

Earnings Labor Supply Responses to Tax Breaks: Evidence from a Regression Discontinuity Design in Argentina*

PRELIMINARY, DO NOT CITE

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Abstract

This paper exploits a novel natural experiment to identify earnings labor supply responses to the income tax. In August 2013, the President of Argentina passed an Executive Order that exempted from the income tax from that point onwards all wage earners with a gross monthly salary below \$AR 15,000 between January and August 2013. The result was a large and salient discontinuity in tax liabilities for upper earning workers above and below 15k that were otherwise very similar. Using a regression discontinuity design and administrative employer-employee data, we estimate that the tax break caused a precisely measured zero change in earnings supply of salaried workers. Being more internally valid, this result challenges previous estimates of reported income elasticities and the response of wage earners to tax cuts.

1 Introduction

The response of wage earners to changes in marginal tax rates has long been of interest to economists and policymakers. The magnitude of this response is of critical importance in the formulation of tax and transfer policies. However, the empirical literature has not yet reached a consensus on the magnitude of the elasticity of earnings with respect to marginal

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tax rates. The empirical estimates are not fully compelling and range from no effect to extremely large effects.

In this article, we exploit a unique natural experiment that took place in Argentina in the year 2013 to estimate earnings supply responses of salaried workers to the personal income tax which overcomes identification difficulties that have plagued previous work. Argentina has a progressive income tax schedule with seven brackets that has been fixed in nominal terms since the year 2000. During this period, the country suffered an accumulated inflation of $\sim 1385\%$ and nominal wages were adjusted by inflation every year. As a result, a lot of people started paying income taxes in the last 15 years, and the system lost a lot of progressivity over time (since inflation reduced the significance of the taxable threshold).¹ To alleviate the tax burden of wage earners, the president implemented in 2013 a permanent and large tax break for a group of workers. This unexpected reform was announced through an Executive Order in August 2013 and had the following key features: (i) wage earners whose (highest) gross monthly salary accrued between January-August 2013 was below AR\$ 15,000 were exempt from the income tax starting in September 2013, regardless of subsequent earnings; (ii) wage earners whose (highest) gross monthly salary accrued between January-August 2013 was between AR\$ 15,001 and AR\$ 25,000 received a 20% increase in personal exemptions; (iii) no changes for workers earning $\geq$ AR\$ 25,001 between January-August 2013. This tax break was revoked by the new administration in February 2016.

As a result, in September 2013, about 16% of wage earners stopped paying the income tax regardless of subsequent earnings. In contrast, about 11% of workers between 15k-25k cutoff received a partial tax cut. Thus, the reform effectively created two groups of workers who coexist in the same labor market but face sharply different tax liabilities. Comparing workers below and above these cutoffs using a regression discontinuity design (RDD) offers a unique opportunity to estimate the impact of a large and salient tax cut on earnings and labor supply. We use administrative employer-employee data provided by the Ministry of Labor, Employment and Social Security, the labor agency in Argentina. The data include all individual private and public salaried workers in Argentina. The data include the year of birth, gender, industry, province, (scrambled) individual and firm identifiers, gross monthly wages.

Three main results are presented in our analysis. First, anecdotic evidence for the first stage suggests a large discontinuity in tax liabilities for upper earning workers above and below 15k. Second, we show that there is no discontinuity in the distribution of gross wages between January and August 2013 around the cutoffs showing that individuals could not

¹In a companion paper we estimate the elasticity of earnings supply in Argentina using the “bracket creep” as a natural experiment. The idea of bracket creep is that a taxpayer near the top-end of a bracket is likely to creep to the next bracket even if her income did not change in real terms.

game the law by underreporting earnings after the law was enacted to take advantage of the tax break. This finding is crucial for the validity of the subsequent RDD analysis. Third, we find no evidence of earning responses of the tax cut along the intensive margin.² This result strikes us as remarkable given the size and saliency of the tax cut.

This paper complements a large empirical literature estimating the responses of reported income to the personal income tax (see Saez, Slemrod, and Giertz 2012a and Weber 2014 for a recent survey). Most of the existing work in this literature, however, is based on developed countries. This paper, therefore, represents an effort at analyzing tax-driven responses of salaried workers in a developing country context. Moreover, a variety of estimation methods have been employed, including difference-in-differences based on repeated cross sections, share analysis, and panel-based difference-in-differences. But none of them used a regression discontinuity design, as we do, which is known to have stronger internal validity. Finally, this paper is also connected to a recent strand of literature that has challenged conventional wisdom by finding precisely measured zero effects of taxes on different outcomes. For example, using a cohort-based reform in Greece, Saez, Matsaganis, and Tsakloglou (2012b) found no responses of labor supply to payroll taxes along the extensive and intensive margins around the discontinuity, suggesting low efficiency costs. In a different context, Yagan (2015) estimates that the 2003 dividend tax cut in the U.S. caused zero change in corporate investment and employee compensation. This paper contributes to this literature by documenting that in contrast to numerous other fiscal reforms, a large and salient tax cut had no detectable near-term impact on earnings of salaried workers.

Our article is organized as follows. Section 2 describes the institutional details and the conceptual framework. Section 3 introduces the administrative data. Section 4 describes the empirical strategy and results. Section 5 concludes.

2 Background and Conceptual Framework

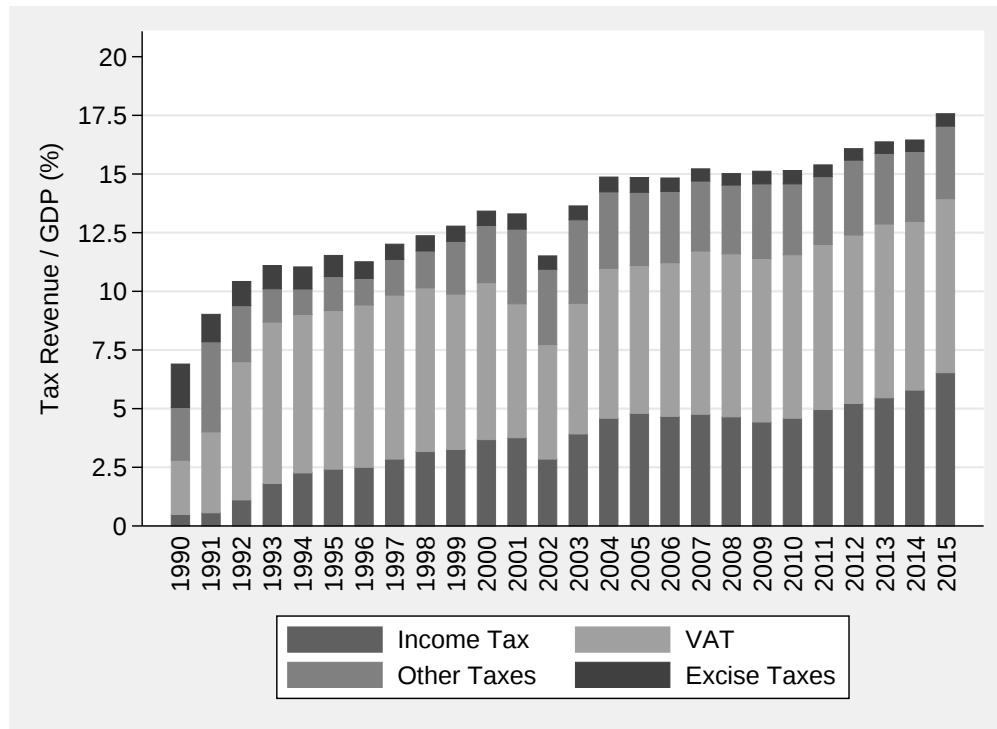
2.1 Overview of the Argentine tax system

Argentina levies taxes at the federal, provincial, and municipal level. The federal tax system is based on the following main taxes: corporate and personal income tax, payroll tax, value added tax, withholding tax, import and export taxes, the tax on financial transactions, and net worth tax. The fiscal pressure (total revenue/GDP) has increased substantially in

²We are planning to incorporate soon extensive margin responses, such as worker accepting promotions or changing to better paid jobs at different firms.

the last years, from 20% in 2001 to 34% in 2016.³ In Figure 1 we show the evolution and composition of tax revenues. In 2015, tax revenues represented 17.5% of GDP. The VAT was the most important tax (42%), followed in the second place by the income tax (38%). Interestingly, the income tax has become a very important source of revenue in the last 25 years.

