Increasing Retirement Savings through Access Points and Persuasive Messages: Evidence from Mexico*

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We study transaction costs for making deposits within the privatized pension system in Mexico. We analyze an expansion of access channels for additional (voluntary) contributions at 7-Eleven stores, followed by a media campaign providing information on this policy and persuasive messages to save. We estimate a differential 6-9% increase in the volume of transactions post-policy in municipalities with 7-Eleven relative to those without. However, due to smaller deposits compared to pre-policy sizes, we find modest effects on the flow of savings. Contribution size was not just smaller for marginal savers, but also decreased significantly for some inframarginal savers.

JEL codes: D14, D83, G23
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1 Introduction

As individuals are living longer, adequate retirement savings are paramount (OECD, 2019). These savings are distinct from regular (precautionary) savings in at least two ways: funds are usually costly to withdraw pre-retirement and individuals need foresight for long-term planning. Defined contribution (DC) plans have garnered attention as many privatized pension systems worldwide have shifted away from defined benefit plans (Pallares-Miralles et al., 2012). DC plans allow more flexibility to accommodate income fluctuations and savings preferences (Benartzi and Thaler, 2013; Choi, 2015), but require some worker sophistication since the risk of not saving enough falls on workers themselves (Clark et al., 2017).

Low retirement savings may be due to hassle and non-pecuniary costs of enrolling and making deposits, as well as other frictions, such as time inconsistency and inertia (Karlan and Morduch, 2010; Handel and Schwartzstein, 2018), which may affect both extensive and intensive margins.[1] It may also be that workers simply do not care about savings or expect to rely on informal retirement plans like family networks (Banerjee et al., 2014). Under DC plans in settings with underdeveloped financial markets, both the volume and value of retirement savings may matter. While the relevance of value is clear, nudging towards a higher volume of transactions may be an important way of engaging workers that are, for various reasons, not actively leveraging features of DC plans.

In this paper, we analyze a policy that mainly decreased transaction costs to study how workers changed their savings behavior and identify both average effects and impacts for the inframarginal savers. Our institutional setting corresponds to voluntary contributions (or top-up contributions) to the privatized social security system of DC plans in Mexico.

In 1997, Mexico transitioned to a privatized DC pension system. Apart from mandatory contributions for formal workers, all registered individuals may also choose to make addi-

[1] Heuristics that have been analyzed include inertia (Choi et al., 2003, 2005), loss aversion (Benartzi and Thaler, 1995; Looney and Hardin, 2009), time inconsistency (Choi et al., 2011; Beshears et al., 2020), peer effects (Beshears et al., 2015), information and complexity (Beshears et al., 2013; Hastings and Tejeda-Ashton, 2008; Iyengar et al., 2004), and even grammatical features of language (Chen, 2013).

tional deposits called voluntary savings. The objective is to allow workers to save more and compensate for long absences from the formal labor market. Although workers are allowed to make withdrawals before retirement, this is rarely the case due to tax liabilities and access costs.[2] Prior to the policies we analyze, workers could make voluntary contributions through direct payroll deductions or by contacting their fund manager directly.

To facilitate deposits, the regulatory agency CONSAR (National Commission of the Retirement Savings System) made voluntary savings deposits available at 7-Eleven convenience stores starting in October 2014. The minimum deposit amount was 50 pesos (3.70 USD; 1 USD=13.5 pesos) and there was no processing fee for workers. Nine months later, CONSAR ran a 6-month long nationwide, non-branded TV and radio ad campaign. The ads informed of the 7-Eleven access channel expansion, emphasized small contribution sizes, and presented a persuasive message – without financial information on fund managers or income replacement rates – to nudge workers toward increasing voluntary contributions.

We use detailed administrative records of all voluntary contributions over a 43-month period to analyze workers' responses to the policy in terms of voluntary transaction volume and value. We exploit geographic variation in 7-Eleven's market presence to identify the causal effect of the policy in a difference-in-differences (DiD) specification. Although municipalities with 7-Eleven stores are observably different from those without, our identification strategy relies on assuming similar trends in the outcomes across both groups of municipalities pre-policy. We present event study plots and robustness checks that lend credibility to our empirical approach. Since the ad campaign was nationwide, we cannot cleanly identify its marginal effect separately from the 7-Eleven access expansion.

We present two main results. First, we find a positive effect of the policy on both the number of workers making voluntary contributions and the total number of voluntary contributions, which is consistent with transaction costs playing a role in access to deposits pre-policy. Specifically, we estimate that the number of workers making at least one vol-

[2]In our data, an average of 7.5 workers in a given municipality-month make withdrawals, with a median of zero. The median number of worker accounts per municipality is 523.

untary contribution in a given municipality-month increased by 9% on average in 7-Eleven municipalities in the post-policy period relative to municipalities without 7-Eleven stores. Moreover, the number of voluntary contributions increased by 6%. A simple calculation indicates that the policy-induced increase in transaction volume was 4-6% of the counterfactual volume of voluntary savings.

Second, we find a positive but imprecisely estimated impact on the value of voluntary contributions. On average, the flow amount contributed voluntarily in a given municipality-month increased by around 4%, with significant estimates when including controls and under alternative measures. This tempered effect in total savings despite important effects in the number of savers and contributions is due to both compositional effects (i.e., new savers are different from existing savers) and changes in behavior of existing savers. Indeed, the average size of contributions made by marginal savers was half the amount of those for workers already making contributions pre-policy. However, we also find that some existing savers reduced their amount contributed: inframarginal savers that were making infrequent but large contributions shifted towards more frequent but much smaller amounts, leading to a 17% significant decline in their flow amount contributed. In all, we calculate that the average voluntary contribution size fell by 5%.

We emphasize two takeaways. First, an at-scale policy that mainly decreased transaction costs for deposits and was then followed by a persuasive media message nudged workers to start making voluntary contributions to their retirement accounts, consistent with these costs playing a role in access to deposits at baseline. Second, inframarginal savers that were more likely constrained by transaction costs based on their number of contributions pre-policy shifted towards more frequent but much smaller contributions, leading to a decline in their flow amount contributed. This suggests that policy effects are tempered not just by who the marginal saver is, but also by responses of the inframarginal savers.

This paper contributes to two strands of the literature. The first studies individual choices in DC plans and emphasizes enrollment barriers (Madrian and Shea, 2001; Carroll

et al., 2009) and inertia or switching costs (Luco, 2019; Chetty et al., 2014; Illanes, 2016). We add to this literature by focusing on transaction costs for making additional deposits to individual retirement accounts. In our setting, as in many other developing countries with DC plans, these types of contributions are particularly important for workers with long absences from the formal labor market. Our results also speak to studies analyzing unintended consequences of behavioral interventions in pension plans, such as low savings due to reluctance to opt out of low default contribution rates (Beshears et al., 2009).

The second literature relates to savings in underdeveloped financial markets. Many papers focus on barriers to providing access to the unbanked (Dupas et al., 2018; Prina, 2015; Burgess and Pande, 2005; Cole et al., 2011), though others study transaction costs for bank account holders (Schaner, 2017; Bachas et al., 2017). Our paper is distinct by focusing on transaction costs for retirement accounts. Similar to Bruhn and Love (2014), we explore a policy that expanded agent banking, adding to our understanding of exploiting existing networks to reach a large segment of the population.[3] Lastly, we focus on a nationwide policy for which we can observe relevant outcomes beyond the immediate period post-intervention, up to 22 months after implementation of the policy.[4]

2 Context

2.1 Privatized Social Security in Mexico

In 1997, Mexico transitioned from a pay-as-you-go pension system to privatized individual retirement accounts. The government agency CONSAR oversees these DC plans. Workers choose from a small set of government-approved private fund managers, called AFORES (Re-

[3] Agent banking is when financial services are provided by non-bank agents, such as post offices (Aportela, 1999) or retailers (Buri et al., 2020). Bruhn and Love (2014) studies an expansion of bank services provided at a Mexican retailer. The authors focus on outcomes related to income and labor market activity. While both savings and loan products were offered, the authors' findings (i.e., higher employment and informal market entrepreneurship) are likely tied to the credit aspect of the retailer's services.

[4] Most interventions in these settings, which tend to be experimental, focus only on short-run outcomes, though some studies – such as Schaner (2018) and De Mel et al. (2013) – have analyzed longer time spans.

tirement Funds Managers), which generally offer a relatively homogeneous financial product due to regulations that limit the riskiness of investment portfolios (Duarte and Hastings, 2012; Hastings et al., 2017).[5] In 2014, returns ranged from 6 to 12% for the riskier portfolio automatically assigned to workers ages 36 and under, and from 5 to 9% for the least risky financial products automatically assigned to workers over age 59.[6]

The individual retirement fund is made up of three separate accounts: (i) the main account, which corresponds to mandatory contributions for workers in the formal sector,[7] (ii) a housing fund administered by INFONAVIT, the Mexican federal institute for workers' housing,[8] and (iii) voluntary savings, which are any additional contributions made by workers, kept separate from mandatory contributions but assigned the same rate of return. Any registered worker, regardless of employment status, may make voluntary contributions, which are tax deductible. Although workers are allowed to withdraw voluntary savings, in practice we observe very few withdrawals, perhaps because of access costs and tax liabilities for pre-retirement withdrawals.

Access to financial services in Mexico is limited and returns are fairly low. Only 36% of the adult population has a savings, payroll or investment account in a formal banking institution, and most savings products offer returns below inflation (Peña et al., 2014).[9] Given these limited options for savings, voluntary contributions are perhaps the most attractive choice for a majority of workers in terms of access and returns, although low withdrawal rates suggest that these are long-term (retirement) savings.

[5]Nevertheless, heterogeneity in labor supply decisions leads to considerable variation in terms of which may be the optimal investment decision. Duarte and Hastings (2012) and Hastings et al. (2017) characterize this heterogeneity and the complexity involved in each worker's decision-making process.

[6]See, for example, https://www.dineroenimagen.com/2014-08-06/41473 (accessed October 23, 2018).

[7]Workers contribute 1.125% of their wage, employers 5.15%, and the federal government 0.225% plus an additional 5.5% of the general minimum wage. A worker's base salary may be lower than the full wage she receives due to underreporting to social security by employers (Kumler et al., 2013).

[8]Employers in the formal economy contribute 5% of the base salary. This money may be accessed through mortgage loans from INFONAVIT. If workers do not use this money, the total amount is added to the main account upon retirement.

[9]For instance, in 2014, banks offered an average yearly rate of 2.35%, and up to 3.75% for larger amounts of at least 5 to 10 million pesos (370 to 740 thousand USD), lower than the 4% inflation rate. See, for example, http://www.elfinanciero.com.mx/archivo/quien-paga-mas-por-el-dinero (accessed October 23, 2018).

2.2 Policies Incentivizing Voluntary Contributions

The first workers to retire under this new system will do so in 2022, with estimated income replacement rates of around 40%, with many workers well below that (Villagómez, 2014).[10] Low contribution rates, low base salaries, and extended absences from formal employment are all important challenges in this system.[11] While voluntary contributions are a potentially attractive feature of the Mexican DC plan, in practice only a little over 1% of workers actually make use of it. In an effort to increase savings and engagement, CONSAR implemented the two policies that we study. Inducing voluntary contributions on the extensive and intensive margins are seen by CONSAR as potential solutions for increasing pension funds.[12]

Prior to October 2014, workers could make voluntary contributions by asking their employer to automatically deduct from their payroll or by contacting their AFORE representative directly.[13] Starting on October 6, 2014, CONSAR made deposits of voluntary savings available at all 7-Eleven convenience stores. Requirements were to deposit at least 50 pesos (3.70 USD) by providing one's national id number to the cashier.[14] The store charges CONSAR a fixed fee of 4 pesos per deposit, but importantly, workers do not pay it themselves. 7-Eleven has over 1,800 locations in Mexico, distributed across 13 out of 32 states.

Following this access channel expansion, CONSAR ran a national media campaign from July to December 2015.[15] This non-branded advertising consisted of radio and TV ads with a catchy jingle, urging workers to increase their voluntary savings and depicting the

[10] Requirements for retirement are a work history of at least 1,250 weeks and a minimum age of 65. See https://www.gob.mx/cms/uploads/attachment/file/503385/1_Apuntes_SAR_Edad_de_retiro.pdf (accessed March 9, 2021).

[11] In many contexts, including the US, low worker participation rates and low contributions are a well-documented barrier to adequate savings (Skinner, 2007; Benartzi and Thaler, 2013).

[12] See, for example, https://www.gob.mx/consar/articulos/beneficios-del-ahorro-voluntario and https://www.forbes.com.mx/mitos-realidades-del-ahorro-voluntario-las-afore/ (accessed February 25, 2021).

[13] Starting in June 2014, workers could also make electronic bank transfers. However, this is not a sizable channel, as there are only 35 million bank accounts and 5 million Internet users in Mexico, from a total population of 110 million, according to the government statistics office INEGI.

[14] To be clear, the 50 peso minimum was also in place for the status quo methods prior to this policy, although it was not common for workers to choose smaller amounts.

[15] A similar but shorter month-long campaign ran in March 2016.

possibility of doing so at 7-Eleven locations.[16] Appendix Figure A1 shows still images from the television ad and Table A1 provides the full text of the message.

The ads consisted of three elements: (i) information about the 7-Eleven access expansion, (ii) emphasis on small contributions, and (iii) reminders to save for retirement. Importantly, the ads did *not* provide any financial information about AFORES or expected income replacement rates. Hence, we refer to the media campaign as a persuasive message without financial information, even if the ads did provide information about the 7-Eleven policy.

Additional access channel expansions occurred after 2014, including Telecomm (a government agency offering basic financial and telegraph services) in June 2015, convenience store Circle-K in February 2016, and Bansefi (a public development bank) in August 2016. However, the volume of voluntary contributions at these other locations is much smaller than at 7-Eleven (see appendix Figure A2). We discuss implications for the empirics in Section 4.

3 Data

We obtained anonymized account-level data from CONSAR covering January 2013 to July 2016. The data include all accounts with at least one voluntary contribution over this period from the universe of 19 million active worker accounts.[17] This gives us a total of 201,565 accounts, from which 75,998 had at least one voluntary contribution prior to October 2014, when 7-Eleven access began. From the remaining 18.8 million worker accounts without voluntary contributions over these 43 months, we obtain a 10% random sample for computational purposes (1,886,907 accounts).

For each account, we observe all voluntary contribution transactions, including the date and amount contributed. We also observe individual-level characteristics (gender, date of

[16] The main TV ad is available from the Nielsen-Ibope advertisement archive (http://youspot.ibopeagb.com.mx) under ad identification number 228053. A version with English subtitles is available at https://www.youtube.com/watch?v=uSdOpwVJy1o (accessed April 4, 2018).

[17] CONSAR has a total of 54 million accounts. However, over 35 million are inactive because of sustained absences from the labor market due to a null labor supply, workers entering the informal labor market, or international migration.

birth, state and municipality of residence, and registration year), as well as each worker's balance in each savings account in March and September of every year. The municipality of residence is only available for the last quarter of 2015, which means we cannot observe workers switching locations over time. We eliminate workers with inconsistent gender, date of birth, place of residence, and registration year values within account ids (3% of the data).

Table 1 presents summary statistics for these worker accounts, differentiating between accounts with voluntary contributions prior to 7-Eleven access (which we call *early savers*), accounts with voluntary contributions post-policy (*policy savers*), and accounts without voluntary contributions in this period (*never savers*). We further distinguish early savers by their number of contributions pre-policy, stratifying into high and low activity using the mean.[18] Early savers are much more active making voluntary contributions than policy savers. However, average voluntary savings are similar between the early savers with low pre-policy activity and the policy savers. Early savers that were very active pre-policy tend to be younger, more likely to be female, and have a larger balance in their main account, indicating higher wages.

Table 2 zooms in on descriptive statistics of the early savers during the pre-policy period. By construction, the high activity early savers have a larger number of transactions over this period, as well as more months with voluntary contributions. There is also a larger total amount contributed, which translates into a larger average contribution size for the low activity group (1,624 pesos for the high activity early savers versus 11,519 pesos for the low activity sample), suggesting that transaction costs may be higher for them.[19]

We collapse these data to obtain a balanced panel of municipality-months using the workers' municipality of residence, which is the level of policy exposure. We add a roster of 7-Eleven stores obtained from CONSAR, using locations from the pre-policy period. Figure 1 shows the geographic distribution of 7-Eleven presence. Out of 2,298 municipalities with

[18]Results are robust to stratifying on the median. We show results by quartile of pre-policy contributions in the online appendix.

[19]Contribution sizes at baseline were larger than those at 7-Eleven post-policy (appendix Figure A3).

at least one active worker account, 7-Eleven is present in 84 of them.[20] However, 45% of workers (8,271,542 accounts) live in municipalities with 7-Eleven presence. Our empirical strategy will exploit this geographic variation to identify the causal effect of the policies.

Using data from the 2010 census, Table 3 documents important differences in observable characteristics of municipalities by 7-Eleven presence. In particular, 7-Eleven municipalities have a larger population that is more educated, more likely to be employed, more likely to have healthcare coverage, and more likely to live in homes with access to basic services like electricity, piped water, and sewerage, as well as technological amenities like cellphones and an internet connection (see appendix Table A2 for additional statistics). Given that, on average, 7-Eleven municipalities have about 12 times more population, 50% more years of education, and 20% more employment, our identifying assumption below will rely critically on similar trends over time between these two groups, regardless of the level differences.

4 Empirical Strategy

4.1 Raw Data Trends

Figure 2 plots municipality-level aggregates of raw outcomes over time by 7-Eleven presence. Appendix Figure A4 shows analogous graphs under the inverse hyperbolic sine transformation of the outcomes. We highlight three relevant time periods: (i) October 2014 to June 2015, when 7-Eleven access began, (ii) July to December 2015, when the access expansion was bundled with non-branded advertising, and (iii) January to July 2016, when the ad campaign was no longer in effect.

We show two measures of transaction volume. Figure 2a considers the total number of active worker accounts that made at least one voluntary contribution in a given month. There is a level difference between these groups of municipalities at baseline, with 7-Eleven

[20] Although there are around 2,500 municipalities in total, some of them do not have any active worker accounts. These are mostly very rural, poor and small municipalities (Table A2).

municipalities having more workers making at least one contribution in any given month. The time series suggests very similar time trends pre-policy, and a widening difference post-policy, which seems more obvious during the media campaign. Figure 2b shows a similar graph for the total number of voluntary contributions made in a given month.

For the value of transactions, Figure 2c presents the total amount contributed voluntarily in thousands of Mexican pesos. The time series shows a similar pattern to the previous plots, although the difference between the groups of municipalities is not as stark post-policy. Lastly, Figure 2d considers the average size of contributions, which appears to decrease in 7-Eleven municipalities post-policy.[21]

4.2 Identification Strategy

The empirical strategy to identify the effect of the policies on voluntary savings is a difference-in-differences (DiD) specification. For a balanced panel of municipality-months, we compare changes over time for relevant outcomes in 7-Eleven municipalities relative to changes over time in non-7-Eleven municipalities. Formally, we estimate the following equation:

$$y_{mt} = \beta(\mathbb{1}_{[\text{7-Eleven}]_m} \times \mathbb{1}_{[\text{post-policy}]_t}) + \gamma_m + \theta_t + \varepsilon_{mt} \tag{1}$$

where y_{mt} is an outcome for municipality m in period t; $\mathbb{1}_{[\text{7-Eleven}]_m}$ is an indicator for whether municipality m has 7-Eleven market presence; $\mathbb{1}_{[\text{post-policy}]_t}$ is an indicator for the post-policy period starting in October 2014; γ_m are municipality fixed effects (FE); θ_t are time period FE (i.e., month-year FE); and ε_{mt} is the idiosyncratic error term.

Regressions are weighted by the number of active accounts prior to October 2014 in each municipality (Angrist and Pischke, 2008).[22] Results are robust to alternative weighting

[21] Appendix Figures A5-A8 complement these plots with histograms of the outcome variables pre- and post-policy in 7-Eleven municipalities.

[22] We classify an account as being active prior to October 2014 if there is at least one non-zero balance in the main account in March 2013, September 2013, March 2014, and September 2014. This excludes accounts that were created or activated post-policy. We use sampling weights to calculate the total number of accounts from the sample that never made voluntary contributions over this time period.

variables and to not using weights. Standard errors are clustered at the municipality level to allow for serial correlation in the unobserved component within municipalities, the level at which exposure varies.

We focus on transaction volume and value as the outcomes of interest, calculating these flow variables at the municipality-month level. We transform the outcome variables using the inverse hyperbolic sine, which has a functional form similar to the natural log but is well-defined at zero.[23] Hence, we interpret the estimates as approximate percentage changes.

The municipality FE imply that we effectively identify coefficients from variation within municipalities over time. This addresses any time-invariant differences between municipalities with and without 7-Eleven stores, such as the fact that the former are more urban than the latter. The month-year FE address any common trends in voluntary contributions over time, including yearly seasonality in income and savings behavior.

In order to show the full dynamic effects of the policy interventions and distinguish effects before, during and after the ad campaign, we also present event study plots from estimating the following equation:

$$y_{mt} = \sum_{k=1}^{T} \beta_k (\mathbb{1}_{[\text{7-Eleven}]_m} \times \mathbb{1}_{[t=k]}) + \gamma_m + \theta_t + \nu_{mt} \tag{2}$$

where $\mathbb{1}_{[t=k]}$ is an indicator for time period k, T represents the total number of periods, ν_{mt} is the error term, and everything else is as defined above.

Threats to Identification

The main identifying assumption for our DiD is that changes in outcomes in non-7-Eleven municipalities are a reasonable counterfactual of what would have occurred in municipalities with 7-Eleven access in the absence of the policies (Angrist and Pischke, 2008). With the

[23] Specifically, the inverse hyperbolic sine of z is defined as $\text{arcsinh}(z) = \ln(z + \sqrt{z^2 + 1})$. For these municipality-level aggregates, we need only consider the accounts with at least one voluntary contribution throughout our sample period. Estimates are qualitatively similar to specifications that use municipality averages instead, including the accounts that had no voluntary contributions.

inclusion of time and unit FE, the fundamental source of omitted variable bias are time-varying factors at the municipality level.

One concern could be that the effects reflect differential trends by urbanicity, given that 7-Eleven municipalities are on average more urban. We address this by presenting a specification that includes a differential linear trend for each category of a four-tier urbanicity classification in equation 1, as well as further restricting to non-rural municipalities. We also present estimates including a differential trend for 7-Eleven municipalities (Bilinski and Hatfield, 2018). Furthermore, we show that once we account for the level differences in outcomes pre-policy (as shown in Figure 2), observable characteristics at the municipality level do not predict much of the variation in our outcomes (appendix Figure A9).

Event study plots allow us to visually inspect the common trends assumption. We present further tests in the online appendix – discussed in Section 5 – by estimating a series of falsification tests using the pre-policy periods only and by estimating differential linear, quadratic, and cubic pre-trends in the pre-policy data.

