *et al.* (2014) to explain bunching cannot be observed, because there is no information about firms in the SR (cf. second limitation of the data). Hence, taking inspiration from Best *et al.* (2014), we follow a backward process and attempt to construct our own strategy and intuition based on what is observed in the data. Contrary to what would be expected if one followed the reasoning of Best *et al.* (2014), the data shows bunching around the cutoff among firms in the GR. We argue that in Argentina bunching could be the result of both intensive and extensive margin responses. In other words, firms in the GR could be indirectly affected by the policy, something that Best *et al.* (2014) completely discard. Thus, in this case, bunching is also the result of behavioral responses of firms above the cutoff (see Graph II).

Graph II: Bunching methodology



Source: Based on Best *et al.* (2014)

This hypothesis rests on three main assumptions, which will be verified in the next section. First, like Best *et al.* (2014), we argue that some firms move from the GR to the SR, and that

²⁴ Best *et al.* (2014) arrive to this conclusion by restricting real output responses. First, since the analysis is based on a partial equilibrium model it avoids an additional source of production inefficiency, namely the cascading effect. Second, the authors assume that bunching at the kink only captures intensive margin responses, restricting production distortions from the extensive margin (i.e. from firms above the cutoff). Third, the authors assume a non-distortionary profit tax and a distortionary turnover tax; but since the later is smaller than the former, the distortion generated by the turnover tax is minimal at the cutoff.

these firms then decide to produce less and comply in costs. According to Best *et al.* (2014), firms reduce turnover because in the SR they have no incentives to continue producing at the optimal level (since the marginal return to output is lower than in the GR: $c'(y) = 1 - t_y$). Our argument is simpler: firms in the SR reduce turnover in order to be classified in the lowest categories of the regime and pay a lower single tax. This also implies that firms have an incentive to continue misreporting turnover in the SR: $g'_y = \tau_y$. Therefore, the intensive margin responses observed in Graph II (ie. bunching below the cutoff) represent real output ($\Delta y < 0$) and evasion ($\Delta \hat{c} < 0, \Delta \hat{y} > 0$) responses. Importantly, this introduces an additional evasion response, namely turnover evasion.

Our second assumption is that the bunching observed above the cutoff is the response of small and medium firms. With the introduction of the policy, these firms have an additional incentive to reduce turnover ‘legally’ (a real response) or ‘illegally’ (an evasion response). In the case of medium firms, the aim would be to become eligible and move to the SR, and in the case of small firms, to be classified in the lowest categories of the SR²⁵. Also, those firms have an incentive to reduce over-reporting costs to be consistent with the information revealed to the tax administration. These two behavioral changes among SMEs move the distribution of the profit rate to the right, creating an excess mass around the cutoff. In other words, this would create an asymmetric bunching rather than a clear spike at the cutoff. By contrast, large firms are not expected to respond to the policy change because it would be too costly for them to reduce turnover to the level required by the SR, but also because large firms are more likely to have international activities and could thus perceive being registered in the VAT as a commercial advantage. Therefore, the extensive margin responses observed in Graph II (ie. bunching above the cutoff) represent real output ($\Delta y < 0$) and evasion responses ($\Delta \hat{c} < 0, \Delta \hat{y} > 0$) from SMEs.

Finally, our last assumption is that the observed bunching represents mostly evasion responses ($\Delta \hat{c} < 0, \Delta \hat{y} > 0$). When turnover evasion is introduced in the model, firms have an incentive to misreport turnover ($\Delta \hat{y} > 0$) in both regimes, and this effect might offset the reduction in cost evasion ($\Delta \hat{c} < 0$), in turn increasing evasion in both regimes. In conclusion, it is not as obvious as in the case of Pakistan that bunching is the result of more compliance.

4.2 Bunching estimation

We now turn to the methodology used in the bunching estimation. The excess mass at the cutoff, the area between the empirical distribution and the counterfactual distribution for all firms in all years (1997, 1998, 1999/2003, 2004/2009 and 2010/2011) are estimated. The estimation strategy builds on Chetty *et al.* (2011) and Saez (2010), as well as on the bunching empirical literature (Best *et al.* 2014; Lediga *et al.* 2016, Mosberger 2016, Dekker *et al.* 2016, Devereux *et al.* 2012). Three aspects of the methodology are worth highlighting.

²⁵ Note that the behavioral decisions of medium and small firms are observable because to apply to the SR, firms need to prove they meet the turnover criteria for at least 12 months. Therefore, when firms take their production and compliance decisions for those 12 months, they are still in the GR.



First, the counterfactual density – what the distribution would have looked like had the kink absent – is estimated from the empirical density²⁶. This is done by excluding data around the kink and fitting a polynomial, as specified in regression (1). The order of the polynomial is chosen to optimize the fit and to keep a reasonable degree of freedom²⁷ and in almost all cases a third-order polynomial is used.

Second, “the bunching window is chosen as the area around the kink that is visibly affected by the bunching” (Best *et al.* .2014, p.20). The bunching window is defined by a middle band around the kink $[\tau_y/\tau_\pi - \delta, \tau_y/\tau_\pi + \delta]$ and two surroundings bands $[\tau_y/\tau_\pi - 2\delta, \tau_y/\tau_\pi - \delta]$ and $[\tau_y/\tau_\pi + \delta, \tau_y/\tau_\pi + 2\delta]$, below and above the kink, as depicted in Graph III. As in Saez (2010, p.187), the parameter δ measures the width of those bands and its choice matters when estimating excess bunching using regression (1): “if δ is too small, the amount of excess bunching will be underestimated; but if δ is too large it will be overestimated”. As Saez (2010) suggests, we select δ graphically to ensure that the full excess mass is included in the band $[\tau_y/\tau_\pi - \delta, \tau_y/\tau_\pi + \delta]$, for this reason the middle band is always selected in such a way that the kink points are at the center.

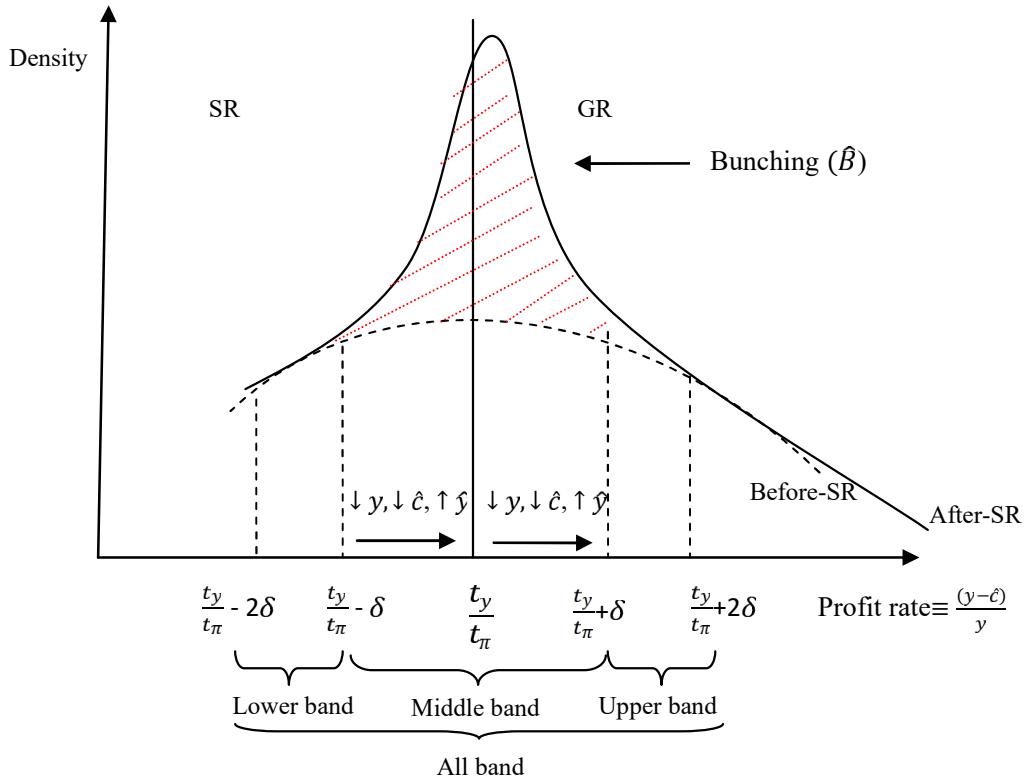
Third, there is a unanimous consensus in the literature that the data must be binned, that is the dataset should be grouped in small intervals (bins) so that the observations are central values (in this case, the mean). Our data is already grouped in bins (or thresholds) based on firms’ turnover, however, these bins are not symmetric (see Table AIV).

Graph III: Bunching estimation

²⁶ Note that we use a hypothetical counterfactual rather than the empirical density distribution before the policy, because the excess mass of the bunching around the kink is diffuse, and because as shown in Figure AIII, the pre-SR distribution is higher than the post-SR distribution.

²⁷ Degree of freedom = number of observations – order of polynomial.





Source: Base on Best *et al.* (2014, p.30) and Saez (2010, p.187)

The estimation methodology has four steps. First, we estimate a regression:

$$d_j = \sum_{i=0}^q \beta_i (\pi_j)^i + \sum_{j=\pi_L}^{\pi_U} \gamma_i \cdot I[\pi_j = i] + v_j \quad \dots (1)$$

where d_j is the number of firms in bin j , $[\pi_L, \pi_U]$ is the bunching window, q is the order of the polynomial, π_j is the profit rate in bin j .

Second, we exclude the data near the kink and then fit a polynomial. The idea is to predict the values from the regression omitting the contribution of the dummies around the kink: $\hat{d}_j = \sum_{i=0}^q \hat{\beta}_i (\pi_j)^i$.

Third, we estimate the excess mass: $\hat{B} = \sum_{j=\pi_L}^{\pi_U} (d_j - \hat{d}_j)$.

Fourth, we calculate the empirical bunching – the firms which cluster around the kink. In order to do this, we divide the excess mass by the average density of the counterfactual distribution around the kink, as in Dekker *et al.* (2016, p.7):

$$\hat{b} = \frac{\hat{B}}{\frac{\sum_{j=\pi_L}^{\pi_U} \hat{d}_j}{(\pi_U - \pi_L + 1)}}$$



Finally, the criterion of selection is based on the significance of the estimate ($\hat{b} \geq 2$), on the smoothness of the counterfactual, on the order of the polynomial ($q \leq 3$) and on the size of the band (a smaller band around the kink is always preferred because according to the bunching approach the intensive margin distortions created by kinks are very local; cf Kleven 2016, p.17).

V. RESULTS

The results of the empirical analysis are contained in the figures in the Annex. First, Figure AII displays bunching evidence for different years (1997, 1998, 1999/2003, 2004/2009 and 2010/2011) and for groups of firms depending on their eligibility (eligible and non-eligible firms) and size (small, medium and large firms). The aim is to show evidence that firms do indeed bunch and that this bunching is around the tax kink. Second, Figure AIII is the result of a placebo analysis conducted by comparing the empirical density of the profit rate in 1998, 1999/2003, 2004/2009 and 2010/2011 to that of 1997 (the year before the introduction of the SR). Based on our assumptions, no bunching is expected in 1997. Third, Figure AIV shows identification checks, done in order to test whether the excess mass at the tax kink is indeed a response to the tax system. This part of the analysis exploits the variations in the tax kink by comparing the reforms applied in December 1998 ($\Delta\tau_{\pi} > 0$), July 2004 ($\Delta\tau_{\gamma} < 0$) and December 2009 ($\Delta\mu < 0$). Our assumptions lead us to expect that bunching moves along with the different tax kinks. Fourth, bunching is used to estimate the magnitude of the excess mass around the kink point (Figure AV).

We merge this analysis in three main results which lends support to the assumptions stated in the previous section. Our first assumption suggests that firms in the SR misreport turnover. As stated above, this behavior is unobservable due to the second limitation of our data. However, the reports of the tax administration (AFIP, 2006) confirm the existence of “icebergs” in the SR, as they show the agglomeration of firms among the lowest categories of the SR and the frequent re-categorizations towards the highest categories of the SR. Also, the reports of the ILO (2013, 2014) conclude that the SR has become a ‘shelter’ for evaders. The next section will examine this issue more closely.

To show that our second assumption is relevant, we present evidence of bunching among small (i.e. eligible) firms and medium firms. For clarity, the sample is divided into two, according to whether a firm is eligible or not. The density distributions are plotted in Figure AII2 and AIII2 for eligible firms and in Figure AII3 and AIII3 for non-eligible firms. At first glance, there is clear bunching only in 1997 and in 1998 for eligible firms, whereas there is bunching in all years for non-eligible firms. If non-eligible firms are disaggregated into medium and large firms, bunching occurs in all years for medium firms (Figure AII4 and AIII4) while there is no bunching for large firms (Figure AII5 and AIII5). These findings seem to confirm our second assumption, i.e. that small and medium firms are indirectly affected by the policy. Medium firms have more incentives to decrease their turnover ‘legally’ or ‘illegally’, to reduce their tax liability and/or to become eligible and move to the SR. As explained in the previous section, such behavior increases the reported profit rate and moves the distribution to the right, with a clustering of medium firms around the kink point. This is precisely what is observed in Figure



AIII4 and AIII4. Small firms follow a similar pattern, except that their behavior is aimed at being classified in the lowest categories of the SR and hence paying a lower turnover tax.

Figure AIV further strengthens our second assumption because it shows that the distribution of all firms (Figure AIV1), non-eligible firms (Figure AIV3) and medium firms (Figure AIV4) moves to the right over the period. Surprisingly, the distribution is furthest to the right in the 2010/2011 period and furthest to the left in 1997 and 1998. In addition, when comparing the number of taxpayers in the years after the policy with those in the year before the policy, growth rates are negative in the years following the introduction of the policy (1998-2003), and this is across all categories of firms. More specifically, the number of small and medium firms decreased by 51% and 30% respectively in 1998, and by 68% and 37% in 1999 (compared to 1997). Also, the growth rates of turnover and taxable income compared to 1997 are negative for small firms in all the period. This suggests that SMEs moved from the GR to the SR in 1998 and in subsequent years.

Turning to our last assumption, that bunching represents mostly evasion responses, there are two elements which support it. First, consistent with previous studies, Figure AIII1, AIII3, AIII4 and Figure AIV1, AIV3, AIV4 show a slight bunching around the zero profit rate²⁸. This is probably due to the high prevalence of losses in taxable income (see Table AI) and zero taxable income (which in turn may be partly explained by the generous deductions offered in Argentina)²⁹. This is quite common in developing countries. For example, Lediga *et al.* (2016) find bunching at zero income for small firms in South-Africa, due to loss carry-forward provisions. Likewise, Dekker *et al.* (2016) find that a large share of bunching in Netherlands was driven by tax deductions. To address this issue, we estimate the observed bunching around zero for all firms, non-eligible and medium firms. However, no value for the bunching estimates is obtained because the predicted values are zero³⁰. The intuitive explanation is that absent the policy, in the hypothetical scenario, there is no firm bunching at the zero profit rate. This means that before the policy there is no firm bunching at zero but after the policy many firms cluster around zero. This is consistent with our assumption since the most likely explanation is a response to tax incentives: the policy gives an incentive to under-report turnover, which in turn results in zero taxable income and hence a zero profit rate.

The second element which supports our third assumption is that sharp and significant bunching are observed in 1997 and 1998 (the year before and of the policy respectively). Interestingly, Figures AIV1, AIV3, AIV4 show that bunching in 1997 is sharper than in any other year for all

²⁸ In 1997 and 1998, there is no bunching around zero because no firms are reporting zero taxable income. Indeed, the CIT returns only allowed to report positive or negative taxable income, and this form of reporting only changed in 2001. We acknowledge that this change may introduce a problem of potential endogeneity in the results.