Figure 1: Evolution and Composition of Tax Revenues in Argentina, 1990-2015



Source: Own elaboration based on 2015 statistical yearbook of the national tax authority (AFIP).

Argentina has a (deferred and individual) progressive personal income tax (PIT) schedule with seven brackets and marginal tax rates ranging from 9 to 35 percent. This schedule is depicted in Table 1 and Figure 2. In practice, employers must withhold employee income taxes at source from monthly paychecks.⁴ The amount to withhold depends on the employee's total taxable income. When computing tax liabilities, employers are entitled to deduct Social security contributions, family allowances (spouse and dependents), and other minor deductions declared by employees.⁵

³This is mainly explained by social security (30%), income tax (24%), customs duties (17%), tax to financial transactions (17%), and VAT (19%).

⁴The income tax is indeed very salient as it appears as one of the concepts in the paycheck of workers.

⁵These additional deductions include prepaid medical care fees, life insurance, medical expenses, mortgage interests, donations, funeral expenses, domestic services. Contrary to developed countries, these itemized deductions are typically capped and represent on average only 5% of gross income.

Table 1: Personal Income Tax Schedule in Argentina

Annual Taxable Income		Annual Payment		
From AR\$	To AR\$	AR\$	+ $x\%$	over AR\$
0	10,000	-	9	0
10,000	20,000	900	14	10,000
20,000	30,000	2,300	19	20,000
30,000	60,000	4,200	23	30,000
60,000	90,000	11,100	27	60,000
90,000	120,000	19,200	31	90,000
120,000		28,500	35	120,000

Note: This table shows the personal income tax schedule in Argentina. This system has been fixed in nominal terms since the year 2000.

The PIT starts being levied at relatively high income levels, as is the case in many developing countries. In August 2013, a single worker with no children and gross annual earnings below AR\$ 108,676 was not charged any income tax.⁶ For the same date, average gross annual earnings for a private salaried worker was AR\$ 107,783 and the monthly minimum wage was set at AR\$ 3,300, corresponding to gross yearly income of AR\$ 42,900, well below the first tax bracket. This shows that in Argentina the PIT is only borne by relatively high-earning individuals.

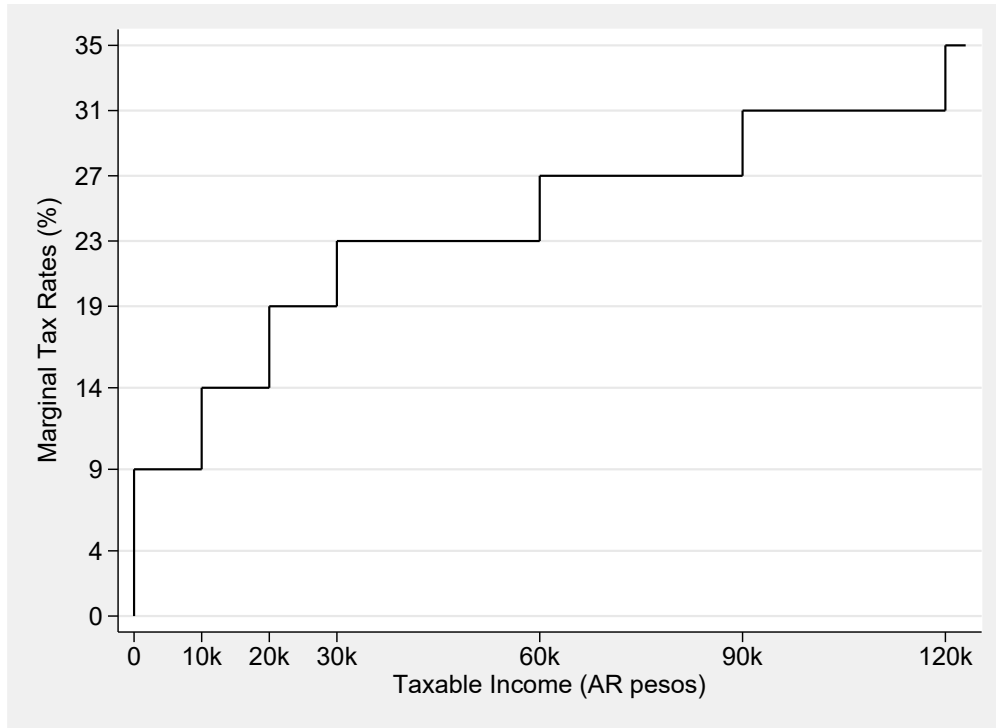
2.2 The reform (decree 1242/2013)

Three facts have characterized the evolution of the PIT tax in the last 15 years: (i) Argentina had an accumulated inflation of $\sim 1385\%$ between 2002 and 2015; (ii) nominal wages were adjusted by inflation every year; and (iii) the PIT schedule remained fixed in nominal terms since the year 2000 (see Table 1). Taken together, these facts suggest that a lot of people started paying taxes in this period because inflation reduced the significance of the taxable threshold. This observation is confirmed in Figure 3. This figure plots the number of taxpayers by brackets filing a tax return from 2000 to 2014. From this figure we learn two things. First, more people pay the income tax nowadays. Second, the top bracket has become the most popular. This implies that it is more likely for workers to pay the income tax and, once they start paying taxes, to “creep” very quickly to the top bracket. Therefore, the PIT lost progressivity in the last 15 years as workers with very different earnings could be taxed at the top marginal tax rate.

To alleviate the increasing tax burden of wage earners, in 2013 the president implemented

⁶This is equivalent to USD 19,406 using an exchange rate of 5.6.

Figure 2: Annual Taxable Income and Marginal Tax Rates in Argentina



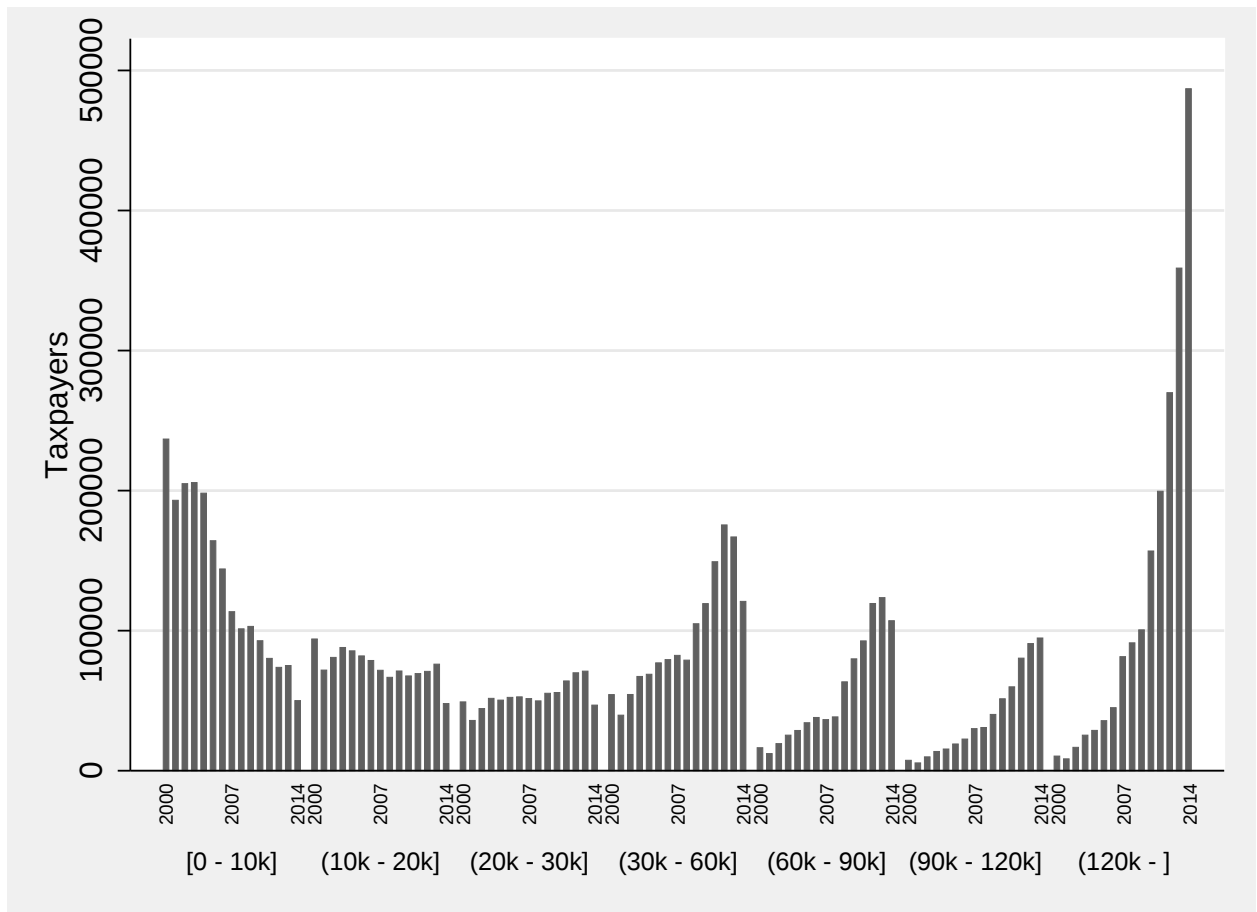
a large and salient tax break that affected differentially what would otherwise be comparable groups of workers.⁷ This unexpected reform was announced through an Executive Order on August 28th, 2013 (Decree No. 1242/2013) and had the following features: (i) wage earners whose (highest) gross monthly salary accrued between January-August 2013 was below AR\$ 15,000 were exempt from the income tax starting in September 2013, regardless of subsequent earnings; (ii) wage earners whose (highest) gross monthly salary accrued between January-August 2013 was between AR\$ 15,001 and AR\$ 25,000 received a 20% increase in personal exemptions (spouse and dependents); (iii) no changes for workers earning +AR\$ 25,001 between January-August 2013.