Another concern could be that other firms and institutions (Telecomm, Circle-K, and Bansefi) began accepting voluntary contributions after 7-Eleven. Using available state-level information, Figure A10 shows the relationship between 7-Eleven presence and these organizations. Telecomm and Bansefi, both government agencies, have locations in all 32 states, while Circle-K is present in 22 states (11 of which coincide with 7-Eleven). We address this concern by showing robustness of leave-one-out estimates in the online appendix.

Telecomm access was also explicitly mentioned in the ads, although featured less prominently than 7-Eleven. Using publicly available, municipality-level data on Telecomm locations, we show in the online appendix that Telecomm is present in almost all municipalities and that the number of locations is not strongly correlated with the number of 7-Eleven stores (Figure A11). Hence, we cannot use a similar DiD strategy to identify effects due to Telecomm accepting deposits. Furthermore, Telecomm transactions are not sizable: 83% of voluntary contributions at new access channels are at 7-Eleven relative to just 14% at

Telecomm (Figure A2). As long as the Telecomm effect is not larger in 7-Eleven municipalities, our estimates will be, if anything, downward-biased. We provide further evidence in favor of the 7-Eleven effect in the online appendix (and discuss in Section 5) by exploiting variation in policy exposure based on the number of stores.

Additional checks are presented in the online appendix. We verify that effects are not driven by differential sorting of workers due to the policy by using workers' place of birth instead of residence to assign exposure status. We also check that there are no differential labor supply changes that may be confounding our estimates. Lastly, we also rule out the unlikely possibility that 7-Eleven expanded differentially in response to the policy. Although we use 7-Eleven presence pre-policy in our estimations, we further show that 7-Eleven did not expand into states where they previously had no stores and that the number of locations per state did not change much (appendix Figure A12).

5 Average Impacts on Voluntary Contributions

Transaction Volume. We first show estimates for outcomes related to the volume of voluntary contributions. All outcomes are transformed using the inverse hyperbolic sine, which allows us to interpret coefficients as approximate percentage changes. Our two measures of the flow of transaction volume are given by the total number of workers making at least one voluntary contribution in a given municipality-month (voluntary savers) and the total number of transactions in a municipality-month (voluntary contributions).

Table 4 presents DiD estimates based on equation 1. Column 1 shows that, relative to municipalities without 7-Eleven presence, the number of voluntary savers in a given month increased by 9% on average relative to the pre-policy period. Column 5 shows a 6% relative increase in the number of voluntary contributions. Both effects are statistically significant. Given the realized values, the policy-induced flow represents 6.4% and 4.3% of the counter-

factual voluntary savers and contributions, respectively, absent the policy.[24] We interpret our DiD estimates as intent-to-treat since we cannot observe which workers in a 7-Eleven municipality were actually treatable (e.g., live or work relatively close to a 7-Eleven). These DiD estimates are a lower bound on the treatment-on-the-treated effect.

Since 7-Eleven stores tend to locate in more urban areas (see appendix Table A2), one may worry about differential urban trends in savings behavior. We address this concern in the remaining columns of Table 4. Columns 2 and 6 add a linear trend by interacting a continuous time variable with indicators for each of a four-tier classification of urbanicity.[25] Columns 3 and 7 additionally drop all rural municipalities. Columns 4 and 8 instead add a quadratic treatment-specific trend. Across specifications we find similar results: voluntary savers increased significantly by 8-12% and contributions by 6-8%.

We complement these DiD estimates with event study plots shown in Figure 3. We graph the estimates from equation 2 with 95% confidence intervals, treating September 2014 – the month prior to the 7-Eleven access policy – as the reference period. The panel on the right corresponds to voluntary savers, while the one on the left shows voluntary contributions. These event studies allow us to visually inspect the parallel trends assumption, as well as the post-policy dynamics. In particular, we distinguish between the access-only period, the ad campaign, and the post-campaign period.

Figure 3 shows that the positive impacts on voluntary savers and contributions accrue slowly during the 7-Eleven access period prior to the ads. The effects then seem to stabilize and are maintained during the seven months post-campaign available in our data.[26] This pattern is consistent with both a gradual adoption of the new access channel and with the ads themselves affecting savings behavior. We discuss this further below. In all, we

[24] In levels, we can attribute on average 10 additional workers making at least one voluntary contribution in a given municipality-month due to the policy. The median number of worker accounts per municipality is 523. We also attribute to the policy an average of 11 additional voluntary transactions per municipality-month. These numbers match up fairly well with the observed transactions made at 7-Eleven.

[25] The 2010 Mexican census considers four types of regions by population: rural (<2,500), semiurban (2,500-15,000), urban (15,000-100,000), and metropolitan (>100,000).

[26] Appendix Table A3 shows DiD estimates for each post-policy period, showing small and weak effects during the access-only period (before the ads) and large and significant effects during and after the campaign.

estimate a 17% increase in voluntary savers and a 12% increase in contributions 15 months after the policy.[27] These plots also show relatively flat estimates for the pre-policy period, most of which are statistically indistinguishable from zero, providing reassurance that the identification assumption holds. We provide additional evidence in favor of the parallel trends assumption in the online appendix and discuss it below.

Transaction Value. Our main outcome of interest is the inverse hyperbolic sine of the total flow amount (in thousands of Mexican pesos) contributed voluntarily in a given municipality-month. Table 5 presents DiD estimates in columns 1-4, corresponding to the baseline equation and subsequent urbanicity controls as described above for Table 4. Point estimates are positive, in the range of 4-9%, but relatively imprecise, with significant effects only in columns 2 and 3. Here, the policy-induced flow represents between 3.4% and 7.9% of the counterfactual flow amount contributed absent the policy.[28]

To get a better grasp on these effects, we present additional measures. Column 5 considers an indicator for whether the total amount contributed voluntarily in a given municipality-month is above the municipality-specific pre-policy median amount. The coefficient shows that flow amounts in 7-Eleven municipalities are 11 percentage points significantly more likely to be above the pre-policy median. Column 6 calculates the z-score of the amount, by subtracting the municipality-specific mean and dividing by the standard deviation, yielding a positive and significant estimate. Column 7 refers to the amount contributed per 10,000 active worker accounts, showing a significant increase of 9,500 pesos per 10,000 workers in 7-Eleven municipalities post-policy. Lastly, column 8 considers the inverse hyperbolic sine of the average size of deposits, showing a significant 5% decline.[29] This suggests that although transaction volume increased, the effects on transaction value were diminished by inducing

[27] These estimates correspond to the pooled coefficients for the seven months post-campaign in Figure 3.

[28] In levels, we identify that the policy is associated with an additional 26 to 58 thousand pesos contributed voluntarily in a given municipality-month, or roughly between 1,900 and 4,300 USD.

[29] Appendix Figure A13 shows DiD effects separately for different bin sizes of contribution amounts, indicating a significant increase in the probability of making very small contributions (under 100 pesos).

smaller contribution sizes.[30] Indeed, recall from Table 1 that the average contribution size of policy-induced (marginal) savers is half the size of workers with contributions pre-policy. Hence, at least part of this result is explained by selection of the marginal savers.

Figure 4 shows event study plots for the flow amount contributed and the average size of contributions. For the former, estimates are very noisy, while for the latter the negative effects on contribution size appear to kick in around the time of the ad campaign.[31] Overall, these plots also show that there is no evident differential pre-trend in the outcomes.

Robustness checks. We present a series of robustness checks in the online appendix. First, we provide additional evidence in favor of the common trends assumption. Using pre-policy data only, Table A4 shows estimates of a linear, quadratic and cubic trend specific to 7-Eleven municipalities, with point estimates that are small and mostly statistically indistinguishable from zero across outcomes. Figure A15 shows falsification tests with permutations of the policy date in the pre-policy data. We plot the DiD estimates and t-statistics, showing mostly small and insignificant effects. Together with the event study plots, these results lend credibility to our empirical approach.

Second, we show event study plots for alternative measures of transaction volume and value. Figure A16 considers the four main outcomes in levels (untransformed), and Figure A17 shows voluntary savers and contributions per 10,000 accounts and the three additional measures of amount contributed included in Table 5. All plots are broadly consistent with the findings reported above.

Third, we ask whether results are driven by a few municipalities alone. Figure A18 plots DiD estimates leaving out one of the 84 7-Eleven municipalities at a time for the four main outcomes, showing that results are stable. Table A5 considers alternative estimation weights,

[30] Appendix Figure A14 shows quantile treatment effects for the four main outcomes. We follow Callaway and Li (2019) to estimate these effects within our DiD models. Results for transaction volume suggest positive effects are concentrated in the upper half of the distribution. Estimates for the amount contributed are negative in the bottom of the distribution and insignificant at the top. Lastly, the declines in the size of contributions are larger in the bottom part of the distribution.

[31] Appendix Table A3 complements these plots with DiD estimates for each post-policy period, with larger and stronger effects during and after the ad campaign.

substituting worker accounts with total population and omitting weights altogether. Point estimates here are larger and stronger.

Fourth, we use different measures of 7-Eleven exposure instead of our binary presence indicator. We consider 7-Eleven density, stores per capita, and market share, with Figure A19 showing the distribution of each measure. We report DiD estimates in Table A6 and event study plots in Figures A20 to A22. Results are fairly robust, especially for the transaction volume outcomes.

Fifth, we assign treatment status based on workers' place of birth instead of residence. Unfortunately, we only observe birthplace at the state level. Figures A23 and A24 show the distribution and relationship between workers' state of birth and residence. Table A7 reports state-level DiD estimates under either assignment, with similar results across outcomes.

Lastly, we present event study plots for additional outcomes. Figure A25 shows two measures of withdrawals of voluntary savings, which we only observe twice per year. We find no evidence of more withdrawals, with some significant declines in withdrawal activity starting in September 2015. This suggests that our estimated impacts on voluntary savings are actually retirement savings and not short-term savings, at least for the months we observe. Figure A26 shows null effects for a variety of labor supply measures, indicating that the changes in voluntary savings are not driven by changes in employment status.

Potential effects of the ads. Our findings indicate a gradual change in outcomes post-policy, with larger and stable effects during and after the media campaign. This may suggest that the ads allowed workers to learn about the 7-Eleven channel, while also providing persuasive reminders to save for retirement. Alternatively, it is possible that individuals simply needed time to experience and build trust in this channel, with the media campaign playing no role. While we cannot cleanly estimate the effect of the ads separately from the 7-Eleven policy, we present some suggestive evidence which may be in line with the former explanation, though we cannot distinguish clearly between the two.

Since the ad campaign was nationwide, we exploit state-level data from the 2014 Module on Availability and Use of Information Technologies at Home (MODUTIH) and the fact that government ads are only broadcast on national TV as a source of variation for exposure. We measure cable TV penetration as the share of televisions with cable in a state. Unfortunately, the MODUTIH survey does not include respondents' municipality of residence. States with low cable TV penetration (below the median) likely experienced a higher exposure to the ads since national broadcasting stations were required by law to air the ads. We stratify our municipality-level sample by state-level exposure to the ads and estimate a regression similar to equation 1 but distinguishing between the three post-policy periods.

Appendix Figure A27 shows the results. Point estimates for low and high exposure states are fairly similar during the access-only period (prior to the ad campaign). Point estimates in states with high exposure to the ads are larger during and after the campaign than in states with low exposure. This may suggest that the ads indeed had a direct effect on savings behavior. However, we caution that standard errors do not allow us to consistently reject that effect sizes are the same across both groups and we cannot discard gradual learning.

Heterogeneous effects. We calculate municipality-month aggregates by worker characteristics to explore heterogeneous effects. First, we construct a proxy of workers' wages from the main contribution flows, which may be an underestimate since it is common for employers to register workers with lower wages than what they actually earn (Kumler et al., 2013). Figure A28 in the online appendix shows the distribution of estimated wages. Table A8 reports the DiD estimates, stratifying by the median wage. Effects are larger and stronger for workers with lower wages.

Second, we stratify workers by the median of their main account balance prior to the policy. A higher balance may reflect both higher wages and a longer work history in the formal sector. Figure A29 plots the distribution. Table A9 shows larger and stronger estimates for workers with a lower main account balance at baseline.

Third, we classify workers based on when they registered with social security. Since workers registered before 1997 will not retire under the privatized system, we use this year to stratify the sample. Figure A30 shows the distribution of this variable and its relationship to age. Table A10 indicates that effects are larger among workers that registered post-1997.

Fourth, we create four groups based on workers' age at baseline and plot the DiD estimates in Figure A31. Effects are strongest among the youngest group (under 30 years old), smaller for those between 30 and 64 years old, and close to zero and insignificant for non-retired workers 65 and over. Lastly, Table A11 shows larger effects for men than women.

Spillover effects. The 7-Eleven access channel may crowd out contributions through other channels. Alternatively, there may be positive spillovers due to salience. We present DiD estimates restricting to status quo (non-7-Eleven) contribution methods for workers already active pre-policy (early savers). Online appendix Table A12 shows a slightly significant 3-4% increase in the number of workers making at least one contribution through these channels and in the total flow of contributions. This is accompanied by small, negative but insignificant coefficients for measures of transaction value. Overall, these results suggest little crowding out of savings via status quo channels, with some evidence perhaps of positive spillovers instead. We cannot observe savings outside the pension system and therefore effects on total savings behavior, including precautionary (non-retirement) savings.

6 Effects for Workers Active Pre-Policy

The average effects above show a strong increase in the volume of voluntary transactions, but weak effects on transaction value. Results suggest that the volume effects are offset to a large degree by changes in the composition of contributions, which skew smaller post-policy. This is probably not surprising since contributions of the marginal saver are smaller and these workers differ from those already making contributions pre-policy. We now turn our attention to this group of workers.

Table 6 presents DiD estimates of the effect of the policy on workers that were already making voluntary contributions at baseline (early savers). We show estimates for the full sample of early savers as well as stratifying into two groups based on the average number of voluntary transactions during the pre-policy months. We call these high and low activity early savers. As before, we use data from these workers to aggregate up to a municipality-month balanced panel.

Panel I of Table 6 corresponds to our transaction volume outcomes. We find that the number of workers among these early savers making at least one voluntary contribution in a given month significantly increased by 3.7% (column 1) and the total number of contributions by 4.5% (column 4). Panel II shows our measures of transaction value. The point estimates for both total amount contributed and the average size of contributions in columns 7 and 10 are negative and insignificant.

Splitting the sample of early savers by pre-policy activity, we find small and statistically insignificant effects for the high activity group across all four outcomes. For the low activity group, we find positive and sizable point estimates in the transaction volume variables, although the standard errors are quite large. We also find large and statistically significant declines in transaction value for this group. The total flow amount contributed decreased by 17.4% in 7-Eleven municipalities post-policy relative to those without 7-Eleven for these workers, and the average size of contributions went down by 23.1%. This translates into an average decline in the flow of contributions of about 71 thousand pesos per municipality-month or about one tenth of the average total amount contributed voluntarily per month in municipalities with 7-Eleven presence.

To show a more granular parsing of the data, Figure 5 presents estimates by quartile of the number of pre-policy contributions. Positive effects on transaction volume seem to be concentrated in the second quartile of pre-policy activity. More importantly, we find that the negative effects on transaction value are increasing with pre-policy activity, with null effects in the last quartile.

We complement these findings with event study plots in Figure 6. The square markers correspond to early savers with high levels of voluntary savings activity pre-policy while the circles represent those with low levels of activity. The plots show little action for the high activity group. For the low activity group, there are sizable declines in the transaction value measures post-policy.

Appendix Figure A32 shows event studies for the pooled sample of early savers. We also show regressions using account-level data for early savers in Table A13. These results echo the findings presented here, with large and significant increases in transaction volume and declines in value for the low activity early savers.

Although high activity early savers had, by construction, a higher number of voluntary contributions pre-policy, their contribution sizes pre-policy were much smaller than the low activity group (Table 1). Effectively, the high activity group was characterized by many small-sized contributions that amount to a smaller monthly quantity compared to the low activity group that has fewer but larger contributions. Decreasing transaction costs via the 7-Eleven channel does not appear to matter for the latter group that was already incurring in the status quo transaction costs on a more regular basis. However, for the low activity group, the policy allowed them to shift to more frequent but much smaller deposits. This highlights a trade-off between the intensive and extensive margin effects of certain policies: lowering transaction costs and providing information and reminders may increase take-up among workers already practicing a given behavior, but at a lower intensity than before. Overall, this led to a decrease in the flow amount saved for these workers relative to the counterfactual.

7 Conclusion

This paper studies a policy that expanded access channels for making deposits to retirement savings accounts in Mexico. We find an increase in the volume of transactions post-policy,

but modest effects on the value of transactions, driven by a decline in the average contribution size. While one might expect that marginal savers would make smaller contributions, we also find that some of the workers already making deposits at baseline significantly decreased their contribution size. Hence, the policy seems to have had the intended impact nudging workers without contributions to make deposits, but unintended effects on workers already actively engaging with their DC plan.

For interpretation, we stress that usage of these voluntary accounts is relatively uncommon. Hence, these effects are unlikely to translate into large changes in retirement savings for the majority of the worker population. However, given that our DiD approach essentially identifies an intent-to-treat effect, the treatment-on-the-treated effect or per capita impact is likely to be significantly larger.

From a policy perspective, our results emphasize the trade-off between extensive and intensive margin responses of marginal and inframarginal savers. Policy-makers affecting behavior in the former group may be inducing countervailing responses in the latter. We stress three caveats and outstanding questions. First, we cannot isolate the marginal effect of the ad campaign that followed the access expansion. Second, as is often the case, we cannot observe total worker savings (outside the pension system) and, therefore, potential crowd-out effects. Lastly, we cannot estimate the impact on pension value at retirement which is ultimately the first-order long-run outcome of interest.

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Tables and Figures

Table 1:
Worker account descriptive statistics

	Early savers				
	All	High activity	Low activity	Policy savers	Never savers
	(1)	(2)	(3)	(4)	(5)
Share female	0.37	0.41	0.36	0.39	0.36
	(0.48)	(0.49)	(0.48)	(0.49)	(0.48)
Age in January 2013	45.17	41.75	46.24	39.47	35.05
	(13.02)	(10.90)	(13.44)	(12.39)	(11.34)
Year of affiliation	1989	1992	1988	1995	1998
	(12.79)	(10.96)	(13.20)	(12.49)	(10.73)
Account balance March 2013 (MXN):					
Main account	163,709.17	224,878.42	144,686.98	172,064.91	74,487.55
	(222,100.11)	(235,839.34)	(214,120.06)	(409,014.06)	(114,560.10)
Housing account	49,616.61	72,699.14	42,438.48	38,835.66	21,630.35
	(89,752.20)	(105,813.66)	(82,834.90)	(71,491.02)	(41,646.79)
Voluntary contributions	28,531.07	31,896.86	27,484.38	2,502.49	188.94
	(102,709.52)	(98,147.72)	(104,066.05)	(14,335.78)	(1,573.48)
Account balance March 2016 (MXN):					
Main account	198,155.62	302,986.19	165,548.25	193,248.88	105,497.47
	(270,970.19)	(300,918.44)	(252,225.00)	(358,993.25)	(145,531.95)
Housing account	60,050.61	93,783.98	49,557.90	51,776.32	30,475.60
	(112,250.80)	(136,671.44)	(101,220.89)	(89,359.50)	(52,752.00)
Voluntary contributions	50,546.48	62,295.08	46,892.09	20,006.54	818.66
	(168,267.00)	(173,939.16)	(166,295.72)	(66,449.52)	(5,901.13)
Months with voluntary contributions	7.91	23.93	2.93	2.25	0.00
	(11.50)	(13.14)	(3.86)	(3.53)	(0.00)
Total voluntary contributions	13.20	43.54	3.77	3.62	0.00
	(24.78)	(35.19)	(6.69)	(7.61)	(0.00)
Total amount contributed	40.15	63.78	32.80	11.87	0.00
(1,000s MXN)	(103.11)	(155.94)	(78.42)	(40.08)	(0.00)
Average size of contribution	10.71	2.27	13.33	5.97	
(1,000s MXN)	(22.86)	(6.62)	(25.34)	(19.29)	
Total amount withdrawn	0.02	0.02	0.02	0.00	0.00
(1,000s MXN)	(0.09)	(0.08)	(0.09)	(0.01)	(0.00)
Probability of making a withdrawal	0.13	0.18	0.12	0.04	0.01
(six-month interval)	(0.15)	(0.18)	(0.14)	(0.08)	(0.05)
Total accounts	73,091	17,336	55,755	122,720	1,882,599

Notes: This table shows means and standard deviations at the worker account level, stratifying by voluntary contributions: accounts with voluntary contributions prior to October 2014 (columns 1-3), those with contributions after 7-Eleven access began (column 4), and those without any voluntary contributions (column 5). Early savers are further stratified into high and low activity based on the average number of contributions during the pre-period. We observe the universe of early savers and policy savers, but only a 10% random sample of never savers. The data span 43 months (January 2013 to July 2016). All amounts are in Mexican pesos (MXN).

Table 2:
Worker account descriptive statistics pre-policy

	Early savers		
	All	High activity	Low activity
	(1)	(2)	(3)
Months with voluntary contributions	4.56	13.72	1.71
	(5.97)	(5.96)	(1.23)
Total voluntary contributions	7.36	24.72	1.97
	(12.96)	(17.47)	(1.55)
Total amount contributed	25.53	35.68	22.37
(MXN thousands)	(62.05)	(90.52)	(49.57)
Average size of contribution	4.45	1.62	11.52
(MXN thousands)	(14.76)	(6.07)	(24.51)
Total accounts	73,091	17,336	55,755

Notes: This table shows means and standard deviations at the worker account level for accounts with voluntary contributions prior to October 2014 (early savers). We stratify into high and low activity based on the average number of contributions during the pre-period. The data spans the pre-policy period (January 2013 to September 2014). All amounts are in Mexican pesos (MXN).

Table 3:
Municipality-level descriptives by 7-Eleven presence

	7-Eleven presence in municipality	
	Yes	No
Total population, thousands	422.10	34.70
	(431.70)	(83.33)
Total households, thousands	109.43	8.56
	(110.84)	(21.08)
Urban municipal government seat	0.87	0.20
	(0.34)	(0.40)
Average years of schooling, pop. 15+	9.51	6.65
	(1.17)	(1.41)
Share employed, pop. 12+	0.52	0.44
	(0.04)	(0.06)
Share without healthcare coverage	0.29	0.38
	(0.08)	(0.17)
Share dwellings with a dirt floor	0.02	0.12
	(0.01)	(0.11)
Share dwellings with electricity	0.96	0.95
	(0.02)	(0.06)
Share dwellings with piped water	0.92	0.79
	(0.06)	(0.20)
Share dwellings with sewerage	0.94	0.75
	(0.05)	(0.23)
Share dwellings with a radio	0.82	0.69
	(0.07)	(0.14)
Share dwellings with a TV	0.95	0.81
	(0.03)	(0.16)
Share dwellings with a cellphone	0.75	0.39
	(0.07)	(0.23)
Share dwellings with internet connection	0.27	0.06
	(0.13)	(0.07)
Total convenience stores	2071.24	192.19
	(2254.19)	(475.16)
7-Eleven stores	22.07	0
	(42.48)	(0.00)
Observations	84	2,214

Notes: This table shows descriptive statistics from the 2010 census at the municipality level, distinguishing by 7-Eleven presence for all municipalities with registered worker accounts. Means and standard deviations for groups of municipalities are shown. Urban municipal government seat indicates whether population is greater than 15,000 in the town that is the administrative center of the municipality.