²⁹ In Argentina, firms can deduct for loss carry-forward, donations, differences in amortization, salaries to directors, expenditure of representation, contribution to private pension plans, etc. in accordance with the Law on Corporate Income Tax 649/97 (III, art.87).

³⁰ Note that we do not estimate for large nor for small firms because there are too few observations for these groups.



firms, non-eligible firms and medium firms³¹. However, the bunching estimate (Figures AV1, AV2, AV3)³² is not consistent with what is observed graphically. This is probably because of the measurement error introduced by our first limitation or because an over-estimation of the excess mass. Indeed, as Dekker *et al.* (2016, p.18) explain, "when pooling data we observe some firms more than once; as a result, we attribute bunching behavior to those firms in every period, although the behavioral decision is made only once". In trying to explain the sharp bunching in 1997 and in 1998, one could call upon the foresight of firms. According to the reports of the tax administration (AFIP, 2006), the introduction of the SR is a response to the requests of small taxpayers made to the parliament of Argentina (probably based on the experience of Brazil where it was introduced in 1997). It is possible that Argentineans firms anticipated the policy and thus modified their behavior in 1997. This explanation requires the assumption that Argentineans firms have rational expectations and knew that the bill was being discussed in parliament. Bunching in 1998 seems less surprising because although the implementation of the policy was in November 1998, it was approved by the parliament in June 1998 and announced in July 1998 through important advertising campaigns. Thus, firms could have modified their behavior from July 1998 to June 1999 (the last month for firms to present their tax returns to the tax administration). Nevertheless, it must be stressed that, by the time the tax changes were announced, most of the real decisions corresponding to the tax year 1998 had already been taken. Given this, the speed of reaction provides supporting evidence that behavioral changes are driven by evasion responses rather than real responses. A similar reasoning is followed by Waseem (2013), Saez (1999) and Mosberger (2016), and this conclusion is further supported by the finding of Lediga *et al.* (2016, p.7) that it is difficult to adjust real output in a short period, because of adjustment costs and optimization frictions (i.e. existing long-term contracts). In short, the bunching observed in 1997 and in 1998 confirms that firms can rapidly adapt their compliance behavior.

Finally, in line with our last assumption, we use the data to argue bunching is the result of intensive and extensive margin responses. Indeed, Figures AIII1, AIII3, AIII4 show that at the beginning of the period under study (in 1998), firms bunch below the kink point $\tau_y(m \cdot) / \tau_\pi$, in 1999/2003 the bunch is placed around the kink point, in 2004/2009 exactly at the kink point and in 2010/2011 above it. The finding that bunching becomes more centered on the kink point over time may indicate that firms slowly adapt their real output behavior and provides compelling evidence that firms learn over time. Bunching translates graphically not into a clear spike at the kink point but instead into a diffuse mass around it. In other words, there is asymmetric bunching which is sometimes below the kink, other times at the kink and others above it³³. Moreover, Table AV shows that bunching is predominantly around 0.09, which

³¹ For all categories of firms: $\hat{b}(1997) > \hat{b}(1998) > \hat{b}(2010/11) > \hat{b}(2004/09) > \hat{b}(1999/03)$; for non-eligible firms: $\hat{b}(1997) > \hat{b}(1998) > \hat{b}(1999/03) > \hat{b}(2004/09) > \hat{b}(2010/11)$; and for medium firms: $\hat{b}(1997) > \hat{b}(1998) > \hat{b}(1999/03) > \hat{b}(2004/09) > \hat{b}(2010/11)$.

³² The bunching estimated in each period is: All firms (2.77 > 2.07 > 5.82 > 3.86 > 2.72), non-eligible firms (5.93 > 7.40 > 8.15 > 2.68 > 0.56) and medium firms (2.36 > 3.37 > 2.92 > 1.05 > 0.31).

³³ It is important to mention that the bunching estimates are fairly sensible with respect to the choice of the bunching window (lower, middle, upper and all bands) and the order of the polynomial, which confirms that firms bunch diffusely around the kink point.



provides strong evidence that firms respond to the tax structure. Indeed, it is difficult to see a reason for firms to cluster around a profit rate of 0.09 other than the presence of the SR. Note that such kink point is calculated using only the taxation component of the single tax $\tau_y(m)$ without considering the social security contributions. This suggests, interestingly, that firms respond only to the taxation component of the SR. There are two main arguments in the empirical bunching literature that can shed light on these findings. First, Kleven (2016, p.23) points out that the creation of a threshold which separates both regimes makes firms consider the 0.09 threshold as a reference point introduced by the policy. For example, Mosberger (2016) explains the Hungarian asymmetric bunching with this reasoning, arguing that, in countries where the tax authority is not credible, firms bunch above the threshold to avoid being audited³⁴. Second, in line with this, Carrillo *et al.* (2014, p.9) point out that the reported profit rate is one of the key characteristics that the tax authority considers when determining whether to audit. For this reason, a very risk adverse firm or a firm just below the kink point might prefer to report the kink point in order to avoid being audited³⁵.

What are the insights that are provided by the reforms? Actually, they do not reveal much. First, the reform of December 1998 ($\Delta\tau_\pi > 0$) slightly decreased the kink point from 0.1 to 0.09. In Figure AIV the distribution does not move substantially. Also, the overlap of the effects of this reform with those of the introduction of the SR in November 1998 makes it difficult to distinguish any pattern in the data. Second, the reform of July 2004 ($\Delta\tau_y > 0$) increased the turnover tax rate of the highest categories in the SR. Because the turnover tax rate of the lowest category is used, the kink point is not affected. Finally, the third reform of December 2009 ($\Delta\mu < 0$) did not affect the ratio of the two tax rates $\tau_y(m)/\tau_\pi$ because it consisted of a change in the tax base.

To conclude this section, three main findings are worth pointing out. First, our results show bunching around the kink point for SMEs and a right-shift of the distribution over the period, which confirms that the policy indirectly affects firms in the GR. Second, there is a slight bunching around zero and sharp bunching in 1997 and 1998, both results suggesting that bunching is mostly due to evasion responses rather than real output responses. Finally, consistent with our original hypothesis, we observe an asymmetric bunching around a profit rate of 0.09 which provides strong evidence that firms respond to the policy. Unfortunately, the lack of data prevents us from continuing with the analysis and estimating the magnitude of the responses.

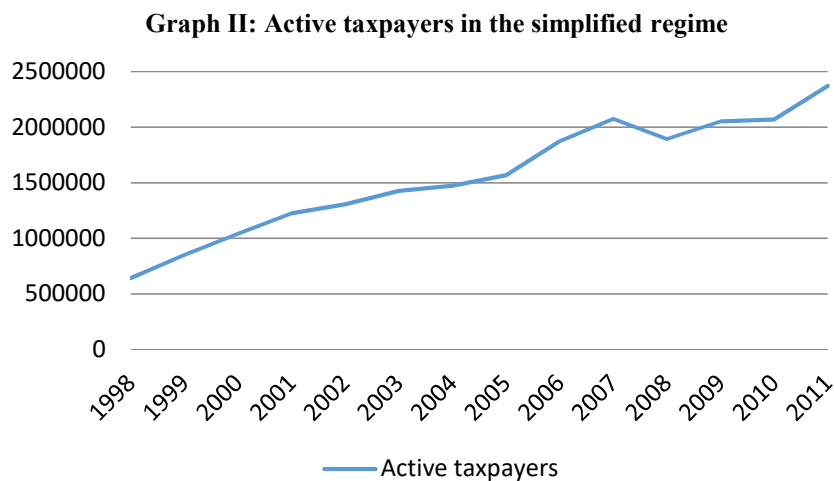
VI. EVALUATION

³⁴ This line of argumentation supports the idea of Castro and Scartascini (2015) that suggest that the level of compliance also depends on individual’s subjective beliefs about the levels of enforcement and penalties, the behavior of other taxpayers, etc.

³⁵ Another possible explanation is the case of potential endogeneity, the tax administration might have identified the profit rate where firms cluster and have used it as cutoff; in other words, the tax administration might have followed a methodology similar to ours to identify the cutoff that separates both regimes.



In this last section, we present some general information about the SR that we unfortunately did not have access to. As mentioned earlier, the policy had two motivations: to fight informality and to reduce evasion. It seems that these became the main concerns of the Argentinean tax administration because informality and the number of self-employed workers increased sharply in the 1970s. Small firms are often associated with subsistence and home-based entrepreneurship, as well as low education levels. These firms cover a significant part of all salaried employment. For instance, in 2011, firms of up to 5 employees contributed to 19% of the total employment, and firms of 6 to 25 employees contributed to another 19% (Van Elk and Kok 2014, p.47). In addition, the tax administration reports (AFIP, 2006) refer to the existence of ‘involuntary informality’ as a result of a complex tax system and high administrative costs³⁶. Unsurprisingly, there are few studies about tax evasion in Argentina due to the limited data availability. The recent study of Gómez *et al.* (2011, p.29) estimates a tax evasion rate of 21.2% for VAT in 2006 and of 49.7% for income tax in 2005. Since its implementation, the SR was successful in attracting taxpayers, as shown in Graph II: the number of active taxpayers registered in the regime continuously increased and it almost quadrupled in the period under study, from 642 167 in 1998 to 2 371 469 in 2011.



Source: Based on ILO (2013, p.41)

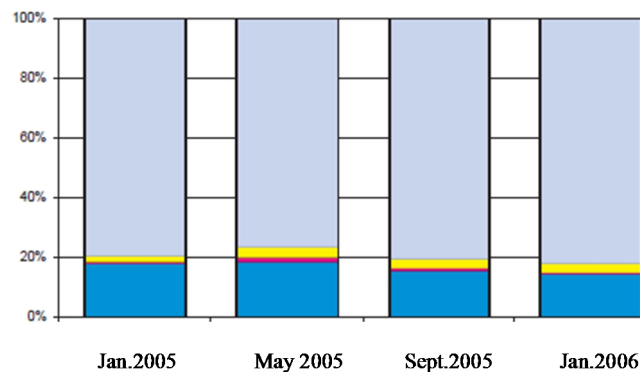
More importantly, the ILO reports (ILO 2013, p.42) show that the majority of active taxpayers in the SR are from the service and commercial sectors. For example, in 1999, 40.7% of the total number of the registered taxpayers was from the service sector and 34.2% was from the commercial sector. In 2005, the percentages had increased to 67.4% and 28.7%, and in 2013 they had decreased slightly to 61.9% and 18.6%, respectively. Conversely, the minority of registered taxpayers are from the industrial and farming sectors.

³⁶ According to “Doing business 2014” (World Bank), Argentina is ranked on the 126 position over 189 countries in the ease of registering a business.

This is likely due to the fact that these sectors engage in trade with firms registered in the GR, which have a disincentive to carry out transactions with taxpayers in the SR, because deducting VAT credits from purchases is not possible in that case.

Furthermore, the reports of the tax administration (AFIP, 2006) show that, in February 1999 (four months after the implementation of the policy), there were nearly 777 605 taxpayers which had registered in the regime and that, by the end of 1999, the number increased to almost one million taxpayers. According to the reports, 90% of those newcomers were classified in the lowest categories (A, B and C) and around 2% in the highest categories (F, G and H). The ILO (2013, p.43) highlights that such numbers continued until 2013: 47% of taxpayers were from category A in 1999, 46% in 2005 and 54.7% in 2013; whereas only 0.2% of the taxpayers were from the highest category. The agglomeration of taxpayers in the lowest categories of the SR confirms the hypothesis that there exist “icebergs” in the SR, i.e. firms who under-report turnover in order to be classified in the lowest categories. As a consequence, there are frequent re-categorizations towards higher categories, as we can observe in Graph III, 79.8% of firms were re-categorized to a higher category in 2005, 82.3% in 2006, 86.7% in 2007, 87.6% in 2008 and 79% in 2009. By contrast, 17.9% of firms were re-categorized to a lower category in 2005, 14.4% in 2006, 10.8% in 2007, 9.2 % in 2008 and 13.4% in 2009 (ILO 2014:39). Also, the reports confirm that 95.1% of firms registered in 1998 in the SR were from the GR, while only 4.9% were informal firms. Of these 95.1%, 83.8% did not register any tax return the previous year, and were thus “icebergs” in the GR, while only 16.2% were fully taxpayers. Finally, in 2006, 11.4% of taxpayers registered in the income tax moved to the SR, yet surprisingly their participation in the income tax revenue was only 0.8%³⁷ (Van Elk and Kok 2014, p.50).

Graph III: Re-categorization in the Simplified Tax Regime



Source: Report (AFIP June 2006, p.14)

Note: Dark blue corresponds to a re-categorization to a lower category, yellow corresponds to a move from the SR to the VAT, red corresponds to a move from the SR to a sub-regime of the SR for eventual taxpayers and grey corresponds to a re-categorization to a higher category.

³⁷ For the VAT, Van Elk and Kok (2014, p.50) indicate that only 2.5% of taxpayers registered in the VAT moved to the SR, their payments were only 0.1% of the VAT revenue and 61.1% did not register any payment in 2006.

Consequently, despite the high number of active taxpayers in the SR, the tax revenue collected is minimal³⁸ (see Table AI). This is probably because of the elevated evasion in the regime and because it concerns mostly small taxpayers with very low income. The tax administration reports (AFIP, 2006) also suggest that the amount of payments in the SR steadily decreased until 2002 and started increasing only after 2004. Furthermore, many features affect the revenue collected through the SR, such as the economic cycle, the inflation and the degree of development. The reports (AFIP, 2006, p.10) estimate a coefficient of correlation between the amount of payments and the real GDP of 0.84 and between the tax revenue and the real GDP of 0.83 for 1998-2006. Inflation also affects the SR through prices and wages. For this reason, the ILO (2014) suggests that the scarcity of information about the SR may be due to its instability, (the single tax was continuously updated by the tax administration). Moreover, contrary to received opinion, the ILO (2013) indicates that the cities with high HDI and less informality have a higher number of firms registered in the simplified regime.

Finally, the reports of the ILO (2013, 2014) raise a crucial issue about this policy in Argentina, and this further strengthens our findings. The SR stopped being a “transitory regime” towards formality, a short-term policy implemented to motivate a ‘smoother’ transition of informal firms to formality. Indeed, the weak entry barriers of the SR became strong exit barriers. As the ILO (2013, 2014) claims, the SR became a “trap” where small taxpayers are encouraged to remain indefinitely small in order to take advantage of the regime, although most of them have the capacity to register in the GR. In other words, the SR becomes a shelter for “icebergs”, impeding their transition to the GR. Thus, the SR is harmful to both tax revenue and production efficiency because it decreases the revenue that can be collected by the GR and gives incentives to firms in both regimes to under-report turnover. The ILO (2013, 2014) rightly argues that the SR should be understood as a short-term policy, and that attention should be paid to the process of “exiting” the SR.

VII. CONCLUSION

In this study we analyzed the trade-off between production and revenue efficiency faced by governments in developing countries. In order to do so, we selected a production inefficient policy, the simplified regime, applied in all Latin America. Under this regime, firms are taxed based on their turnover and have access to social security benefits. We drew upon Best et al. (2014), who model the trade-off in the presence of evasion, and we introduced turnover evasion to better approximate the economic reality in Argentina. The optimality conditions suggest that, in countries with limited tax capacity, it may be desirable to deviate from full production efficiency in order to reduce evasion. We analyzed this empirically using the bunching approach, relying on the idea that firms are taxed either on their profits or on their turnover depending on which tax liability is larger. Our results are not as robust as we hoped, due to the

³⁸ 70% of the revenue collected from the SR is destined to the ANSES (National Administration of Social Security) and 30% is set aside for provincial jurisdictions according to the partnership’s tax regime (Van Elk and Kok 2014, p.47).



two limitations of our data. However, they do provide bunching evidence and help to shed light on the corporate tax situation in Argentina, which will be helpful for future research.