The rule applied to all regular earnings irrespective of type, that is, it was calculated by adding together earnings from regular pay, overtime, bonus, and so on earned in a given month. In the case of employees working for multiple employers, the rule applied to the sum of earnings across all employers.⁸

⁷Importantly, legislative elections were held in Argentina on October 27th, 2013. Some people claim that the tax break was a political movement of Fernandez administration to improve her public image after being defeated in the 2013 midterm elections held in August 2013.

⁸Note that income taxes are based on income net of all social security contributions. However, since payroll taxes remained unchanged at roughly 17% they do not add differential tax wedges between workers and hence do not need to be incorporated in our analysis.

Figure 3: Number of taxpayers filing tax returns by tax brackets, 2000-2014



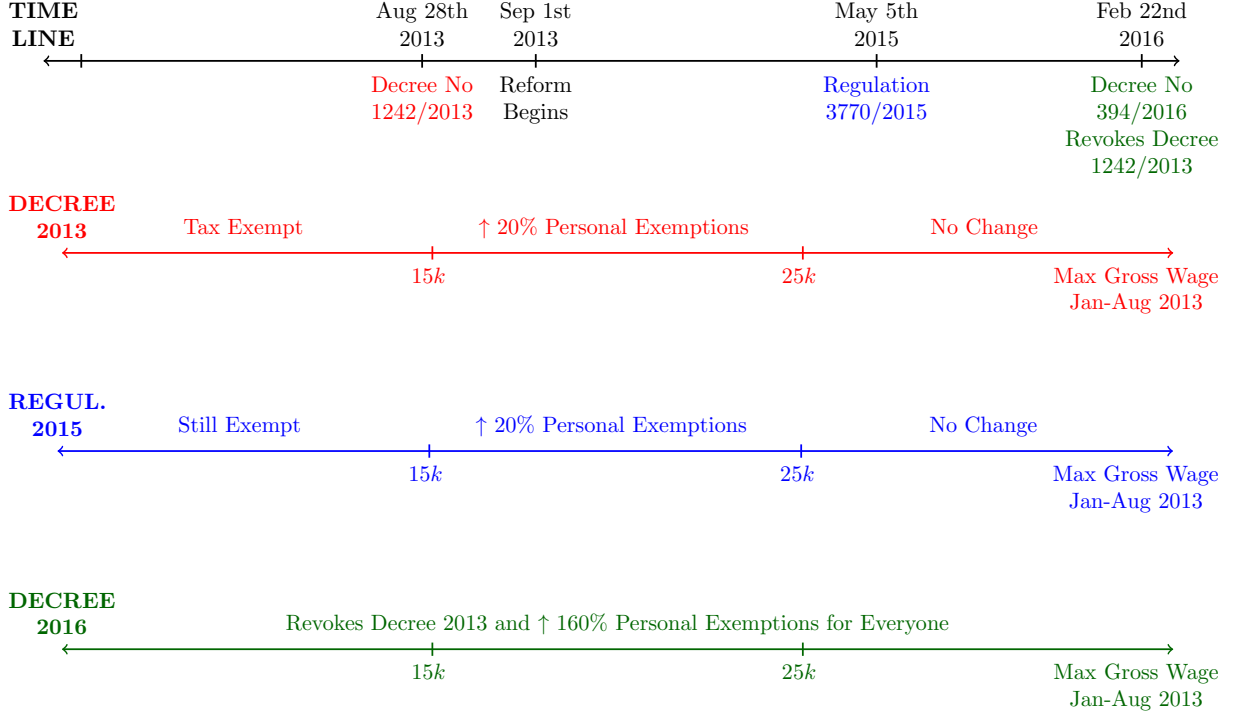
Note: this figure shows the number of taxpayers that are mandated to file a tax return by the end of the fiscal year. These numbers do not include wage-earners subject to tax withholding since they are not mandated to file a tax return. Source: Own elaboration based on statistical yearbooks of the national tax authority (AFIP).

This reform implied that very similar workers ended up with very different tax liabilities from September 2013 onwards, depending on whether their earnings from January to August 2013 were above or below 15k and 25k. Comparing workers below and above these cutoffs using a regression discontinuity design (RDD) offers a unique opportunity to estimate the impact of a large and salient tax cut on earnings and labor supply.

Critically for our analysis, the reform was indeed very salient. For example, it appeared on the front page of the main newspapers in Argentina.⁹ Moreover, employers in charge of withholding the income tax at source were required by the Executive Order to notify the

⁹For instance, see Diario La Nacion (<http://servicios.lanacion.com.ar/archivo/2013/08/28/005/DT>) and Diario Clarin (<http://tapas.clarin.com/tapa.html#20130828>)

Figure 4: Timeline and Reforms



Notes: This figure displays the chronology of the events and the main details of each reform. The tax break was announced on August 28th, 2013, and was implemented beginning on September 1st, 2013. All the reforms were based on the highest gross monthly salary earned between January and August 2013, regardless of subsequent earnings.

benefit to affected employees by including on their paychecks the concept of “*Compensation and/or not subject to Income Tax - Benefit Decree PEN 1242/2013*”.

In May 2015, the president passed a new decree based on the same rule, that is, using the highest monthly earnings accrued between January and August 2013. In this case, the decree only increased personal exemptions by 20% for the group of workers with earnings between 15k and 25k. Finally, in February 2016 the new administration put an end to the tax break and increased personal exemptions for everyone by 160%. The timeline and relevant details of each of these reforms are summarized in Figure 4.

2.3 Conceptual framework

In this section we develop a simple graphical framework to understand the theoretical predictions of the effects of the reform. Gross earnings z are defined as earnings before employee payroll and income taxes. Net earnings c are defined as earnings net of employee

payroll taxes and income taxes. Earnings include the regular wages and salaries and overtime pay, but not bonuses for vacations or 13th month salary.