Table 4:
Policy effect on the volume of transactions

	Voluntary savers				Voluntary contributions			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
7-Eleven × post-access	0.0888***	0.0820***	0.0770***	0.1190***	0.0619**	0.0617**	0.0568**	0.0806**
	(0.026)	(0.027)	(0.028)	(0.034)	(0.026)	(0.027)	(0.028)	(0.034)
Observations	98,814	98,814	21,758	98,814	98,814	98,814	21,758	98,814
R-squared	0.985	0.985	0.983	0.985	0.982	0.982	0.980	0.982
Linear trends by urbanicity		X	X			X	X	
Without rural municipalities			X				X	
Treatment-specific trend				X				X
Mean dep. var. (levels)	111.2	111.2	126.8	111.2	180.1	180.1	205.6	180.1
Mean dep. var. (arcsinh)	5.40	5.40	5.54	5.40	5.89	5.89	6.02	5.89

Notes: This table shows the main results on voluntary savings transaction volume from expanding 7-Eleven access. Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. Voluntary savers are the total number of accounts in a municipality-month with at least one voluntary contribution. Voluntary contributions are the total number of contributions to voluntary accounts. The mean of the dependent variable for treatment municipalities at baseline is shown. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Urbanicity linear trends include the interaction between a continuous time variable and indicators for each of a four-tier urban/rural classification. Treatment-specific trend is a quadratic trend specific to 7-Eleven municipalities. Robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table 5:
Policy effect on the value of transactions

	Amount contributed voluntarily				$> p50$ pre-policy amount	z-score of amount	Amount per 10,000 accts.	Avg. size of contribution
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
7-Eleven × post-access	0.0386	0.0860**	0.0704*	0.0372	0.113***	0.283***	9.451***	-0.0469*
	(0.033)	(0.036)	(0.037)	(0.059)	(0.032)	(0.065)	(2.330)	(0.025)
Observations	98,814	98,814	21,758	98,814	98,814	98,814	98,814	98,814
R-squared	0.935	0.936	0.919	0.935	0.252	0.236	0.712	0.546
Linear trends by urbanicity		X	X					
Without rural municipalities			X					
Treatment-specific trend				X				
Mean dep. var. (levels)	641.2	641.2	726.5	641.2	0.5	0.3	56.5	3.1
Mean dep. var. (arcsinh)	7.16	7.16	7.28	7.16				1.85

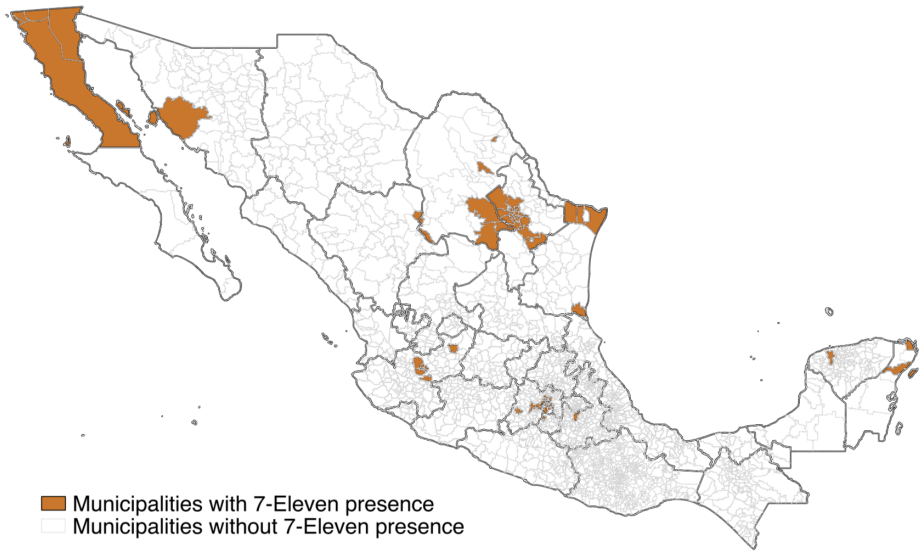
Notes: This table shows the main results on voluntary savings transaction value from expanding 7-Eleven access. Observations are at the municipality-month level. The first four columns show different specifications for the inverse hyperbolic sine of total amount contributed voluntarily (1,000s MXN) in a municipality-month. The last four columns explore alternative measures: an indicator for amounts above the pre-policy median amount, the z-score of the amount, the amount (1,000s MXN) per 10,000 active worker accounts, and the inverse hyperbolic sine of the average size (1,000s MXN) of voluntary contributions. The mean of the dependent variable for treatment municipalities at baseline is shown. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Urbanicity linear trends include the interaction between a continuous time variable and indicators for each of a four-tier urban/rural classification. Treatment-specific trend is a quadratic trend specific to 7-Eleven municipalities. Robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table 6:
Policy effects on transaction volume and value for workers with voluntary contributions pre-policy

I. Transaction volume						
	Voluntary savers			Voluntary contributions		
	Early savers	High activity	Low activity	Early savers	High activity	Low activity
	(1)	(2)	(3)	(4)	(5)	(6)
7-Eleven × post-access	0.0368**	-0.0163	0.0404	0.0453**	0.0046	0.1020*
	(0.018)	(0.016)	(0.037)	(0.020)	(0.019)	(0.053)
Observations	98,814	98,814	98,814	98,814	98,814	98,814
R-squared	0.988	0.991	0.957	0.985	0.987	0.949
Mean dep. var. (levels)	111.2	82.5	28.7	180.1	146.9	33.3
Mean dep. var. (arcsinh)	5.40	5.11	4.05	5.89	5.68	4.20
II. Transaction value						
	Amount contributed			Size of contribution		
	Early savers	High activity	Low activity	Early savers	High activity	Low activity
	(7)	(8)	(9)	(10)	(11)	(12)
7-Eleven × post-access	-0.0371	-0.0340	-0.1740***	-0.0424	0.0081	-0.2310***
	(0.038)	(0.037)	(0.062)	(0.027)	(0.026)	(0.058)
Observations	98,814	98,814	98,814	98,814	98,814	98,814
R-squared	0.936	0.954	0.881	0.580	0.588	0.642
Mean dep. var. (levels)	641.2	229.4	411.8	3.1	1.3	9.3
Mean dep. var. (arcsinh)	7.16	6.13	6.71	1.85	1.08	2.93

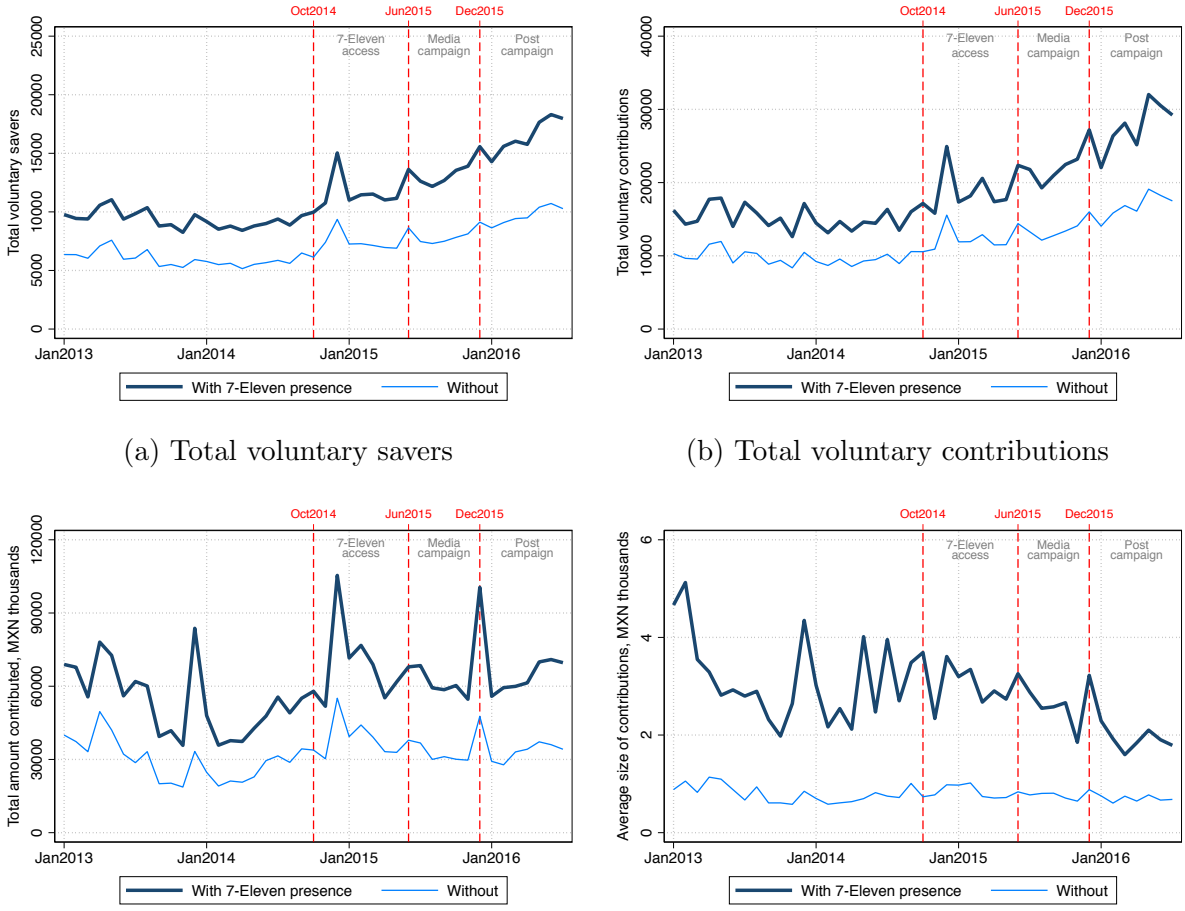
Notes: This table shows the estimates from expanding 7-Eleven access for workers with voluntary contributions pre-policy (early savers). We further disaggregate these accounts into those with high and low levels of activity based on number of transactions. Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. Voluntary savers are the total number of accounts in a municipality-month with at least one voluntary contribution. Voluntary contributions are the total number of contributions to voluntary accounts. Amount contributed is the total amount contributed voluntarily (1,000s MXN). Size of contribution is the average amount (1,000s MXN) per contribution. The mean of the dependent variable for treatment municipalities at baseline is shown. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Figure 1:
7-Eleven presence by municipality



Notes: This map shows the distribution of 7-Eleven presence in Mexico by municipality.

Figure 2:
Voluntary savings over time by 7-Eleven presence



(a) Total voluntary savers

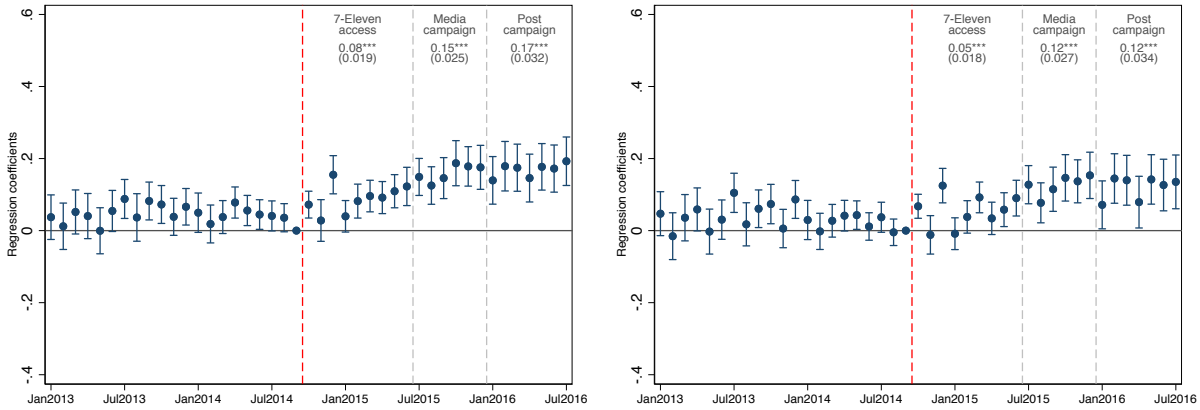
(b) Total voluntary contributions

(c) Total amount contributed (1,000s MXN)

(d) Avg. size of contributions (1,000s MXN)

Notes: These plots show the raw data, divided by municipalities with and without 7-Eleven presence. The first graph shows the total number of accounts with at least one voluntary contribution in a given month, the second graph shows the total number of voluntary contributions in a given month, the third graph shows the total amount contributed voluntarily, and the fourth graph shows the average size of contributions. The vertical lines show each of the post-policy periods: 7-Eleven access only, access during the campaign, and access after the campaign.

Figure 3:
Event study of the policy effects on transaction volume

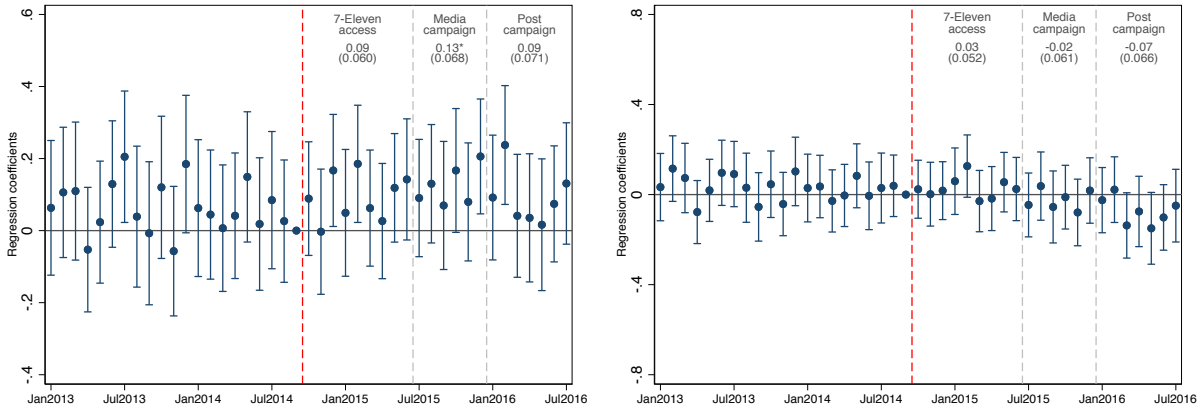


(a) Voluntary savers

(b) Voluntary contributions

Notes: These plots show event study estimates from expanding 7-Eleven access before, during, and after the media campaign. Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. The first panel shows the total number of accounts in a municipality-month with at least one voluntary contribution, and the second shows the total number of contributions to voluntary accounts. Coefficients for month indicators interacted with 7-Eleven presence are shown, from regressions that include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Bars correspond to 95% confidence intervals based on robust standard errors clustered by municipality. Pooled coefficients for each post-policy period also shown with robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

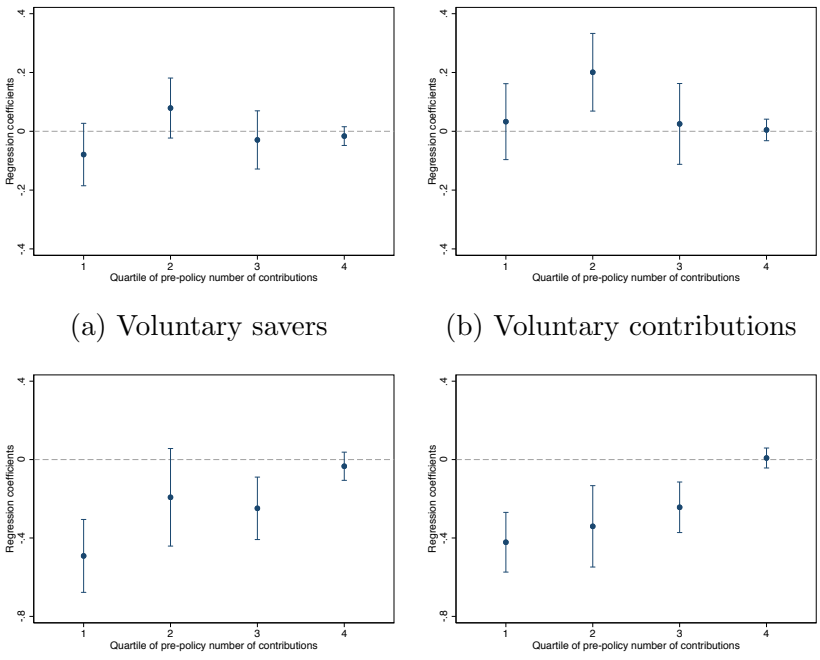
Figure 4:
Event study of the policy effects on transaction value



(a) Amount contributed voluntarily (b) Average size of contribution

Notes: These plots show event study estimates from expanding 7-Eleven access before, during, and after the media campaign. Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. The first panel shows the total amount contributed voluntarily in a municipality-month, and the second shows the average amount per contribution. Coefficients for month indicators interacted with 7-Eleven presence are shown, from regressions that include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Bars correspond to 95% confidence intervals based on robust standard errors clustered by municipality. Pooled coefficients for each post-policy period also shown with robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Figure 5:
Effects for early savers by quartiles of pre-policy activity



(a) Voluntary savers

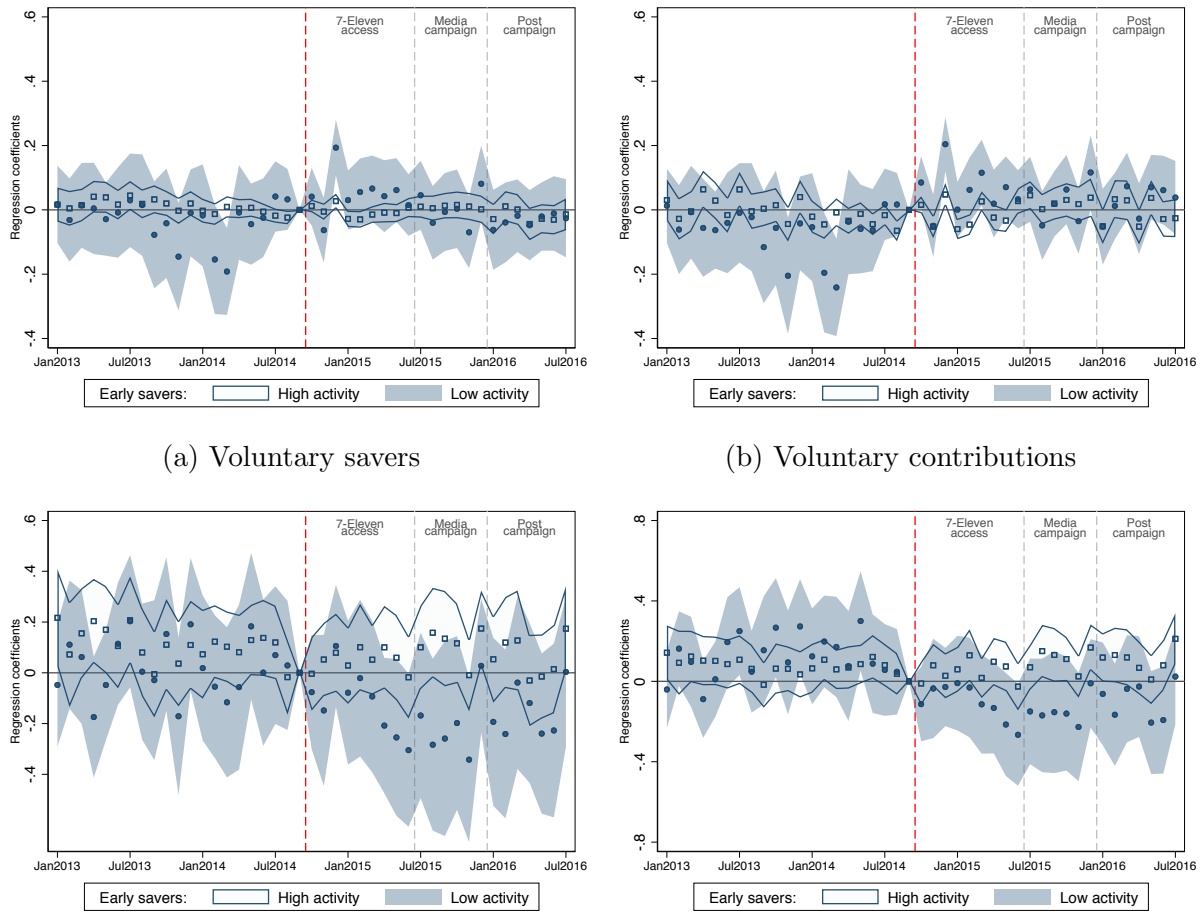
(b) Voluntary contributions

(c) Amount contributed

(d) Size of contributions

Notes: These plots show the estimates from expanding 7-Eleven access for workers with voluntary contributions pre-policy (early savers), disaggregating by quartiles of the number of transactions pre-policy. Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. Voluntary savers are the total number of accounts in a municipality-month with at least one voluntary contribution. Voluntary contributions are the total number of contributions to voluntary accounts. Amount contributed is the total amount contributed voluntarily (1,000s MXN). Size of contribution is the average amount (1,000s MXN) per contribution. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Bars correspond to 95% confidence intervals based on robust standard errors clustered by municipality.

Figure 6:
Event study of the policy effects for early savers with high vs low pre-policy contributions



(a) Voluntary savers

(b) Voluntary contributions

(c) Amount contributed

(d) Size of contributions

Notes: These plots show event study estimates from expanding 7-Eleven access before, during, and after the media campaign for workers with voluntary contributions prior to the treatment. We stratify those early savers into those with high vs low voluntary contributions pre-policy. Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. The top two graphs correspond to the volume of transactions, the bottom two are the value. Markers correspond to coefficients for month indicators interacted with 7-Eleven presence, from regressions that include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Shaded areas are 95% confidence intervals based on robust standard errors clustered by municipality.

