UNITED NATIONS UNIVERSITY
UNU-WIDER

WIDER Working Paper 2018/27

# Campaign externalities, programmatic spending, and voting preferences in rural Mexico

## The case of Progresa-Oportunidades-Prospera programme

Dragan Filipovich[1], Miguel Niño-Zarazúa[2], and
Alma Santillán Hernández[3]

February 2018

United Nations University World Institute for Development Economics Research
wider.unu.edu

**Abstract:** This study presents an analysis of the electoral impacts of one of the most prominent conditional cash transfers in the world: Mexico's Progresa-Oportunidades-Prospera (POP) programme. Using population censuses, and POP's administrative records and elections data, we exploit the targeting criteria of the programme and its gradual expansion to implement difference-in-differences estimators and a regression discontinuity design for past presidential elections (2000, 2006, and 2012). Overall, we find no sizeable electoral effects of POP in favour to the incumbent in the 2000 and 2012 presidential elections, but instead a significant negative effect in the very competitive presidential election of 2006. We provide a theoretical rationalization for this result, which highlights the role of behaviour towards risk near a subsistence threshold and ex-ante expectations among the poor in control localities that were influenced by campaign externalities. We conclude with a discussion on the implications of our results for future theoretical and empirical research.

**Keywords:** conditional cash transfers, information externalities, Mexico, rural poverty, voting behaviour,
**JEL classification:** H53, I38, N36, P16

**Acknowledgements:** We are grateful to participants at the 2017 UNU-WIDER Development Conference on Public Economics in Maputo, and the internal WIDER Seminar in Helsinki, for their helpful comments on earlier versions of this paper. We gratefully acknowledge support for this research from UNU-WIDER. Naturally, any remaining errors are ours.

[1] Universidad Rafael Landívar, Guatemala City, Guatemala; [2] UNU-WIDER, Helsinki, Finland, corresponding author: miguel@wider.unu.edu; [3] Universidad Autónoma del Estado de Hidalgo, Hidalgo, Mexico.

This study has been prepared within the UNU-WIDER project on 'The political economy of social protection systems', which is part of a larger research project on 'The economics and politics of taxation and social protection'.



Information and requests: publications@wider.unu.edu

ISSN 1798-7237 ISBN 978-92-9256-469-8 https://doi.org/10.35188/UNU-WIDER/2018/469-8

Typescript prepared by the authors.

The United Nations University World Institute for Development Economics Research provides economic analysis and policy advice with the aim of promoting sustainable and equitable development. The Institute began operations in 1985 in Helsinki, Finland, as the first research and training centre of the United Nations University. Today it is a unique blend of think tank, research institute, and UN agency—providing a range of services from policy advice to governments as well as freely available original research.

The Institute is funded through income from an endowment fund with additional contributions to its work programme from Finland, Sweden, and the United Kingdom as well as earmarked contributions for specific projects from a variety of donors.

Katajanokanlaituri 6 B, 00160 Helsinki, Finland

# 1 Introduction

Conditional cash transfer programs (CCTs) represent one of the most important social policy innovations of the last two decades.[1] Unlike most social policies that dominated past antipoverty strategies in Latin America, CCTs have largely adopted programmatic principles and 'conditionalities' as incentive devices, aimed to encourage poor households to invest in the education, health, and nutrition of their children. The idea is that by investing in human capital, CCTs can contribute to breaking the intergenerational transmissions of poverty.

The politics—and political economy dimensions—of social policy has been at the centre of scholarly work for decades. Concerns about the discretionary use of social policies to advance incumbents' position in election times, particularly in contexts in which democratic institutions are still evolving, have been studied extensively in theoretical and empirical research (Caselli and Morelli, 2004; Cukierman and Meltzer, 1986; Franzese, 2002; Rogoff and Sibert, 1988; Wantchekon, 2002).

In the particular case of CCTs, there is scant literature that has looked into the electoral effects of these programmes in a number of cases, including Brazil (Zucco, 2013), Colombia (Baez *et al.* , 2012), Honduras (Galiani *et al.* , 2017), Mexico (Cornelius, 2004; Diaz-Cayeros *et al.* , forthcoming; De La O, 2013; Imai *et al.* , 2016; Green, 2005), the Philippines (Cruz *et al.* , 2016), and Uruguay (Manacorda *et al.* , 2011). Overall, this literature reports mixed results, mainly on single elections and mostly under short-term time horizons.

This paper focuses on what is widely regarded as one of the pioneer CCTs, the Mexican Progresa-Oportunidades-Prospera (POP) programme.[2] POP was introduced in 1997 by the Zedillo administration from the centrist Institutional Revolutionary Party (PRI) under the name Progresa, and then renamed as Oportunidades in 2002 under the conservative Fox administration from the National Action Party (PAN). The programme currently operates under the name Prospera, which it acquired after the PRI won back the presidency in the elections of 2012, with Enrique Peña Nieto as its candidate.

In this paper, we ask whether incumbents charged with POP's implementation have benefited electorally from it; and if so, how they might have done so, and to what extent. Our analysis covers the past three presidential elections in a period of profound political transitions that saw the country moving from an autocratic one-party regime towards a more competitive democratic system.

From POP's beginning, a major concern was to prevent it from being exploited for electoral purposes, which is not surprising given that at the time Mexico was fully engaged in overcoming its history of clientelistic one-party rule. Accordingly, the programme adopted programmatic principles and objectively targeted the poor using geographical criteria and proxy means tests. Further, it was implemented by a dedicated agency under direct control by the Executive Branch. Rigorous evaluations by independent researchers were also regularly conducted. Finally, the allocated budget to the programme was approved

[1] While this type of policy was pioneered in Chile in the early 1980s, the archetypal programme is arguably Mexico's flagship *Progresa* programme (later renamed as *Oportunidades* and subsequently operating under the name *Prospera*).

[2] The Mexican experiment inspired a host of similar programmes across Latin America and also in sub-Saharan Africa and Asia, although at a smaller scale. For an overview, see Fiszbein and Schady (2009).

by Congress every year, which meant that opposition parties retained a certain degree of influence (De La O, 2015).

Those regular and rigorous evaluations seem to leave little doubt as to its success in improving schooling and health for the poor (Skoufias, 2005; Skoufias and McClafferty, 2001).[3] Yet, the question of its electoral impact is still an open one. It is not clear that POP's design, 'safeguards' and all, suffice to protect it from political exploitation.

The scant literature on the electoral impact of POP now spans a decade or so (De La O, 2013, 2015; Cornelius, 2002; Diaz-Cayeros *et al.* , forthcoming; Rodríguez Chamussy, 2015; Green, 2005; Imai *et al.* , 2016), and has taken almost by default a 'direct' approach to the question of electoral impact, assuming that only the vote in treated localities could be influenced by the programme. This literature has generally yielded mixed results, with the majority of studies finding evidence of an 'electoral bonus' to the incumbent (De La O, 2013, 2015; Cornelius, 2002; Diaz-Cayeros *et al.* , forthcoming; Rodríguez Chamussy, 2015), while others dispute these findings (Green, 2005; Imai *et al.* , 2016).

To us, these mixed results suggest that there is something amiss in the assumptions adopted by the literature. Imai *et al.* (2016) recently reviewed what is arguably one of the most influential studies in this area (De La O, 2013). De La O's ancillary experimental study used the randomized evaluation data that were collected at the very start of POP (1997–2000) and found a positive electoral effect in favour to the incumbent during the 2000 presidential election. Imai et al., using the same data, convincingly demonstrated that this positive effect vanished once errors in matching between electoral and programme data were corrected. The absence of any POP impact echoes earlier findings by Green (2005), who adopted a regression discontinuity design for the same election.