In Figure 5 and Figure 6 we depict the effect of the reform on the individual budget constraint set and utility maximizing choices in the (c, z) space. Utility increases with disposable income c (as disposable income funds consumption) and decreases with z (as labor supply is costly). To simplify the analysis, we focus on a single worker without any children. Before the reform, a worker with these characteristics and gross monthly earnings greater than AR\$ 8,360 was subject to the income tax. This first kink is shown in the figures at $8.3k$. Without loss of generality, we also assume that the first tax bracket goes beyond the $15k$ cutoff.¹⁰

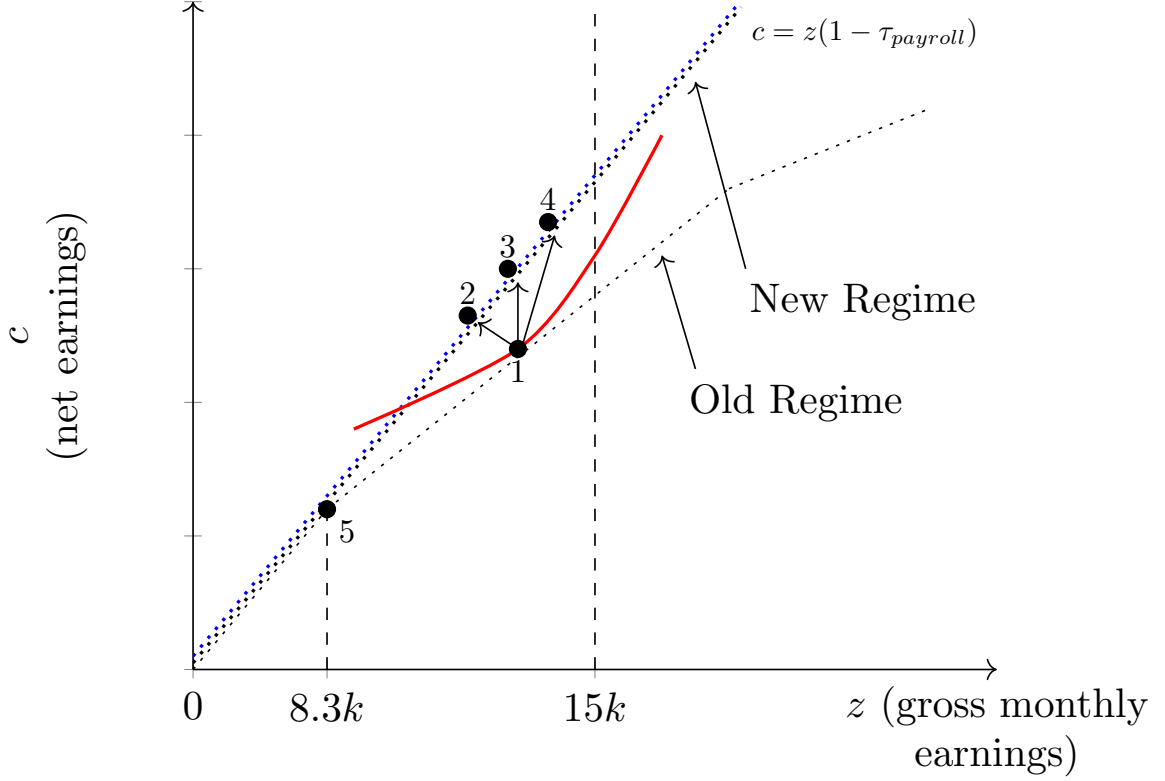
Figure 5 shows the predicted effects of the reform for individuals whose (highest) gross monthly salary accrued between January and August 2013 was below AR\$ 15,000. These wage earners were fully exempt from the income tax from September 2013 onwards, regardless of subsequent earnings. Along the intensive margin, workers with gross monthly earnings below $8.3k$ were not paying income taxes before the reform and thus are unaffected. Workers with pre-reform earnings between $8.3k$ and $15k$ experience a decrease in marginal income tax rates from $\tau > 0$ to $\tau = 0$ so that their net-of-income-tax rate increases from $1 - \tau$ to 1. Their budget set shifts upwards from the black solid line to the blue line. This will create a substitution and income effect. The substitution effect increases hours of work and hence gross earnings. Intuitively, individuals have incentives to work more hours or accept promotions because they can keep the full payment. However, holding everything else constant, workers maximizing utility in $z \in (8.3k, 15k]$ will get a higher take-home pay now. Thus, income effect reduces hours of work and hence gross earnings. For example, the worker maximizing utility at point 1 could end up in points like 2, 3, or 4. Thus, the effect of the tax break on earnings for this group of workers is ambiguous. Finally, note that workers bunching at the first kink $8.3k$ (i.e. maximizing at point 5) experience a substitution effect that will push them to work more hours (or report higher earnings). This implies that after the reform we should expect bunching at the first kink to decrease substantially.

Figure 6 shows the predicted effects of the reform for individuals whose (highest) gross monthly salary accrued between January and August 2013 was between AR\$ 15,001 and AR\$ 25,000. In this case, the reform increased the minimum non taxable income 20% from $8.3k$ to $10k$, hence shifting outward the kink point in the budget set where the income marginal income tax rate starts.¹¹ Workers with pre-reform earnings between $15k$ and $25k$

¹⁰In Table 3 below we show the tax schedule for 2013 with corresponding marginal tax rates for workers earning between $8.3k$ and $25k$.

¹¹The 20% increase in personal exemptions corresponds to deductions for spouse, children, and a special deduction for wage earners.

Figure 5: Conceptual Framework, Case 1:
Single worker without children and $\max\{earnings|Jan\ to\ Aug\ 2013\} \leq 15k$



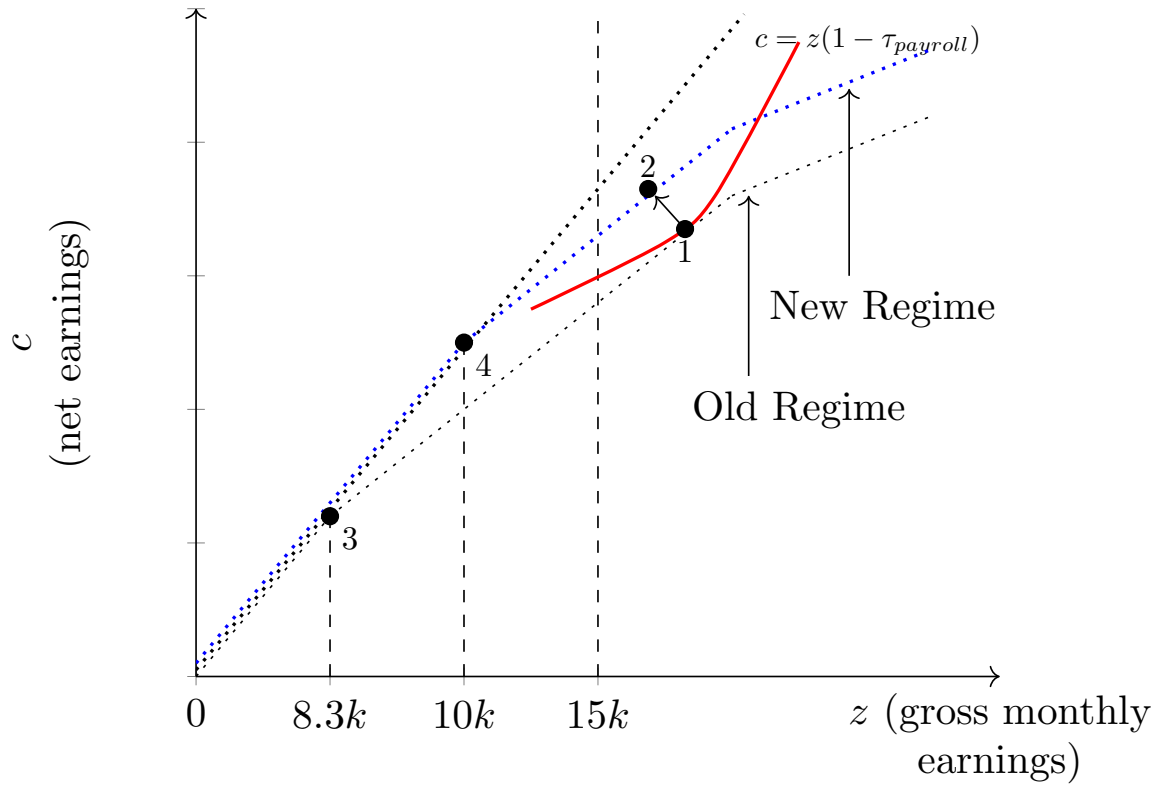
Notes: The figure displays the effects of the 2013 income tax reform in Argentina on the monthly budget constraint of single salaried workers with no children. The x-axis represents gross monthly earnings (including employee payroll taxes). The y-axis represents net monthly earnings (earnings net of both payroll and income taxes). The black solid line is the old regime budget and the blue solid line is the new regime budget. The first kink denoted by $8.3k$ corresponds to AR\$ 8,360 as of August 2013.

experience no changes in marginal income tax rates and therefore substitution effect is zero. However, holding everything else constant, workers maximizing utility in $z \in (15k, 25k]$ will get a higher take-home pay now. Thus, income effect reduces hours of work and hence gross earnings. For example, the worker maximizing utility at point 1 would go to a point like 2. Finally, note that the first kink moved from $8.3k$ to $10k$ (point 3 to 4). However, this change should not matter for the analysis as, by definition, this group of workers were making more than $15k$ before the reform.