Appendices for Online Publication

Context and descriptives. Figure A1 shows still images of key messages from the media campaign. Table A1 contains the full script of the ads. Table A2 shows additional municipality characteristics by 7-Eleven presence. Figure A2 plots the distribution of voluntary contributions over time by new channel expansion methods. Figure A3 shows the distribution of contribution sizes at 7-Eleven and via status quo methods. Figure A4 traces raw data time trends for the four main outcomes under the inverse hyperbolic sine transformation. Figure A5 plots histograms of the distribution of voluntary savers before and after the 7-Eleven policy in 7-Eleven municipalities, distinguishing between the full sample and early savers. Figures A6, A7, and Figure A8 repeat this for voluntary contributions, amount contributed, and average contribution size, respectively. Figure A9 shows that municipality-level observables are not strong predictors of baseline outcomes once we account for the level difference between municipalities with and without 7-Eleven presence. Figure A10 relates 7-Eleven presence at the state level with Telecomm, Circle-K, and Bansefi. Figure A11 correlates municipality-level data of 7-Eleven and Telecomm presence. Figure A12 shows state-level expansion of 7-Eleven stores at the state level.

Additional specifications. Table A3 shows DiD estimates similar to the main results, distinguishing between the three post-policy periods (before, during, and after the ad campaign). Figure A13 plots estimates from DiD regressions where the outcome variable is an indicator for different bin sizes of the average contribution size. Figure A14 shows quantile treatment effects of the main DiD estimates. Figure A32 plots event studies for the four main outcomes restricting to the sample of early savers. Table A13 presents results using individual-level data restricting to the sample of early savers.

Robustness checks. Table A4 uses pre-policy data to show the lack of differential trends in outcomes between 7-Eleven and non-7-Eleven municipalities. Figure A15 uses pre-policy

data to estimate placebo DiD effects, where we assign the placebo policy date to each of the pre-policy months, showing null effects. Figure A16 shows event study plots where the outcomes are measured in levels instead of using the inverse hyperbolic sine. Figure A17 presents event study plots for alternative measures of the main transaction volume and value outcomes. Figure A18 shows robustness of the DiD estimates to leaving out of the sample one 7-Eleven municipality at a time. Table A5 shows robustness of the main effects to using population instead of worker accounts as regression weights and to not using weights at all. Table A6 estimates DiD models where the treatment variable is not the binary indicator of 7-Eleven presence but a measure of 7-Eleven intensity (7-Eleven density, locations per capita, and market share). Figure A19 plots the distribution of these 7-Eleven intensity measures. The corresponding event study plots are shown in Figures A20, A21, and Figure A22. Table A7 uses state-level data to show robustness of DiD estimates to assigning workers to 7-Eleven exposure based on their state of birth instead of residence. Figure A23 plots histograms of workers' state of birth and state of residence. Figure A24 shows the distribution of workers' state of residence by state of birth. Figure A25 presents event study plots of the policy effects on withdrawals from voluntary savings accounts, showing, if anything, a decline in withdrawals. Figure A26 uses survey data to estimate event studies of labor supply outcomes for individuals ages 15 and older, showing no response along these margins.

Effect of the ads. Figure A27 shows DiD estimates before, during, and after the ad campaign at the state level, stratifying states by exposure to the ads based on cable TV penetration.

Heterogeneous effects. Table A8 shows heterogeneous effects by worker accounts with an estimated monthly wage above and below the median. Figure A28 plots the distribution of these estimated wages. Table A9 presents DiD estimates stratifying by workers' main account balance at baseline. Figure A29 plots the distribution of the pre-policy account

balance. Table A10 explores heterogeneous effects by affiliation year, using 1997 to stratify workers into those registering under the previous defined benefits plan and those in the new system. Figure A30 shows the distribution of this measure and its correlation with age. Figure A31 divides workers into four age groups and presents DiD estimates for each. Table A11 shows effects for men and women separately.

Spillovers onto previous contribution methods. Table A12 presents DiD estimates of the 7-Eleven policy on voluntary contributions made via status quo methods for early savers, suggesting perhaps positive spillovers.

Table A1:
Ad campaign text

Original Spanish text	English translation
10 pesitos al día muy fácil tú puedes ahorrar	10 pesos each day is easy to save
Poco a poco un retiro más digno vas a asegurar	And little by little you will ensure a better retirement
10 morlacos, 10 varos o como les quieras llamar	10 bucks, 10 clams, whatever you call them
Es sencillo lograrlo sin tu bolsillo afectar	It's easy to achieve, it's no burden on your pocket
Con 10 pesitos (diez diez) para tu AFORE (diez diez)	With just 10 pesos (ten, ten), for your AFORE (ten, ten)
Lo de hoy es ahorrar y después tu futuro gozar	It's trendy to save, so you can then enjoy your future
Con 10 pesitos (diez diez) para tu AFORE (diez diez)	With just 10 pesos (ten, ten), for your AFORE (ten, ten)
Hay que ahorrar diariamente con 10 pesitos o más	You must save everyday, just 10 pesos or more
Súmale 10 pesitos al día para asegurar	Add 10 pesos a day in order to ensure
Tu futuro, tu AFORE y muy buena pensión alcanzar	that your future, AFORE and pension will turn out right
En Seven Eleven y en Telecomm tú podrás aportar	At 7-Eleven and Telecomm you can save
Deposita sin costo 50 pesitos o más	Deposit without charge from 50 pesos or more
Con 10 pesitos (diez diez) para tu AFORE (diez diez)	With just 10 pesos (ten, ten), for your AFORE (ten, ten)
Lo de hoy es ahorrar y después tu futuro gozar	It's trendy to save, so you can then enjoy your future
Con 10 pesitos (diez diez) para tu AFORE (diez diez)	With just 10 pesos (ten, ten), for your AFORE (ten, ten)
Hay que ahorrar diariamente con 10 pesitos o más	You must save everyday, just 10 pesos or more
Se te nota que sí traes morralla, tú puedes ahorrar	One can see that you've got spare change, you can save
El guardián de tu AFORE y tu aliado sin duda es CONSAR.	Your best ally and guard for your AFORE, without a doubt, is CONSAR.

Notes: The left column shows the original Spanish text from the television ad's jingle. The right column shows the equivalent in English (authors' own translation). The ad uses the diminutive form of the word "peso" to emphasize that workers do not need to make large contributions. Note also that even though AFORE is the acronym for the retirement fund managers, it is customary to refer to one's retirement account as an AFORE as well (for example, "10 pesos for your AFORE" means 10 pesos for your individual retirement account).

Table A2:
Municipality-level descriptives by 7-Eleven presence

	Municipalities with accounts		Without accounts
	With 7-Eleven	Without 7-Eleven	Without 7-Eleven
Total population, thousands	422.10	34.70	1.92
	(431.70)	(83.33)	(2.42)
Total households, thousands	109.43	8.56	0.46
	(110.84)	(21.08)	(0.53)
Urban municipal government seat (pop.>15,000)	0.87	0.20	0.00
	(0.34)	(0.40)	(0.00)
Share ages 11 and under	0.22	0.25	0.24
	(0.04)	(0.04)	(0.06)
Share ages 12 to 17	0.11	0.13	0.14
	(0.01)	(0.02)	(0.03)
Share ages 18 to 59	0.59	0.51	0.45
	(0.03)	(0.04)	(0.04)
Share ages 60 and over	0.08	0.11	0.18
	(0.03)	(0.04)	(0.08)
Average years of schooling, pop. 15 and over	9.51	6.65	5.12
	(1.17)	(1.41)	(0.94)
Share employed, pop. 12 and over	0.52	0.44	0.38
	(0.04)	(0.06)	(0.10)
Share without healthcare coverage	0.29	0.38	0.42
	(0.08)	(0.17)	(0.26)
Share with IMSS healthcare coverage	0.44	0.16	0.09
	(0.12)	(0.14)	(0.16)
Share with Seguro Popular healthcare coverage	0.13	0.40	0.45
	(0.09)	(0.19)	(0.28)
Share dwellings with a dirt floor	0.02	0.12	0.26
	(0.01)	(0.11)	(0.14)
Share dwellings with electricity	0.96	0.95	0.93
	(0.02)	(0.06)	(0.08)
Share dwellings with piped water	0.92	0.79	0.77
	(0.06)	(0.20)	(0.24)
Share dwellings with sewerage	0.94	0.75	0.55
	(0.05)	(0.23)	(0.32)
Share dwellings with a radio	0.82	0.69	0.61
	(0.07)	(0.14)	(0.15)
Share dwellings with a TV	0.95	0.81	0.59
	(0.03)	(0.16)	(0.20)
Share dwellings with a computer	0.36	0.12	0.03
	(0.13)	(0.09)	(0.03)
Share dwellings with a cellphone	0.75	0.39	0.08
	(0.07)	(0.23)	(0.13)
Share dwellings with an internet connection	0.27	0.06	0.01
	(0.13)	(0.07)	(0.01)
Observations	84	2,214	159

Notes: This table shows descriptive statistics from the 2010 census at the municipality level, distinguishing by 7-Eleven presence (columns 1 and 2). The third column shows municipalities without any registered accounts (and without 7-Eleven presence). Means and standard deviations for groups of municipalities are shown. Urban municipal government seat indicates whether population is greater than 15,000 in the town that is the administrative center of the municipality. IMSS is public healthcare for the formally employed and their dependents. Seguro Popular is healthcare for the unemployed and informal workers.

Table A3:
Policy effects on transaction volume and value by timing to the media campaign

	Voluntary savers	Voluntary contributions	Amount contributed	Size of contribution
7-Eleven × pre-campaign	0.0395*	0.0166	0.0251	0.0005
	(0.022)	(0.021)	(0.039)	(0.029)
7-Eleven × media campaign	0.1100***	0.0882***	0.0647*	-0.0451
	(0.027)	(0.028)	(0.037)	(0.032)
7-Eleven × post-campaign	0.1240***	0.0872**	0.0279	-0.1030***
	(0.034)	(0.036)	(0.045)	(0.040)
Observations	98,814	98,814	98,814	98,814
R-squared	0.985	0.982	0.935	0.547
Mean dependent variable	111.2	180.1	641.2	3.1

Notes: This table shows the estimates from expanding 7-Eleven access before, during, and after the media campaign. Observations are at the municipality-month level. Voluntary savers are the total number of accounts in a municipality-month with at least one voluntary contribution. Voluntary contributions are the total number of contributions to voluntary accounts. Amount contributed is the total amount contributed voluntarily (1,000s MXN). Size of contribution is the average amount (1,000s MXN) per contribution. Outcome variables transformed with the inverse hyperbolic sine for the estimation. The mean of the dependent variable for treatment municipalities at baseline is shown. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table A4:
Robustness of main results to pre-trends in the pre-policy sample

	Voluntary savers			Voluntary contributions			Amount contributed			Size of contribution		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
7-Eleven × t	-0.0001	0.0080**	0.0046	-0.0010	0.0068	0.0079	-0.0017	0.0028	-0.0064	-0.0016	-0.0050	-0.0107
	(0.001)	(0.004)	(0.007)	(0.002)	(0.004)	(0.008)	(0.003)	(0.011)	(0.025)	(0.002)	(0.009)	(0.022)
7-Eleven × t^2		-0.0004**	0.0000		-0.0004**	-0.0005		-0.0002	0.0008		0.0002	0.0008
		(0.000)	(0.001)		(0.000)	(0.001)		(0.000)	(0.003)		(0.000)	(0.002)
7-Eleven × t^3			-0.0000			0.0000			-0.0001			-0.0000
			(0.000)			(0.000)			(0.000)			(0.000)
Observations	48,258	48,258	48,258	48,258	48,258	48,258	48,258	48,258	48,258	48,258	48,258	48,258
R-squared	0.989	0.989	0.989	0.987	0.987	0.987	0.937	0.937	0.937	0.581	0.581	0.581
Mean dep. var.	111.2	111.2	111.2	180.1	180.1	180.1	641.2	641.2	641.2	3.1	3.1	3.1

Notes: This table shows supporting evidence for the parallel pre-trends assumption. Observations are at the municipality-month level, and are restricted to the months prior to the treatment. Outcome variables transformed with the inverse hyperbolic sine for the estimation. The mean of the dependent variable for the treatment municipalities at baseline is shown. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table A5:
Robustness of main results to alternative regression weights

	Voluntary savers			Voluntary contributions			Amount contributed			Size of contribution		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
7-Eleven × post-access	0.0888***	0.152***	0.300***	0.0619**	0.128***	0.307***	0.0386	0.0800***	0.232***	-0.0469*	-0.0861***	-0.0860***
	(0.026)	(0.022)	(0.024)	(0.026)	(0.023)	(0.027)	(0.033)	(0.029)	(0.038)	(0.025)	(0.021)	(0.025)
Observations	98,814	98,814	98,814	98,814	98,814	98,814	98,814	98,814	98,814	98,814	98,814	98,814
R-squared	0.985	0.985	0.944	0.982	0.982	0.934	0.935	0.949	0.862	0.546	0.620	0.490
Mean dep. var.	111.2	111.2	111.2	180.1	180.1	180.1	641.2	641.2	641.2	3.1	3.1	3.1
Weights	Accts.	Pop.	None	Accts.	Pop.	None	Accts.	Pop.	None	Accts.	Pop.	None

Notes: This table shows robustness of the main results to alternative regression weights. We present estimates weighting by the number of accounts pre-policy (main specification), by the total municipality population in 2010, and without any weights. Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. The mean of the dependent variable for the treatment municipalities at baseline is shown. Regressions include municipality and month-year FE. Robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table A6:
Event study of the policy effects under various measures of intensity of treatment

	Voluntary savers			Voluntary contributions		
	(1)	(2)	(3)	(4)	(5)	(6)
7-Eleven density × post-access	0.0072***			0.0040*		
	(0.002)			(0.002)		
7-Eleven per capita × post-access		0.0018*			0.0008	
		(0.001)			(0.001)	
7-Eleven market share × post-access			0.0157**			0.0084
			(0.007)			(0.007)
Observations	98,814	98,814	98,814	98,814	98,814	98,814
R-squared	0.985	0.985	0.985	0.982	0.982	0.982
Mean dependent variable	111.2	111.2	111.2	180.1	180.1	180.1
	Amount contributed			Size of contribution		
	(7)	(8)	(9)	(10)	(11)	(12)
7-Eleven density × post-access	0.0029			-0.0030		
	(0.003)			(0.004)		
7-Eleven per capita × post-access		0.0009			-0.0007	
		(0.002)			(0.002)	
7-Eleven market share × post-access			0.0061			-0.0075
			(0.012)			(0.013)
Observations	98,814	98,814	98,814	98,814	98,814	98,814
R-squared	0.935	0.935	0.935	0.546	0.546	0.546
Mean dependent variable	641.2	641.2	641.2	3.1	3.1	3.1

Notes: This table shows the main results from expanding 7-Eleven access using different measures of intensity of treatment. We consider the density of 7-Eleven stores per 10 square km. in urban areas, 7-Eleven locations per 100,000 working-age individuals (ages 15-59), and the percentage of all convenience stores that correspond to 7-Eleven. Across 7-Eleven municipalities, the means of these measures are 5.75, 24.35, and 3.19, respectively. Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. The mean of the dependent variable for treatment municipalities at baseline is shown. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table A7:
State-level estimates on size of contributions comparing state of residence vs state of birth

	Voluntary savers		Voluntary contributions		Amount contributed		Size of contribution	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
7-Eleven × post-access	0.0779*	0.0631**	0.0718	0.0538*	0.0601	0.0190	-0.0136	-0.0328
	(0.045)	(0.028)	(0.044)	(0.029)	(0.038)	(0.036)	(0.042)	(0.038)
	[0.090]	[0.030]	[0.120]	[0.080]	[0.110]	[0.620]	[0.770]	[0.420]
Observations	1,376	1,376	1,376	1,376	1,376	1,376	1,376	1,376
R-squared	0.994	0.997	0.994	0.997	0.973	0.979	0.717	0.710
State of residence	X		X		X		X	
State of birth		X		X		X		X
Mean dependent variable	854.4	816.1	1383.6	1320.3	4745.4	4609.2	3.0	3.1

Notes: This table shows state-level results that allow us to distinguish between the workers' residence vs birth place. Odd columns classify workers into treatment and control based on their state of residence, even columns use state of birth. Observations are at the state-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. The mean of the dependent variable for the treatment states at baseline is shown. Regressions include state and month-year FE, and are weighted by the number of accounts pre-policy. Robust standard errors clustered by state in parentheses. Wild cluster bootstrap p-values in brackets (stars denote significance from these values).
*** p<0.01, ** p<0.05, * p<0.1

Table A8:
Heterogeneous effects by workers' estimated wage

	Voluntary savers		Voluntary contributions		Amount contributed		Size of contribution	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
7-Eleven × post-access	0.1360***	0.0868***	0.1301***	0.0567**	0.0107	0.0465	-0.1720***	-0.0256
	(0.031)	(0.028)	(0.035)	(0.029)	(0.053)	(0.036)	(0.047)	(0.028)
Observations	96,320	91,504	96,320	91,504	96,320	91,504	96,320	91,504
R-squared	0.963	0.986	0.957	0.982	0.883	0.933	0.539	0.540
Sample	$<$ median	$\geq$ median	$<$ median	$\geq$ median	$<$ median	$\geq$ median	$<$ median	$\geq$ median
Mean dependent variable	26.8	84.5	36.7	143.4	227.9	413.3	4.7	2.5

Notes: This table shows heterogeneous effects of the main results by workers' estimated wage pre-policy. Wages are estimated based on contributions to the main account balance a year prior to the policy. Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. The mean of the dependent variable for the treatment municipalities at baseline is shown. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table A9:
Heterogeneous effects by workers' pre-policy main account balance

	Voluntary savers		Voluntary contributions		Amount contributed		Size of contribution	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
7-Eleven × post-access	0.2190***	0.0775***	0.2040***	0.0574*	0.0668	0.0261	-0.1880***	-0.0442
	(0.033)	(0.029)	(0.039)	(0.030)	(0.055)	(0.035)	(0.046)	(0.027)
Observations	96,621	89,698	96,621	89,698	96,621	89,698	96,621	89,698
R-squared	0.961	0.986	0.954	0.983	0.879	0.931	0.504	0.542
Sample	$<$ median	$\geq$ median	$<$ median	$\geq$ median	$<$ median	$\geq$ median	$<$ median	$\geq$ median
Mean dependent variable	22.3	88.9	31.7	148.5	148.6	492.6	3.7	2.9

Notes: This table shows heterogeneous effects of the main results by workers' main account balance prior to the treatment. Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. The mean of the dependent variable for the treatment municipalities at baseline is shown. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table A10:
Heterogeneous effects by workers' year of affiliation

	Voluntary savers		Voluntary contributions		Amount contributed		Size of contribution	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
7-Eleven × post-access	0.0549**	0.137***	0.0368	0.104***	0.0351	0.0966**	-0.0178	-0.0488
	(0.027)	(0.032)	(0.027)	(0.034)	(0.038)	(0.045)	(0.028)	(0.033)
Observations	88,021	96,320	88,021	96,320	88,021	96,320	88,021	96,320
R-squared	0.983	0.977	0.980	0.973	0.923	0.916	0.562	0.452
Sample	< 1997	≥ 1997	< 1997	≥ 1997	< 1997	≥ 1997	< 1997	≥ 1997
Mean dependent variable	71.9	39.3	115.2	64.9	499.4	141.8	3.7	1.7

Notes: This table shows heterogeneous effects of the main results by workers' year of affiliation (before and after 1997). Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. The mean of the dependent variable for the treatment municipalities at baseline is shown. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table A11:
Heterogeneous effects by workers' gender

	Voluntary savers		Voluntary contributions		Amount contributed		Size of contribution	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
7-Eleven × post-access	0.0737**	0.1220***	0.0438	0.1030***	0.0565	0.0432	-0.0017	-0.0858***
	(0.034)	(0.026)	(0.038)	(0.026)	(0.049)	(0.035)	(0.034)	(0.028)
Observations	90,257	96,879	90,257	96,879	90,257	96,879	90,257	96,879
R-squared	0.979	0.981	0.976	0.977	0.911	0.924	0.468	0.565
Sample	Women	Men	Women	Men	Women	Men	Women	Men
Mean dependent variable	46.9	64.3	76.8	103.4	191.2	450.0	1.8	3.8

Notes: This table shows heterogeneous effects of the main results by workers' gender. Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. The mean of the dependent variable for the treatment municipalities at baseline is shown. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table A12:
Spillovers on status quo (non-7-Eleven) contribution methods for early savers

	Voluntary savers	Voluntary contributions	Amount contributed	Size of contribution
7-Eleven × post-access	0.0320*	0.0380*	-0.0417	-0.0393
	(0.018)	(0.020)	(0.038)	(0.027)
Observations	98,814	98,814	98,814	98,814
R-squared	0.988	0.985	0.936	0.580
Mean dependent variable	111.2	180.1	641.2	3.1

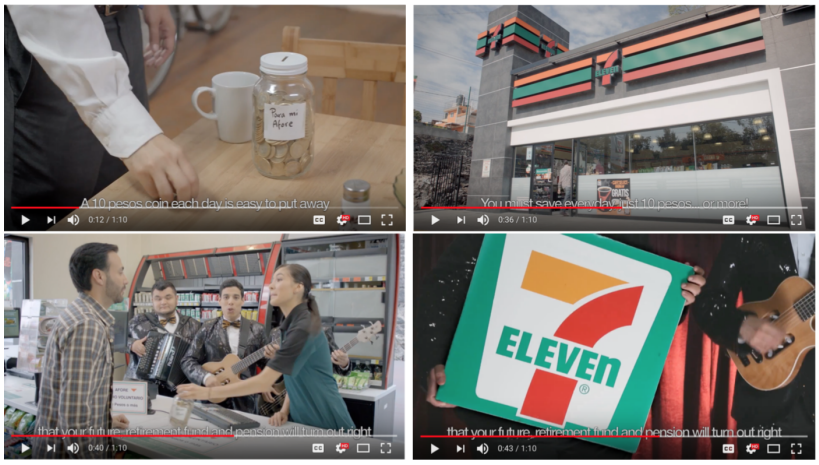
Notes: This table shows the estimates from expanding 7-Eleven access restricting to outcomes related to contribution methods available at baseline (status quo) for the workers who were making contributions pre-policy. Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. Voluntary savers are the total number of accounts in a municipality-month with at least one voluntary contribution. Voluntary contributions are the total number of contributions to voluntary accounts. Amount contributed is the total amount contributed voluntarily (1,000s MXN). Size of contribution is the average amount (1,000s MXN) per contribution. The mean of the dependent variable for treatment municipalities at baseline is shown. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table A13:
Policy effects for early savers using individual-level regressions