The objective of this study was to analyze empirically the trade-off between revenue and production efficiency in the choice of tax instruments in a developing country. Is there indeed any trade-off between revenue and production efficiency in the SR of Argentina? Theoretically, the regime should reduce the number of “ghosts” and “icebergs”, and hence increase revenue efficiency (welfare gain) while reducing production efficiency (welfare loss). However, in practice these results are not so clear. In fact, we showed that turnover evasion played a crucial role in explaining the results. It is not so obvious that the SR increases compliance at the expense of production efficiency, so that the trade-off in Argentina is not as clear as in the case of Pakistan analyzed by Best et al. (2014). All in all, the asymmetric bunching observed among firms in the GR suggests that something is happening at the extensive margin; the policy might indirectly affect the real and compliance behavior of firms in the GR by giving them an additional incentive to evade taxation.



REFERENCES

- ABRAMOVSKY, Laura, KLEMM, Alexander and PHILLIPS, David (2014), “Corporate Tax in developing countries: current trends and design issues”, Institute for Fiscal Studies, 559-588.
- BESLEY, Timothy and PERSSON, Torsten (2013): “Taxation and Development”, CEPR Discussion Papers 9307, C.E.P.R. Discussion Papers.
- BEST, Michael Carlos, SPINNEWIJN, Johannes, KLEVEN, Henrik and WASEEM, Mazhar (2014), “Production vs Revenue Efficiency with Limited Tax Capacity: Theory and Evidence From Pakistan”, *Journal of Political Economy* 124.
- BOADWAY, Robin and SATO, Motohiro (2009), “Optimal Tax Design and Enforcement with an Informal Sector”, *American Economic Journal: Economic Policy*, Vol. 1, N° 1, 1-27.
- CARRILLO, Paul, POMERANZ, Dina and SINGHAL, Monica (2014), “Tax Me if Your Can: Evidence on Firm Misreporting Behavior and Evasion Substitution”, Working Paper, Harvard University.
- CASTRO, Lucio and SCARTASCINI, Carlos (2015), “Tax compliance and enforcement in the pampas evidence from a field experiment”, *Journal of Economic Behavior & Organization*, 116, 65-82.
- CHETTY, Raj, FRIEDMAN, John, OLSEN, Tore and PISTAFERRI, Luigi (2011), “Adjustment Costs, Firm Responses, and Micro vs. Macro Labor Supply Elasticities: Evidence from Danish Tax Records”, *Quarterly Journal of Economics*, 126, 749-804.
- DEKKER, Vincent and STROHMAIER, Kristina (2016), “A Data-Driven Procedure to Determine the Bunching Window-An Application for the Netherlands”, mimeo.
- DEVEREUX, Michael, LIU, Li and LORETZ, Simon (2012), “The Elasticity of Corporate Taxable Income: New Evidence from UK Tax Records”, *American Economics Journal: Economic Policy*, 6, 19-53.
- DHARMAPALA, Dhammika, SLEMROD, Joel and DOUGLAS, John (2011), “Tax policy and the missing middle: Optimal tax remittance with firm-level administrative costs”, *Journal of Public Economics* 95, 1036-1047.
- DIAMOND, Peter & MIRRLEES, James (1971), “Optimal taxation and public production I: Production efficiency”, *American Economic Review*, 61(1), 8-27.
- EMRAN, Shahe and STIGLITZ, Joseph (2005), “On selective indirect tax reform in developing countries”, *Journal of Public Economics* 89, 599-623.
- Federal Administration of Public Revenue (AFIP), Report June 2006, “Régimen Simplificado para Pequeños Contribuyentes”.
- Federal Administration of Public Revenue (AFIP), Report November 2006, “Evolución de los Regímenes Simplificados para Pequeños Contribuyentes en la República de Argentina”.
- Federal Administration of Public Revenue (AFIP), Statistics-Dataset, <http://www.afip.gob.ar/institucional/estudios/>
- GÓMEZ, Juan Carlos and JIMÉNEZ, Juan Pablo (2011), “Estructura tributaria y evasión impositiva en América Latina”, Corporación Andina de Fomento, Documento de Trabajo N° 2011/08.



- GORDON, Roger and LI, Wei (2009), “Tax structure in developing countries: Many puzzles and a possible explanation”, NBER Working Paper Series, N° 11267.
- International centre for tax and development (ICTD): “ICTD Government Revenue Dataset” (ICTD GRD, 2014), <http://www.ictd.ac/en/about-ictd-government-revenue-dataset>
- International Labour Organization (2013), Desempeño del Monotributo en la formalización del empleo y la ampliación de la protección social, N°4 Documento de Trabajo.
- International Labour Organization (2014), Monotributo en América Latina: Los casos de Argentina, Brasil y Uruguay, FORLAC.
- International Tax Dialogue (2007), “Small and Medium Enterprises”-Argentina, October 2007, IMF.
- KANBUR, Ravi and KEEN, Michael (2014), “Thresholds, informality and partitions of compliance”, *International Tax and Public Finance*, Springer, Vol. 21 (4), 536-559.
- KEEN, Michael (2007), “VAT, tariffs and withholding: border taxes and informality in developing countries”, IMF Working Paper, WP/07/174.
- KEEN, Michael (2012), “Taxation and development-Again”, IMF Working Paper, WP/12/220.
- KEEN, Michael and MINTZ, Jack (2004), “The optimal threshold for a value-added tax”, *Journal of Public Economics* 88, 559-576.
- KLEVEN, Henrik (2016), “Bunching”, *Annual Review of Economics*, 8.
- KLEVEN, Henrik and WASEEM, Mazhar (2013), “Using notches to uncover optimization frictions and structural elasticities: theory and evidence from Pakistan”, *The Quarterly Journal of Economics*, 128 (2).
- KLEVEN, Henrik, KHAN, Adnan and KAUL, Upaasna (2016), “Taxing to develop: When ‘third-best’ is best”, *International Growth Centre (IGC)*, April 2016.
- KLEVEN, Henrik, KNUDSEN, Martin, THUSTRUP, Claus, PEDERSEN, Soren. and SAEZ, Emmanuel (2011), “Unwilling or unable to cheat? Evidence from a tax audit experiment in Denmark”, *Econometrica*, Vol.79, N°3, pp.651-692.
- KOPZUK, Wojciech and SLEMROD, Joel (2006), “Putting firms into Optimal Tax Theory”, *American Economic Review Papers and Proceedings*, 96 (2), 130-134.
- Law No. 24977, Boletín Oficial de la República Argentina, June 1998.
- Law No. 25865, Boletín Oficial de la República Argentina, December 2003.
- Law No. 26565, Boletín Oficial de la República Argentina, November 2009.
- Law Corporate Income Tax, Boletín Oficial de la República Argentina No. 649/97 (III, art.87).
- LEDIGA, Collen, RIEDEL, Nadine and STROHMAIER, Kristina (2016), “Corporate Taxes and Firm Behavior-Evidence from South Africa”, Working Paper.
- MOSBERGER, Pálma (2016), “Essays on responses to taxation”, Working Paper.
- MUNK, Knud (1978), “Optimal taxation and pure profit”, *The Scandinavian Journal of Economics*, 80, 1-19.
- OECD (2012), “Revenue statistics in Latin America, Special Feature: Taxation and SMEs in Latin America”.
- SAEZ, Emmanuel (1999), “Do Taxpayers Bunch at Kink Points?”, *National Bureau of Economic Research, Working Paper 7366*.



SAEZ, Emmanuel (2010), “Do Taxpayers Bunch at Kink Points?”, *American Economic Journal*, 180-212.

SCHNEIDER, Friedrich, BUEHN, Andreas and MONTENEGRO, Claudio (2010), “Shadow Economies All over the World: New Estimates for 162 Countries from 1999 to 2007”, Policy Research Working Paper 5356, World Bank.

VAN ELK, Koos and KOLK, Jan (2014), “Enterprise formalization: fact or fiction (A quest for case studies), ILO, GIZ and BMZ.

WASEEM, Mazhar (2013), “Taxes, Informality and Income Shifting: Evidence from a Recent Pakistani Tax Reform”, Working Paper.

World Bank, “Doing business 2014”,
<http://www.doingbusiness.org/data/exploreeconomies/argentina>



Table AI: Descriptive Statistics														
Panel A: Tax Variables														
	1997	1998	1999	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Profit Tax Rate	0.33	0.33	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Turnover Tax Rate (Min.)	-	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.02	0.02
CIT Revenue (%GDP)	2.85	3.18	3.26	3.67	2.85	3.92	4.98	5.27	5.14	5.28	5.17	4.85	5.31	5.9
Total Tax revenue (%GDP)	13.37	13.72	14.1	13.38	11.49	13.65	16.08	16.29	16.22	16.88	16.67	16.47	17.51	18.27
SR Revenue (%GDP)	-	-	0.14	0.12	0.07	0.08	0.11	0.14	0.13	0.13	0.13	0.14	0.15	0.16
SR Revenue (%TotGovRev)	-	-	0.81	0.72	0.44	0.39	0.51	0.63	0.58	0.53	0.5	0.51	0.51	0.55
Panel B: Firm Characteristics (Mean)														
Taxable Income (thousands, pesos)	262	269	232	274	1 382	513	432	487	541	696	842	852	1 032	1 271
Profits (thousands, pesos)	769	890	735	803	1 408	1 316	1 322	1 553	1 737	2 204	2 502	2 638	3 266	4 148
Turnover (thousands, pesos)	2 632	2 968	2 413	2 554	4 210	4 370	4 271	5 010	5 637	7 334	8 550	8 604	10 589	13 716
Total number of firms	105 721	102 617	104 193	103 706	93 661	92 699	132 032	133 639	152 429	140 135	159 995	172 385	176 387	182 577
Firms reporting gains	59 791	58 220	56 097	54 139	43 437	49 797	71 380	78 551	94 244	93 735	109 498	115 477	123 878	133 746
Firms reporting losses	1 704	1 881	2 257	2 334	36 242	27 458	34 297	30 591	32 203	26 132	29 640	36 471	30 829	28 297
Observations	34	34	34	34	51	51	51	51	51	51	51	51	51	51

Note: The table presents descriptive statistics, focusing on tax variables (panel A) and firm characteristics (panel B). Rows 1-2 of panel A are based on Argentina’s corporate tax schedule (Laws No. 24977, 25865 and 26565). Rows 3-4 of Panel A are based on administrative tax return data from the universe of tax-registered firms in the GR in Argentina (Federal Administration of Public Revenue, Dataset (AFIP). Rows 5-6 of Panel A are based on ILO (2014, p.42).



Table AII: Simplified tax regime					
(Nov.) 1998-(Jun.) 2004					
Category	Turnover	Physical area	Electricity bill	Unit Price	
	(annual, pesos) To:	(m2) To:	(annual) To:	To:	
A	12000	20	2000kw	100	
B	24000	30	3300kw	150	
C	36000	45	5000kw	220	
D	48000	60	6700kw	300	
E	72000	85	10000kw	430	
F	96000	110	13000kw	580	
G	120000	150	16500kw	720	
H	144000	200	20000kw	870	
(Jul.) 2004-(Dec.) 2009					
Category	Turnover	Physical area	Electricity bill	Unit Price	
	(annual, pesos) To:	(m2) To:	(annual) To:	To:	
A	12000	20	2000kw	100	
B	24000	30	3300kw	150	
C	36000	45	5000kw	220	
D	48000	60	6700kw	300	
E	72000	85	10000kw	430	
F	96000	110	13000kw	580	
G	120000	150	16500kw	720	
H	144000	200	20000kw	870	
(Jan.) 2010-(June) 2012					
Category	Turnover	Physical area	Electricity bill	Accrued rent	Employees
	(annual, pesos) To:	(m2) To:	(annual) To:	(annual) To:	(min.)
A	24000	30	3300kw	9000	-
B	36000	45	5000kw	9000	-
C	48000	60	6700kw	18000	-
D	72000	85	10000kw	18000	-
E	96000	110	13000kw	27000	-
F	120000	150	16500kw	27000	-
G	144000	200	20000kw	36000	-
H	200000	200	20000kw	48000	-

Note: Physical area refers to the area affected by the activity and electricity bill refers to the electrical energy consumed.

Source: Federal Administration of Public Revenue, Dataset (AFIP).



Table AIII: Single tax (monthly)						
(July)1998-(June)2004						
Category	Turnover Tax (Monthly)		Pension (monthly)		Total (monthly)	
A	33		33		66	
B	39		33		72	
C	75		33		108	
D	118		33		151	
E	194		33		227	
F	284		33		317	
G	373		33		406	
H	464		33		497	
(July)2004-(Dec.)2009						
Category	Turnover Tax (Monthly)		Pension (monthly)	Health (monthly)	Total (monthly)	
A	33		33	22	88	
B	39		33	22	94	
C	75		33	22	130	
D	118		33	22	173	
E	194		33	22	249	
F	310		33	22	365	
G	405		33	22	460	
H	505		33	22	560	
(Jan.) 2010-(Jun.) 2012						
Category	Services (monthly)	Commercial (monthly)	Pension (monthly)	Health (monthly)	Total service (monthly)	Total commercial (monthly)
A	39	39	110	70	219	219
B	75	75	110	70	255	255
C	128	118	110	70	308	298
D	210	194	110	70	390	374
E	400	310	110	70	580	490
F	550	405	110	70	730	585
G	700	505	110	70	880	685
H	1600	1240	110	70	1780	1420

Source: Federal Administration of Public Revenue, Dataset (AFIP).



Turnover tax (annual)					
(July) 1998-(June) 2004					
	Turnover base	Single tax (annual)		Turnover tax [max-min]	
A	[0-12000]	396		[0.033]	
B	[12001-24000]	468		[0.038-0.020]	
C	[24001-36000]	900		[0.037-0.025]	
D	[36001-48000]	1416		[0.039-0.030]	
E	[48001-72000]	2328		[0.048-0.032]	
F	[72001-96000]	3408		[0.047-0.040]	
G	[96001-120000]	4476		[0.046-0.037]	
H	[120001-144000]	5568		[0.046-0.039]	
(July) 2004-(Dec.) 2009					
	Turnover base	Single Tax (annual)		Turnover tax [max-min]	
A	[0-12000]	396		[0.033]	
B	[12001-24000]	468		[0.038-0.020]	
C	[24001-36000]	900		[0.037-0.025]	
D	[36001-48000]	1416		[0.039-0.030]	
E	[48001-72000]	2328		[0.048-0.032]	
F	[72001-96000]	3720		[0.051-0.039]	
G	[96001-120000]	4860		[0.050-0.041]	
H	[120001-144000]	6060		[0.050-0.042]	
(Jan.) 2010-(June). 2012					
	Turnover base	Single Tax (annual, Service)	Single Tax (annual, Commercial)	Turnover tax, Service [max-min]	Turnover tax, Commercial [max-min]
A	[0-24000]	468	468	[0.020]	[0.020]
B	[24000-36000]	900	900	[0.037-0.025]	[0.037-0.025]
C	[36001-48000]	1536	1416	[0.042-0.032]	[0.039-0.030]
D	[48001-72000]	2520	2328	[0.052-0.035]	[0.048-0.032]
E	[72001-96000]	4800	3720	[0.066-0.050]	[0.051-0.039]
F	[96001-120000]	6600	4860	[0.068-0.055]	[0.050-0.041]
G	[120001-144000]	8400	6060	[0.069-0.058]	[0.050-0.042]
H	[144001-200000]	19200	14880	[0.130-0.096]	[0.103-0.074]

Source: Federal Administration of Public Revenue, Dataset (AFIP).