Finally, workers whose (highest) gross monthly salary accrued between January and

Figure 6: Conceptual Framework, Case 2:

Single worker without children and $15k < \max\{\text{earnings}|\text{Jan to Aug 2013}\} \leq 25k$



Notes: The figure displays the effects of the 2013 income tax reform in Argentina on the monthly budget constraint of single salaried workers with no children. The x-axis represents gross monthly earnings (including employee payroll taxes). The y-axis represents net monthly earnings (earnings net of both payroll and income taxes). The black solid line is the old regime budget and the blue solid line is the new regime budget. The first kink denoted by $8.3k$ corresponds to AR\$ 8,360 as of August 2013. The second kink denoted by $10k$ corresponds to AR\$ 10,032 starting in September 2013.

August 2013 was greater than AR\$ 25,001 were not affected by the reform.¹²

¹²In fact, this groups of workers experience an increase in average tax rates due to inflation and the “bracket creep”. In this case, the substitution effect will reduce hours of work and hence gross earnings. But income effect will push them to work more hours.

3 Data

For the empirical analysis we use the administrative databases from the Social Security (“Sistema Integrado Previsional Argentino”, SIPA) provided by the Ministry of Labor, Employment and Social Security, the labor agency in Argentina. These are social security records of all employer-employee links. We used a particular version of SIPA database, which follows the jobs (worker in a firm) providing the level of wages for that job at a monthly level. From this source we can follow the full working history of workers, month by month, from January 1995 to May 2016. This allowed us to generate variables related to the jobs previous to the tax reform, and to identify declared re-employment jobs. In 2013, the year of the reform, the dataset included more than 6 million salaried workers and around 400 thousands firms. All of these data have two types of identification numbers: CUIL, which identifies workers, and CUIT, which identifies the firm(s) where they work. Another variables contained in the data are: gross monthly salary, age, gender, indicator for private employee, 4-digit industry code, geographic location. Unfortunately, at this point it is not possible to decompose the gross salary into its different components such as bonuses, overtime pay, vacations and 13th salary.

At this stage, all the results in this paper draw on a random sample of roughly 3% of the full population. This is only for computational limitations in dealing with the whole universe of workers. We are currently working to extend the analysis to the universe of salaried workers and the results will soon be available.

Table 2 reports some summary statistics for all private and public workers, and for three groups of workers based on the running variable: (1) workers between $10k$ and $15k$; (2) workers between $15k$ and $25k$; (3) workers between $25k$ and $40k$. We can see that about 16% of total wage earners went from paying income taxes before August 2013 to none taxes after that date, and about 11% of total wage earners received a partial tax cut due to the 20% increase in personal exemptions. These two groups of workers belong to the 8th and 9th decile. Hence, this reform mainly affected upper earning workers.

4 Empirical Strategy and Results

As the August 2013 reform was based on gross monthly earnings accrued between January and August of that year, our empirical analysis compares labor market outcomes after the reform based on these earnings. The reform created a sharp discontinuity on tax liabilities depending on whether wage earners were below or above the $15k$ and $25k$ cutoffs. This feature leads naturally to a regression discontinuity design (RDD). The basic idea is to

Table 2: Summary Statistics of Wage Earners in Argentina (3% random sample)

	Group 1: 10k-15k	Group 2: 15k-25k	Group 3: 25k-40k	All
	(1)	(2)	(3)	(4)
Percent of salaried workers	0.161	0.108	0.038	1
Decile of max wage Jan-Aug 2013	8	9	10	1 to 10
Average gross earnings Aug 2013	10,737	15,737	23,182	9,215
Average gross earnings Aug 2014	14,845	21,299	31,097	12,400
Average gross earnings Aug 2015	20,142	28,724	41,126	16,447
Percent female	0.389	0.335	0.285	0.403
Percent public employee	0.356	0.371	0.340	0.296
Average age	41.3	43.4	44.1	37.2
Number of jobs	1.03	1.07	1.08	0.73
Percent with multiple jobs	0.074	0.103	0.124	0.049
Number of observations	50,632	34,081	12,093	314,766

Note: This table displays summary mean statistics for private and public wage earners.

compare wage earners just above and just below the thresholds (15k and 25k) to infer the causal effect of the tax break. This design is appealing because it is relatively simple and transparent. Therefore, we will identify tax effects by running regressions of the form:

$$Y_i = \alpha + \beta \cdot 1(R_i \leq c) + \sum_{k=1}^K \gamma_{0k} \cdot (R_i - c)^k + \sum_{k=1}^K \gamma_{1k} \cdot 1(R_i \leq c)(R_i - c)^k + e_i \quad (1)$$

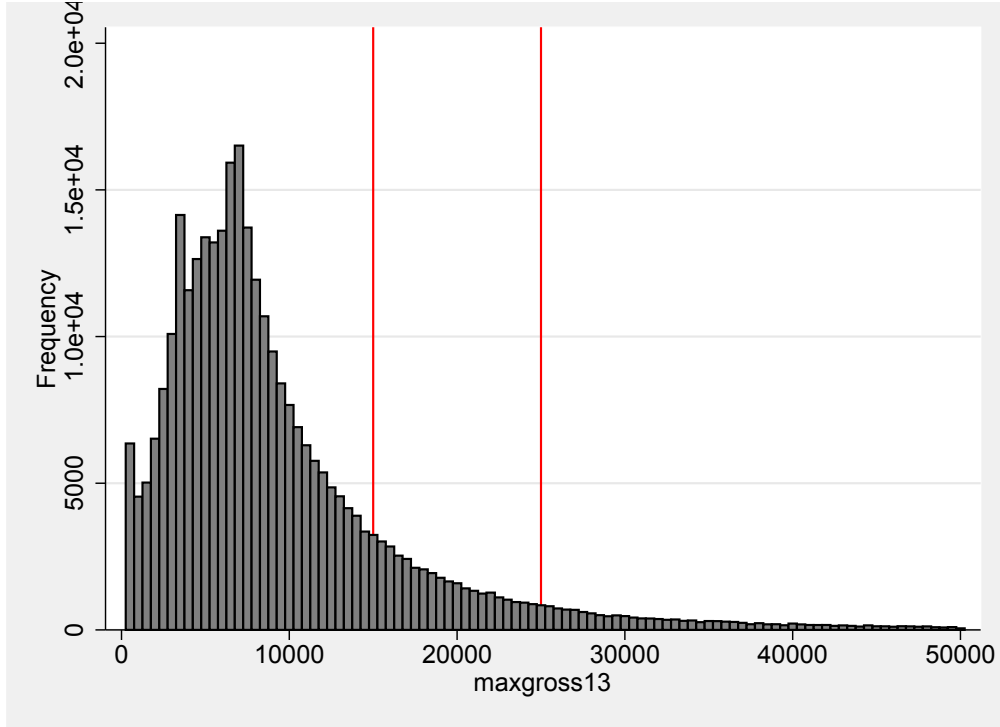
where Y_i denotes gross earnings for worker i in any month after the reform, R_i is our running variable defined as $R_i \equiv \max\{Y_i \text{ in Jan-Aug 2013}\}$, and $c = 15k, 25k$ are the cutoffs. The coefficient of interest capturing the effect of the discontinuity at $c = 15k$ is β . A simple way to illustrate the RDD is to plot average outcome Y_i by bins of our running variable R_i and draw the quadratic fit below and above the cutoffs. Intuitively, the treatment may be as good as randomly assigned for individuals in the neighborhood of $R_i = c$, so comparing treated and nontreated reveals a treatment effect (i.e. the effect of a large tax break on earnings labor supply).

4.1 Identification Checks

A fundamental RD identifying assumption is that $1(R_i \leq c)$ must be as good as randomly assigned in the neighborhood of $R_i = c$. This may be violated if individuals can exactly control the value of R_i and therefore the location relative to the threshold. If individuals are

strategically locating above or below the threshold, we would expect bunching on whichever side of the discontinuity is preferable (in this case the left side). In Figure 7 we visually test for this threat. The figure plots the distribution of the highest gross monthly salary between January and August 2013. Reassuringly, wage earners are not sorting in the neighborhood of the threshold. Specifically, we observe no spike in the number of wage earners just below 15k and 25k.