I. Transaction volume						
	Prob. at least one contribution			Number of contributions		
	Early savers	High activity	Low activity	Early savers	High activity	Low activity
	(1)	(2)	(3)	(4)	(5)	(6)
7-Eleven × post-access	0.002	0.021***	0.010***	-0.000	0.038***	0.012***
	(0.002)	(0.008)	(0.002)	(0.004)	(0.015)	(0.004)
Elasticity	0.0130	0.0367***	0.139***	-0.0014	0.0374***	0.135***
	(0.0127)	(0.0140)	(0.0267)	(0.0142)	(0.0142)	(0.0402)
Observations	2,980,330	724,378	2,255,952	2,980,330	724,378	2,255,952
R-squared	0.490	0.425	0.136	0.550	0.478	0.182
II. Transaction value						
	Amount contributed			Size of contribution		
	Early savers	High activity	Low activity	Early savers	High activity	Low activity
	(7)	(8)	(9)	(10)	(11)	(12)
7-Eleven × post-access	-0.154***	-0.122**	-0.177***	-0.127***	-0.100***	-0.157***
	(0.033)	(0.057)	(0.038)	(0.027)	(0.033)	(0.033)
Elasticity	-0.172***	-0.0840**	-0.248***	-0.185***	-0.111***	-0.258***
	(0.0386)	(0.0400)	(0.0569)	(0.0407)	(0.0377)	(0.0584)
Observations	2,980,330	724,378	2,255,952	2,980,330	724,378	2,255,952
R-squared	0.096	0.184	0.059	0.088	0.239	0.060

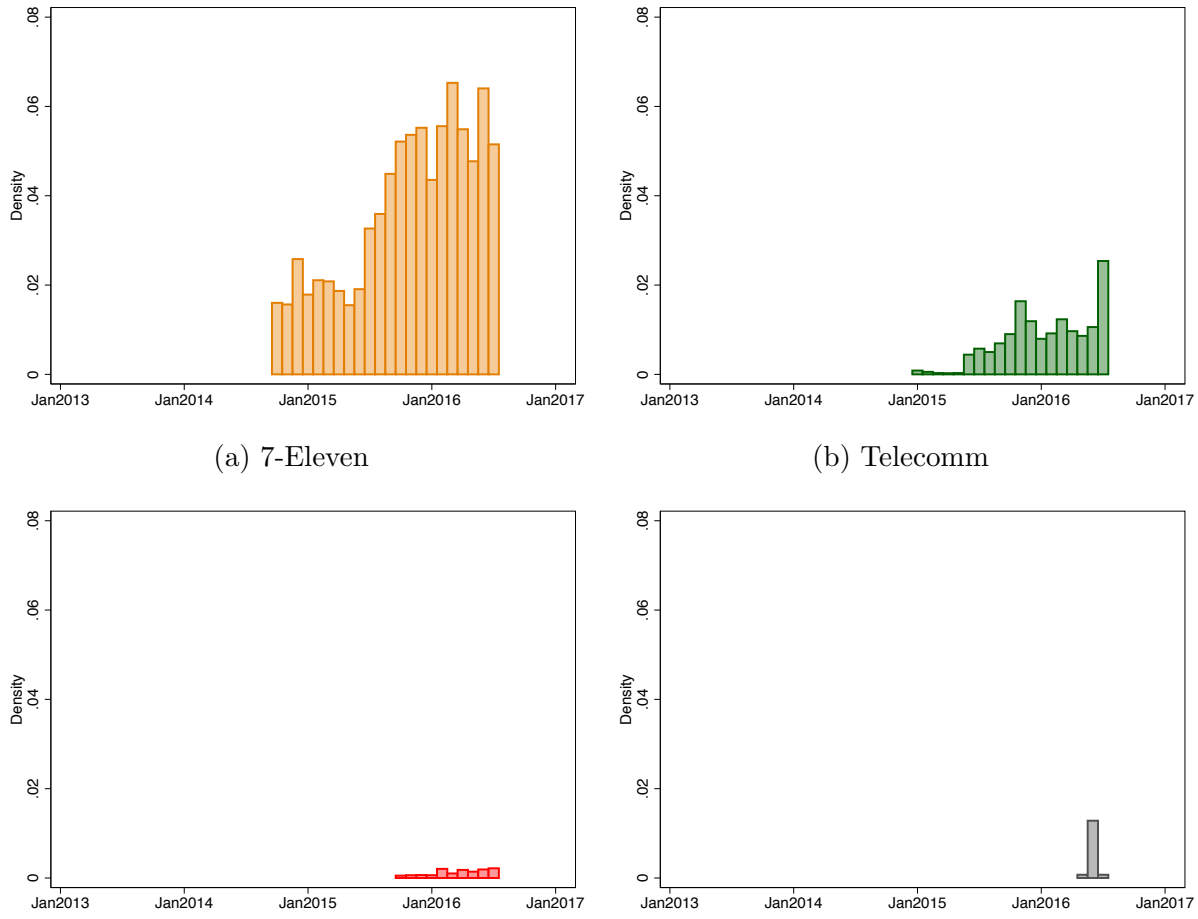
Notes: This table shows the estimates from expanding 7-Eleven access for workers with voluntary contributions pre-policy (early savers) using account-level data. We further disaggregate these accounts into those with high and low levels of activity based on number of transactions. Observations are at the account-month level. We estimate a regressions similar to equation 1, with account FE instead of municipality FE. All outcomes are in levels: an indicator for making at least one contribution, the total number of contributions in a month, the total amount contributed in a month, and the average size of contributions. We present the coefficient estimates as well as the implied semi-elasticity associated with the policy. Regressions include month-year FE. Robust standard errors clustered by municipality in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Figure A1:
Still images from the ad campaign on television



Notes: These four images are representative of the message the ad campaign was transmitting. The top left image shows an individual saving in 10 peso coins, with the objective of depositing the money in their AFORE. The top right image shows the individual going to a 7-Eleven convenience store. The image on the bottom left shows the worker making a voluntary contribution, and the bottom right image emphasizes the 7-Eleven policy. These stills were taken from a version of the ad with English subtitles, available at https://www.youtube.com/watch?v=uSdOpwVJy1o (accessed April 4, 2018).

Figure A2:
Distribution of voluntary contributions by store or institution over time



(a) 7-Eleven

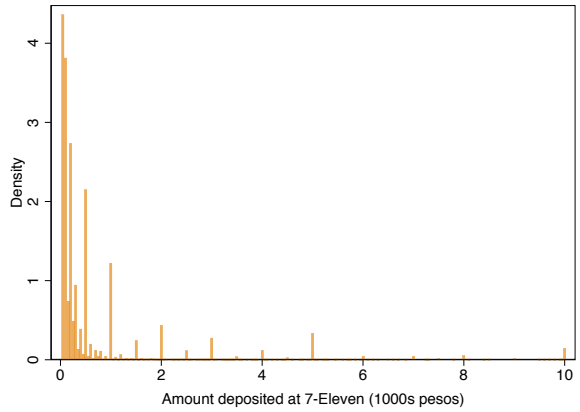
(b) Telecomm

(c) Circle-K

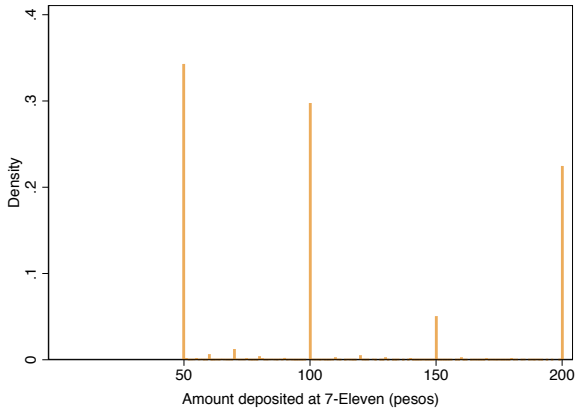
(d) Bansefi

Notes: These plots show histograms detailing the density of voluntary contributions at each chain of stores or financial institution over time.

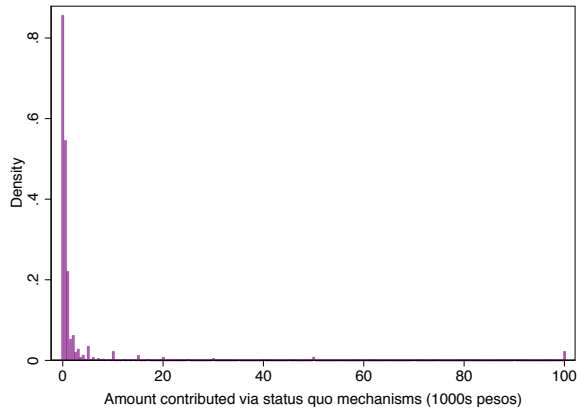
Figure A3:
Histograms of size of contributions by contribution methods



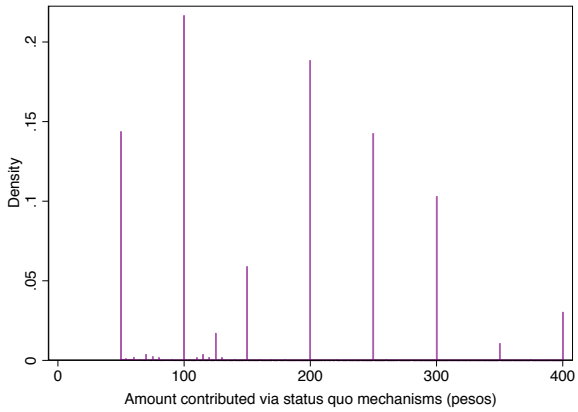
(a) 7-Eleven, full distribution



(b) 7-Eleven, below median



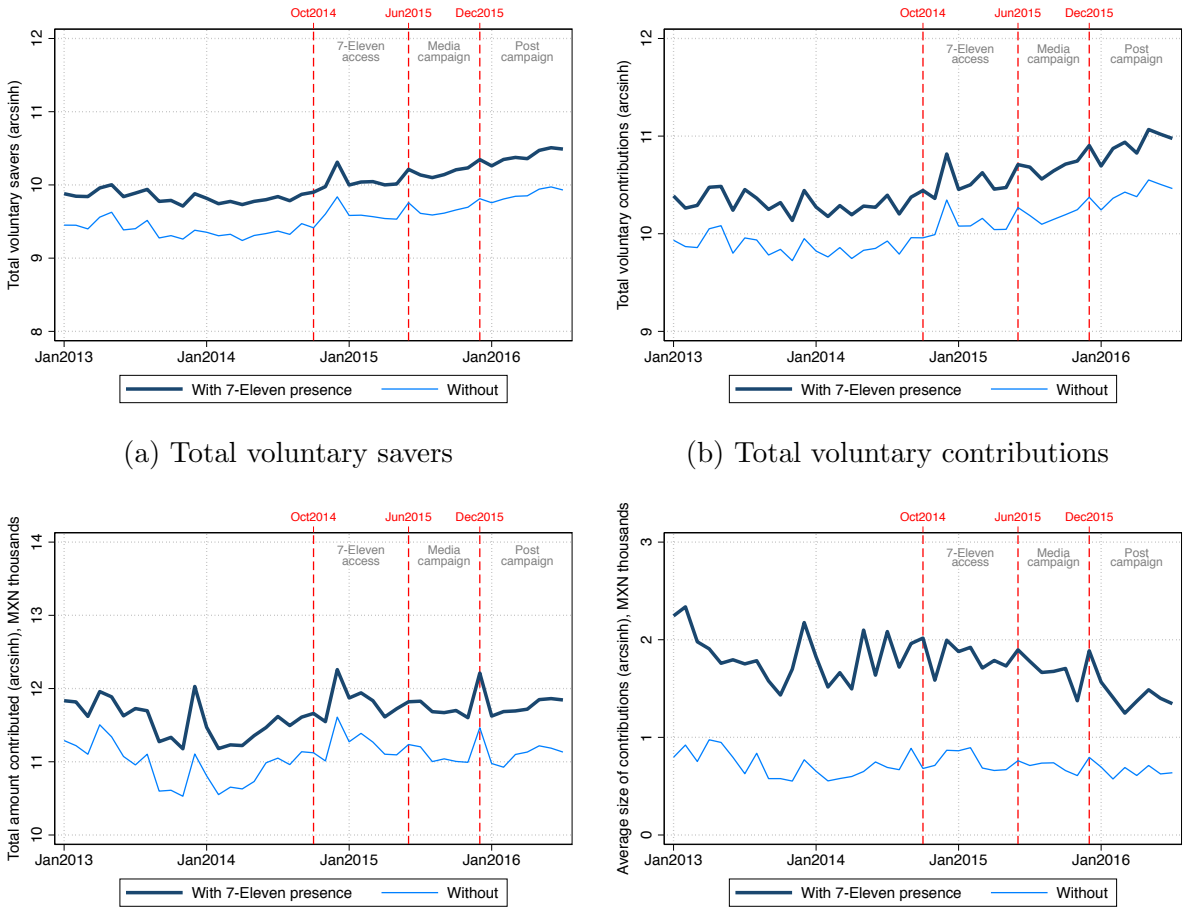
(c) Status quo, full distribution



(d) Status quo, below median

Notes: These plots show histograms for the size of contributions from the full transactions data. The top two graphs restrict to voluntary contributions made at 7-Eleven. The bottom two graphs consider the status quo mechanisms available before the treatments. The plots on the left show the full distribution over the entire time frame included in this study. The plots on the right restrict to contributions below the median (200 Mexican pesos por 7-Eleven contributions, 400 for status quo methods).

Figure A4:
Voluntary savings over time by 7-Eleven presence using inverse hyperbolic sine transformations



(a) Total voluntary savers

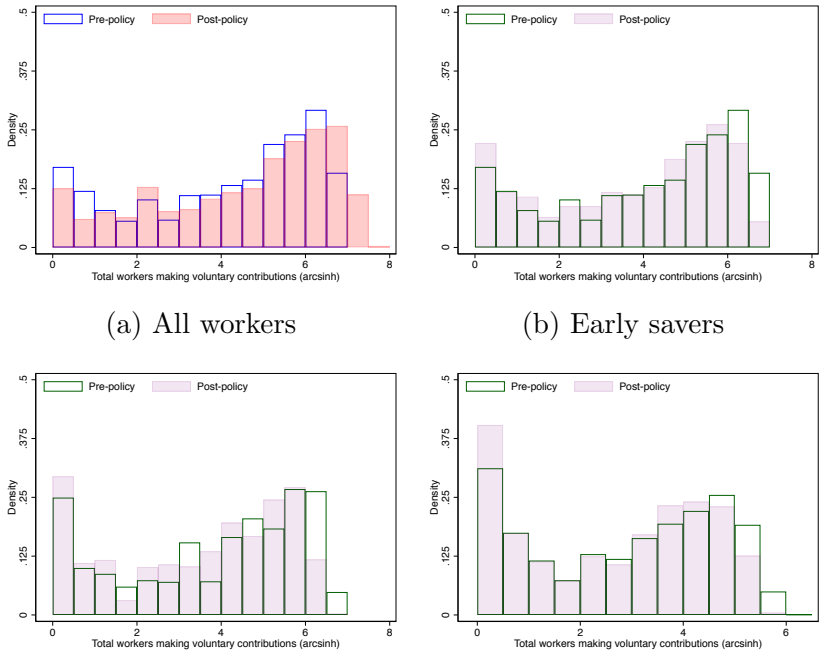
(b) Total voluntary contributions

(c) Total amount contributed (1,000s MXN)

(d) Avg. size of contributions (1,000s MXN)

Notes: These plots show the raw data, divided by municipalities with and without 7-Eleven presence. The first graph shows the total number of accounts with at least one voluntary contribution in a given month, the second graph shows the total number of voluntary contributions in a given month, the third graph shows the total amount contributed voluntarily, and the fourth graph shows the average size of contributions. All outcomes are transformed using the inverse hyperbolic sine. The vertical lines show each of the post-policy periods: 7-Eleven access only, access during the campaign, and access after the campaign.

Figure A5:
Distribution of voluntary savers pre- and post-policy in 7-Eleven municipalities



(a) All workers

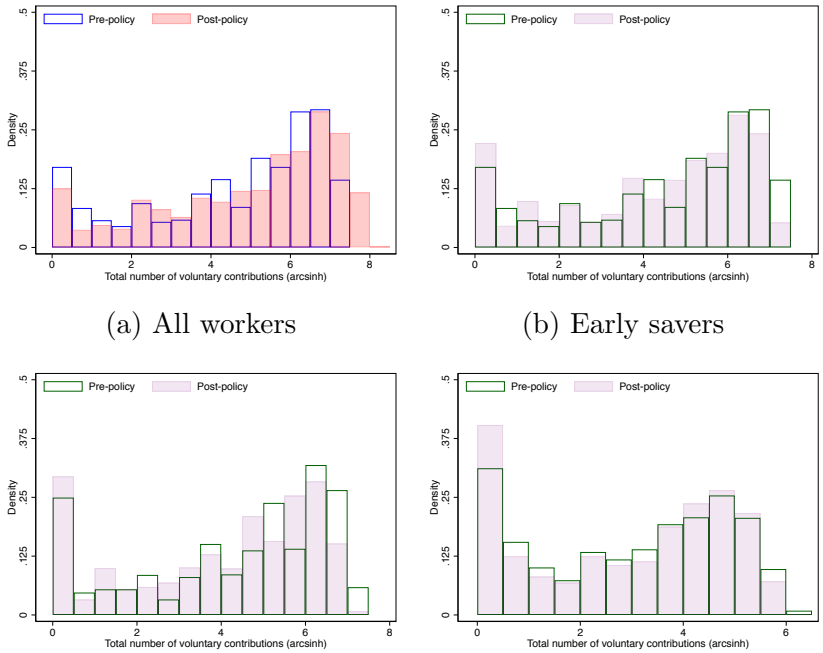
(b) Early savers

(c) Early savers with high activity

(d) Early savers with low activity

Notes: These plots show histograms of voluntary savers at 7-Eleven municipalities before and after the access policy. Each panel corresponds to a different sample. Early savers are worker accounts with voluntary savings pre-policy. High activity refers to accounts with above average total voluntary contributions pre-policy. Outcome transformed with the inverse hyperbolic sine.

Figure A6:
Distribution of voluntary contributions pre- and post-policy in 7-Eleven municipalities



(a) All workers

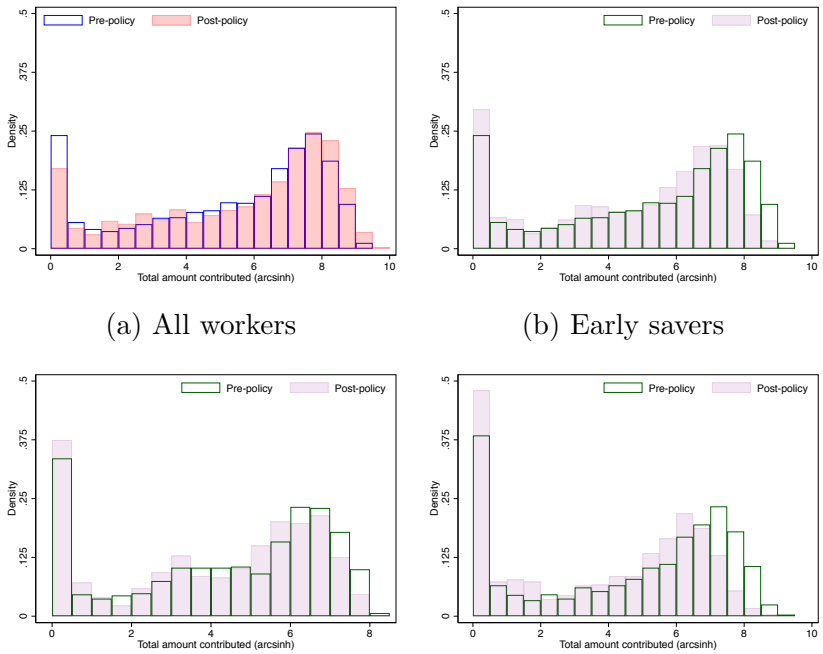
(b) Early savers

(c) Early savers with high activity

(d) Early savers with low activity

Notes: These plots show histograms of voluntary contributions at 7-Eleven municipalities before and after the access policy. Each panel corresponds to a different sample. Early savers are worker accounts with voluntary savings pre-policy. High activity refers to accounts with above average total voluntary contributions pre-policy. Outcome transformed with the inverse hyperbolic sine.

Figure A7:
Distribution of amount contributed voluntarily pre- and post-policy in 7-Eleven municipalities



(a) All workers

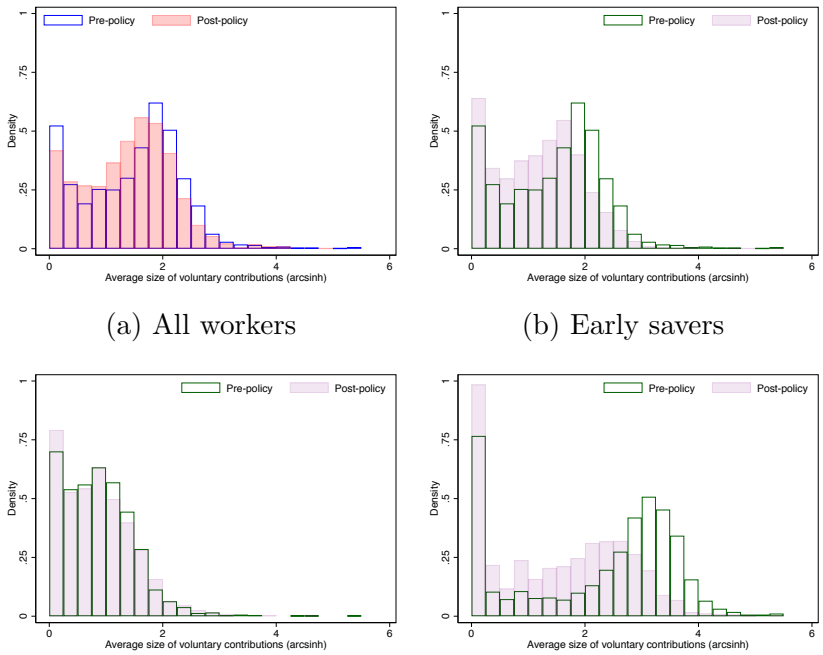
(b) Early savers

(c) Early savers with high activity

(d) Early savers with low activity

Notes: These plots show histograms of the total amount contributed voluntarily (1,000s MXN) at 7-Eleven municipalities before and after the access policy. Each panel corresponds to a different sample. Early savers are worker accounts with voluntary savings pre-policy. High activity refers to accounts with above average total voluntary contributions pre-policy. Outcome transformed with the inverse hyperbolic sine.