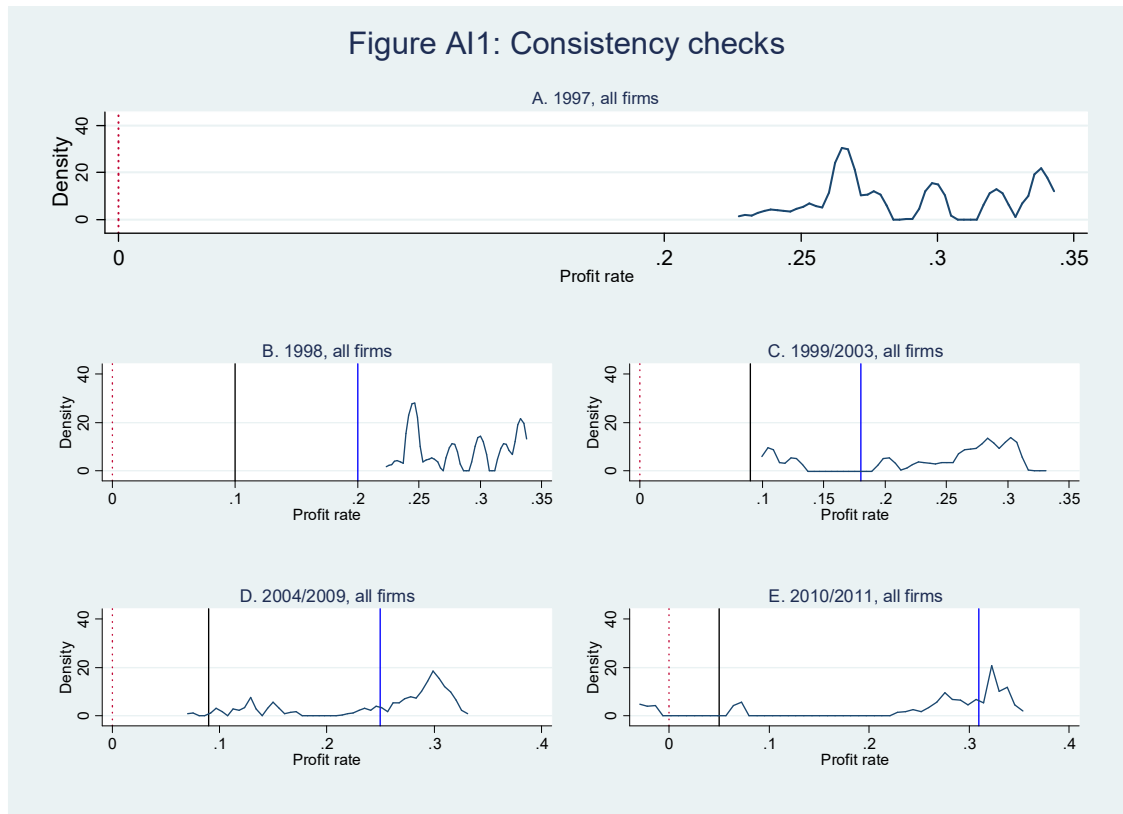


Table AIV: Classification of firms in the GR				
Threshold	Reported turnover (annual, pesos)		Size	Eligibility
1°	1	100 000	Small firms	Eligible firms
2°	100 001	200 000		
3°	200 001	300 000	Medium firms	Non eligible firms
4°	300 001	500 000		
5°	500 001	1 000 000		
6°	1 000 001	2 000 000		
7°	2 000 001	3 000 000		
8°	3 000 001	5 000 000		
9°	5 000 001	10 000 000		
10°	10 000 001	20 000 000		
11°	20 000 001	30 000 000		
12°	30 000 001	50 000 000		
13°	50 000 001	100 000 000		
14°	100 000 001	200 000 000		
15°	200 000 001	300 000 000		
16°	300 000 001	500 000 000	Large firms	
17°	More than 500 000 000			

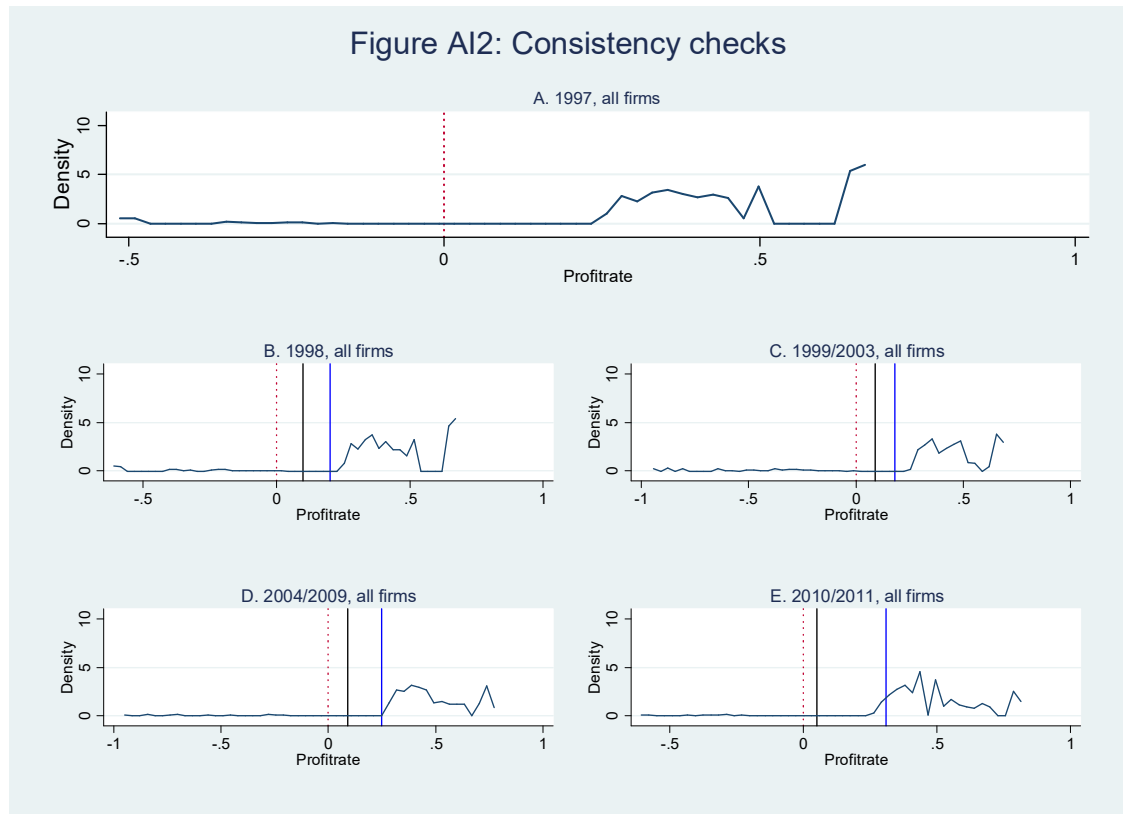
Source: Federal Administration of Public Revenue of Argentina, Dataset (AFIP).



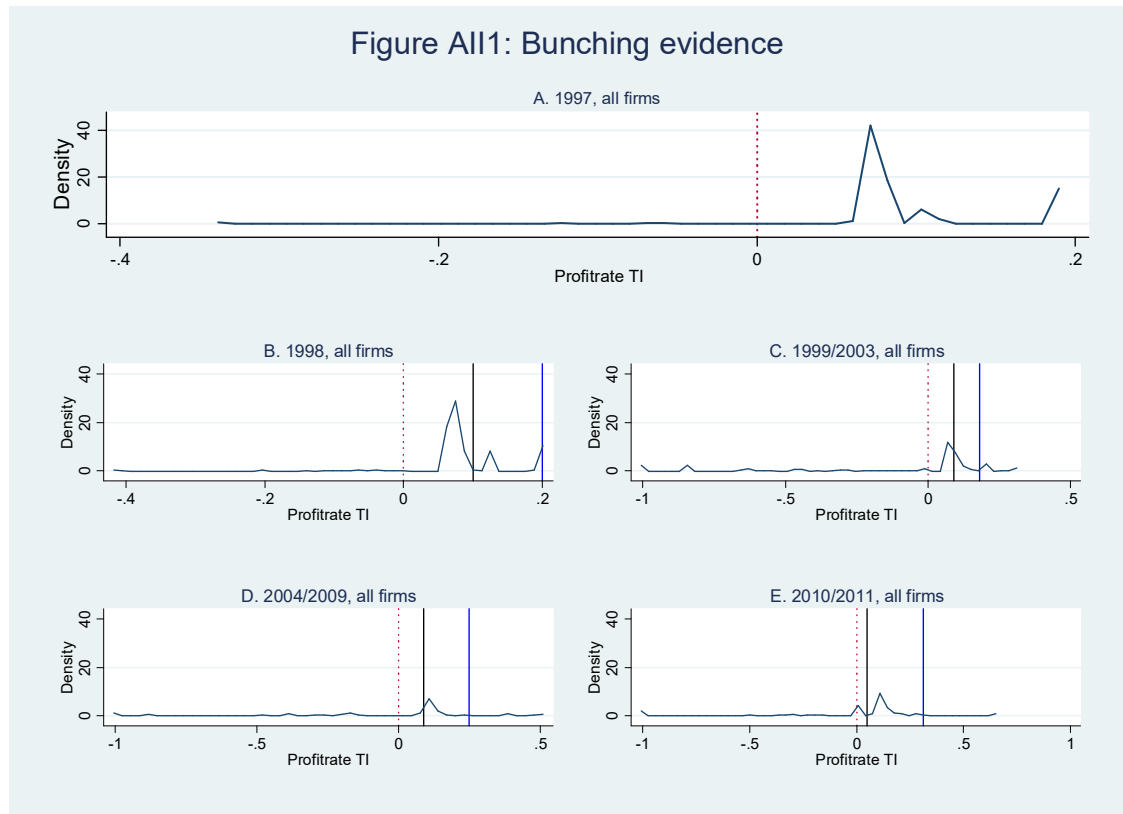
Table AV: Bunching window							
All firms							
Tax years	Kink point (theory)	Kink point (practice)	Width Parameter	Lower band	Middle band	Middle band	Upper band
1997	-	0,07	0,01	0,05	0,06	0,08	0,09
1998	0,1	0,07	0,01	0,05	0,06	0,08	0,09
1999/2003	0,09	0,075	0,02	0,035	0,055	0,095	0,115
2004/2009	0,09	0,09	0,01	0,07	0,08	0,1	0,11
2010/2011	0,05	0,1	0,02	0,06	0,08	0,12	0,14
Non eligible firms							
Tax years	Kink point (theory)	Kink point (practice)	Width Parameter	Lower band	Middle band	Middle band	Upper band
1997	-	0,068	0,01	0,048	0,058	0,078	0,088
1998	0,1	0,071	0,01	0,051	0,061	0,081	0,091
1999/2003	0,09	0,065	0,02	0,025	0,045	0,085	0,105
2004/2009	0,09	0,09	0,01	0,07	0,08	0,1	0,11
2010/2011	0,05	0,093	0,01	0,073	0,083	0,103	0,113
Medium firms							
Tax years	Kink point (theory)	Kink point (practice)	Width Parameter	Lower band	Middle band	Middle band	Upper band
1997	-	0,07	0,005	0,06	0,065	0,075	0,08
1998	0,1	0,071	0,005	0,061	0,066	0,076	0,081
1999/2003	0,09	0,077	0,01	0,057	0,067	0,087	0,097
2004/2009	0,09	0,1	0,01	0,08	0,09	0,11	0,12
2010/2011	0,05	0,09	0,01	0,07	0,08	0,1	0,11



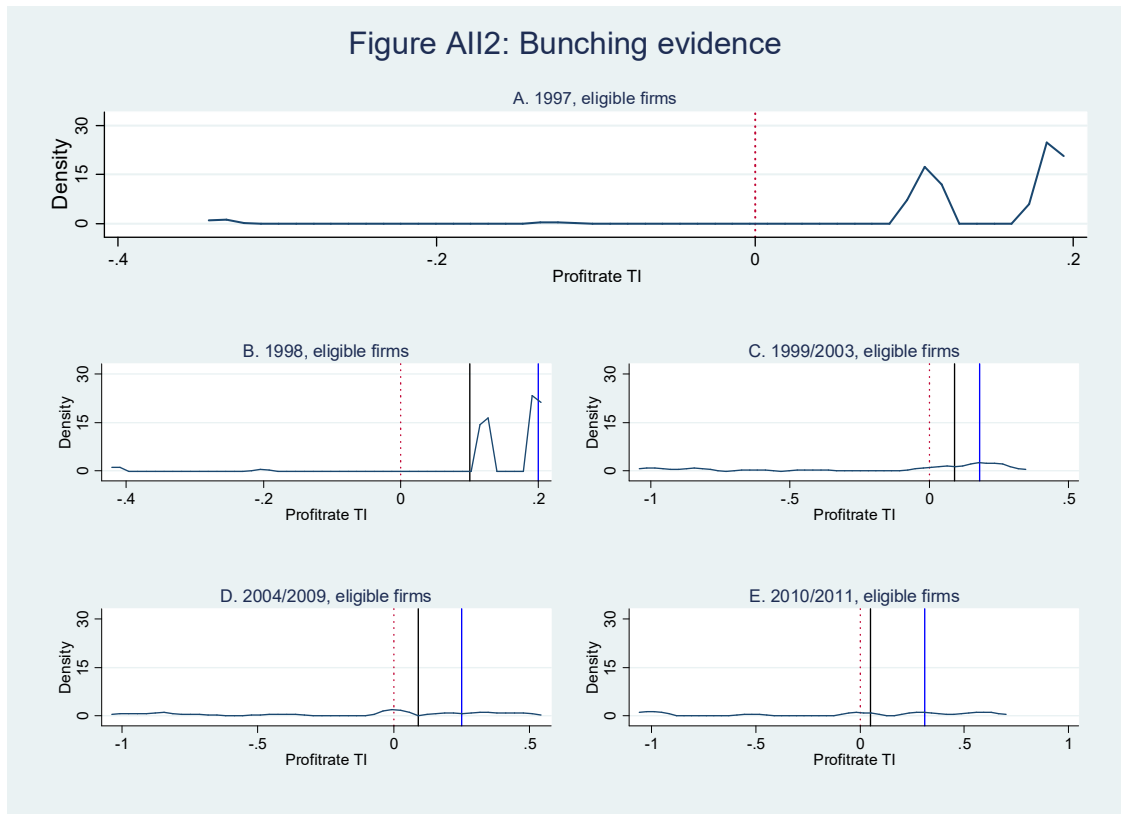
Note: Figure A11 shows the empirical Kernel density distribution of the profit rate (*calculated profit* as a fraction of turnover) for all firms and different time periods. The calculated profit is the reported turnover minus the reported costs. The calculated profit is the reported turnover minus the reported costs. The black solid line shows the kink points calculated using $\tau_y(\min)$ and τ_π : 1998(0.1), 1999/2003(0.09), 2004/2009(0.09) and 2010/2011(0.05). The blue solid line shows the kink points calculated using $t_y(t_{i-1}, \min)$ and τ_π : 1998(0.2), 1999/2003(0.18), 2004/2009(0.25) and 2010/2011(0.31).