Figure 7: Identification Check: Density of $\max\{earnings|Jan\ to\ Aug\ 2013\}$ around 15k and 25k



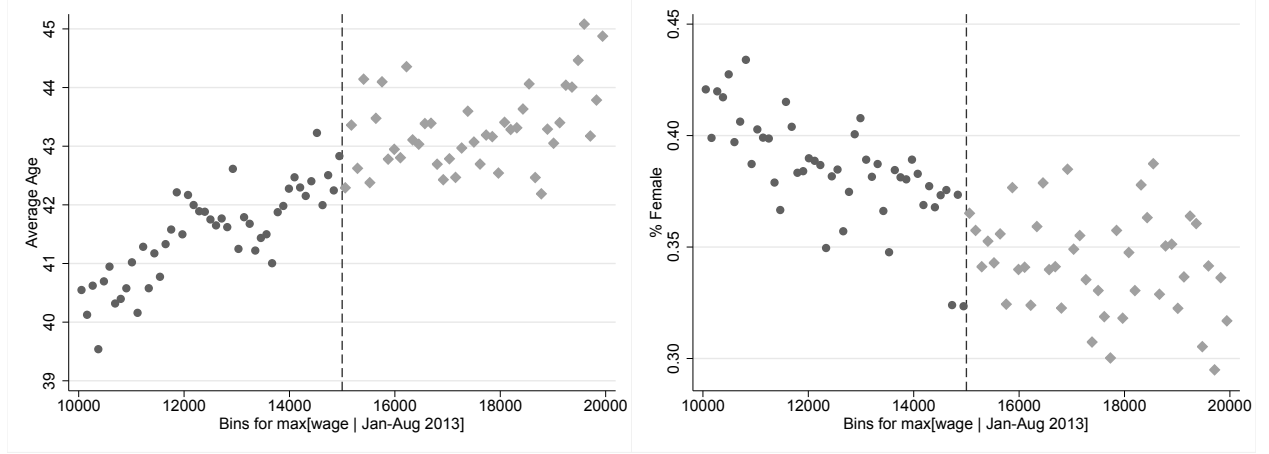
Note: this figure displays the distribution of the highest gross monthly salary between January and August 2013. This is our running variable to be used in the RDD analysis. The vertical lines denote the two key thresholds, AR\$ 15,000 and AR\$ 25,000.

Similarly, a key requirement for identification is that the workers just below and just above the cutoffs are comparable. If people are not sorting in the neighborhood of the threshold, we would expect distributions of observed characteristics X_i to be smooth. This motivates a check for whether there is a discontinuity in average X_i at $R_i = c$. In Figure 8 we show, however, that there is no discontinuity in the age and gender of wage earners at the reform cutoff.

The graphical evidence presented suggest that workers around the cutoffs are comparable and that they could not game the law by underreporting earnings after the law was enacted

to take advantage of the tax break. This finding is crucial for the validity of the subsequent RDD analysis.

Figure 8: Identification Checks: Gender and Age Composition



(a) PANEL A: Average Age

(b) PANEL B: Fraction Female

Note: Panel A displays the age of workers (as of August 2013) by bins of our running variable. Panel B displays the fraction of female workers by bins of our running variable. Both graphs display no discontinuity at AR\$ 15,000 showing that there is no systematic difference in observable variables between wage earners just above and just below the cutoff, a requirement for the Regression Discontinuity Design to be valid.

4.2 First Stage

To formally test the first-stage effects in a regression framework, we would ideally need microdata on workers' income tax liability. Unfortunately, this information is not available in the Social Security database. In this section, we present instead suggestive evidence that the first stage ought to be large.

In Table 3 we illustrate with an example how the reform effectively created two groups of workers that coexist in the same labor market but face sharply different tax liabilities. Without loss of generality, we consider a wage earner without spouse or children earning between AR\$ 8,000 and AR\$ 26,000 in August 2013, right before the reform came into force. Each row represents an different situation. For example, as of August 2013 workers with a gross monthly wage of AR\$ 8,000 were not subject to the income tax because their income was below the non taxable income cap of AR\$ 8,360.

The main takeaway from Table 3 is that the tax break reduced substantially tax liabilities of salaried workers earning AR\$ 15,000 or less. Workers with gross monthly incomes of 14k, 15k, or 16k faced the same 27% marginal tax rate before the reform, yet were treated very

differently. For instance, while workers earning 15k saved up to 8.8% of their total annual earnings in taxes, individuals earning 16k only received a partial tax cut (20% increase in personal exemptions), and individuals earning more than 25k continued paying income taxes normally.

Table 3: First stage for a single wage earner without children, August 2013

Gross Income (1)	Gross Taxable (2)	Annual Net Taxable (3)	MTR (4)	Annual Tax Before Reform (5)	Share Tax on Earnings (6)
8k	0	0	0	0	0
9k	640	6909	hits 9%	622	0.6
10k	1640	17699	hits 14%	1978	1.8
12k	3640	39279	hits 23%	6334	4.9
14k	5640	60859	hits 27%	11332	7.5
15k	6640	71649	hits 27%	14245	8.8
16k	7640	82439	hits 27%	17159	9.9
17k	8640	93229	hits 31%	20201	11.0
20k	11640	125599	hits 35%	30460	14.1
25k	16640	179549	hits 35%	49342	18.3
26k	17640	190339	hits 35%	53119	18.9

Note: This table shows potential tax savings for a single worker without children. All the values are expressed in AR\$. Column (1) shows gross monthly earnings. Column (2) shows gross monthly taxable earnings. This is computed by subtracting personal exemptions of AR\$ 8,360 from column (1). Column (3) shows net annual taxable earnings. This is computed by multiplying column (2) by 13 (12 months plus 13th salary) and $1 - \tau_{payroll} = 0.83$ (where $\tau_{payroll} = 17\%$). Column (4) and (5) show the marginal tax rate and annual tax liability. These are obtained by taking the value in column (3) to the PIT schedule in Table 1. Column (6) shows the participation of income tax liabilities on gross annual earnings (net of payroll taxes).