Figure A8:
Distribution of the average size of voluntary contributions pre- and post-policy in 7-Eleven municipalities



(a) All workers

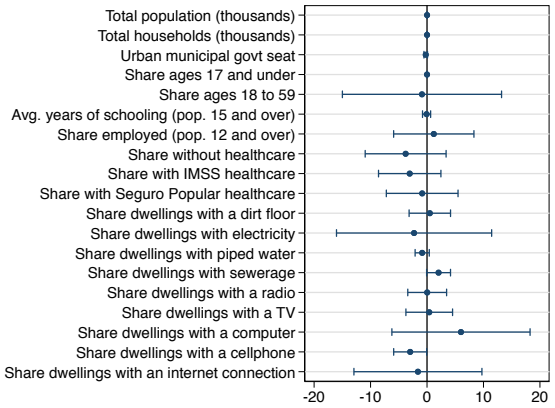
(b) Early savers

(c) Early savers with high activity

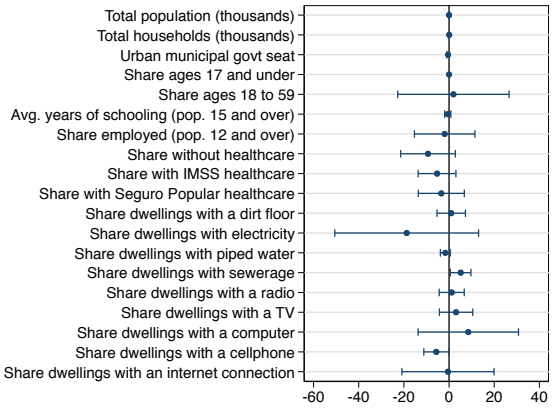
(d) Early savers with low activity

Notes: These plots show histograms of the average size of voluntary contributions (1,000s MXN) at 7-Eleven municipalities before and after the access policy. Each panel corresponds to a different sample. Early savers are worker accounts with voluntary savings pre-policy. High activity refers to accounts with above average total voluntary contributions pre-policy. Outcome transformed with the inverse hyperbolic sine.

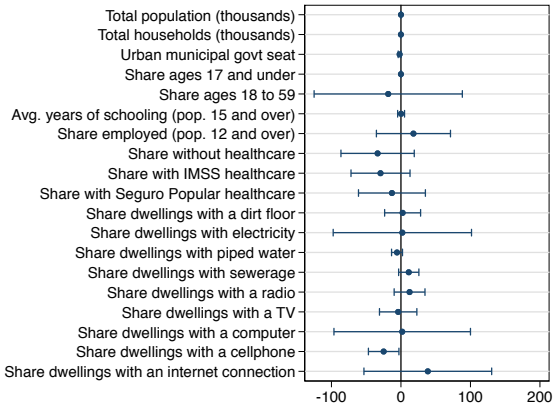
Figure A9:
Pre-policy correlation between municipality observables and outcomes demeaned by 7-Eleven presence



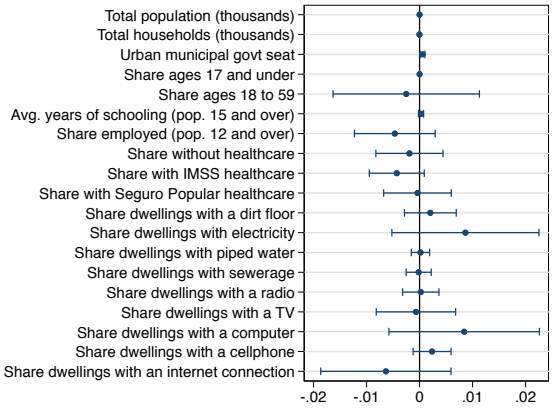
(a) Voluntary savers



(b) Voluntary contributions



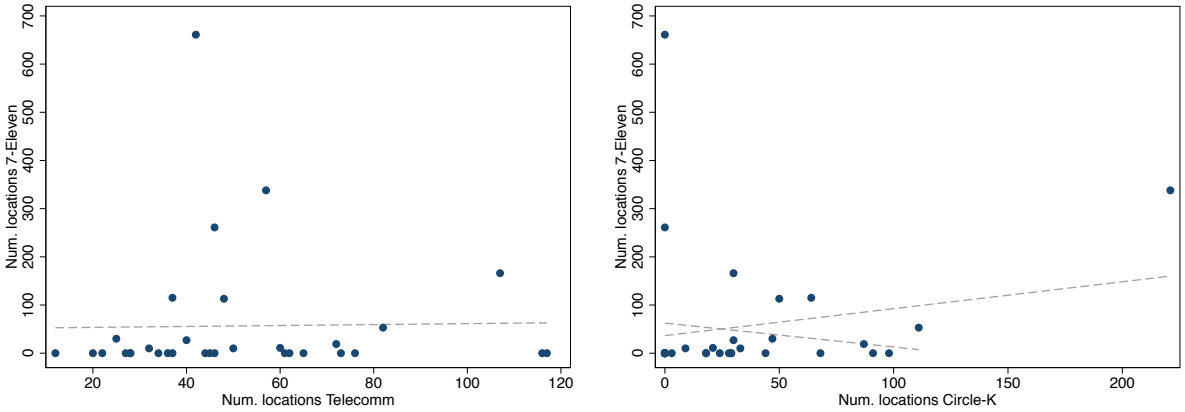
(c) Amount contributed



(d) Size of contributions

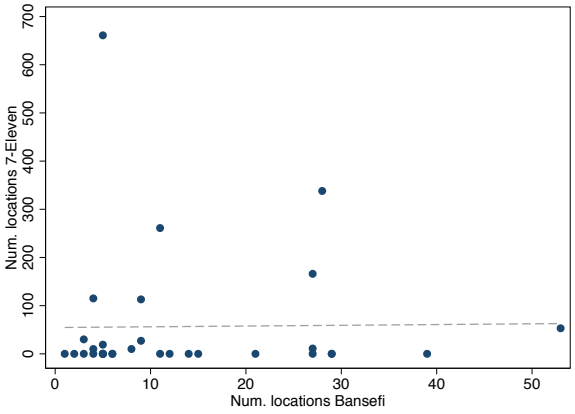
Notes: These plots show that municipality-level observables are not a strong predictor of the outcomes once we account for the level differences between municipalities with and without 7-Eleven presence. We restrict the data to pre-policy dates and obtain the sum over this time period for each municipality for the first three outcomes and the mean for the average contribution size. We then calculate demeaned outcomes by subtracting the average within each group of municipalities (by 7-Eleven presence). We regress the demeaned outcome on the municipality observables and plot the coefficients and 95% confidence bars.

Figure A10:
Relationship between 7-Eleven state presence and other stores or institutions



(a) Telecomm

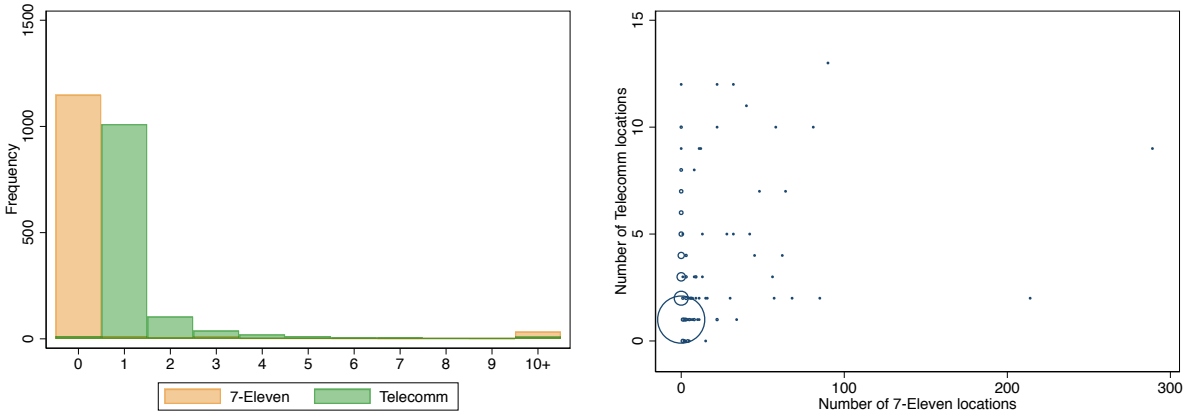
(b) Circle-K



(c) Bansefi

Notes: These plots show the relationship between the number of 7-Eleven stores by state and the number of locations for Telecomm, Circle-K, and Bansefi. The dashed lines represent the linear fit. In the second panel, the upward sloping linear fit considers all the data for 32 states, while the downward sloping line excludes the outlier (Distrito Federal).

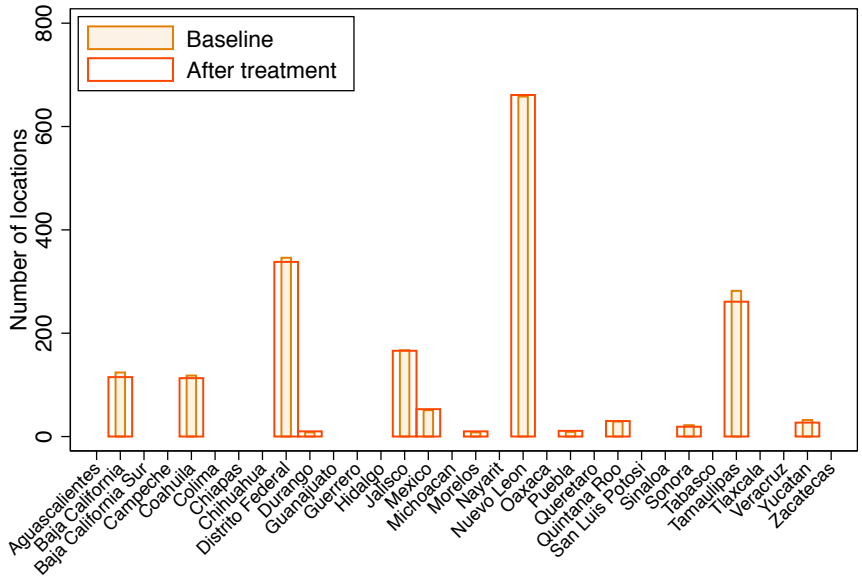
Figure A11:
Relationship between 7-Eleven and Telecomm at the municipality level



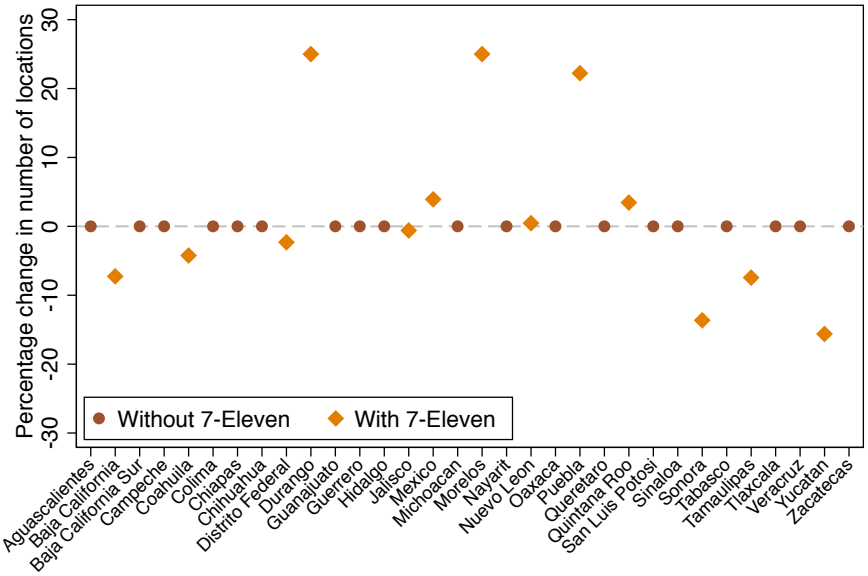
(a) Number of locations per municipality (b) Relationship at the municipality level

Notes: These plots show the relationship between the number of 7-Eleven stores and the number of locations for Telecomm at the municipality level. The plot on the left shows histograms for the number of locations, showing that 7-Eleven does not have widespread presence (mass at zero), while Telecomm is more ubiquitous. The plot on the right shows the correlation between the number of locations of 7-Eleven and Telecomm. The size of the circles denotes the number of municipalities with that particular combination, where the most common configuration is municipalities with one Telecomm location and zero 7-Eleven stores.

Figure A12:
7-Eleven presence by state over time



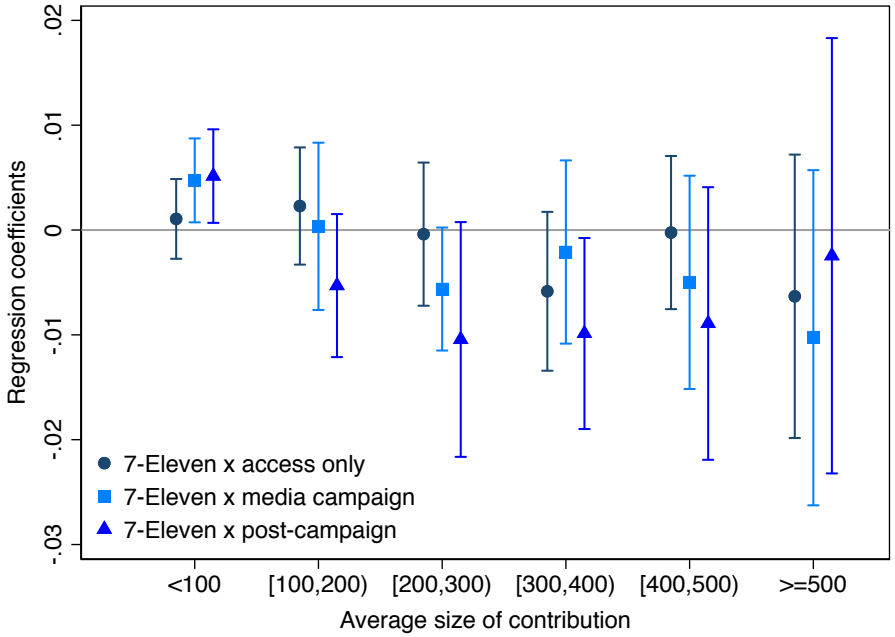
(a) Number of locations



(b) Change in locations

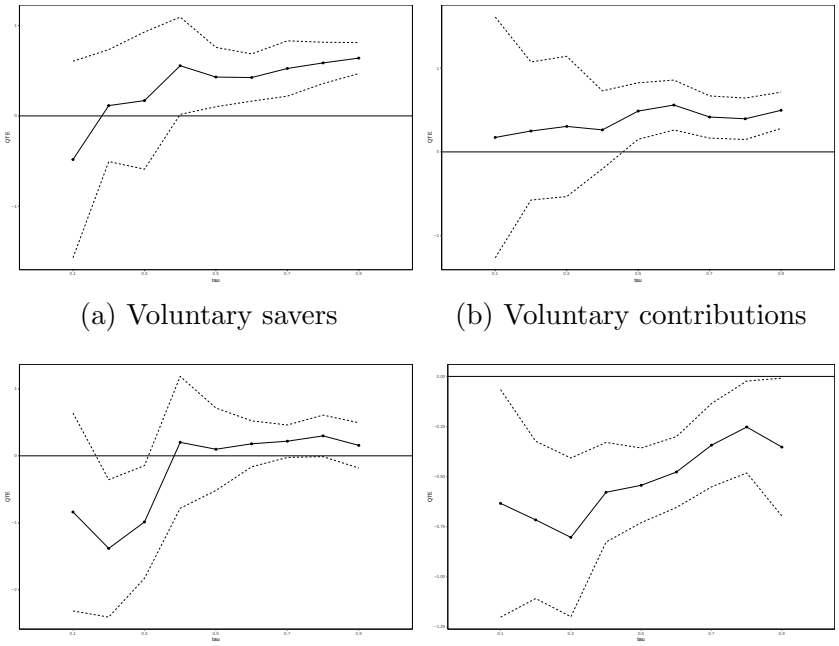
Notes: These plots show 7-Eleven locations by state pre and post-policy (2014 vs 2016). The top graph shows the histograms, while the bottom graph plots the percentage change in number of locations over time, for each of the 32 states.

Figure A13:
Effect of treatments on size of contributions



Notes: This plot shows the effect of the treatments on the average size of contributions for different intervals. We focus on small quantities, in intervals of 100 pesos. Each interval on the horizontal axis corresponds to a different binary variable used as the dependent variable in separate regressions. Observations are at the municipality-month level. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy.

Figure A14:
Quantile treatment effects of the policy on the outcomes

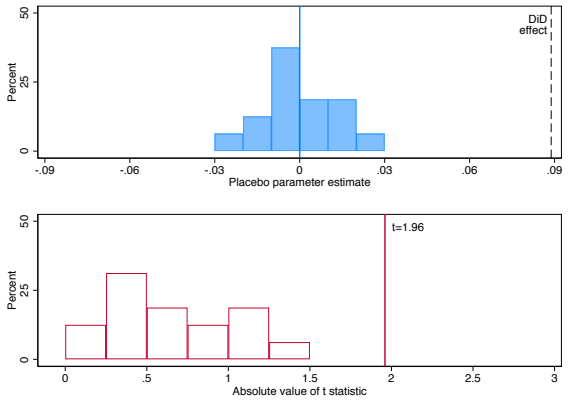


(a) Voluntary savers (b) Voluntary contributions

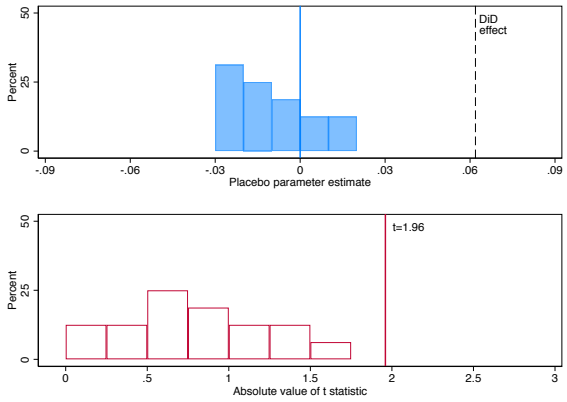
(c) Amount contributed (d) Size of contributions

Notes: These plots show quantile treatment effects under DiD from expanding 7-Eleven access, following the methodology in Callaway and Li (2019). Observations are at the municipality-month level. The top two graphs correspond to the volume of transactions, the bottom two are the value. Outcome variables transformed with the inverse hyperbolic sine for the estimation. Each dot corresponds to a quantile effect. Regressions include municipality and month-year FE. Weights are not included. Dashed lines correspond to 95% confidence intervals based on robust standard errors clustered by municipality.

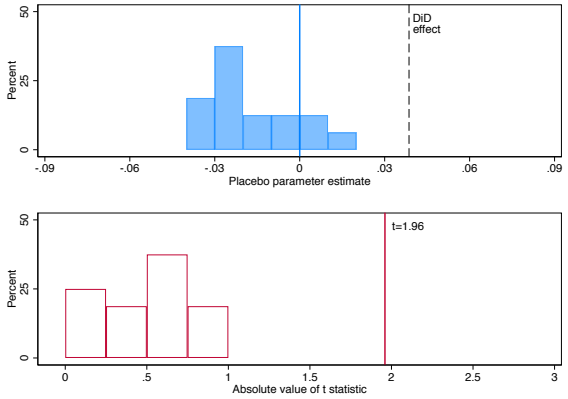
Figure A15:
Falsification tests on the main effects



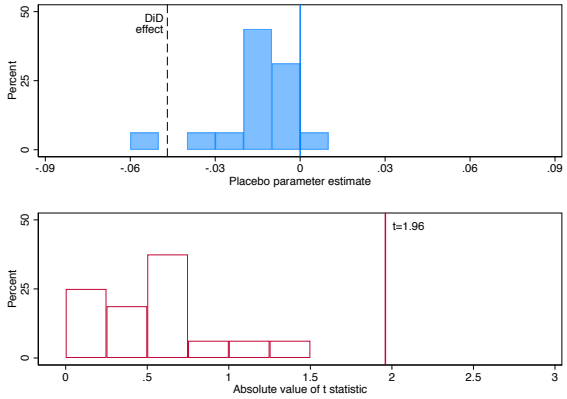
(a) Voluntary savers



(b) Voluntary contributions



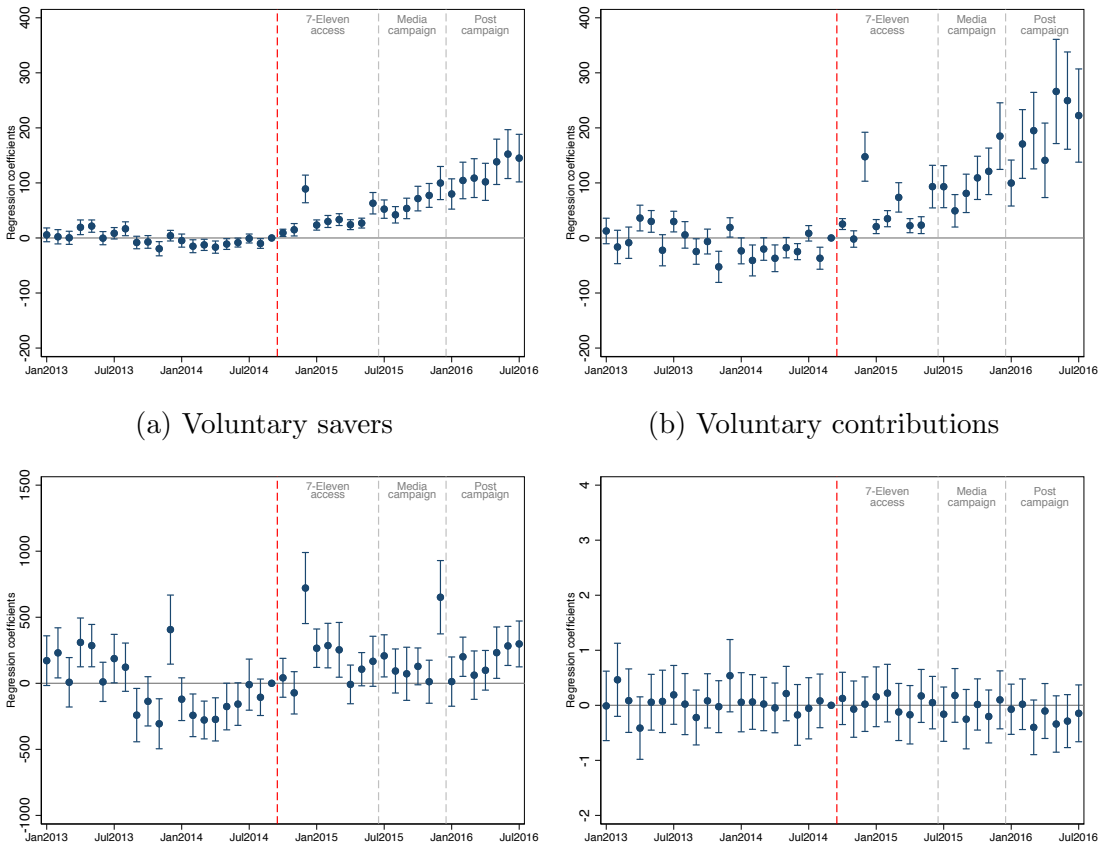
(c) Amount contributed voluntarily



(d) Average size of contribution

Notes: These plots show falsification tests on the main effects. Using pre-policy data only, we assign a placebo ("wrong") policy date and estimate equation 1. We repeat this for all pre-policy dates. For each outcome, we plot the distribution of parameter estimates and their corresponding t-statistics. Vertical lines denote a parameter value of zero, the estimated DiD effect as reported in the main text, and a t-stat of 1.96 in absolute value. Observations are at the municipality-month level. The top two graphs correspond to the volume of transactions, the bottom two are the value. Outcome variables transformed with the inverse hyperbolic sine for the estimation. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Robust standard errors are clustered by municipality.