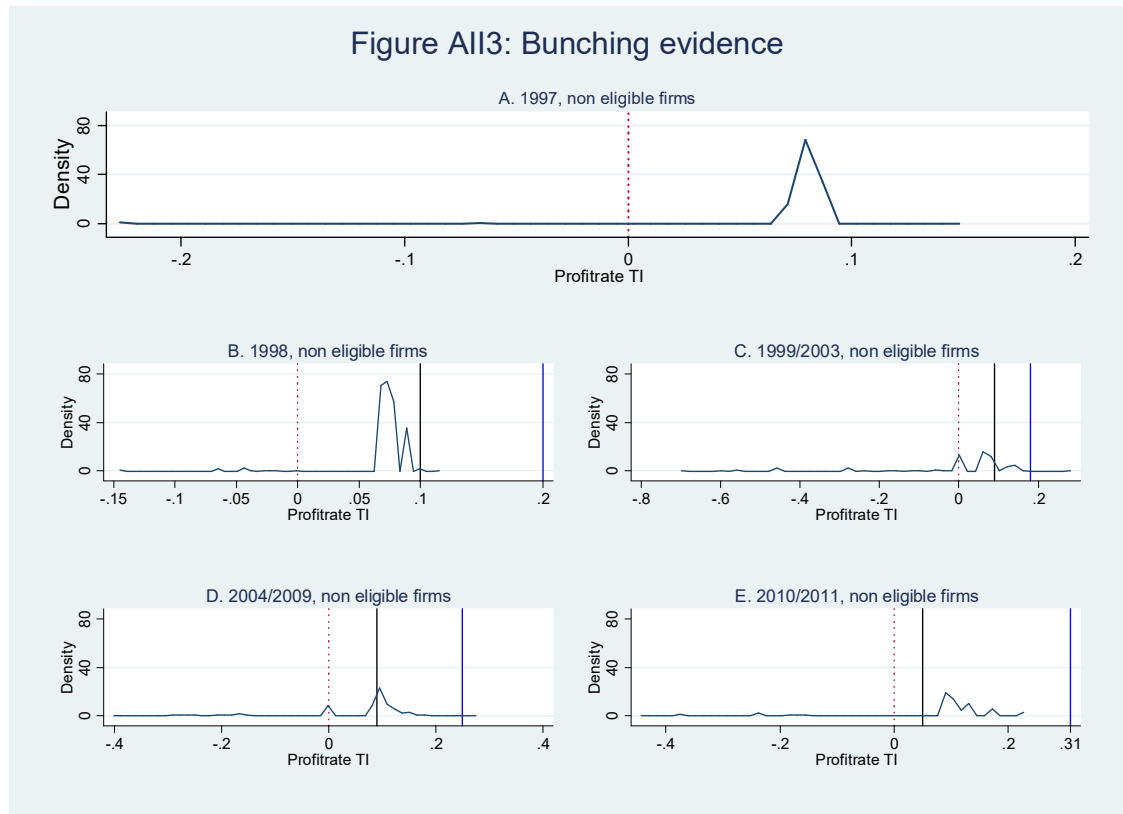
Note: Figure AI2 shows the empirical Kernel density distribution of the profit rate (*reported gross profit* as a fraction of turnover). The black solid line shows the kink points calculated using $\tau_y(\min)$ and τ_π : 1998(0.1), 1999/2003(0.09), 2004/2009(0.09) and 2010/2011(0.05). The blue solid line shows the kink points calculated using $t_y(t, \min)$ and τ_π : 1998(0.2), 1999/2003(0.18), 2004/2009(0.25) and 2010/2011(0.31).



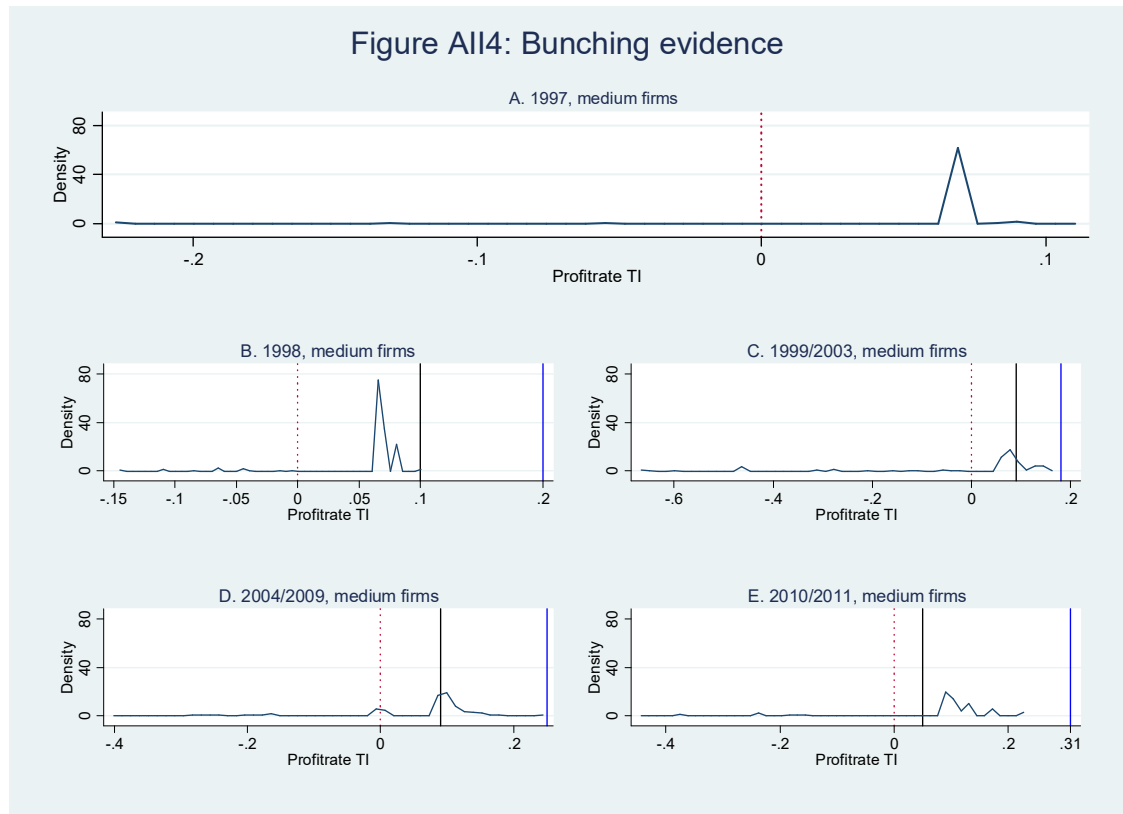
Note: Figure AII1 shows the empirical Kernel density distribution of the profit rate (*reported taxable income* as a fraction of turnover) for *all firms*. The black solid line shows the kink points calculated using $\tau_y(\min)$ and τ_π : 1998(0.1), 1999/2003(0.09), 2004/2009(0.09) and 2010/2011(0.05). The blue solid line shows the kink points calculated using $t_y(t, \min)$ and τ_π : 1998(0.2), 1999/2003(0.18), 2004/2009(0.25) and 2010/2011(0.31).



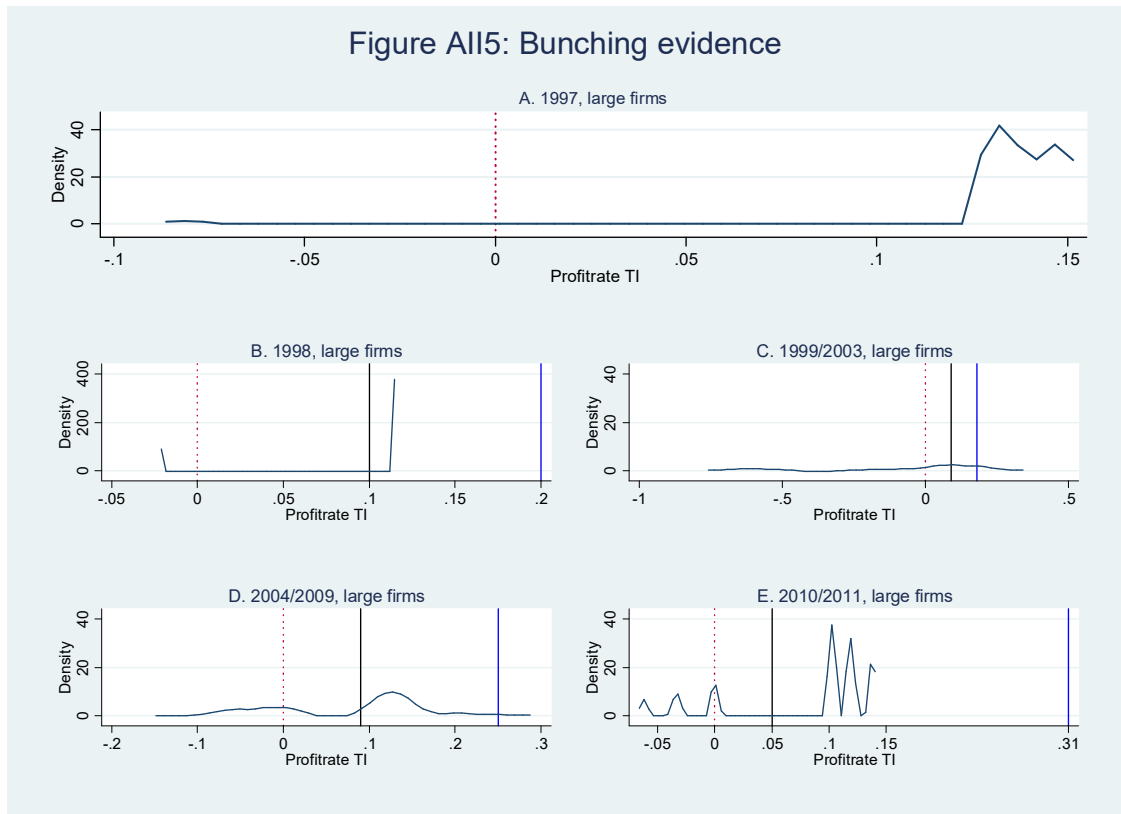
Note: Figure AII2 shows the empirical Kernel density distribution of the profit rate (*reported taxable income as a fraction of turnover*) for *eligible firms*. The black solid line shows the kink points calculated using $\tau_y(\min)$ and τ_π : 1998(0.1), 1999/2003(0.09), 2004/2009(0.09) and 2010/2011(0.05). The blue solid line shows the kink points calculated using $t_y(t_{\text{min}})$ and τ_π : 1998(0.2), 1999/2003(0.18), 2004/2009(0.25) and 2010/2011(0.31).



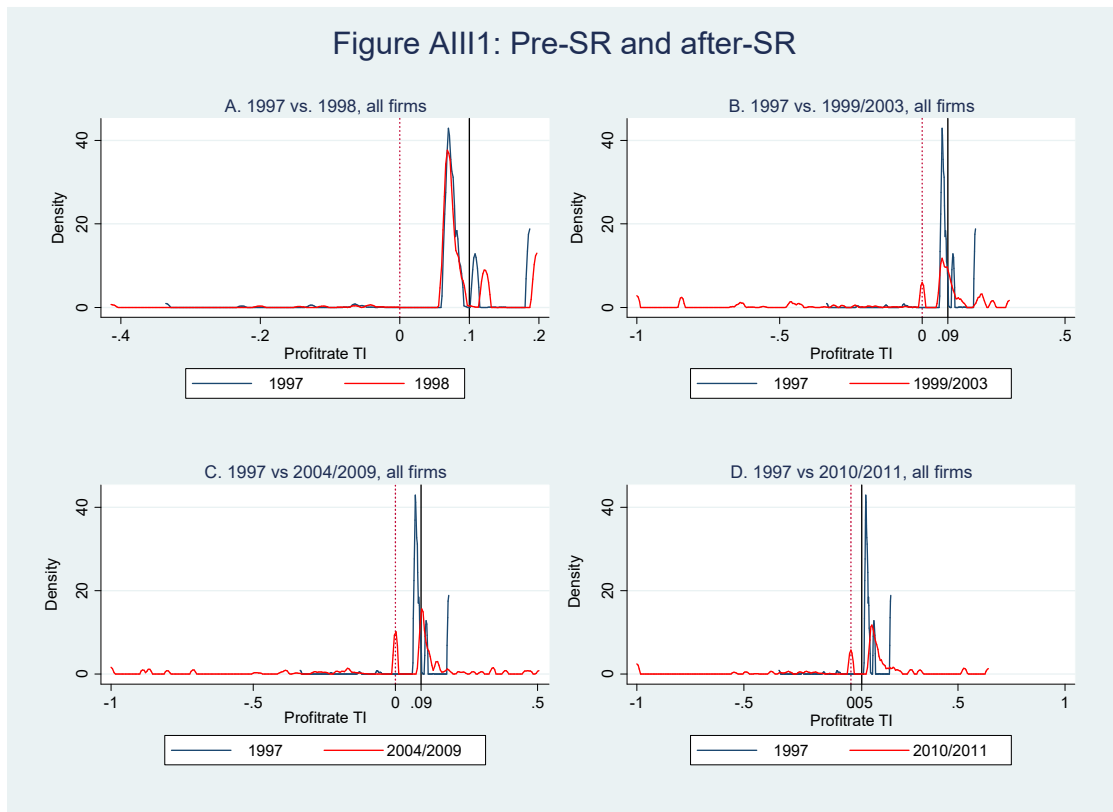
Note: Figure AII3 shows the empirical Kernel density distribution of the profit rate (*reported taxable income as a fraction of turnover*) for *non-eligible firms*. The black solid line shows the kink points calculated using $\tau_y(\min)$ and τ_π : 1998(0.1), 1999/2003(0.09), 2004/2009(0.09) and 2010/2011(0.05). The blue solid line shows the kink points calculated using $t_y(t_{\text{min}})$ and τ_π : 1998(0.2), 1999/2003(0.18), 2004/2009(0.25) and 2010/2011(0.31).



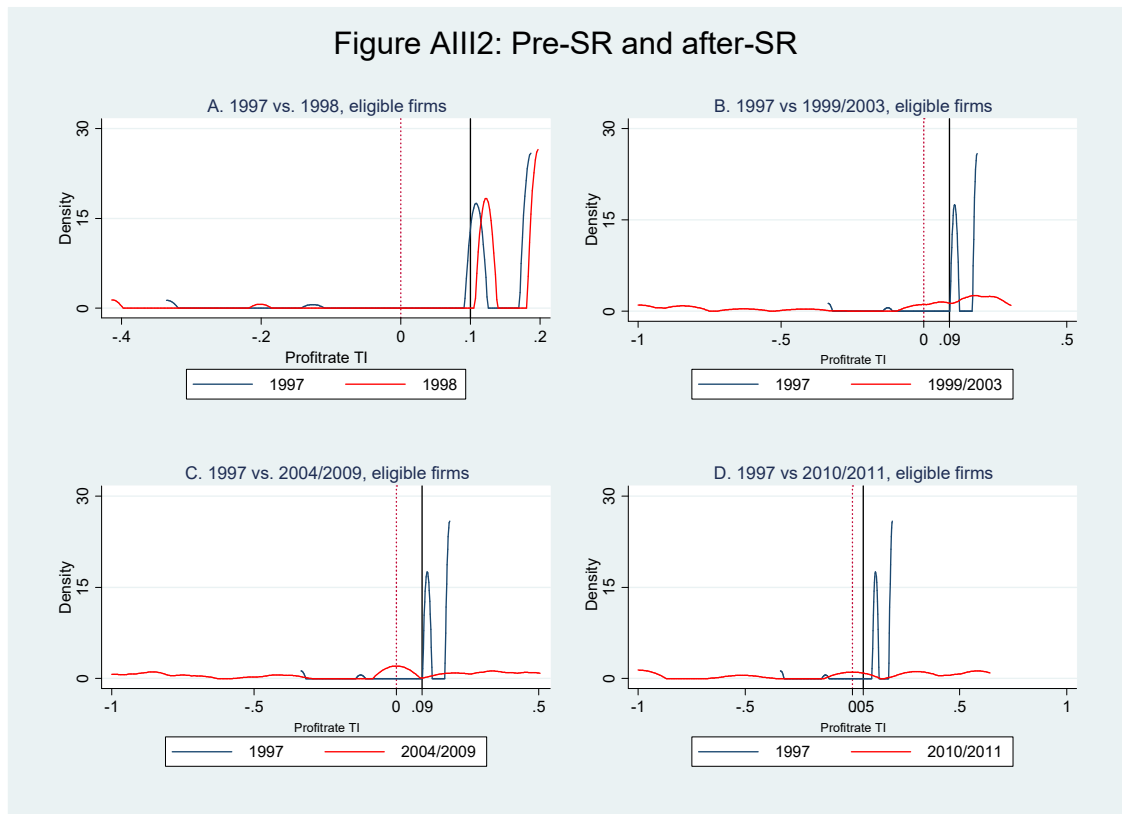
Note: Figure AII4 shows the empirical Kernel density distribution of the profit rate (*reported taxable income* as a fraction of turnover) for *medium firms*. The black solid line shows the kink points calculated using $\tau_y(\min)$ and τ_π : 1998(0.1), 1999/2003(0.09), 2004/2009(0.09) and 2010/2011(0.05). The blue solid line shows the kink points calculated using $t_y(t_y, \min)$ and τ_π : 1998(0.2), 1999/2003(0.18), 2004/2009(0.25) and 2010/2011(0.31).