While Imai *et al.* (2016) argue their finding is the 'natural' outcome, or at least, the result to be expected given the programmatic features of POP, we are not so certain. For the reasons discussed below, and also highlighted in past and more recent studies (Cornelius, 2002; Spalding, 1998; Larreguy *et al.* , 2016), POP is unlikely to be immune to political manipulation of some sort or another. This led us to approach the issue of electoral impact of POP from a related, but so far unexplored angle. The basic idea is simple: in the context of a gradual expansion of the programme, the campaign of the incumbent party during the presidential election would exploit the *promise*—which generates an ex-ante prospective expectation of voters in poor but untreated localities—that POP would be implemented in their communities if they favoured the incumbent party with their vote. This form of informational spillover is what we refer to hereafter as 'campaign externalities'.[4]

If such 'externalities' are at work, it is clear that any exercise comparing treated with control localities, even under an experimental setting, will only identify a 'net electoral

[3] For a comprehensive review of the welfare impacts of POP, see Parker *et al.* (2007).

[4] There are clear indications that this sort of campaign externality was at work in the 2000 and subsequent presidential elections. For instance, prior to the 2000 presidential election, a senior PRI politician, Manuel Bartlett, ex-Minister of the Interior, stated quite brazenly and in keeping with the style of PRI traditional politicians that *'the federal government's social programmes are PRI programmes, and we're going to use them to win the presidency'* (quoted in Diaz-Cayeros *et al.* (forthcoming): 193). Naturally, other forms of externalities, not necessarily informational, could be at work too. For instance, POP might have allowed federal authorities to reshuffle non-programme discretionary spending towards non-treated communities, as pointed out by Cruz and Schneider (2017) and Bobba (2011).

effect', i.e. a direct electoral effect minus the indirect effect from externalities. In this work, we take two approaches to try to identify such 'net effects' using population censuses, POP administrative records and electoral data for Mexico's presidential elections of 1994, 2000, 2006, and 2012.

First, we exploit the variation in the roll-out of the programme to compute difference in differences (DD) estimators in the vote shares for each of the three major parties (PAN, PRI, PRD) by comparing households living in localities that were treated by POP, and those that were equally deprived but remained untreated by the time of the election. However, since the progressive expansion of the programme was non-random, and driven by observed heterogeneity associated with the availability of social infrastructure, we adopted a semi-parametric approach to compute the DD estimators.

Second, we exploit the exogenous rule that eligibility into treatment is decided by programme administrators based on a marginality index at locality level and a proxy means test at household level, to derive threshold points to run regression discontinuity (RD) estimators.

The results from the DD and RD estimators are at first sight somewhat puzzling. We find no significant net effects for any party in the 2000 and 2012 presidential elections, but we do find a significant *negative* net effect for the incumbent PAN in the 2006 presidential election. We offer a rationalization of these findings in terms of behaviour towards risk in the neighbourhood of a 'subsistence' threshold, campaign externalities, systematic differences in before-programme incomes between treated and untreated localities, and the peculiarities of the different presidential campaigns. While we are certainly not in a position to claim a full causal treatment effect of POP in this study, but just a net one, we offer in Section 9 tentative routes to derive estimates of the indirect effect from externalities.

The remainder of the paper is organized as follows: Section 2 presents a review of the relevant literature on political effects of CCTs with a specific focus on Mexico. Section 3 discusses the programme, its key design features, and the economic and political context in which the programme was introduced, and then further expanded in subsequent years. Section 4 presents the theoretical model and premises that underpin our analysis, and Section 5 describes the data used in the analysis. Section 6 presents the empirical strategy for identification, and the quasi-experimental methods used in the analysis. Section 7 briefly discusses some descriptive statistics before moving onto Section 8, where we present the results. Section 9 elaborates in more detail on the mechanisms at work in our results, highlighting the role of campaign externalities, ex-ante expectations, and risk-taking behaviour among the extreme poor. Finally, Section 10 concludes with some reflections on the implications of our results for policy design.

## 2 Literature review

Political dimensions of social policy—and public resources in general—has been the focus of a considerable number of scholarly works. Concerns about the use of social policy as a part of vote buying and clientelistic tactics and discretionary government spending have been widely studied (Arndt, 2013; Giger, 2011; Jones *et al.* , 2012). The literature highlights the detrimental effects on state capacity (Geddes, 1996; Grzymala-Busse, 2008);

the efficient allocation of public goods (Adsera *et al.* , 2003; Robinson and Verdier, 2013); corruption, accountability, and governance (Ades and Di Tella, 1999; Brinkerhoff and Goldsmith, 2004; Kurer, 1993), and the building blocks of democracy more generally (Fukuyama, 2015).[5]

Closer to our study is the literature that focuses on how, and under what conditions, social policy generates an electoral advantage to the incumbent in contexts in which democratic institutions are still evolving. In Brazil, for instance, Samuels (2002) finds no evidence of a direct causal effect of discretionary 'pork barrel' government spending on an electoral advantage to the incumbent, but instead finds an indirect pecuniary effect of pork barrelling via campaign finance. In Mexico, Bruhn (1996) and Dion (2000) find no evidence of an electoral gain for the incumbent PRI as a result of the distribution of the National Solidarity Program (PRONASOL), a matching grant programme for small and medium-sized infrastructure and social projects introduced by President Salinas de Gortari to compensate for the adverse effects associated with the rapid market liberalization and structural change of the 1980s.

Other studies find, in contrast, an incumbency advantage of social policy, although with varying explanatory routes. In Peru, Schady (2000) finds that Alberto Fujimori's regime strategically increased discretionary spending of the Peruvian Social Fund (FONCODES) prior to national elections, and in provinces where the incumbency advantage was likely to be largest, denoting a political business cycle. In Argentina, Gibson and Calvo (2000) show that the government of Carlos Menem manipulated social spending in economically marginal but politically important regions to gain support for the introduction of socially costly structural reforms that primarily affected the more affluent regions.

In Latin America, in particular, comparative studies generally argue that targeted social policies have been key for economic stabilization and recovery after costly market-oriented reforms, which in turn produced positive electoral outcomes for the incumbent in some countries, but not in others (Weyland, 1998). Cross-country studies also highlight the underlying mechanisms through which discretionary social spending impact electoral outcomes, notably wages and subsidies (Vergne, 2009).[6]

In the specific context of CCTs, a scant literature reports mixed results with regard to their electoral impacts. A first generation of studies relied on exit polls and opinion surveys to study the routes through which CCTs impact electoral preferences. Notable cases are the studies by Zucco (2013) in Brazil, and Cornelius (2004) and Diaz-Cayeros *et al.* (forthcoming) in the context of Mexico.

While this generation of studies offer rich and detailed accounts of vote-buying tactics and other means used by incumbents to exercise their electoral advantage in the context of programmatic CCTs, some concerns remain latent, particularly with regard to non-response bias arising from exit poll surveys.[7] Post-election surveys also suffer from response bias—

[5] For comprehensive reviews on the effect of clientelism and vote buying, see Hicken (2011) and Vicente and Wantchekon (2009).

[6] In the context of sub-Saharan Africa, the execution of expansionary fiscal and monetary stimuli prior to elections—often unintentionally instigated by foreign aid—has been extensively exploited (see Chiripanhura and Niño-Zarazúa, 2015).