Figure A16:
Policy effects on main outcomes measured in levels



(a) Voluntary savers

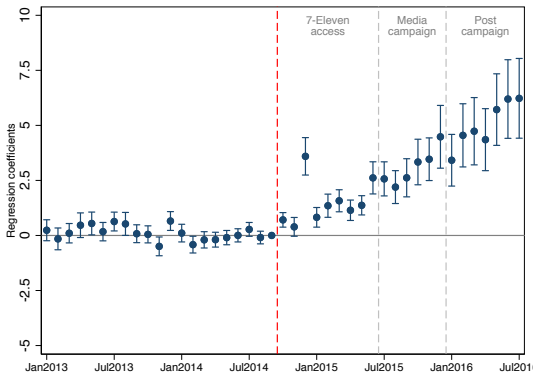
(b) Voluntary contributions

(c) Total amount contributed

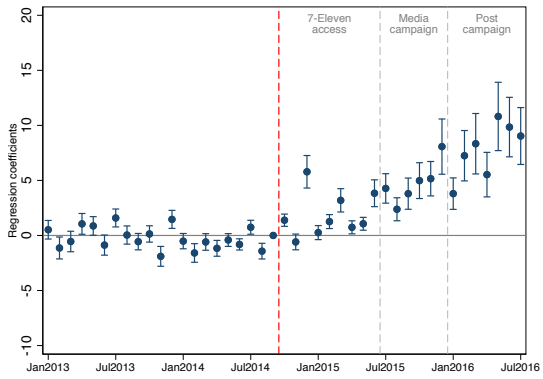
(d) Size of contribution

Notes: These plots show event study estimates from expanding 7-Eleven access before, during, and after the media campaign. Observations are at the municipality-month level. We show measures of our main transaction volume and value outcomes in levels (without the inverse hyperbolic sine transformation). Amounts are measured in thousands of Mexican pesos. Coefficients for month indicators interacted with 7-Eleven presence are shown, from regressions that include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Bars correspond to 95% confidence intervals based on robust standard errors clustered by municipality.

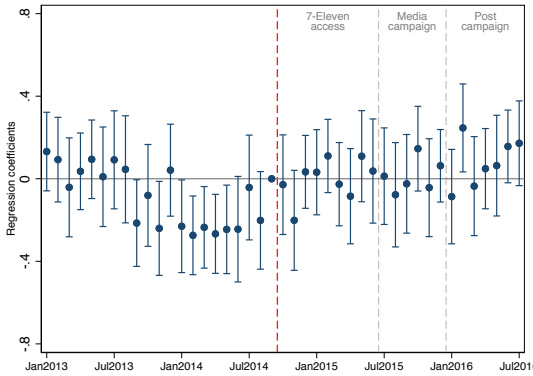
Figure A17:
Policy effects on alternative measures of the outcomes



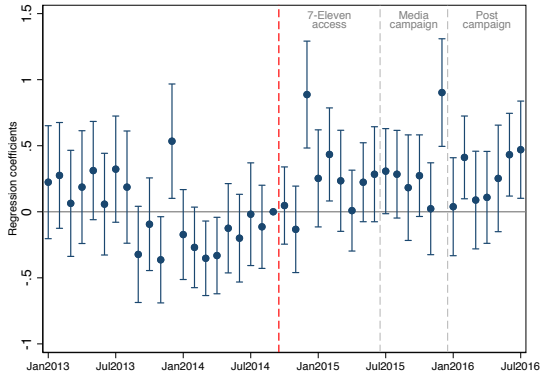
(a) Voluntary savers per 10,000 accounts



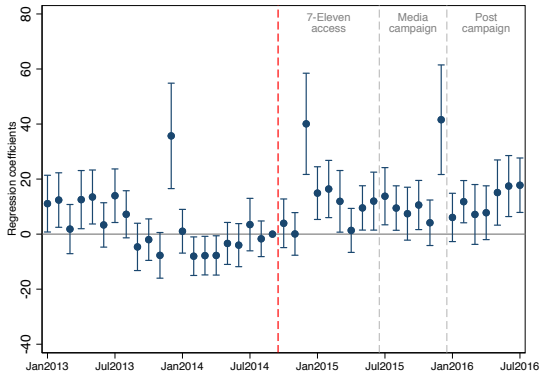
(b) Contributions per 10,000 accounts



(c) Indicator $> p50$ pre-policy amount



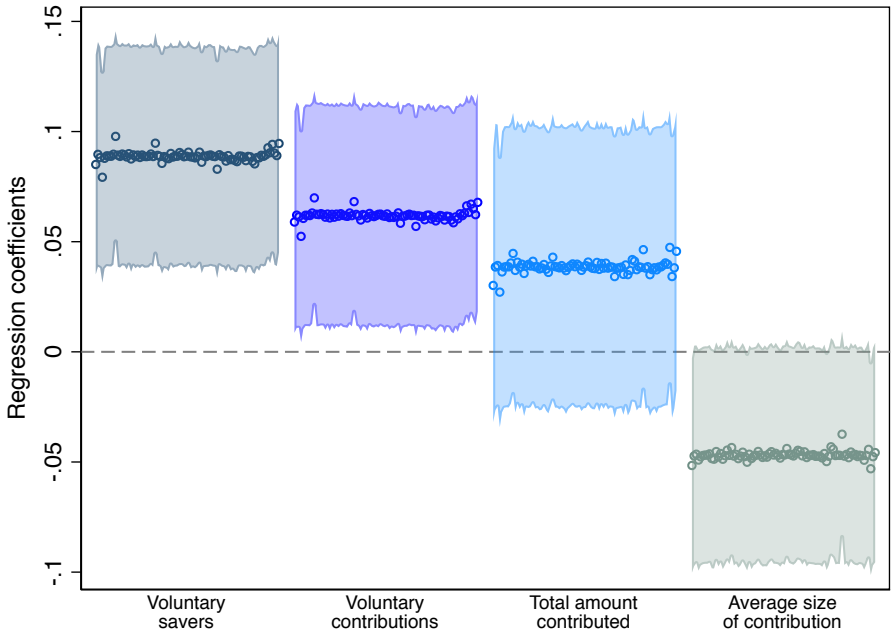
(d) z-score of amount contributed



(e) Amount contributed per 10,000 accounts

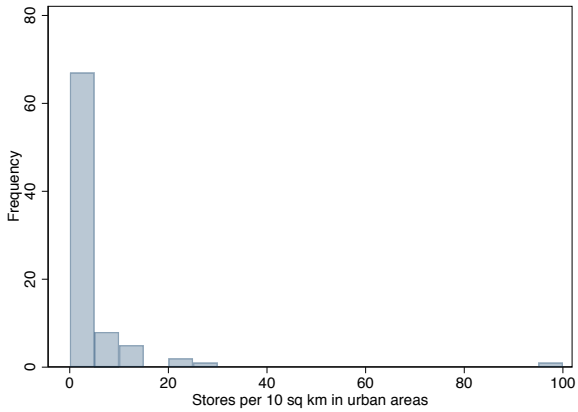
Notes: These plots show event study estimates from expanding 7-Eleven access before, during, and after the media campaign. Observations are at the municipality-month level. We show alternative measures of our transaction volume and value outcomes. Coefficients for month indicators interacted with 7-Eleven presence are shown, from regressions that include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Bars correspond to 95% confidence intervals based on robust standard errors clustered by municipality.

Figure A18:
Robustness of effects to to leave-one-out estimates

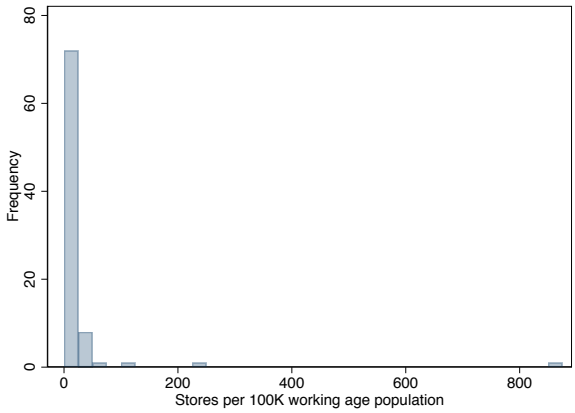


Notes: These plots show robustness of the main results presented in Tables 4 and 5 to outliers. We estimate the main specification 84 times, leaving one of the 84 7-Eleven municipalities out of the sample each time. We plot the coefficients of interest and their 95% confidence interval based on robust standard errors clustered by municipality. Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy.

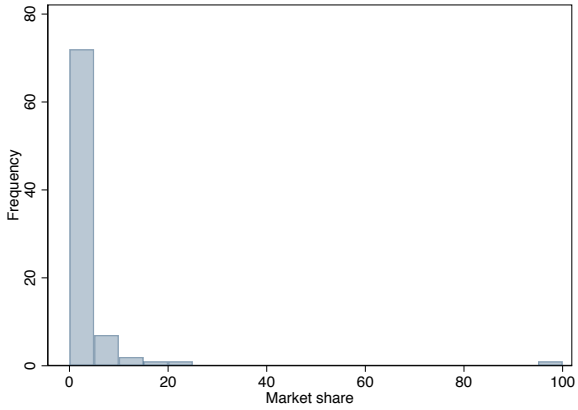
Figure A19:
Histograms of municipality measures of 7-Eleven intensity



(a) Stores per 10 sq. km. in urban areas



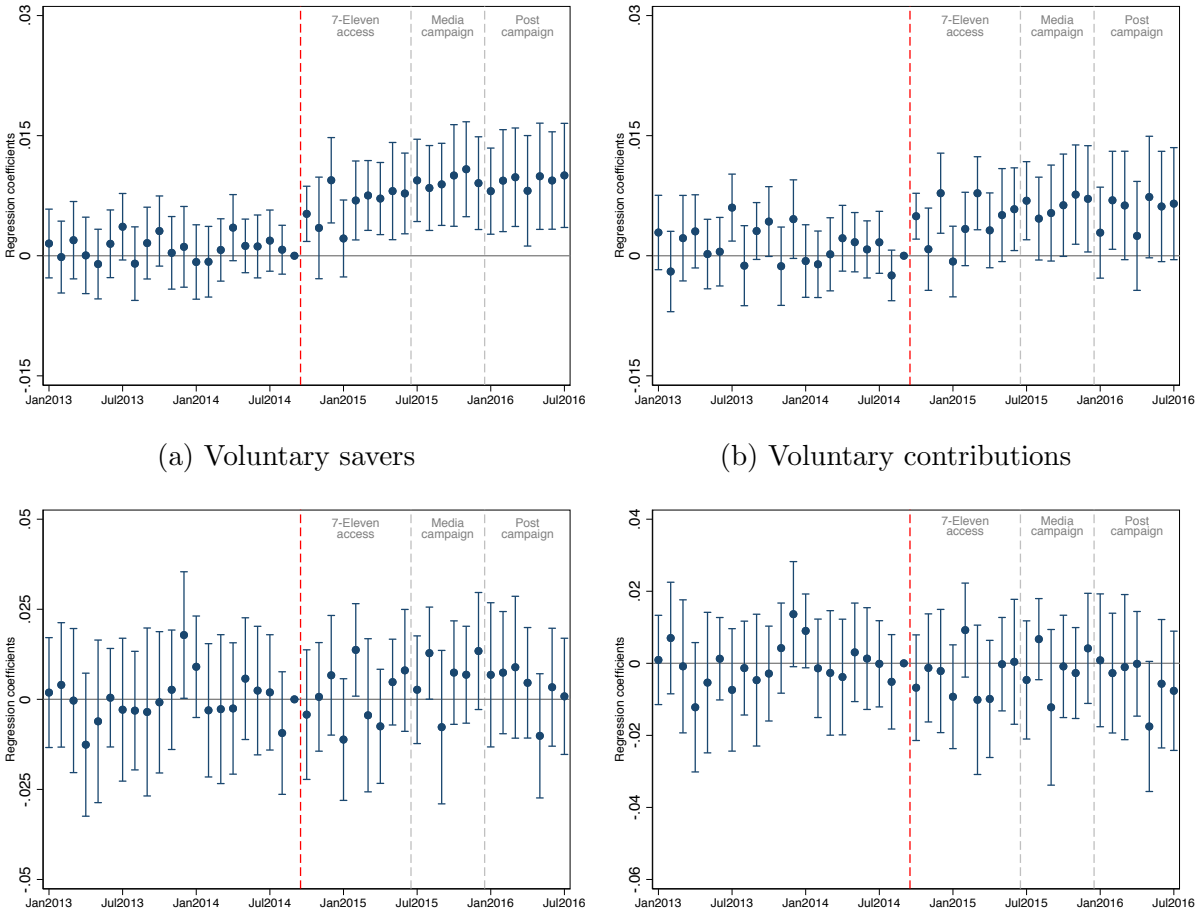
(b) Stores per 100,000 working age individuals



(c) Percentage of convenience stores

Notes: These plots show histograms displaying the frequency for different measures of 7-Eleven intensity of exposure for the 84 municipalities in the treatment group of the analysis. Each panel considers the following measures: (i) the number of stores per 10 square km in urban areas, (ii) the number of stores per 100,000 working age individuals (15-59 y/o), and (iii) 7-Eleven's market share, defined as the percentage of convenience stores that belong to 7-Eleven.

Figure A20:
Event study of the policy effects exploiting store density



(a) Voluntary savers

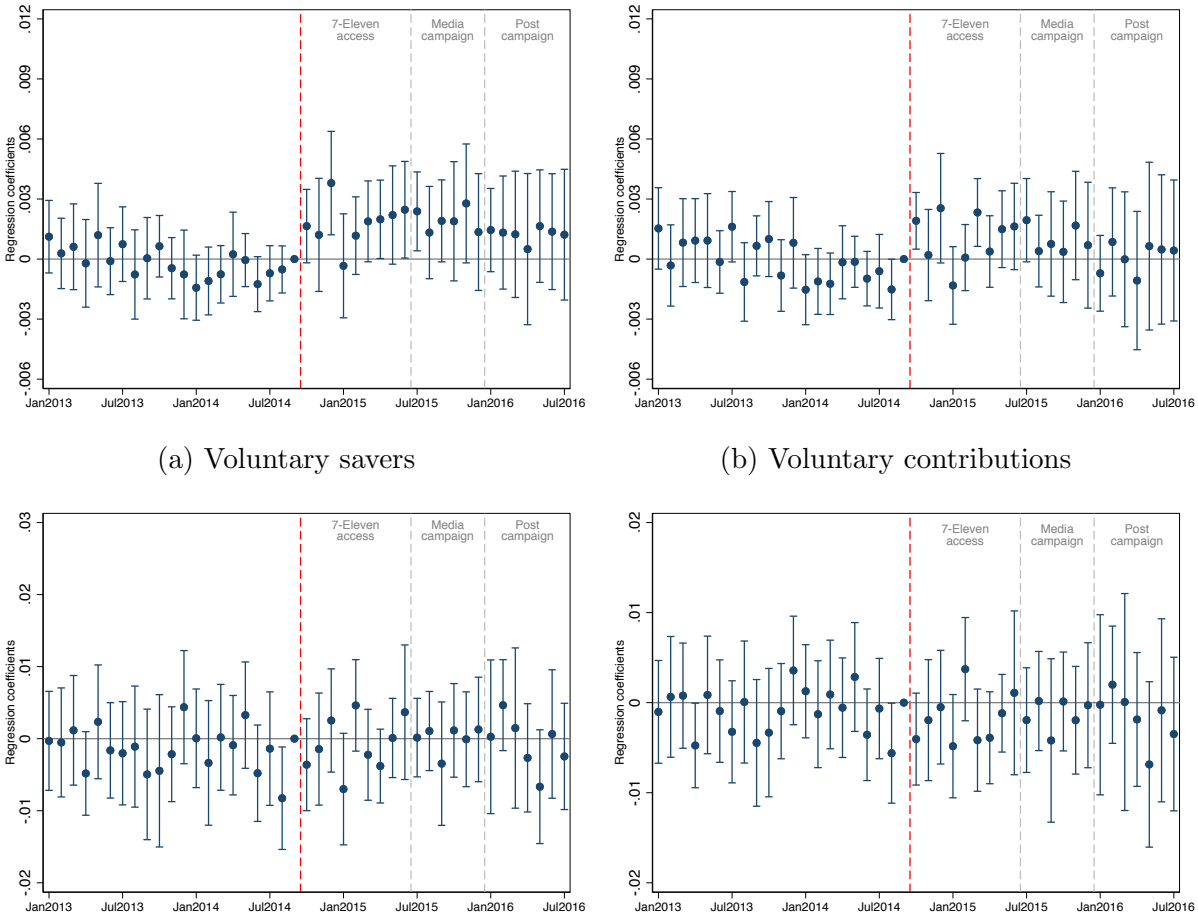
(b) Voluntary contributions

(c) Amount contributed voluntarily

(d) Average size of contribution

Notes: These plots show event study estimates from expanding 7-Eleven access before, during, and after the media campaign exploiting store density per 10 square km as the treatment. Observations are at the municipality-month level. The top two graphs correspond to the volume of transactions, the bottom two are the value. Outcome variables transformed with the inverse hyperbolic sine for the estimation. Coefficients for month indicators interacted with 7-Eleven density are shown, from regressions that include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Bars correspond to 95% confidence intervals based on robust standard errors clustered by municipality.

Figure A21:
Event study of the policy effects exploiting stores per 100,000 workers



(a) Voluntary savers

(b) Voluntary contributions

(c) Amount contributed voluntarily

(d) Average size of contribution

Notes: These plots show event study estimates from expanding 7-Eleven access before, during, and after the media campaign exploiting the number of stores per 100,000 working-age individuals (ages 15-59) as the treatment. Observations are at the municipality-month level. The top two graphs correspond to the volume of transactions, the bottom two are the value. Outcome variables transformed with the inverse hyperbolic sine for the estimation. Coefficients for month indicators interacted with 7-Eleven locations per 100,000 workers are shown, from regressions that include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Bars correspond to 95% confidence intervals based on robust standard errors clustered by municipality.

Figure A22:
Event study of the policy effects exploiting market share of 7-Eleven stores

(a) Voluntary savers

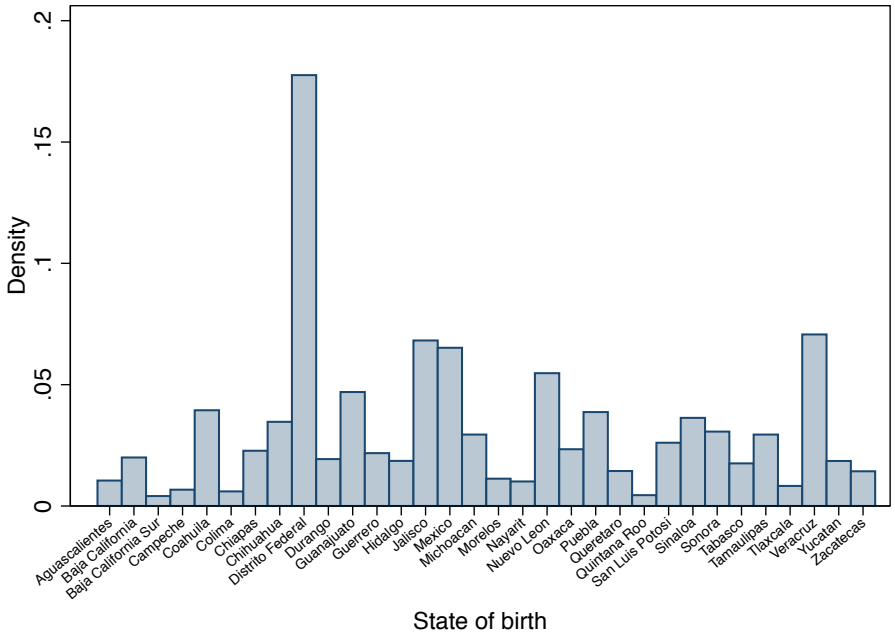
(b) Voluntary contributions

(c) Amount contributed voluntarily

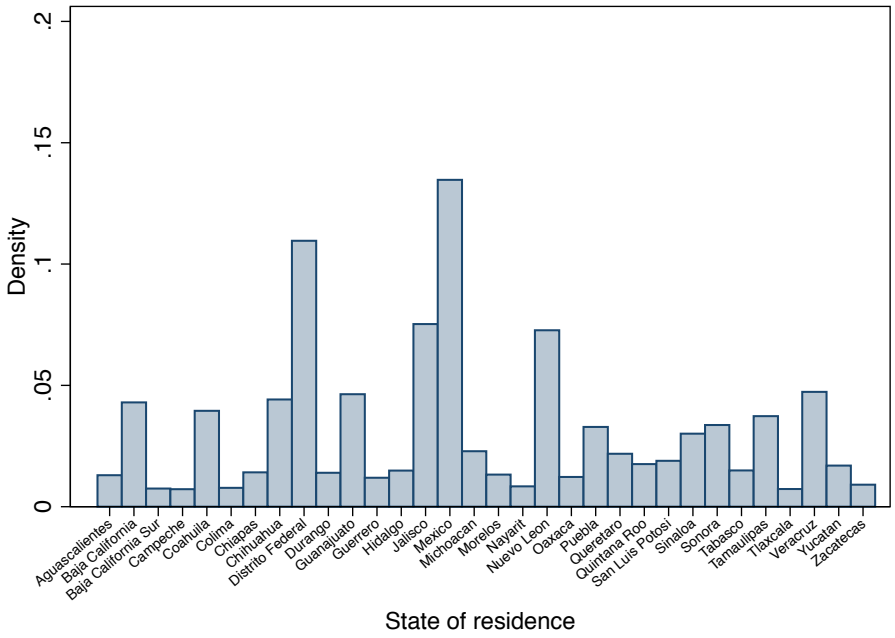
(d) Average size of contribution

Notes: These plots show event study estimates from expanding 7-Eleven access before, during, and after the media campaign exploiting the percentage of all convenience stores that correspond to 7-Eleven as the treatment. Observations are at the municipality-month level. The top two graphs correspond to the volume of transactions, the bottom two are the value. Outcome variables transformed with the inverse hyperbolic sine for the estimation. Coefficients for month indicators interacted with percentage of stores that are 7-Eleven are shown, from regressions that include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Bars correspond to 95% confidence intervals based on robust standard errors clustered by municipality.