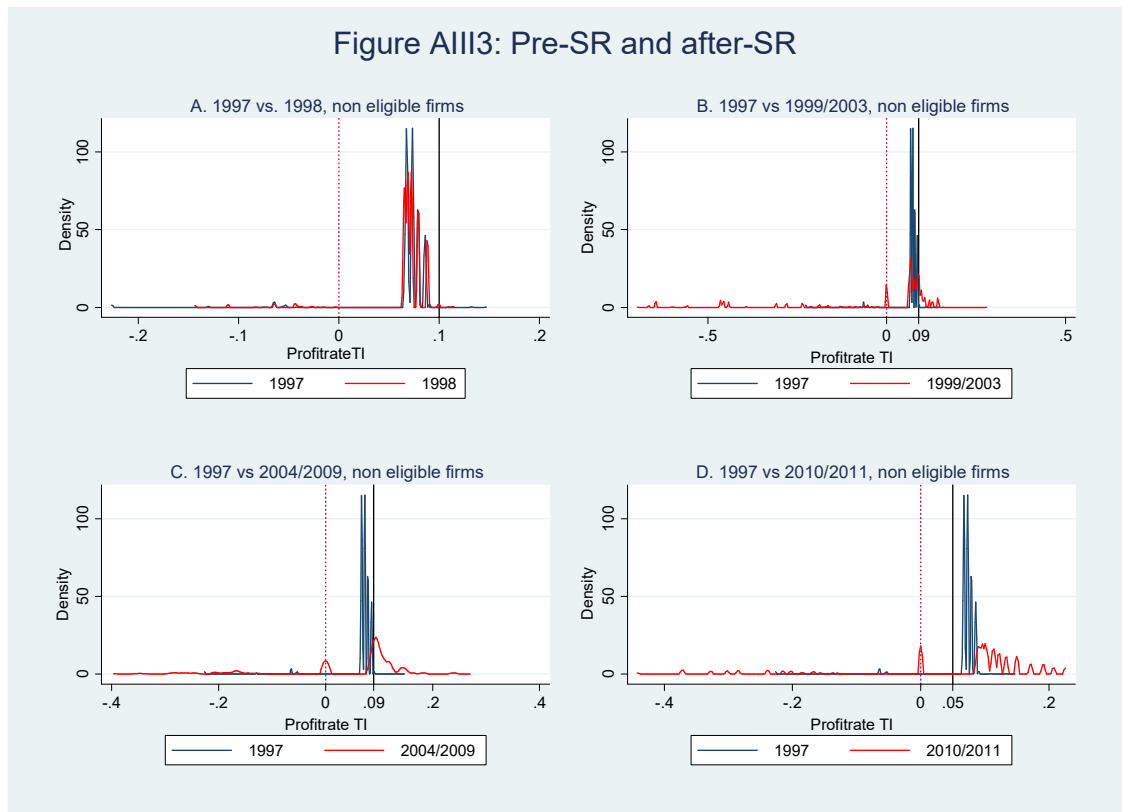
Note: Figure AII5 shows the empirical Kernel density distribution of the profit rate (*reported taxable income as a fraction of turnover*) for *large firms*. The black solid line shows the kink points calculated using $\tau_y(\min)$ and τ_π : 1998(0.1), 1999/2003(0.09), 2004/2009(0.09) and 2010/2011(0.05). The blue solid line shows the kink points calculated using $t_y(t_{y, \min})$ and τ_π : 1998(0.2), 1999/2003(0.18), 2004/2009(0.25) and 2010/2011(0.31).



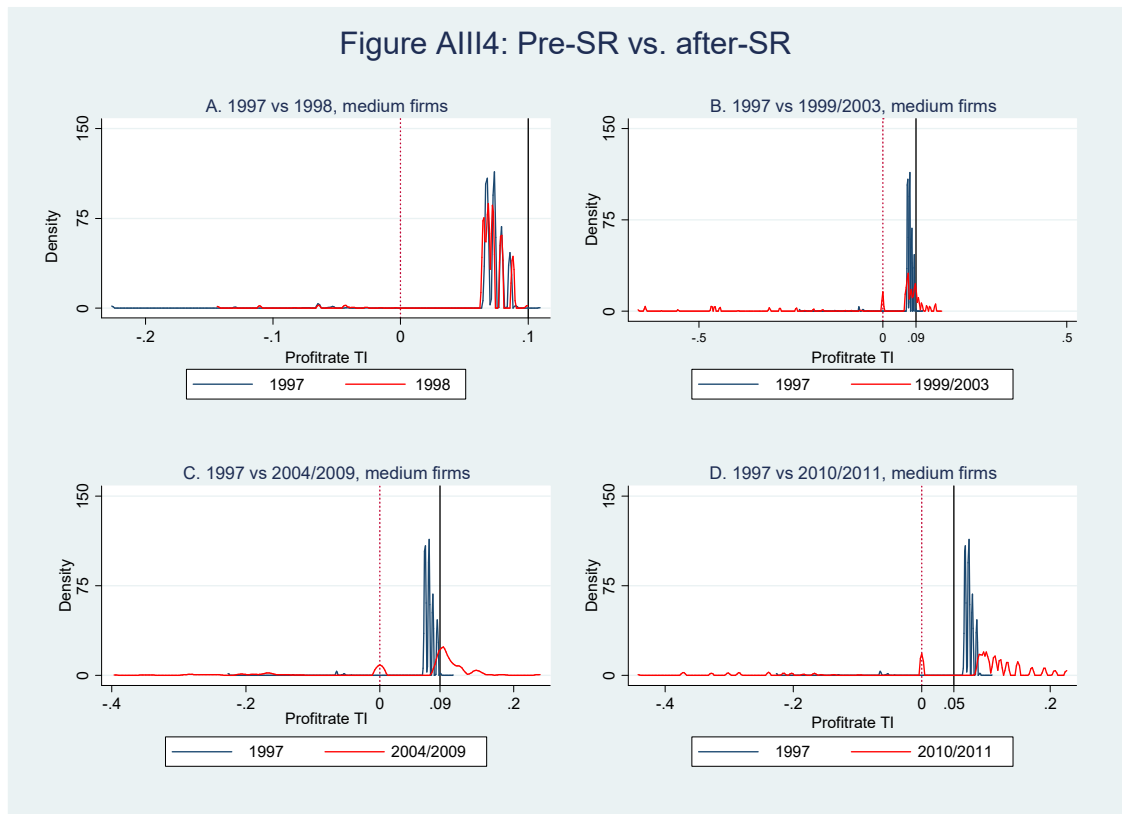
Note: Figure AIII1 shows the empirical Kernel density distribution of the profit rate (reported taxable income as a fraction of turnover) for *all firms* in 1997, 1998, 1999/2003, 2004/2009 and 2010/2011. The black solid line shows the profit rates calculated using $\tau_y(\min)$ and τ_π : 1998(0.1), 1999/2003(0.09), 2004/2009(0.09) and 2010/2011(0.05), and the zero profit rate is marked by a dotted line.



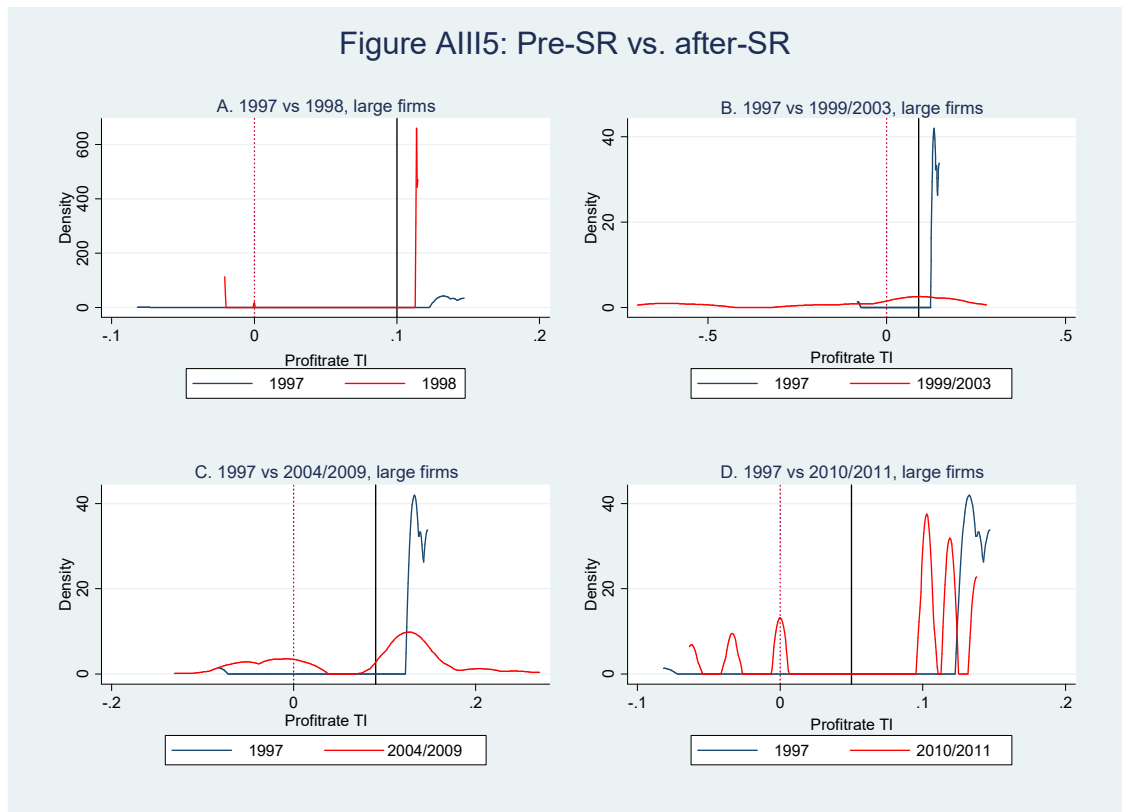
Note: Figure AIII2 shows the empirical Kernel density distribution of the profit rate (reported taxable income as a fraction of turnover) for *eligible firms* in 1997, 1998, 1999/2003, 2004/2009 and 2010/2011. The black solid line shows the profit rates calculated using $\tau_y(\min)$ and τ_π : 1998(0.1), 1999/2003(0.09), 2004/2009(0.09) and 2010/2011(0.05), and the zero profit rate is marked by a dotted line.



Note: Figure AIII3 shows the empirical Kernel density distribution of the profit rate (reported taxable income as a fraction of turnover) for *non-eligible firms* in 1997, 1998, 1999/2003, 2004/2009 and 2010/2011. The black solid line shows the profit rates calculated using $\tau_y(\min)$ and τ_π : 1998(0.1), 1999/2003(0.09), 2004/2009(0.09) and 2010/2011(0.05), and the zero profit rate is marked by a dotted line.

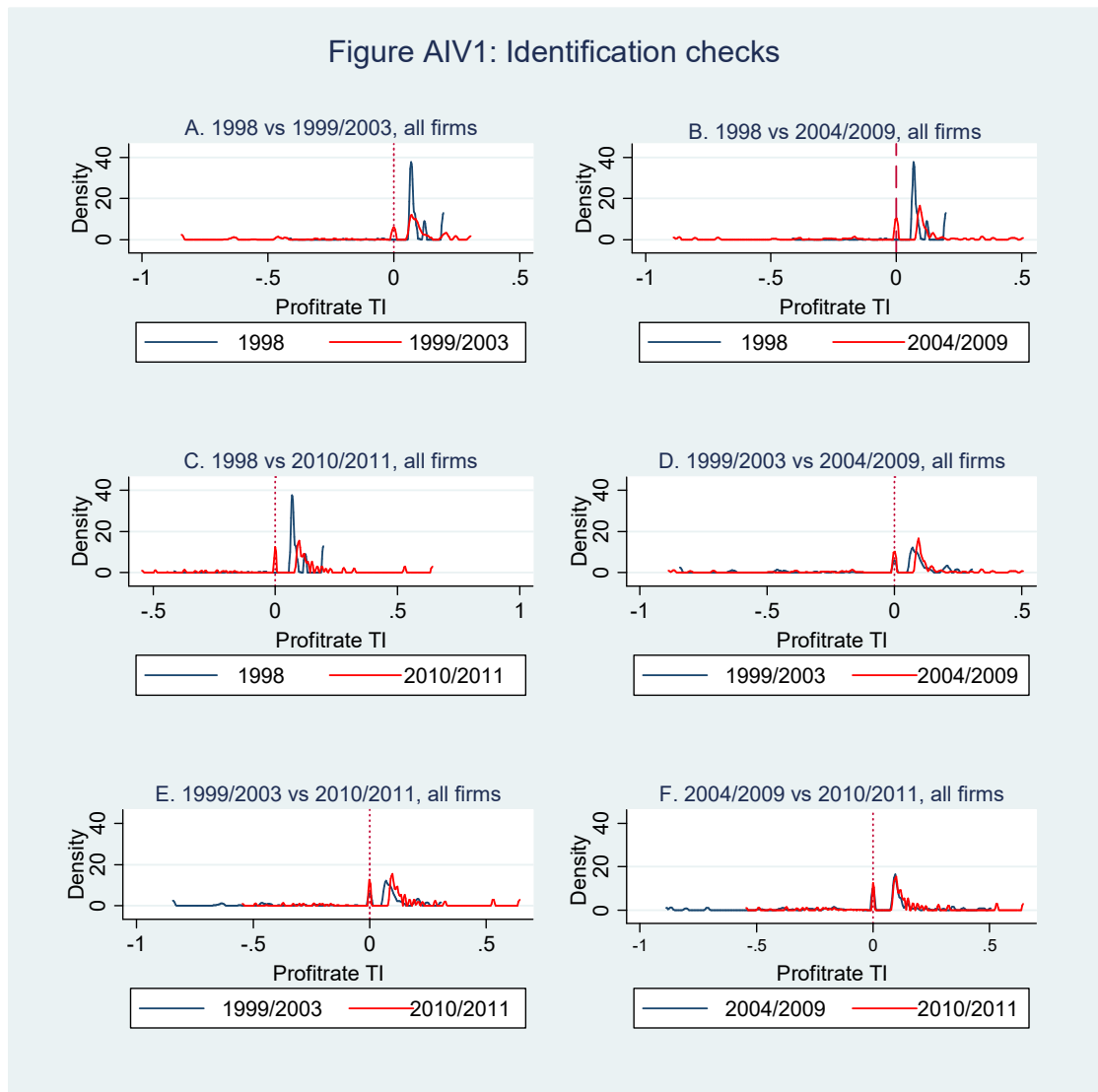


Note: Figure AIII4 shows the empirical Kernel density distribution of the profit rate (reported taxable income as a fraction of turnover) for *medium firms* in 1997, 1998, 1999/2003, 2004/2009 and 2010/2011. The black solid line shows the profit rates calculated using $\tau_y(\min)$ and τ_π : 1998(0.1), 1999/2003(0.09), 2004/2009(0.09) and 2010/2011(0.05), and the zero profit rate is marked by a dotted line.