[7] There is evidence that non-responders are usually poorer, dissatisfied with their living conditions and often disfranchised from political and social institutions. For a discussion, see Imam *et al.* (2014) and the

what Gonzalez-Ocantos *et al.* (2012) have referred to as social desirability bias—given that voters may provide misleading responses, especially in the context where mistrust for political institutions and actors is widespread. Equally important—and often overlooked in the literature—is the fact that exit polls and opinion surveys often suffer from sample selection bias, as the sampling frames are not designed to cover representative samples of population subgroups of interest, such as the poor who are targeted by CCTs.

A second generation of studies have adopted both experimental and 'ancillary' approaches to examine the electoral impacts of CCTs.[8] Notable examples are the field experiments by Galiani *et al.* (2017) and Cruz *et al.* (2016) conducted in Honduras and the Philippines, respectively. These studies highlight the role of information asymmetries between incumbents and voters in generating an electoral advantage to the incumbent. Specifically relevant for our study is the finding that information on public policy can increase the incentives for the incumbent to deliver his or her redistributive promises. As it becomes evident in Section 8, in contexts of programmatic policies, this may not lead to vote-buying per se, but instead to prospective expectations on the side of the poor (both treated and untreated), who hoped to continue receiving (or begin to receive) transfer benefits once the incumbent is re-elected.

In the particular context of Mexico, the ancillary study by De La O (2013) employs the experimental evaluation data of POP and the 2000 presidential election data at precinct level to assess the electoral effects of the programme. She finds evidence of an incumbency advantage that materializes through a mobilizing mechanism. Early programme treatment seems to have led to increases both in voter turnout and vote shares to the incumbent, despite the fact that main opposition parties did not see significant declines in their vote shares. De La O concludes that it is the intensity of programme exposure, and not retrospective voting or vote-buying tactics per se that explains the electoral bonus generated by POP. In a recent replication study, Imai *et al.* (2016) contest the results of De La O (2013) and find that the electoral effects of POP vanished after they corrected for coding and matching errors incurred by De La O during the merging of the experimental and election data. Although our empirical results are quantitatively similar to those of Imai *et al.* (2016), the underlying mechanisms, as we argue in Section 4, are quite distinct.

While the sampling frame and level of randomization of the experimental study of POP was successful in controlling for observed and unobserved heterogeneity and confounding factors associated with programme treatment and the welfare domains that the programme aimed to influence (see Behrman and Todd, 1999), it is unclear to us why one should expect that the experimental design of POP was also effective at removing unobserved heterogeneity associated with electoral preferences and information externalities generated throughout political campaigns that would influence voter preferences in both treatment and control localities.

Another source of concern relates to potential threats to the external validity of experimental data, particularly in our context (Deaton, 2010; Gisselquist and Niño-Zarazúa, 2015; Ravallion, 2009). Since POP's experimental data were collected in only 503 localities

studies in the special issue edited by Singer (2006).

[8] Ancillary studies rely on existing experimental data collected by others to investigate unresearched causal mechanisms on new outcomes. For a detailed discussion on ancillary studies, see Baldwin and Bhavnani Rikhil (2015).

(320 treatment and 186 controls) in seven states out of 304,375 localities that integrate the 32 states of Mexico,[9] it lacks statistical representativeness at subnational levels and thus does not capture accurately the distribution of political preferences across the rural poor.

More recently, a third generation of studies have adopted quasi-experimental approaches that exploit exogenous rules as well as the variation in the implementation of CCTs, to measure the causal effects of such policies. One key advantage of quasi-experimental studies is their stronger external validity, as they rely of population census, elections results data, and administrative records that are representative at national and subnational levels.

One of the earlier studies of this generation is Green's (2005) analysis of Mexico's POP. She adopted an RD design to estimate POP's electoral impacts. She found no sizeable effects of the programme on voter turnout and vote shares to the then incumbent PRI, which was at odds with the findings reported by De La O (2013), but in line with our findings, as we discuss in Section 8.

More recent studies belonging to this third generation are Baez *et al.*'s (2012) analysis of Colombia's Familias en Acción, Manacorda *et al.*'s (2011) study of Uruguay's PANES programme, and Curto-Grau's (2017) study that examines the electoral effect of Spain's Plan for Rural Employment. Overall, these studies find evidence of an electoral advantage to the incumbent, which often seems to materialize through retrospective voting and reciprocity, whereby poorly informed voters infer ex-post the incumbent's redistributive preferences. The present study belongs, in methodological terms, to the third generation of studies, although it does not go as far as to claim a causal impact, but instead highlights, as discussed in Sections 4 and 8, the role of campaign externalities and prospective expectations in voting preferences of the poor, two issues widely overlooked in the literature.

## 3 POP in the 2000–2012 presidential elections

Mexico's Progresa was launched in August 1997, almost two years after the country experienced one of the most difficult political and economic crises in more than five decades. First, on 1 January 1994, about six months before the presidential elections, the uprising of the Zapatista Army of National Liberation (EZLN) in the southern state of Chiapas shocked the nation with a declaration of war against the State.[10]

In the months that followed, a series of events, notably the assassinations of two leading political figures in the country—the presidential candidate of the ruling Institutional Revolutionary Party (PRI), Luis Donaldo Colosio, on 23 March, and the secretary-general of the PRI, Francisco Ruiz Massieu on 28 September—generated political uncertainty, which together with fundamental macroeconomic disequilibria, contributed to triggering the peso crisis of December 1994 (Gil-Díaz and Carstens, 1996). The setback of a 7 per

[9] The sampled states in the ENCEL survey were Guerrero, Hidalgo, Michoacán, Puebla, Queretaro, San Luis Potosi, and Veracruz. For logistical and political reasons, the poorest states, Chiapas and Oaxaca, were not included in the experimental sample. For a discussion on the sampling frame of the ENCEL survey, see Skoufias (2005).

[10] The uprising of the EZLN, which became public the same day the North American Free Trade Agreement (NAFTA) came into force, proved to be highly significant for the redefinition of antipoverty strategies in the years that followed. For a discussion, see Gilbreth and Otero (2001); Diaz-Cayeros *et al.* (2016).

cent fall in real GDP in 1995 had a devastating effect on household welfare, pushing the headcount index associated with a food-based poverty line up from 21.2 per cent just before the crisis in 1994 to 37.4 per cent in 1996. This was equivalent to pushing more than 16 million people into poverty in such a short period.[11]

In the aftermath of the peso crisis, severe budgetary constraints that resulted from the slowdown of the economy and caused austerity measures meant that the incoming Zedillo (PRI) administration (1994–2000) had very little room for manoeuvre to increase social spending. In addition to that was the fact that most antipoverty policies at the time consisted of generalized and targeted food and in-kind subsidies that reached a fraction of the poor. Levy (2006) has pointed out that more than 75 per cent of the total budget for subsidised food consumption was allocated to urban areas, despite the fact that nearly 60 per cent of the poor lived in rural communities. Thus, any counter-cyclical strategy based on the existing antipoverty policy system would have had a very limited effect.

It was in this context of rising poverty and economic and political hardship that POP under the name Progresa was introduced. With its multidimensional approach towards tackling intergenerational transmissions of poverty, POP was revolutionary (Levy and Schady, 2013; Niño-Zarazúa, 2011). It provides cash transfers every two months to households in poverty to support food consumption, together with nutritional supplements to young children aged four months to two years, and pregnant and lactating women. The cash transfer is given to female household heads contingent upon regular medical check-ups of household members, attendance at group meetings where health, hygiene, and nutrition issues are discussed, and school attendance of children of school age. POP also provides school grants per child enroled in primary and secondary education[12] and health care services to household members.[13]

The school grant grows with school progression to compensate for the increasing opportunity cost of schooling, and is higher for girls to incentivize their enrolment in post-primary education (Parker *et al.* , 2007; Todd and Wolpin, 2006). POP initially covered 300,700 households in 6,344 rural municipalities. In 2003, under the Fox (PAN) administration, the programme was expanded to cover poor urban localities, and by the end of 2015 it had nationwide coverage, providing support to 28.2 million people living in poverty, or about 22 per cent of Mexico's population (see Table A1).