Figure A23:
Distribution of workers' state of birth and state of residence



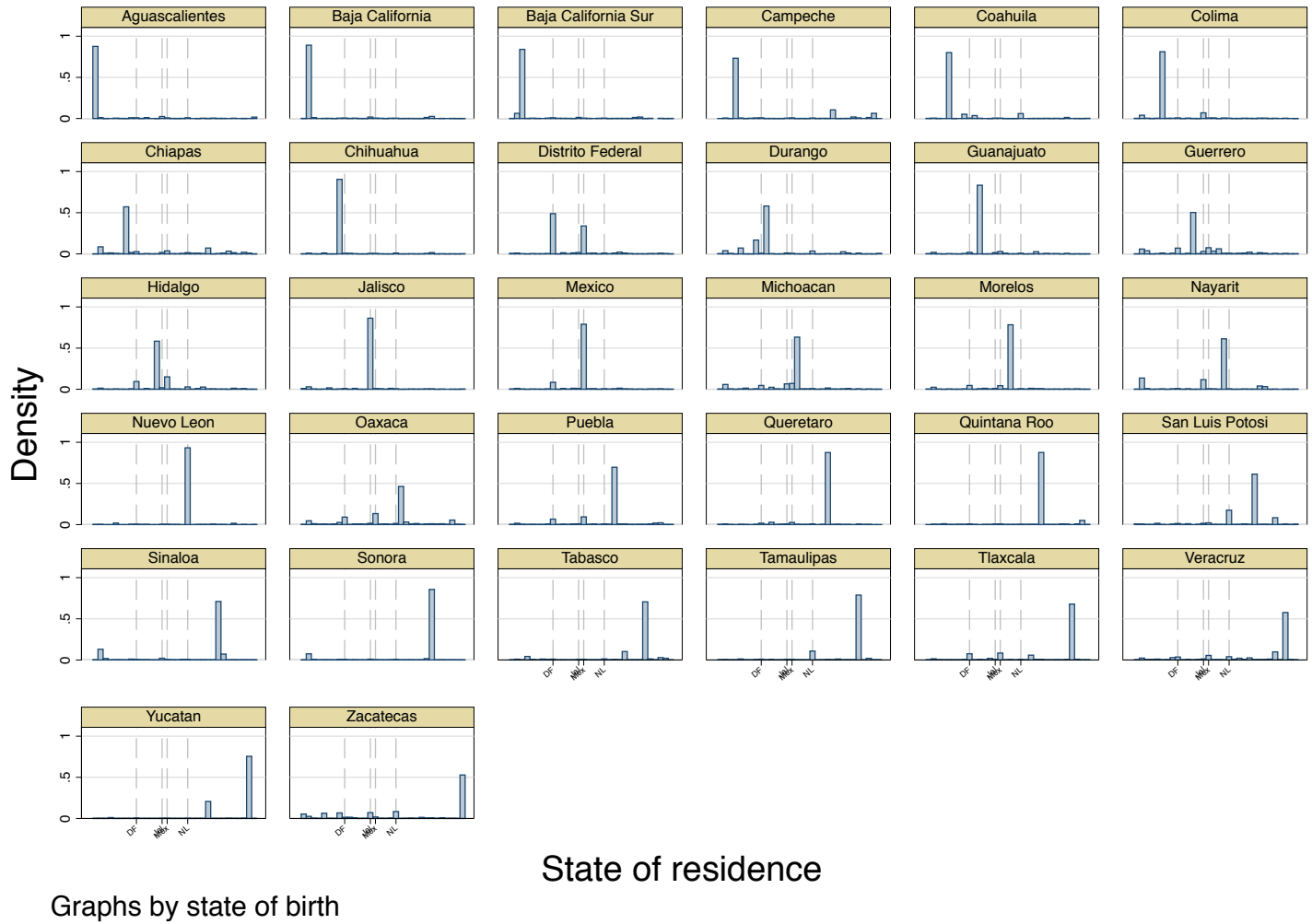
(a) Distribution of state of birth



(b) Distribution of state of residence

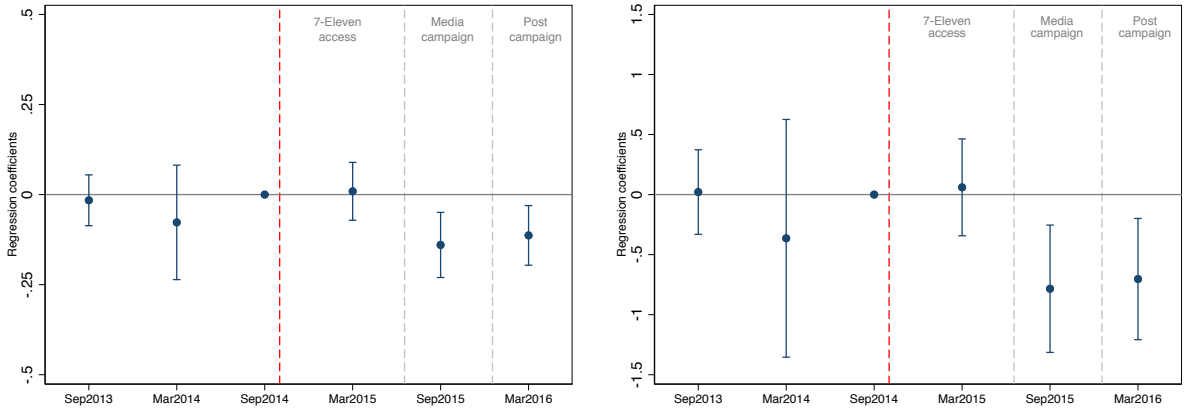
Notes: These plots show histograms for workers' state of birth and state of residence (measured in the last quarter of 2015).

Figure A24:
Relationship between workers' state of birth and state of residence



Notes: These plots show the relationship between state of birth and state of residence (measured in the last quarter of 2015). Dashed lines correspond to states that contain the three largest metropolitan areas: Mexico City (Distrito Federal [DF] and Mexico [Mex]), Guadalajara (Jalisco [Jal]), and Monterrey (Nuevo Leon [NL]).

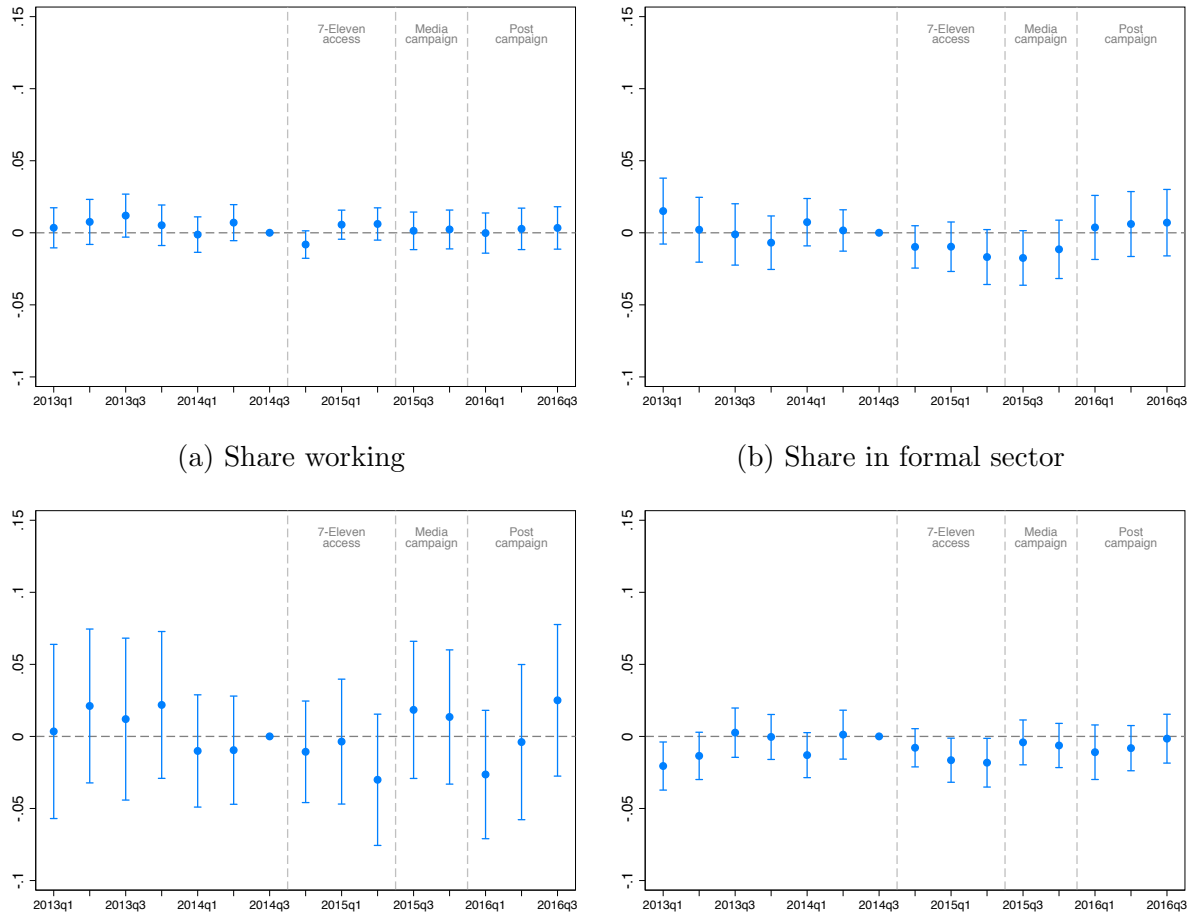
Figure A25:
Policy effects on withdrawals from voluntary savings



(a) Indicator for net withdrawals (b) Amount withdrawn

Notes: These plots show event study estimates from expanding 7-Eleven access before, during, and after the media campaign. Observations are at the municipality-month level. We only observe withdrawals every six months. The first panel shows an indicator for having net withdrawals in a municipality-month, and the second shows the total amount withdrawn by workers (1,000s MXN), transformed with the inverse hyperbolic sine for the estimation. Coefficients for month indicators interacted with 7-Eleven presence are shown, from regressions that include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Bars correspond to 95% confidence intervals based on robust standard errors clustered by municipality.

Figure A26:
Effect of treatments on voluntary contributions



(a) Share working

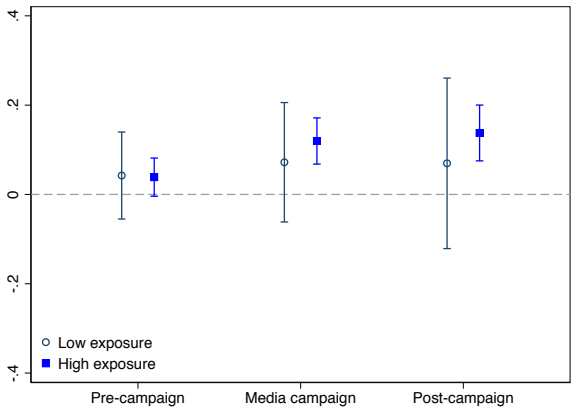
(b) Share in formal sector

(c) Average monthly income

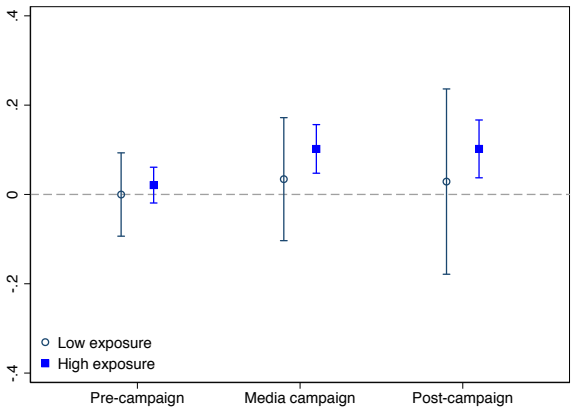
(d) Average work hours per week

Notes: These plots show effects on labor supply outcomes using the same time periods from expanding 7-Eleven access before, during, and after the media campaign, within a dynamic DD framework. Observations are at the municipality-quarter level, using data from the quarterly ENOE surveys. The outcomes are the share of individuals in a municipality-quarter that are working, the share that are working in the formal sector, the average monthly income conditional on working, and the average number of hours worked per week conditional on working. The last two outcomes are measured in logs. Coefficients for month indicators interacted with 7-Eleven presence are shown, from regressions that include municipality and quarter-year FE. Bars correspond to 95% confidence intervals based on robust standard errors clustered by municipality.

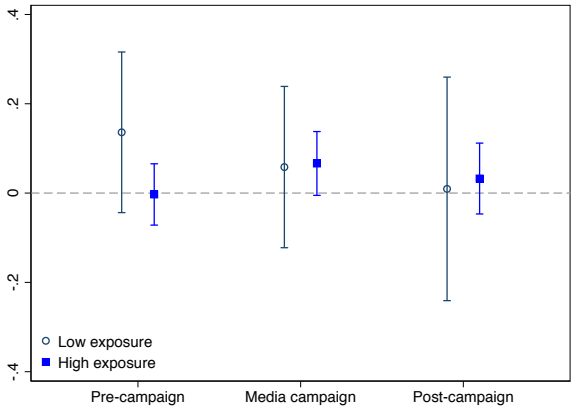
Figure A27:
Policy effects before, during, and after the media campaign by exposure to the ads



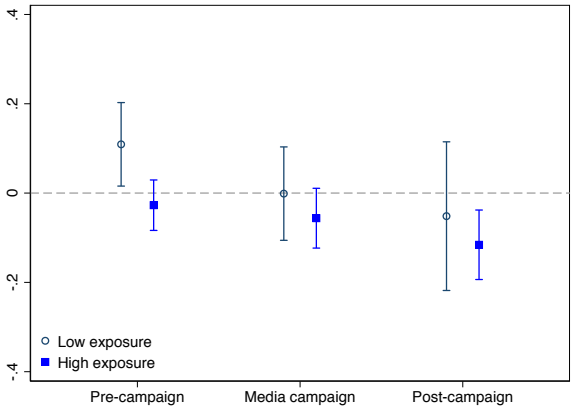
(a) Voluntary savers



(b) Voluntary contributions



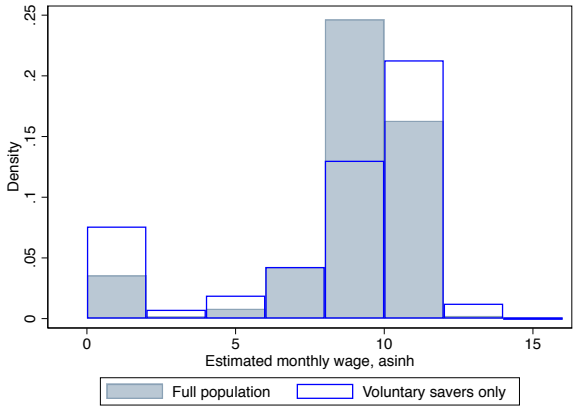
(c) Amount contributed voluntarily



(d) Average size of contribution

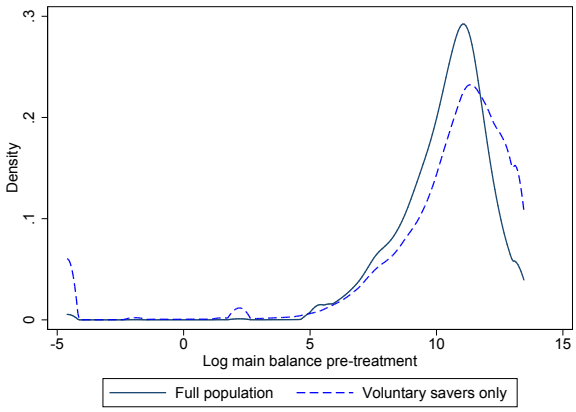
Notes: These plots show estimates from expanding 7-Eleven access before, during, and after the media campaign exploiting state-level exposure to the ads via the share of televisions with cable TV. Observations are at the municipality-month level. The top two graphs correspond to the volume of transactions, the bottom two are the value. Outcome variables transformed with the inverse hyperbolic sine for the estimation. Coefficients for time period interacted with 7-Eleven are shown, from regressions that include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Bars correspond to 95% confidence intervals based on robust standard errors clustered by municipality.

Figure A28:
Distribution of pre-policy estimated monthly wage



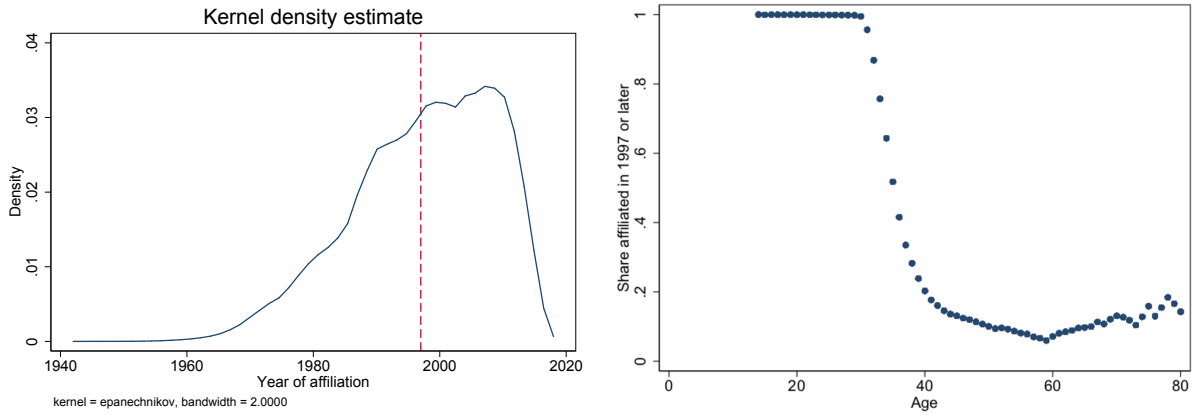
Notes: This plot shows the density of the estimated monthly wage in 1000s MXN, transformed with the inverse hyperbolic sine. We use information on mandatory contributions to the main account to back out the average monthly wage of workers.

Figure A29:
Distribution of pre-policy main account balance



Notes: This plot shows the density of the main account balance of workers prior to October 2014, measured in logs. All workers are included in the solid line, using survey weights. The dashed line considers only the workers that ever made a voluntary contribution, regardless of the timing of their first contribution.

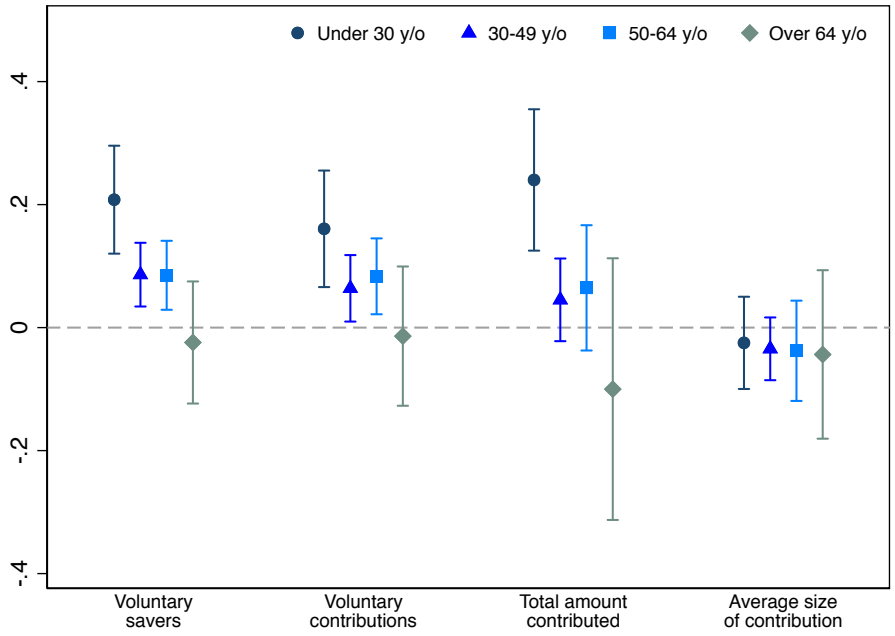
Figure A30:
Workers' year of affiliation



(a) Distribution (b) Relationship with age

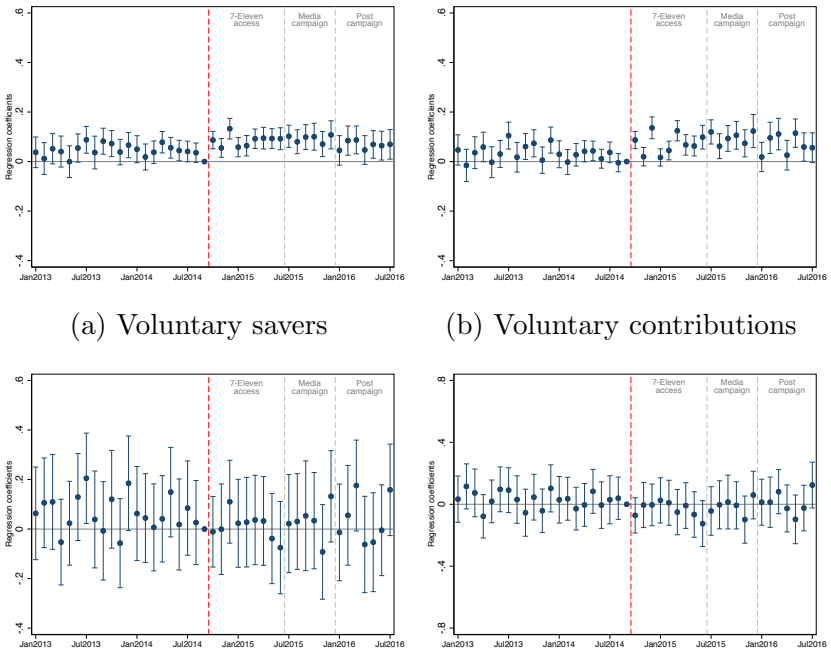
Notes: The plot on the left shows the density of the year of affiliation of workers. All workers are included, using survey weights. The dashed line shows 1997, the year when the new individual retirement accounts system began. The plot on the right shows the share of workers affiliated in 1997 or after by age.

Figure A31:
Heterogeneous effects by workers' age



Notes: This plot shows heterogeneous effects of the main results by workers' age at baseline. Observations are at the municipality-month level. Outcome variables transformed with the inverse hyperbolic sine for the estimation. Regressions include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Bars correspond to 95% confidence intervals based on robust standard errors clustered by municipality.

Figure A32:
Event study of the policy effects for early savers



(a) Voluntary savers (b) Voluntary contributions

(c) Amount contributed (d) Size of contributions

Notes: These plots show event study estimates from expanding 7-Eleven access before, during, and after the media campaign focusing on worker accounts that had voluntary savings pre-policy (early savers). Observations are at the municipality-month level. The top two graphs correspond to the volume of transactions, the bottom two are the value. Outcome variables transformed with the inverse hyperbolic sine for the estimation. Coefficients for month indicators interacted with 7-Eleven density are shown, from regressions that include municipality and month-year FE, and are weighted by the number of accounts pre-policy. Bars correspond to 95% confidence intervals based on robust standard errors clustered by municipality.