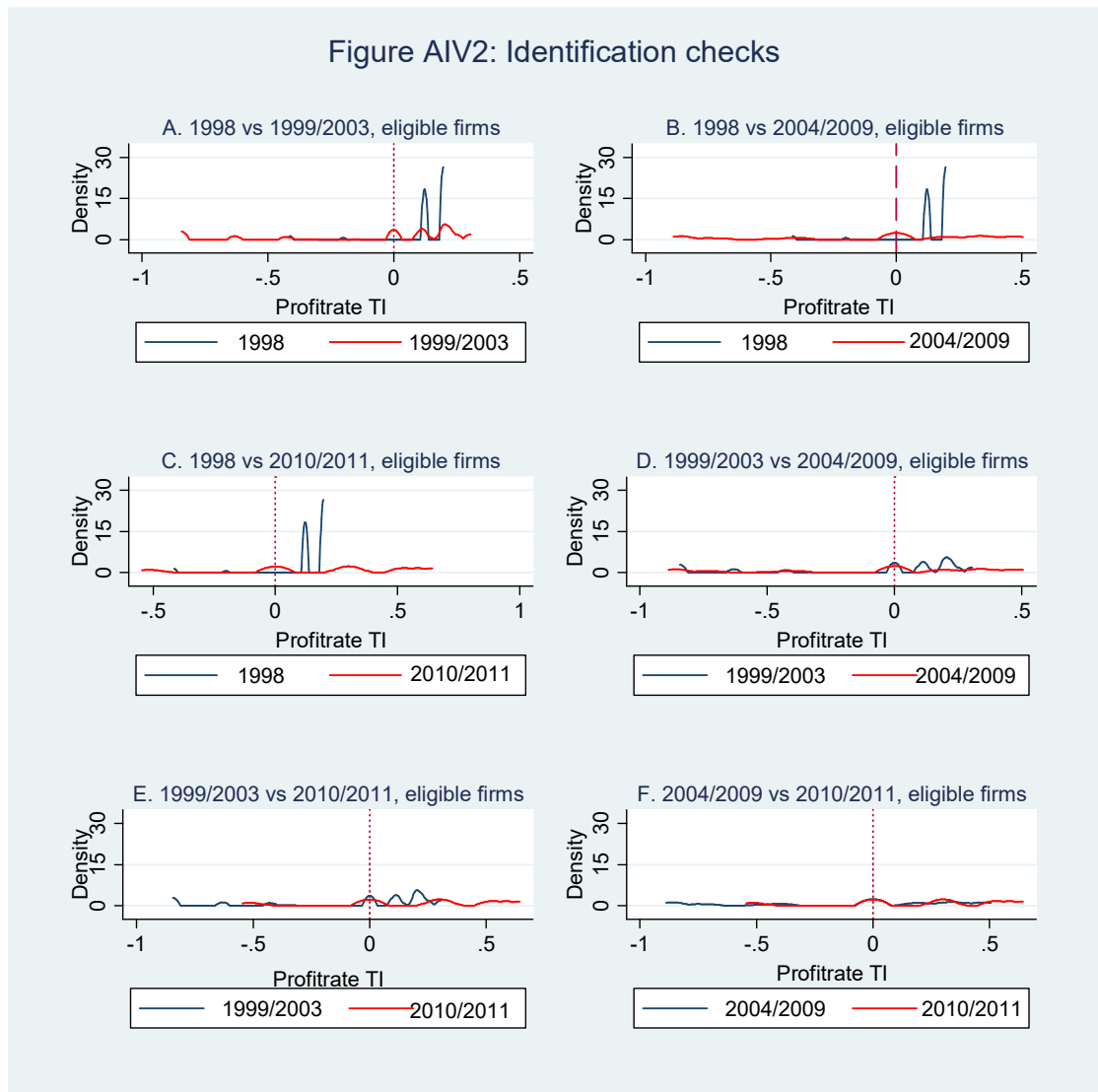
Note: Figure AIII5 shows the empirical Kernel density distribution of the profit rate (reported taxable income as a fraction of turnover) for *large firms* in 1997, 1998, 1999/2003, 2004/2009 and 2010/2011. The black solid line shows the profit rates calculated using $\tau_y(\min)$ and τ_π : 1998(0.1), 1999/2003(0.09), 2004/2009(0.09) and 2010/2011(0.05), and the zero profit rate is marked by a dotted line.

Figure AIV1: Identification checks



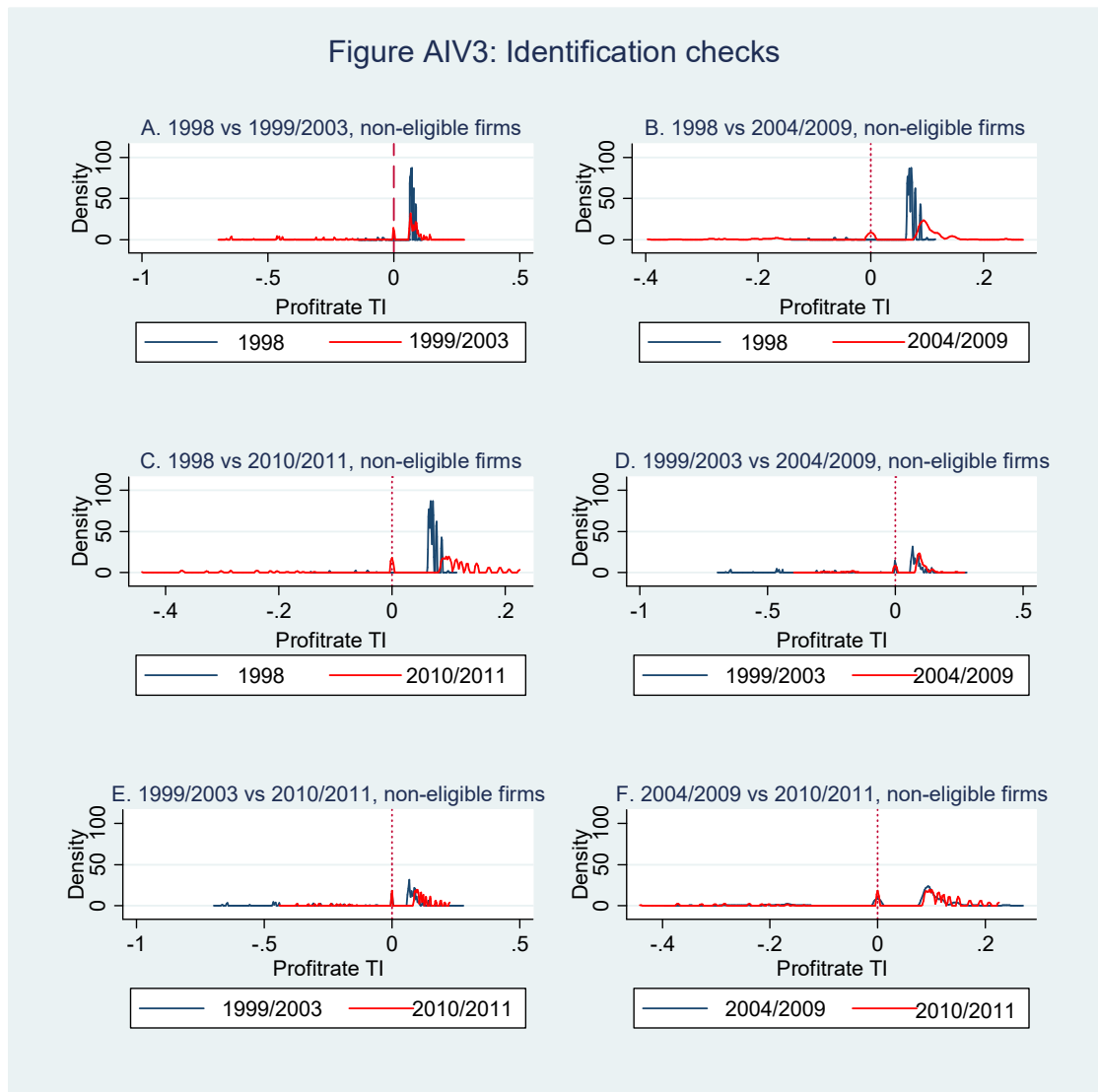
Note: Figure AIV1 shows the empirical Kernel density distribution of the profit rate (reported taxable income as a fraction of turnover) for *all firms* in each time period. In Panel A, the kinks are at a profit rate 0.1 (in 1998) and 0.09 (in 1999/2003). In Panel B, the kinks are at a profit rate 0.1 (in 1998) and 0.09 (in 2004/2009). In Panel C, the kinks are at a profit rate 0.1 (in 1998) and 0.05 (in 2010/2011). In Panel D, the kinks are at a profit rate 0.09 (in 1999/2003) and 0.09 (in 2004/2009). In Panel E, the kinks are at a profit rate 0.09 (in 1999/2003) and 0.05 (in 2010/2011). In Panel F, the kinks are at a profit rate 0.09 (in 2004/2009) and 0.05 (in 2010/2011).

Figure AIV2: Identification checks



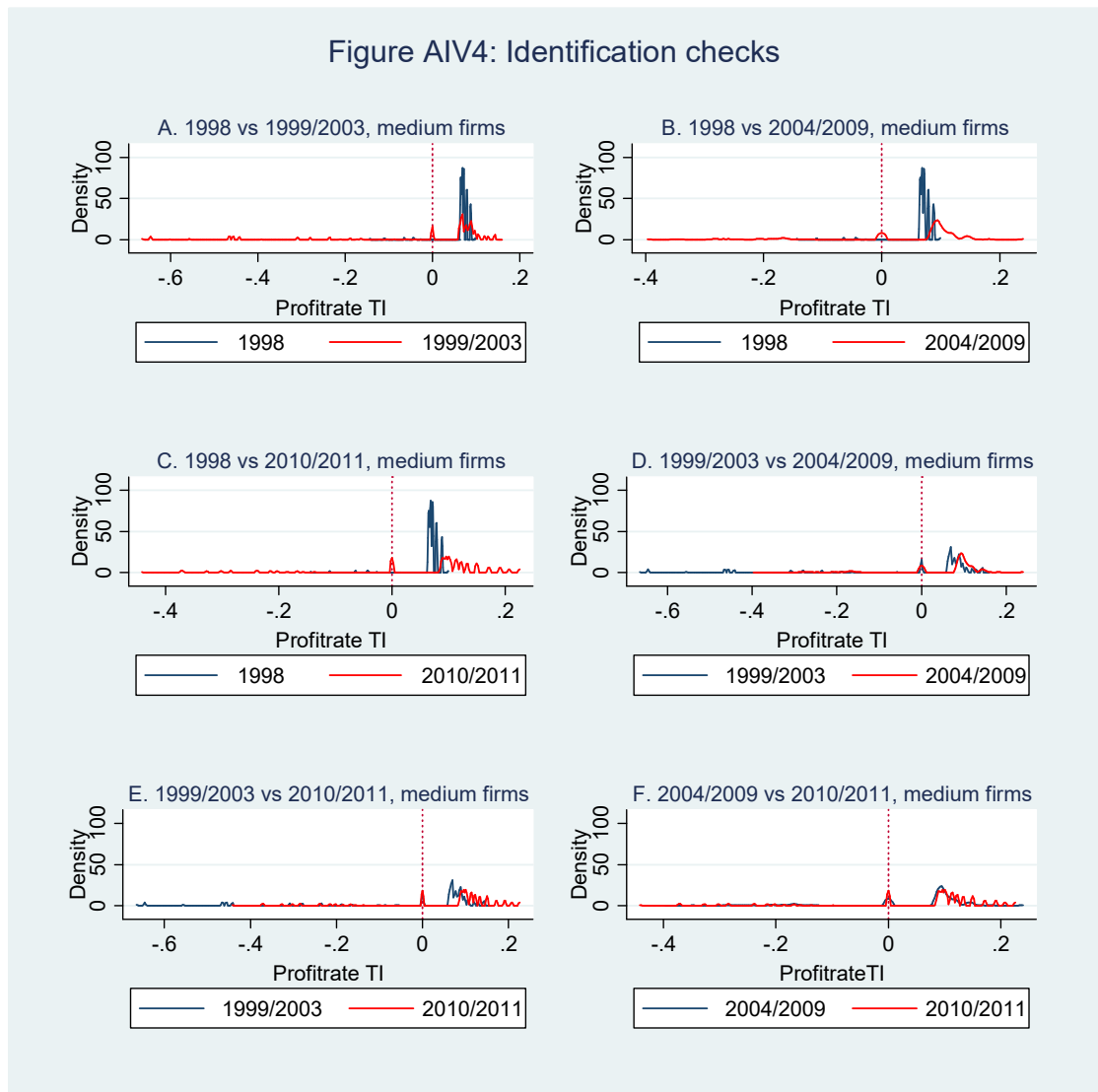
Note: Figure AIV2 shows the empirical Kernel density distribution of the profit rate (reported taxable income as a fraction of turnover) for *eligible firms* in each time period. In Panel A, the kinks are at a profit rate 0.1 (in 1998) and 0.09 (in 1999/2003). In Panel B, the kinks are at a profit rate 0.1 (in 1998) and 0.09 (in 2004/2009). In Panel C, the kinks are at a profit rate 0.1 (in 1998) and 0.05 (in 2010/2011). In Panel D, the kinks are at a profit rate 0.09 (in 1999/2003) and 0.09 (in 2004/2009). In Panel E, the kinks are at a profit rate 0.09 (in 1999/2003) and 0.05 (in 2010/2011). In Panel F, the kinks are at a profit rate 0.09 (in 2004/2009) and 0.05 (in 2010/2011).