Besides its innovative approach to poverty reduction, POP also embraced distinct design features that are relevant for our study. First, it focused on the poor. This is in stark contrast to the truncated social security system and other generalized food subsidies and discretionary interventions that dominated social policy in Mexico, and which were regressive and of a clientelistic nature (Levy, 2006; Niño-Zarazúa, 2011). Second, POP included an independent impact evaluation protocol that generated rigorous evidence on its effectiveness. This eventually also helped guarantee support during subsequent political transitions (Skoufias, 2005). Third, POP was introduced under programmatic principles whereby the identification and selection of eligible households is done based on clear operating rules approved by the lower house of Congress, and implemented by a

[11] For a technical discussion on Mexico's poverty lines, see SEDESOL (2002).

[12] In 2001, the incoming Fox administration extended the school grant to high school levels.

[13] The health care package is comprehensive and includes child vaccinations, family planning, prenatal, childbirth, and puerperal care, prevention and treatment of diarrhoeal and infection diseases, respiratory infections, tuberculosis, and diabetes among other services.

centrally run federal agency following a rigorous targeting method.

The programmatic nature of POP was relevant, not only for effective targeting purposes, but also for limiting—although not eliminating altogether, as we discuss later—the scope of influence of the incumbent.[14] This is in a context in which the ruling PRI had systematically manipulated social policy for decades, as part of its vote-buying tactics (Bojar, 2017; Brown and Hunter, 2014; Diaz-Cayeros *et al.* , forthcoming; Drazen and Eslava, 2010).

The shift from clientelistic to programmatic spending should be seen in the context of increasing political competition and a democratization process that eventually saw the ruling PRI, which dominated party politics for seven decades, losing its majority in the lower house of Congress in the July 1997 congressional election—the same year that Progresa was introduced—making it increasingly difficult for the PRI to continue exercising flagrant clientelistic strategies.[15]

While *direct* clientelism was contained, electoral manipulation was not in any way eliminated. For instance, Cornelius (2002) report PRI governors taking advantage of the fiscal decentralization reform of the 1990s to mobilize resources towards strongholds and swing electoral districts. Voter intimidation through media campaigns, as well as direct threats to the poor that Progresa would cease if PAN won the presidential election, were widely reported (Spalding, 1998).

With the unprecedented victory of Vicente Fox from the conservative National Action Party (PAN) in the 2000 presidential election, significant changes were introduced to the existing Progresa. First, a new decree in 2002 replaced Progresa with Oportunidades. The new programme expanded its coverage to cover not only poor rural communities, but also urban areas, where PAN had historically had strongholds. Between 2001 and 2002, nearly six million people were added to the programme, and from 2002 to 2005, 710,000 households (nearly three million people) living in deprived urban areas were incorporated into Oportunidades (see Table A1).

In addition, a new component, *Young People with Opportunities*, was conceived as an incentive device for young people to complete high school. It consisted of savings accounts for graduates to be used for productive purposes, under the condition that they completed their studies before turning 22 years of age. In 2005, a year before the 2006 presidential election, the Fox administration introduced *70 y Mas*, a non-contributory pension for adults aged 70 and older, in clear response to the old age pension scheme that Andrés Manuel López Obrador of the left-wing Democratic Revolutionary Party (PRD)—the main contender in the 2006 presidential election—had established when he was Major of Mexico City (Hevia de la Jara, 2008).

[14] To limit even further the scope of political manipulation, a gradual process began in 2003 to shift the delivery of POP from cash to electronic payments. By 2011, all POP beneficiaries received their grants in a savings account or prepaid cards. For a detailed discussion on POP's electronic payment system see Masino and Niño-Zarazúa (2014).

[15] The debacle of the hegemonic PRI began in 1996 with an unprecedented legal reform to the electoral system that included changes in the Mexican Constitution and the federal election law (Codigo Federal de Instituciones y Procedimientos Electorales, or COFIPE), and which introduced several penalties for electoral fraud, vote-buying practices, and for the first time provided generous campaign funds and free media time to the opposition parties. For a discussion on Mexico's electoral reforms, see Brinegar *et al.* (2006) and Lujambio and Segl (2000).

In the very competitive presidential election of 2006, PAN's candidate, Felipe Calderon, won the election over his main contender, Andrés Manuel López Obrador, by a very small margin, 0.58 per cent (see Table 1).[16] Two aspects of the 2006 presidential election are relevant for our analysis: First, an unprecedented level of negative and derogatory campaigning, in which the PRD candidate, Andrés Manuel López Obrador, was portrayed as a 'radical populist', and 'a dangerous leftist' for Mexico (Domínguez, 2012; Estrada and Poiré, 2007; Pérez Dámazo, 2014).[17] Coupled with that was López Obrador's cautious yet ambiguous position towards POP, which was encapsulated by the message of 'to be continued but reformed', while his campaign continue to issue regular denunciations of the political use of POP.[18] Such a massive media campaign generated—in the form of information 'externalities'—uncertainty and untrustworthiness among the poor, who already received POP in treatment localities, or were promised to receive the benefits in control localities.

Table 1: Vote shares (%) by main political parties (and their coalitions) in Mexico's presidential elections

| Party | 1994 | 2000 | 2006 | 2012 |
|---|---|---|---|---|
| PRI | **48.69** | 36.11 | 22.23 | **36.3** |
| PAN | 25.92 | **42.52** | **35.89** | 25.39 |
| PRD | 16.59 | 16.64 | 35.33 | 26.95 |

Source: authors, based on data from INE (2017).

Second, the conservative Fox administration moved to the left and adopted an active antipoverty policy strategy, spending more on social policies than previous PRI administrations (Cortina and Lasala-Blanco, 2016). It also emulated PRI's old electoral tactics and began to mobilize members of POP's Community Development Committees to campaign in favour of PAN's presidential candidate, highlighting his commitment to continue the programme, and expand it to those communities that had not been reached yet (Hevia de la Jara, 2008).[19] Indeed, Larreguy *et al.* (2016) have documented the role of political brokers and polling stations in mobilizing support for PAN in the 2006 presidential election. The ex-ante expectation that the campaign promise generated among the poor both in treatment and control localities is crucial to understand the results that we report in Section 8 for the presidential election of 2006.

[16] AMLO finished with 35.33 per cent of the vote compared to Calderon's 35.89 per cent, a margin of 233,000 votes out of more than 41 million ballots. For a discussion on Mexico's 2006 presidential election, see Estrada and Poiré (2007).

[17] This was possible, partly as a result of a process that began with the 1996 legal reform to the electoral system, which provided statutory campaign funding to political parties, and which became one of the most generous contributions to media campaigns in the world, measured in per capita terms (Brinegar *et al.* , 2006).

[18] Two weeks before the election, López Obrador's spokeswoman, Claudia Sheinbaum, gave a highly publicized press conference to claim that the PAN campaign was exploiting the list of POP's beneficiaries. For a detailed account, see Carter Center (2000).

[19] Hardly coincidental was the appointment of Josefina Vazquez Mota as head of the PAN 2006 presidential campaign, who also was the former Minister for Social Development, the senior officer in charge of implementing and expanding POP during Fox's presidential term (2000–2006).