4.3 Earnings Labor Supply

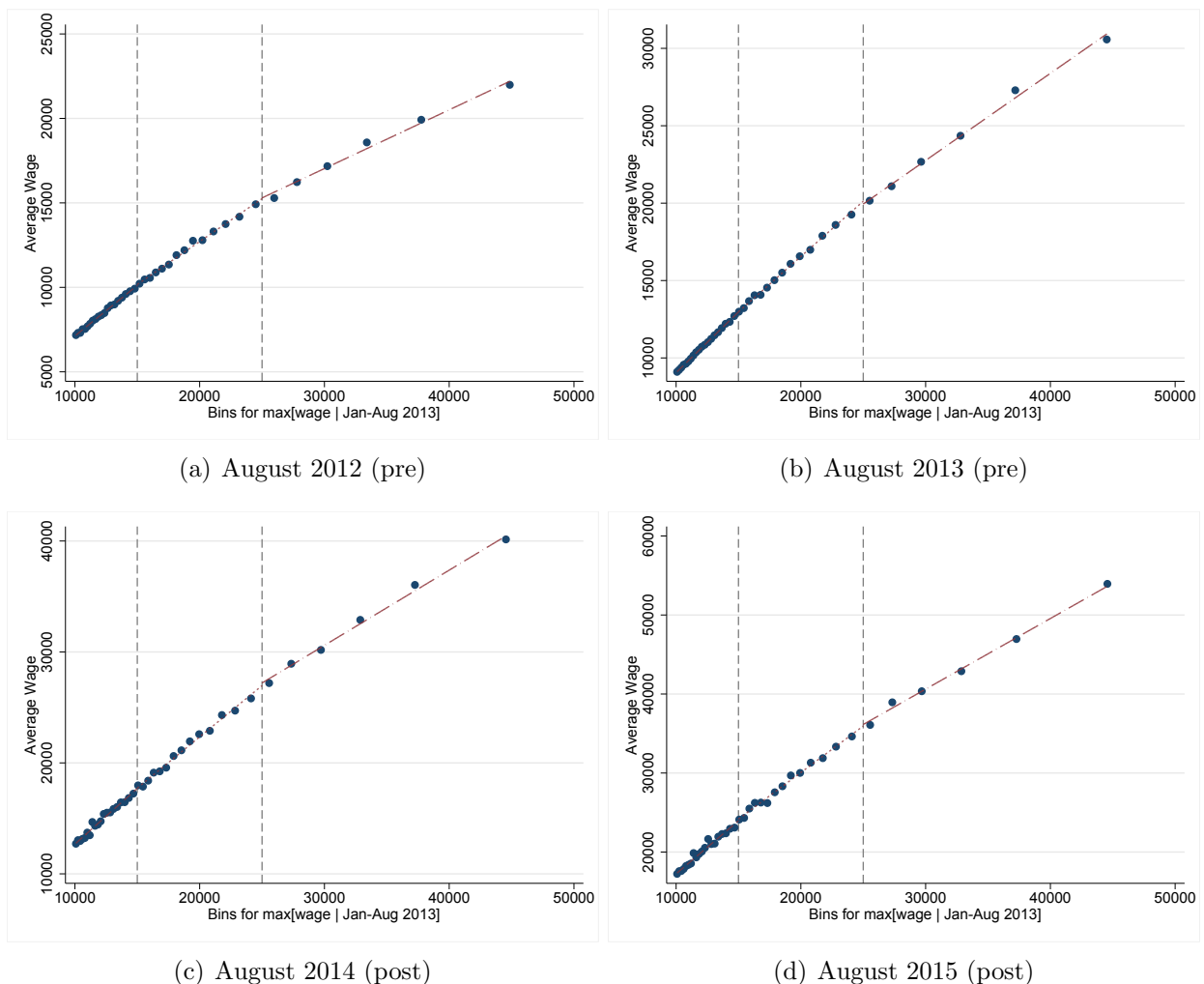
4.4 Intensive Responses

Individuals can respond to taxation through many margins such as hours of work, intensity of work, career choices, form and timing of compensation, tax avoidance, or tax evasion. In this section we focus on a broader concept of income, gross monthly salary, which captures all these margins of response.¹³

¹³Our data allow us to study intensive labor supply decisions along other dimensions such as overtime pay and multiple jobs. We are working to incorporate these results.

Figure 9 displays average gross monthly earnings by bins of our running variable. Recall that the running variable is defined as $R_i \equiv \max\{Y_i \text{ in Jan-Aug 2013}\}$. Reassuringly, Panels (a) and (b) show that there is no discontinuity in gross earnings in August 2012 and 2013, this is before the reform came into force. Most important, Panels (c) and (d) show that there is no visible discontinuity at the cutoffs, suggesting that high earners did not respond to the tax cut.

Figure 9: Binned scatterplots of gross monthly w and $\max\{w|\text{Jan-Aug '13}\}$ (RDD)

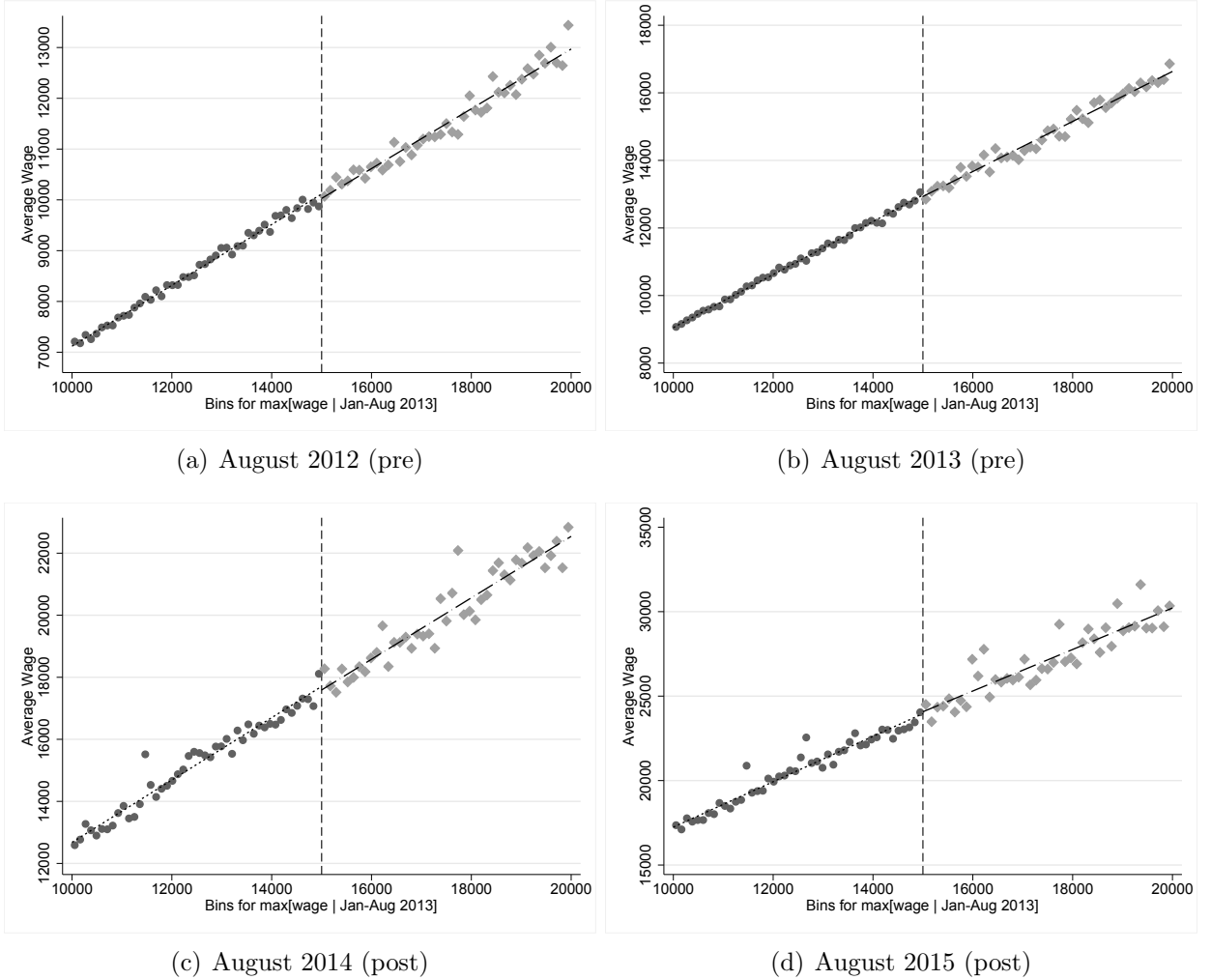


Note: This graph plots average gross monthly earnings by bins of our running variable, R_i . None of the graphs display a significant discontinuity at AR\$ 15,000 or AR\$ 25,000 showing that there is no intensive labor supply response to the tax cut.

We also perform two robustness checks. In Figure 10 we repeat the analysis by zooming into the AR\$ 15,000 cutoff. In Figure 11 we overlap these results in order to hold the scale constant. In Figure 12 we repeat for women who presumably have more flexibility to adjust

labor supply in the labor market. Again, there is no visual evidence of a discontinuity at the cutoff.