Figure AIV3: Identification checks



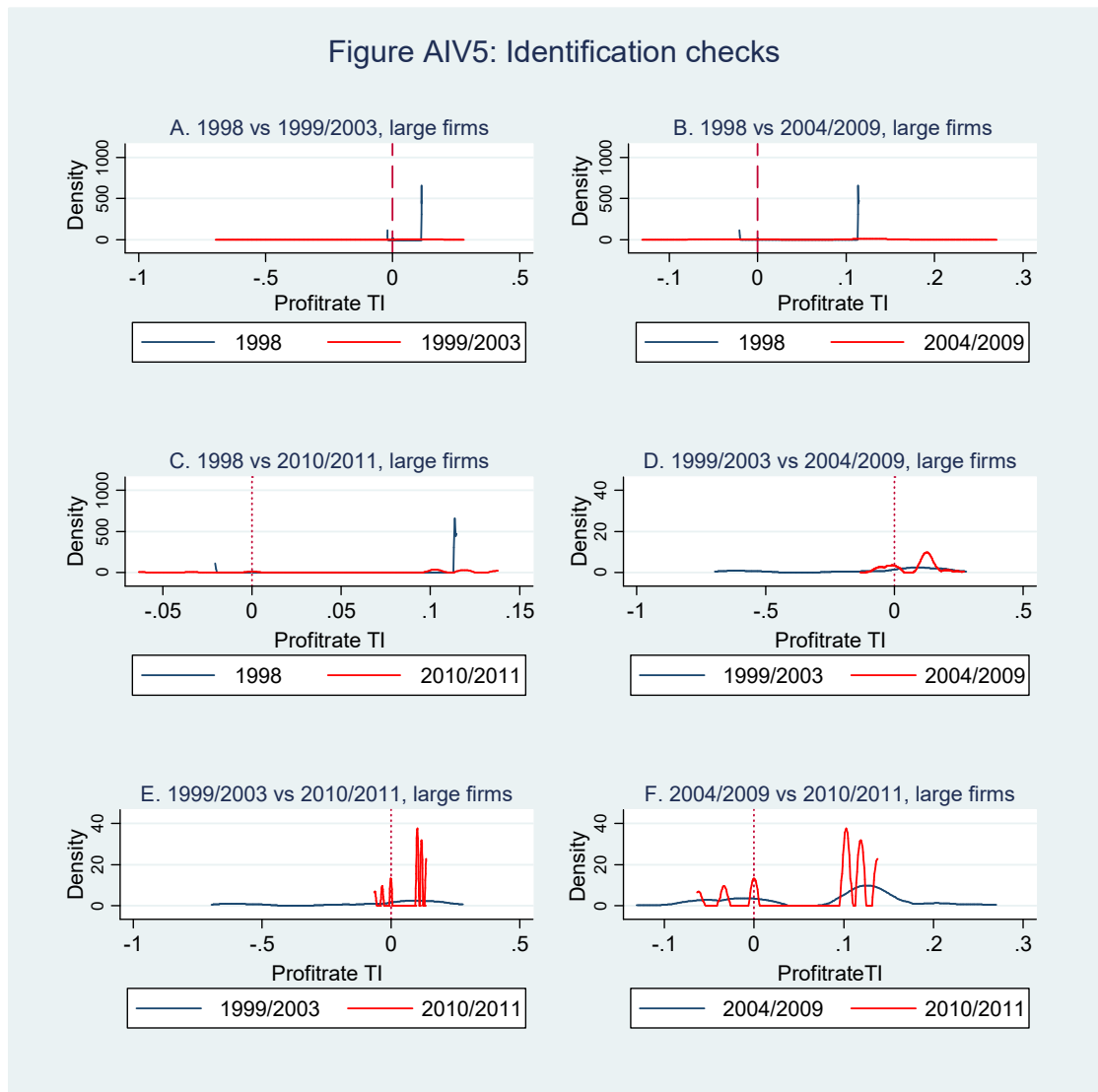
Note: Figure AIV3 shows the empirical Kernel density distribution of the profit rate (reported taxable income as a fraction of turnover) for *non-eligible firms* in each time period. In Panel A, the kinks are at a profit rate 0.1 (in 1998) and 0.09 (in 1999/2003). In Panel B, the kinks are at a profit rate 0.1 (in 1998) and 0.09 (in 2004/2009). In Panel C, the kinks are at a profit rate 0.1 (in 1998) and 0.05 (in 2010/2011). In Panel D, the kinks are at a profit rate 0.09 (in 1999/2003) and 0.09 (in 2004/2009). In Panel E, the kinks are at a profit rate 0.09 (in 1999/2003) and 0.05 (in 2010/2011). In Panel F, the kinks are at a profit rate 0.09 (in 2004/2009) and 0.05 (in 2010/2011).

Figure AIV4: Identification checks

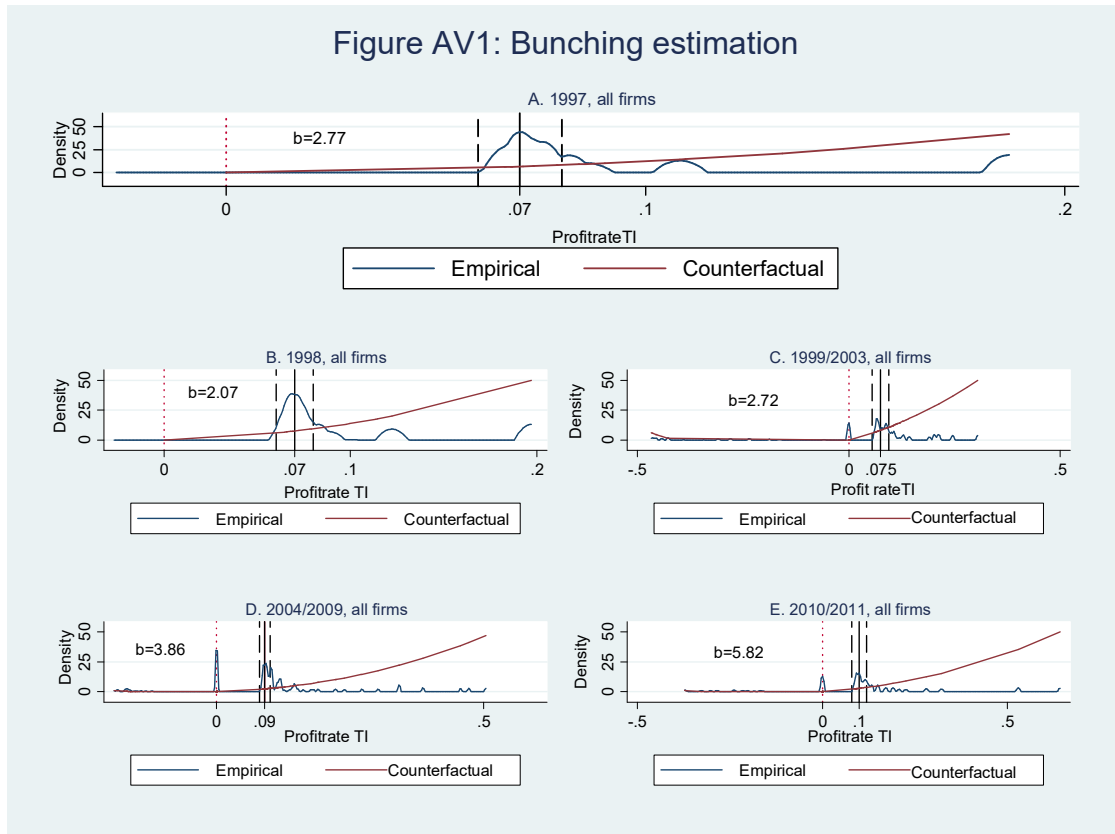


Note: Figure AIV4 shows the empirical Kernel density distribution of the profit rate (reported taxable income as a fraction of turnover) for *medium firms* in each time period. In Panel A, the kinks are at a profit rate 0.1 (in 1998) and 0.09 (in 1999/2003). In Panel B, the kinks are at a profit rate 0.1 (in 1998) and 0.09 (in 2004/2009). In Panel C, the kinks are at a profit rate 0.1 (in 1998) and 0.05 (in 2010/2011). In Panel D, the kinks are at a profit rate 0.09 (in 1999/2003) and 0.09 (in 2004/2009). In Panel E, the kinks are at a profit rate 0.09 (in 1999/2003) and 0.05 (in 2010/2011). In Panel F, the kinks are at a profit rate 0.09 (in 2004/2009) and 0.05 (in 2010/2011).

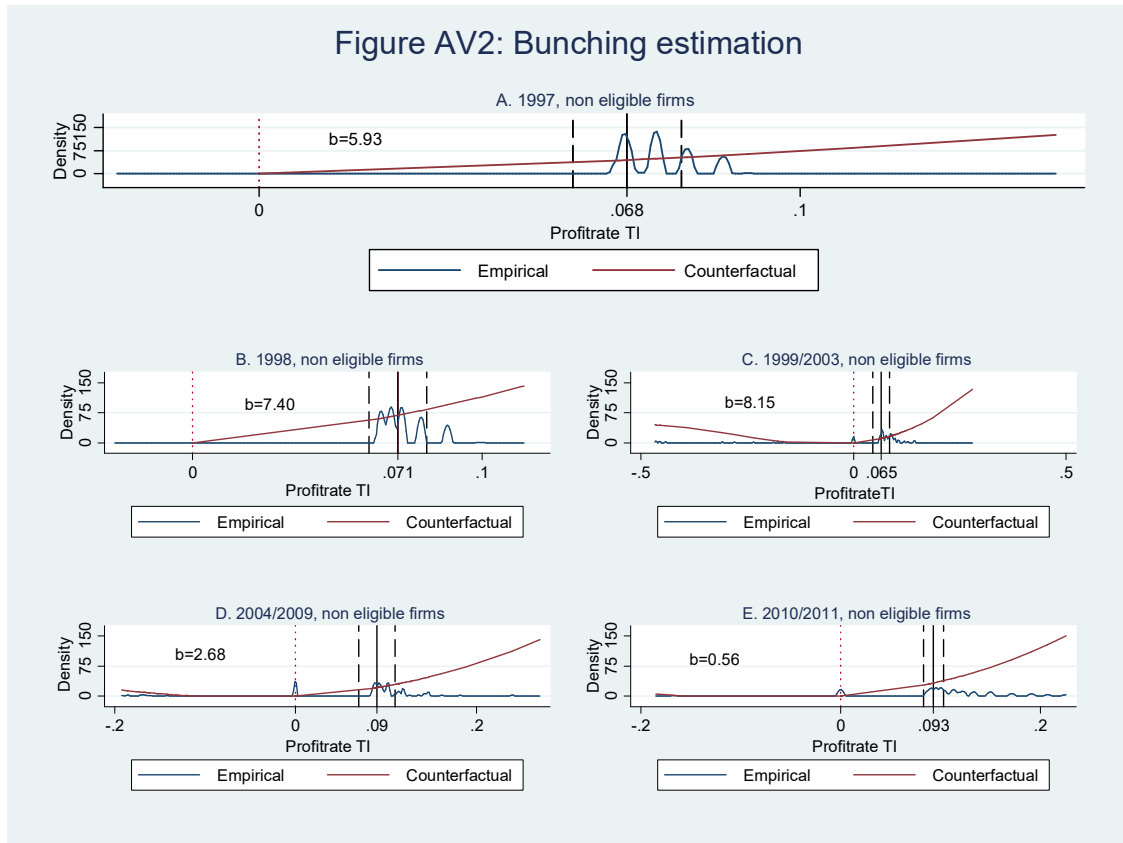
Figure AIV5: Identification checks



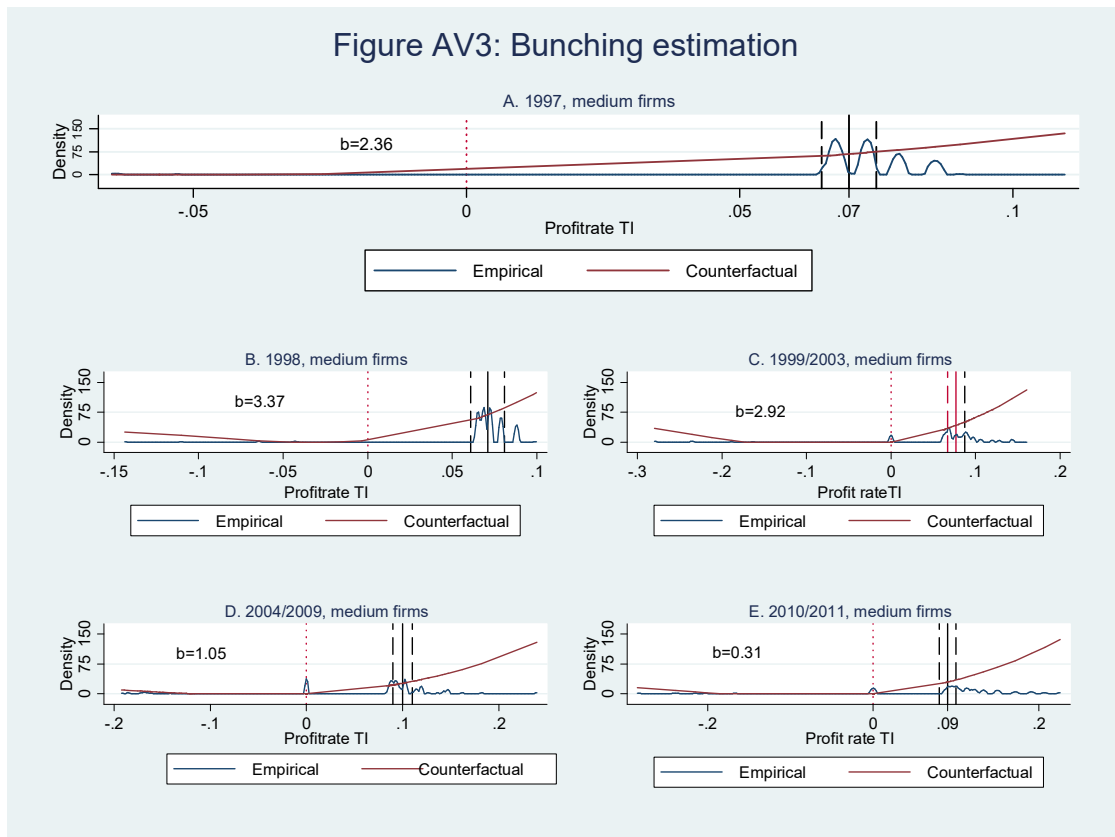
Note: Figure AIV5 shows the empirical Kernel density distribution of the profit rate (reported taxable income as a fraction of turnover) for *large firms* in each time period. In Panel A, the kinks are at a profit rate 0.1 (in 1998) and 0.09 (in 1999/2003). In Panel B, the kinks are at a profit rate 0.1 (in 1998) and 0.09 (in 2004/2009). In Panel C, the kinks are at a profit rate 0.1 (in 1998) and 0.05 (in 2010/2011). In Panel D, the kinks are at a profit rate 0.09 (in 1999/2003) and 0.09 (in 2004/2009). In Panel E, the kinks are at a profit rate 0.09 (in 1999/2003) and 0.05 (in 2010/2011). In Panel F, the kinks are at a profit rate 0.09 (in 2004/2009) and 0.05 (in 2010/2011).



Note: Figure AV1 shows the empirical density distribution of the profit rate (reported taxable income as a fraction of turnover, solid blue graph) and the counterfactual density (solid black graph) for *all firms* in 1997, 1998, 1999/2003, 2004/2009 and 2010/2011. The counterfactual density is estimated from the empirical density, by fitting a third-order polynomial, second-order for 1999/2003, excluding data around the kink. We choose the middle band for all panels such that the kink points are bin centers. The kink points are marked by vertical solid lines, lower and upper bands of the bunching window are marked by vertical dashed lines. The zero profit rate is marked by a dotted line.



Note: Figure AV2 shows the empirical density distribution of the profit rate (reported taxable income as a fraction of turnover, solid blue graph) and the counterfactual density (solid black graph) for *non eligible firms* in all periods. The counterfactual density is estimated from the empirical density, by fitting a third-order polynomial, second-order for 1997 and 1998, excluding data around the kink. We choice the middle band for all panels, except 2004/2009 (all bands), such that the kink points are bin centres. The kink points are marked by vertical solid lines, lower and upper bands of the bunching window are marked by vertical dashed lines. The zero profit rate is marked by a dotted line.



Note: Figure AV3 shows the empirical density distribution of the profit rate (reported taxable income as a fraction of turnover, solid blue graph) and the counterfactual density (solid black graph) for *medium firms* in all periods. The counterfactual density is estimated from the empirical density, by fitting a third-order polynomial, excluding data around the kink. We choice the middle band for all panels, except 1998 (all bands), such that the kink points are bin centres. The kink points are marked by vertical solid lines, lower and upper bands of the bunching window are marked by vertical dashed lines. The zero profit rate is marked by a dotted line.

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