After winning the 2006 presidential election, Felipe Calderon (PAN) expanded POP's coverage by 14 per cent, especially in deprived urban areas (see Table A1). The budget allocated to the programme—measured in constant 2008 prices—also increased substantially, by about 26 per cent, as the result of new components added to the programme: (1) *Energético*, a monetary supplement of about US$5 that supported households with energy expenses.[20] (2) *Apoyo vivir major*, a temporary monetary supplement of US$9 that started in May 2009 to compensate, as a counter-cyclical measure, for the effects of the Great Recession of 2008 and the global food crisis of 2007–2008. (3) *Apoyo infantil vivir mejor*, an income supplement introduced in 2010 to support households with small children. The transfer was equivalent to US$8 per child aged 0 to 9 years. Finally, (4) scholarships for students enroled in *Centros de Atención Múltiple Laboral*, centres specialized in vocational training for young people with disabilities.[21]

In the 2012 presidential election, POP almost did not figure in the campaign at all, possibly because both the incumbent PAN as well as the main contender, PRI, had already proved to the poor their commitment to the programme. With the return of the PRI to power, after the victory of Enrique Peña Nieto, Oportunidades was renamed as Prospera in a deliberate attempt to politically brand the programme.[22] POP was again reformed to become a platform for the delivery of social policies, linking beneficiaries of the original conditional cash transfer with a wider system of interventions, ranging from productive enterprises, labour market insertion, and financial inclusion (SEDESOL, 2015). In the next section, we present the theoretical model and premises that guide the empirical analysis.

# 4 Theoretical model

The economics and political science literature on the determinants of voting decisions is very large and wide-ranging.[23] Yet, as far as we can tell, that literature lacks consensus on how to go about modelling the determinants of voting decisions, over and beyond perhaps a general implicitly shared view that such decisions are very complex and unconventional from a decision-theoretic point of view, namely the 'paradox of voting'.[24]

Such complexity stems from the great number of agents involved (voters, parties, media,

[20] This component ceased in 2010.

[21] For a detailed discussion on POP during the Calderon administration, see Barajas Martínez (2016).

[22] It is highly surprising that with a history of clientelistic politics, such renaming of government programmes is not prohibited by law in Mexico, unless such 'branding' is of course aimed at eliciting 'gratitude' from beneficiaries.

[23] It ranges from work on the impact of general spending by incumbents (e.g., Levitt and Snyder, 1997; Litschig and Morrison, 2012), and the closely related literature on 'redistributive politics' (e.g., Cox, 2004; Cox and McCubbins, 1986; Lindbeck and Weibull, 1987; Dixit and Londregan, 1996), to the work that looks at the impact of specific categories of spending such as campaign spending (Jacobson, 1990; Levitt, 1994), 'earmarks' (Lazarus and Reilly, 2010; Pop-Elches and Pop-Elches, 2008), and specific programmes (Curto-Grau, 2017; Lazarus *et al.* , 2012; Cruz and Schneider, 2017; Healy and Malhotra, 2009). The literature has also covered questions related to individual voters' income (often referred to as 'pocketbook voting' (Grafstein, 2009; Kramer, 1983); the effects of economic conditions in general, as opposed to partisanship, ideology, or social status (Lewis-Beck and Stegmaier, 2000), and within that strand, studies that examine whether voting is retrospective or prospective (Fiorina, 1978; Fair, 1996; Healy and Malhotra, 2013; Lockerbie, 1991). Other relevant studies focus on *quid pro quo* arrangements, including clientelism (Wantchekon, 2003; Stokes, 2005) and the 'incumbency advantage' (Cruz *et al.* , 2016; Mayhew, 2008).

[24] The 'paradox of voting' reflects the insight that in large electorates the probability that a single vote is decisive is vanishingly small, and that hence, in the presence of even tiny voting costs, no one should vote (Feddersen, 2004)

etc.); the simultaneity and tightly linked nature of their decisions (often involving many different levels of elections and different forms of coordination); the vagueness and multidimensionality of the choice involved, as well as the difficulty in delimiting the set of potential factors influencing the vote.

Fortunately, the present work, while falling within the broad literature, does not have to deal with voting decisions in its full complexity. First and foremost, we are not asking what determines the vote in general, but rather how a *specific* programme (i.e. POP) impacts the voting decision of a very particular subset of voters, the rural poor.

Moreover, since POP can be regarded as being very important to that subset of voters,[25] it is not far-fetched to posit that, when the programme is seen by these voters to be 'on the table'—when they consider that their vote will determine whether the programme is continued or not—it can be regarded as a major *controlling* factor influencing their voting decision.[26] While this approach does away with a lot of the complexity that bedevils establishing the determinants of voting decisions, it still leaves ample room for variation. After all, what matters is how these voters understand the choice before them.

In the context of very poor rural communities in a country like Mexico, which is only 'just'—in a historical perspective—emerging from a long period of one-party rule, the identity of local authorities, municipal but also state ones, might be a consideration that modulates how voters perceive the consequences of voting (Cornelius, 2002; Takahashi, 2008).

Besides these 'direct' political factors, voting decisions will be 'indirectly' influenced by other crucial factors, especially income. As discussed below, we argue that in contexts in which voters are near a 'subsistence' threshold, attitudes towards risk is a key determinant in voting decisions. Poor voters will vote differently from richer ones since they assign greater utility to the extra income coming from POP.

### 4.1 A decision rule approach to vote under POP

The central theoretical choice we make is to ignore all the strategic issues associated with voting ('paradox of voting') and just put forward a simple 'voting rule' criterion for how the very poor voters cast their ballots. The idea is that each voter $i$ will associate an (income) lottery $L_i(v_i, \mathbf{x}_i)$ with each value of his or her vote $v_i$, with $v \in \{PRI, PAN, PRD\}$, and $x$ indicating factors that influence the form of the lottery, including party affiliation of municipal authorities, parties' identities of the front-runner and the runner-up in national polls, programme membership, voter's party affiliation or ideological preferences, etc.

Thus, our hypothetical voter $i$ will simply choose the vote $v_i^*$ that maximizes the expected value of his or her utility, so that

$$v_i^* = argmax[EU_i(v_i = PRI, \mathbf{x}_i), EU_i(v_i = PRD, \mathbf{x}_i), EU_i(v_i = PAN, \mathbf{x}_i)] \quad (1)$$

Now, let

[25] POP makes up a large portion of the total income of the rural poor, ranging from an average of 40 per cent of household labour income in 2000 to nearly 47 per cent in 2012. For further details, see Table A1.

[26] We are presupposing here that voters are not particularly ideological, or at least not so much that they would forego the income benefits of the programme on ideological or political grounds.

$$prob_i(PRI \mid R, v_i = PRI, \mathbf{x}_i) \tag{2}$$

denote the probability assigned by voter $i$ to PRI winning the presidential election, given that this voter is a recipient of the program $R$ (alternatively, is not a recipient of the program, $NR$), he or she voted for PRI, $v_i = PRI$, and given the covariates in $\mathbf{x}_i$.