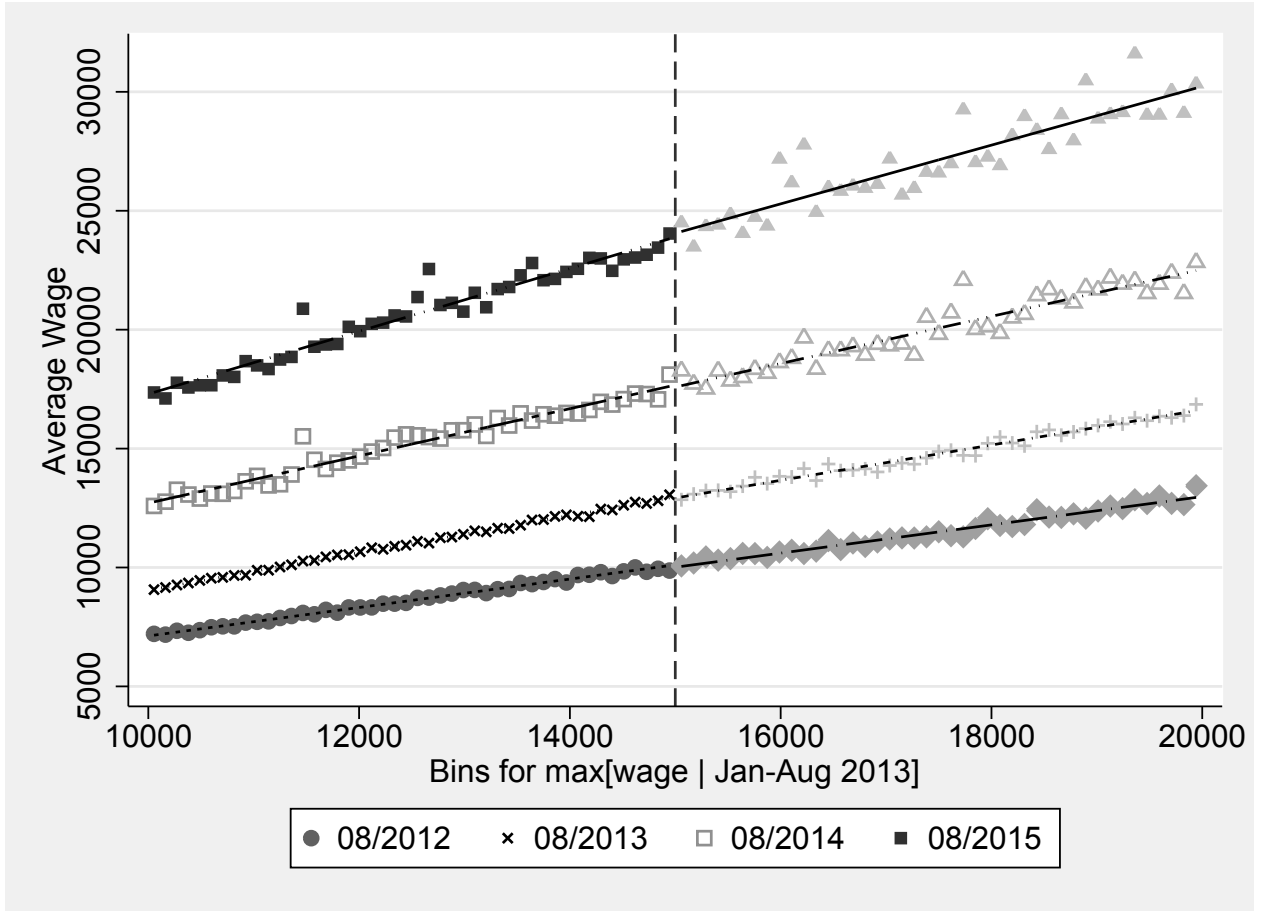
Figure 10: Binned scatterplots of gross monthly w and $\max\{w|\text{Jan-Aug '13}\}$ (RDD)



Note: This graph plots average gross monthly earnings by bins of our running variable, R_i . None of the graphs display a significant discontinuity at AR\$ 15,000 showing that there is no intensive labor supply response to the tax cut.

Our results are consistent with the paper by Saez (2010) who finds that labor supply responses are mostly concentrated among self-employed workers but not among wage earners, for which the implied elasticity is zero and precisely estimated. One potential explanation could be that wage earners may have a very low intensive elasticity of earnings with respect to marginal tax rates. Another explanation is that wage earners face large adjustment costs to changing labor supply (such as finding a new job, adjusting hours of work, etc.), which create a slow dynamic response to the tax cut (Saez, 2010).

Figure 11: Binned scatterplots of gross monthly w and $\max\{w|\text{Jan-Aug '13}\}$ (RDD)



Note: This graph plots average gross monthly earnings by bins of our running variable, R_i . There is no significant discontinuity at AR\$ 15,000 showing that there is no intensive labor supply response to the tax cut.

This result strikes us as remarkable given the size and saliency of the tax cut. This finding could imply that the costs of raising taxes in Argentina are not large. However, as pointed by Waseem (2016), this conclusion might be misleading as in an environment characterized by low evasion costs the greatest part of the excess burden is produced when the tax rate increases marginally above zero. Hence, the next step of our study would be to incorporate extensive margin responses.

4.5 Extensive Responses

[IN PROGRESS]

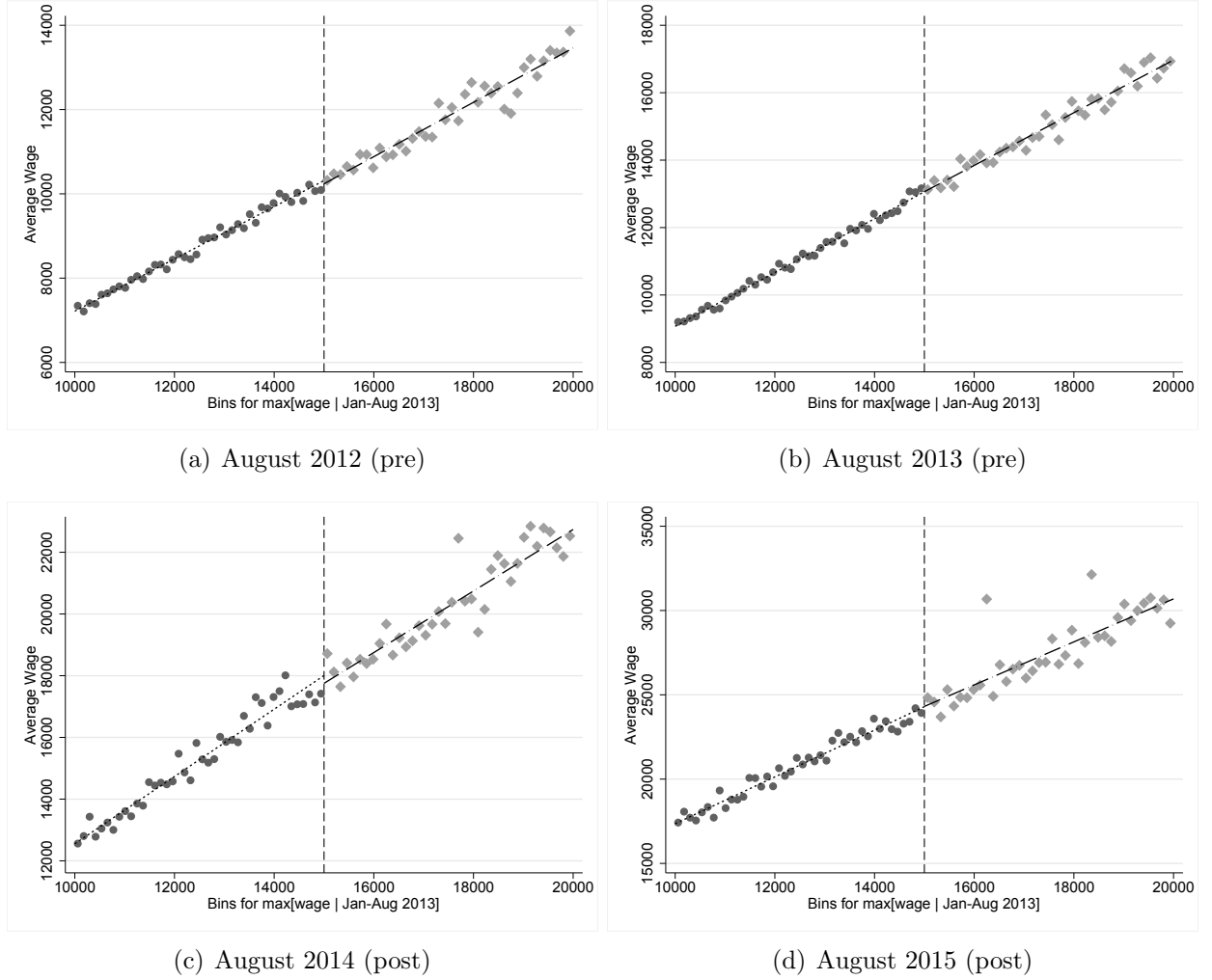
5 Final Remarks

Argentina implemented a large and salient income tax cut for wage earners in 2013 that lasted two and a half years. This tax break was intended to increase the progressivity that the income tax lost during the 2000s due to the growing inflation. This paper used a regression discontinuity design and administrative data from Argentina to analyze earnings labor supply responses of salaried workers. We estimate that the tax cut caused no change in gross monthly earnings of workers around the discontinuity. Anecdotic evidence of an immediate decrease in tax liabilities confirms salience and relevance. Our findings could imply that the costs of raising income taxes in Argentina are not large, at least for the intensive margin. External validity remains an open question.

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Figure 12: Binned scatterplots of gross monthly w and $\max\{w|\text{Jan-Aug '13}\}$ (RDD) - FEMALE



Note: This graph plots average gross monthly earnings by bins of our running variable, R_i . This is done for the sample of working women. None of the graphs display a significant discontinuity at AR\$ 15,000 showing that there is no intensive labor supply response to the tax cut.