Further, let

$$prob_i\,(POP \mid PRI : v_i = PRI, R, \mathbf{x}_i) \tag{3}$$

be the probability that this voter continues to receive POP given that PRI wins; his or her vote for PRI; his or her recipient status; and covariates associated with this voter. Correspondingly,

$$y_i(POP \mid PRI : v_i = PRI, R, \mathbf{x}_i) \tag{4}$$

stands for the income of this voter when the PRI wins and he or she continues to receive POP, given this person's vote for PRI, his or her recipient status $R$, and values of covariates (other than recipient status). Similarly,

$$y_i(NPOP \mid PRI : v_i = PRI, R, \mathbf{x}_i) \tag{5}$$

is the income of this voter if he or she fails to get POP despite the PRI win; their vote for the winning party; their recipient status, and values of covariates. Thus, if $i$ votes for PRI and is currently a POP recipient, the expected utility from voting for PRI can be defined as follows:[27]

$$EU_i(v_i = PRI, R) =$$

$$prob_i(PRI \mid R, v_i = PRI)\times$$

$$\{\, prob_i\,(POP \mid PRI : v_i = PRI, R)\; u\,[y_i(POP \mid PRI : v_i = PRI, R)]$$
$$+(1 - prob_i\,(POP \mid PRI : v_i = PRI, R))\; u\,[y_i(NPOP \mid PRI : v_i = PRI, R)]\,\}$$

$$+\, prob_i(PRD \mid R, v_i = PRI)\times \tag{6}$$

$$\{\, prob_i\,(POP \mid PRD : v_i = PRI, R)\; u\,[y_i(POP \mid PRD : v_i = PRI, R)]$$
$$+(1 - prob_i\,(POP \mid PRD : v_i = PRI, R))\; u\,[y_i(NPOP \mid PRD : v_i = PRI, R)]\,\}$$

$$+\, prob_i(PAN \mid R, v_i = PRI)\times$$
$$\{\, prob_i\,(POP \mid PAN : v_i = PRI, R)\; u\,[y_i(POP \mid PAN : v_i = PRI, R)]$$
$$+(1 - prob_i\,(POP \mid PAN : v_i = PRI, R))\; u\,[y_i(NPOP \mid PAN : v_i = PRI, R)]\,\}$$

[27] For simplicity and in order to avoid clutter, we leave the covariates term $\mathbf{x}_i$ out throughout this expression.

### 4.1.1 The apolitical scenario

To help develop some intuition around this formulation, it is perhaps helpful to consider the extreme scenario in which voters do not believe their vote or their recipient status influence the outcome of the election, nor do they believe there is any 'political' component to POP or any form of political 'retaliation' associated with their vote.

Since voters do not believe their vote or their recipient status influence the outcome of the election, we have

$$prob_i(party \mid status, v_i) = prob_i(party) \tag{7}$$

with $party \in \{PRD, PRI, PAN\}$, $status \in \{R, NR\}$, and $v_i \in \{PAN, PRD, PRI\}$.

Furthermore, since they do not believe there is any 'political' component to POP or any form of political 'retaliation' associated with their vote, one has that POP's sub-lotteries are all independent of one's vote, and also independent of which party wins the election, so that

$$\begin{aligned} &\{ prob_i\,(POP \mid party : v_i, status)\; u\,[y_i(POP \mid party : v_i, status)] \\ &+(1 - prob_i\,(POP \mid party : v_i, status))\; u\,[y_i(NPOP \mid party : v_i, status)]\,\} = \\ &\{ prob_i\,(POP \mid party : status)\; u\,[y_i(POP \mid party : status)] \\ &+(1 - prob_i\,(POP \mid party : status))\; u\,[y_i(NPOP \mid party : status)]\,\} \end{aligned} \tag{8}$$

with $party \in \{PRD, PRI, PAN\}$, $status \in \{R, NR\}$, and $v_i \in \{PAN, PRD, PRI\}$

This scenario (with both conditions above satisfied) might perhaps be the one that would result from a well-informed and rational voter confronting a perfectly designed and implemented programmatic policy. In such a scenario, it is clear that the vote will not be influenced by POP. Within the narrow purview of this formalization, the vote will then be indeterminate. More generally, one would assume that if POP is not 'on the table' then other considerations—subsidiary ones, ideology, or identitary considerations perhaps—would determine the sense of the vote.

### 4.1.2 No externality scenario

Another interesting benchmark scenario is the one that the literature on POP so far has taken for granted. Namely, one in which voters in non POP-treated localities assign zero probability of obtaining POP, regardless of how they vote. Assuming that their non-POP income is independent of POP as well, then one could expect the scenario in which one might use the vote of non-POP-treated localities to establish the electoral impact of POP in POP-treated localities. In this latter case, we would have

$$prob_i\,(POP \mid party : v_i, NR) = prob_i\,(POP \mid NR) = 0 \tag{9}$$

### 4.1.3 The clientelistic scenario

If voters believe that their probability of either receiving POP for the first time, or of continuing to benefit from the program after an election, depends in some way on their vote, then POP will have an electoral impact.

**A clientelistic component**. Imagine now that the voter does not believe his or her vote makes a difference to the probability of any given party winning, yet believes that voting for a certain party (say PRI) increases his or her chances of getting (or keeping) POP, if that party wins (and, say, assigns zero probability of getting POP if one of the other parties wins). Here, POP might still have an electoral impact, persuading this voter to favour the incumbent, merely because of the increased probability that he or she assigns to getting (or keeping) POP if he or she votes for the ruling party (and that party wins).

**Electoral impact but no clientelistic component.** Consider the case in which a voter believes that his or her vote influences the probability of a win by a particular party and that if that party wins, he or she assigns a higher probability of either gaining access to POP or continuing to enjoy POP. However, the voter does not believe that he or she is more likely to gain access to POP than someone who voted against the winner. Thus, even if the voter is well-informed about the programmatic nature of POP, and hence does not believe that the programme is assigned politically, POP will still influence his or her voting decision, with the party that most credibly favours the programme earning his or her vote.

## 4.2 Risk aversion just above, and risk happiness just below, a subsistence threshold

We now consider a two-part intuition regarding the behaviour towards risk of the very poor, and which underlies the findings of this paper. The first part is generally emphasized: a voter who hovers *just above* a subsistence line will display extreme risk aversion, reflecting his or her concern to avoid falling below the subsistence threshold.

The second part of the intuition is less often emphasized: a very poor voter hovering *just below* the subsistence line will display extreme risk-seeking behaviour if confronted with a lottery that offers him or her even a small chance of overcoming the subsistence barrier.[28] A utility index, with income as its argument, captures this idea. To illustrate, consider the following logistic formulation:

$$u(y \mid \overline{y}) = \frac{1}{1 + e^{(\overline{y}-y)}} \tag{10}$$

This formulation, however, does not capture fully the intuition outlined above since the voter becomes gradually risk-neutral as the threshold, $\overline{y}$, is approached.[29]

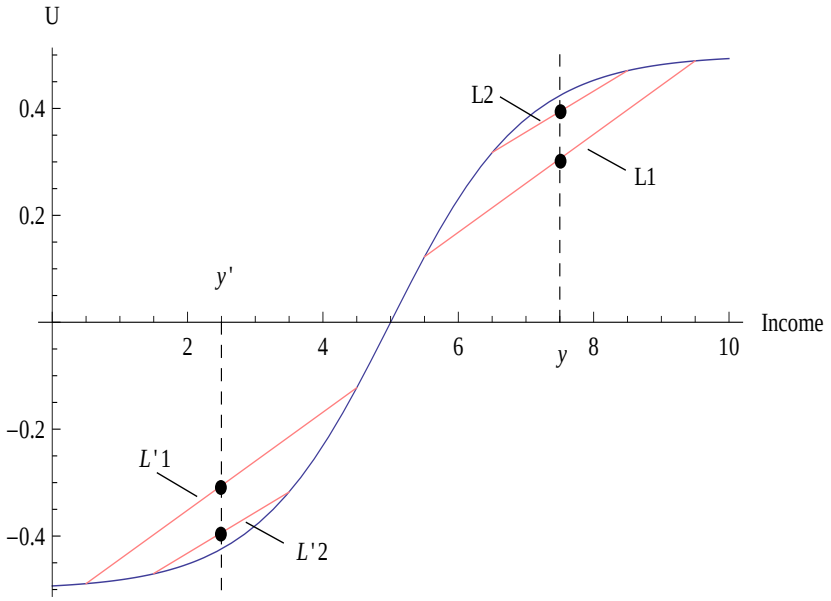
[28] In more popular writings, this second part is more evident. For example, when the extreme audacity and savagery of drug traffickers is attributed to the extreme poverty of their families and the lack of prospects for advancement in the regions they come from.

[29] This particular formulation entails *absolute* risk aversion that increases with income above the threshold, while risk happiness decreases with income below the threshold. In contrast, the intuition above posits that below the threshold any lottery that assigns positive probability to an income above the threshold will be preferred to any other that only assigns prizes below the critical level, regardless of the expected income associated with it; and that above the threshold, a lottery that assigns positive probability to a prize below the threshold will never be played in preference to a lottery that guarantees an income above the critical income.

### 4.2.1 Dual risk behaviour and the politics of POP in poor communities

In Figure 1, we illustrate the more specialized argument. To begin the exposition, consider two pairs of lotteries, each pair indexed by the same numeral, with 'ex-ante' income higher in the non-primed lottery in the pair ($y$) than in the primed one ($y'$), though otherwise lotteries associated with the same numeral are identical.[30] In the diagram, the black dot indicates the expected value of the corresponding lottery. Both primed lotteries, $L'1$ and $L'2$ (as well as the non-primed lotteries, $L1$ and $L2$), yield the same expected income but have different variances, with 1 having a higher variance than 2.

Figure 1: Reversal of preferences.




Source: authors.

The relevant point for our analysis is that the ranking of the two primed (resp., non-primed) lotteries is reversed for the lower 'ex-ante' income agent compared to the higher 'ex ante' income agent. This reversal results from the poor voter just above the income (or POP eligibility) threshold (the point of inflection $\overline{y}$) being risk-averse, while the poorer voter with ex-ante income below the threshold is risk-seeking. We think that this kind of dual behaviour can explain voting behaviour and vote preferences among the poor in POP-treated and control localities. We elaborate this argument further in Section 9.

# 5 Data

The data used in this study come from four sources: (1) the National Institute of Statistics and Geography (INEGI), (2) the National Population Council (CONAPO), (3) administrative records of POP's National Co-ordination Unit, and (4) the National Electoral Institute (INE). From INEGI, we use the Territorial Integration System (ITER), which is a population census data repository that contains indicators on household and housing characteristics at locality level. We use census data for the years 1995, 2000, 2005, and 2010, prior to the

[30] The deviations from 'ex ante' income are the same, and occur with the same probabilities.

presidential elections covered in the analysis.

From CONAPO we obtained the number of inhabitants and the marginality index (CONAPO, 1998, 2002, 2007). The marginality index—which is used by POP to identify poor localities—is calculated by a linear combination of standardized indicators, following Principal Component Analysis, that measure well-being (or lack thereof) in three main dimensions: (1) education, (2) housing conditions, and (3) income (CONAPO, 2013).

For each year, we grouped localities by levels of deprivation, following Dalenius and Hodges' (1959) optimal stratification method. For the analysis, we restricted the sample to localities with a high and very high marginality index, as defined by CONAPO, as well as those having between 50 and 2,499 inhabitants, as these are key components of POP's targeting criteria for rural areas.

We used administrative records from POP to calculate the number of beneficiaries in each locality, which together with population census data, helped us to estimate POP's coverage rates. Since INEGI, POP, and CONAPO use a unique locality identifier (ID), we were able to merge all the aforementioned datasets straightforwardly.

Election data came from INE (2017) and were used to calculate voter turnout and vote shares received by the three main political parties (PRI, PAN, and PRD) in each precinct in the presidential elections of 1994, 2000, 2006, and 2012. We focus on presidential elections for a good reason: POP is a federal programme, administered centrally by the Executive Branch, so it is at that level of political transitions that we would expect POP to influence voting decisions. Earlier surveys have shown that more than 80 per cent of POP's beneficiaries knew that allocation decisions were made at the federal level (PNUD, 2007).

From INE, we also obtained the General Catalogue of Voters, which is a database that contains information on voters, including sex, age, location and time of residence, and the electoral precinct in which they voted. As in previous studies (De La O, 2013; Imai *et al.* , 2016; Green, 2005), we encountered two problems: first, electoral precincts, which are by Mexican electoral law the smallest unit at which aggregate election outcomes are measured, do not match exactly with the geographical boundaries of localities. Second, the unique locality identifier used by INEGI and other federal agencies including POP, do not correspond to the ones used by INE.

As a first step to overcome these constraints, we resorted to cartographic electoral data at district and precinct levels from INE-INEGI's Census Statistics on Geo-electoral Scales (INE-INEGI, 2012), geographical coordinates of which were matched with the corresponding locality identifiers from INEGI's Geo-statistical Framework (INEGI, 2016), which is a census-based digital mapping system that divides the country into geo-statistical areas, including localities both rural and urban.

Through this first step, we were able to match a considerable number of localities with their corresponding electoral sections. This matching procedure is in essence what Imai *et al.* (2016) did in their replication of De La O's (2013) work. However, this procedure is not quite sufficient. To illustrate, some electoral precincts that INE identified in locality *a* were placed by INEGI in an adjacent locality *b*. Furthermore, we encountered two

additional problems: first, in some cases voters living in locality *c* did not vote in their geographically corresponding electoral precinct but instead, voted in the adjacent locality *d*. Second, there was a significant number of cases in which the names of localities did not coincide. For example, in INEGI, locality 0501100149 was listed as *Kilometro sesenta y cuatro*, whereas in INE it was listed as *Km. 64*.

In order to overcome this problem, we obtained the catalogue of localities registered by INE and undertook the arduous manual task of verifying unmatched localities with INEGI's digital mapping system using four pieces of additional information: (1) state number, (2) electoral district number, (3) municipality number, and (4) name of the locality. By following this final procedure, we were able to match accurately 37,195 poor rural localities with their corresponding electoral precincts.

# 6 Empirical strategy

For empirical analysis, we adopt the following strategy. First, we take advantage of POP's targeting criteria and focus on the poorest rural localities, i.e. those with a high and very high marginality index and having between 50 and 2,499 inhabitants. We focus on the rural poor for three fundamental reasons:

1. POP makes up not only a large share of the total income of the poor (ranging from an average of 40 per cent of household labour income in 2000 to nearly 47 per cent in 2012),[31] but also a share that is monetized and highly reliable. This is critical as in most rural subsistence economy environments, income sources are seasonal and often unpredictable. There is a growing scholarly work in the context of Mexico (Angelucci *et al.* , 2012; Gertler *et al.* , 2012; Handa *et al.* , 2009; Hoddinott and Skoufias, 2004; Ruiz-Arranz *et al.* , 2002), and Latin America in general (Attanasio *et al.* , 2012; Attanasio and Mesnard, 2006; Braido *et al.* , 2012; Macours *et al.* , 2012; Maluccio and Flores, 2005; Perova and Vakis, 2012), that highlights the importance of cash transfer programmes in smoothing consumption and mitigating risks.[32] For programme beneficiaries, POP is arguably not only a major income source, but also an instrument to smooth consumption and, therefore, strongly influences their voting preferences.

2. POP began operations in 1997 exclusively in rural areas, so any sizeable programme effects on the presidential election of 2000 were mainly constrained to the rural domain. In order to keep comparability with subsequent presidential elections, we restrict the analysis to rural localities.

3. While the central features of POP remained intact when the programme was extended to urban areas in 2003, the targeting and selection mechanisms in urban localities differed in very substantial ways from the ones adopted in the rural context.[33]

[31] The increasing contribution of POP to household labour income partly reflects the growth of transfer size in real terms over the period of analysis. For a description, see Table A1.

[32] For reviews of the literature, see Barrientos and Niño-Zarazúa (2010), Kabeer and Waddington (2015), and Bastagli *et al.* (2016).

[33] More critical for our study is the fact that eligible households have to register themselves first in local offices (modulos) and then go through an eligibility test before enrolling in the programme. Administrative data from urban Oportunidades show that programme take-up was about 50 per cent during the first years of operation. For a detailed discussion, see Angelucci and Attanasio (2013).

Second, although we cannot observe, for very good reasons, individual voting behaviour, we follow the literature and resort to aggregate data at the locality level. Evidently, one may argue that total vote and vote shares received by the incumbent and their political opponents also include a fraction of non-POP beneficiaries whose incomes are above POP's eligibility threshold.

However, in our sample of poor rural localities, POP's coverage is high, ranging from around 64 per cent in 2000, 72 per cent in 2006, to 63 per cent in 2012. While the remaining may not be strictly poor, a very significant proportion of them can be regarded as vulnerable non-poor.[34] Indeed, as Tables A2, A3, and A4 in the Appendix illustrate, income and well-being variance within poor rural localities is small, denoting a tendency of uniformity of material deprivation. So, although we do not observe individual voting decisions of POP beneficiaries and their close counterparts with incomes very near or at subsistence levels, we are still able to capture, with a good degree of precision, how POP affects voting behaviour in localities (both treated and controls) where material deprivation is widespread and severe.

Third, we also take advantage of POP's gradual expansion that began in 1997 with a coverage of about 1.6 million people to more than 28 million people in 2015, and exploit this variation in the programme's take up, for identification. More specifically, we resort to DD estimators to measure a 'net' average treatment effect of POP on voter turnout and party vote shares. We also adopt an RD design, which we use as part of our robustness checks. In the sections that follow we describe more formally our empirical strategy.

### 6.1 Difference-in-differences estimators

To begin the exposition, consider two groups of localities indexed by the treatment status $T = 0, 1$ where 1 measures poor rural localities, which by the time of the presidential elections had been treated by POP, and 0 measures poor rural localities that by the time of the elections had not been treated by POP. Localities $i = 1, ..., N$ are observed in at least two time periods, $t = 0,1$ where 0 indicates the pre-treatment period, and 1 indicates the post-treatment period.

Further, let $y_0^T$ and $y_1^T$ be the average outcomes of interest for treatment localities before and after POP, respectively, whereas $y_0^C$ and $y_1^C$ are the average outcomes for control localities. Subscripts correspond to time period and superscripts to the treatment (or control) status. The DD estimator takes the following form:

$$DD = (y_1^T - y_1^C) - (y_0^T - y_0^C) \tag{11}$$

To control for observed characteristics that may influence voting behaviour, Equation 11 is transformed into the following linear expression:

$$y = \alpha + \beta T_i + \gamma t_i + \delta(T_i * t_i) + \sigma X + u_i \tag{12}$$

where $X$ and $\sigma$ are a vector of observed characteristics and its parameter, respectively. $\alpha$ is the constant term, $\beta$ captures treatment group-specific effects to account for average differences between treatment and control localities, $\gamma$ measures the time trend, common

[34] Villa and Niño-Zarazúa (2014) have found that about half of the rural population was 'transient' poor, moving in and out of poverty between 2002 and 2012, whereas about 11 per cent were consistently non-poor.

to treatment and control localities, $\delta$ is the DD estimator, measuring the net effect of POP, and $u$ is the error term.

As discussed in Section 3, POP is distributed to poor households, conditional on school attendance and regular health check-ups by household members. Such conditionalities meant that the progressive expansion of the programme was not random, and was driven by the availability of, or close proximity to, social infrastructure. As a consequence, control localities exhibit, on average, higher marginality indices than treatment localities. This non-random programme placement is problematic as it may affect voting decisions and thus imply a violation of the parallel trends assumption, which would ultimately yield biased estimates. In order to address this threat and relax the parallel trend assumption, we follow Abadie (2005) and adopt a semi-parametric approach to compute the DD estimators.

To do so, we first estimate the probability that rural poor localities belong to the treatment group conditional on a vector $X$ of key observed characteristics related to POP's targeting criteria in a pre-treatment period, with a propensity score $P(T = 1|X)$.[35] In a subsequent step, we computed the semi-parametric DD matching estimators (SDD) after re-weighting the sample by the propensity score in such a way that control localities with a greater propensity score were assigned a greater weight, that is,

$$SDD = \frac{1}{N} \sum_{i=1}^{N} W_i \left(y_{i1} - y_{i0}\right) \omega_i \tag{13}$$

where $W_i = [T_i - P(T = 1|X)]/P(T = 0|X)$, $\omega_i = 1/P(T = 1)$, $t_1$ and $t_0$ are the post-treatment and pre-treatment periods, respectively. Abadie's (2005) method yields unbiased average treatment effects on the treated (ATT) estimates, conditional on the vector of covariates in $X$, that is,

$$E(y_1 - y_0|X, T = 1) = E(y_1 - y_0|X, T = 0) \tag{14}$$

with the overlap assumption satisfied, given that $0 < P(T = 1|X) < 1$. Note, however, that under this framework, there is an additional assumption that needs to be satisfied, namely that voter turnout and vote shares for political parties exhibit a parallel trend in both treatment and control localities in the pre-treatment period after matching. To validate this assumption, we present in Figures A1, A2, and A3 in the Appendix the parallel trend in outcomes in the 2000, 2006, and 2012 presidential elections, respectively. The results indicate that this condition is satisfied.

Finally, since unobserved factors that are not controlled for by the vector of covariates may still affect voting behaviour in both treatment and control localities—something that becomes evident in Section 9—we cluster the standard errors at locality level to reduce the threat of a serial correlation problem. The results of the SDD estimators are presented later in Table 4.

### 6.2 Regression discontinuity design

POP has focused, by design, on rural localities with the highest levels of poverty, as defined by having high and very high marginality indices. This targeting criterion generated

[35] The variables included in the propensity score are described in Tables A2, A3, and A4 in the Appendix.

a discontinuity in the probability of programme treatment between localities with high and very high marginality indices and those above that threshold, with medium levels of deprivation. We exploit this discontinuity for the implementation of the RD design. In each group, the marginality index was centred at zero as the cut-off point between high and medium marginality levels, so that localities with high marginality indices were placed to the right, whereas those with medium marginality indices were placed to the left.[36] We restrict the analysis to localities with high and medium marginality, with centred indices in the range $[-a, a]$, where $a$ is the minimum between the absolute value of the lowest centred index and the highest centred index.[37]

Figure 2 shows the probability of programme treatment as a function of the centred marginality index, based on a weighted regression at the local level. The circles represent the average proportion of treated localities in an interval of size $a/10$. It is clear from this figure that, at least for the 2000 election, the probability of programme treatment increased with a higher marginality index.

As discussed in Section 3, POP was rolled out gradually. Such expansion in coverage also brought about changes in the targeting criteria that resulted in a loss in the discontinuity of programme treatment that was observed in 2000, in the subsequent elections of 2006 and 2012.[38] For that reason, we were only able to adopt the RD design for the 2000 presidential election, as part of our robustness check.

Furthermore, since the identification of the causal effect of POP hinges on the crucial assumption that there is indeed a sharp cut-off in the probability of programme treatment, and given the fact that the implementation of POP was not merely conditional on the marginality index, but also on other factors including social infrastructure (see Figure 2), we adopted a fuzzy regression discontinuity design (Hahn *et al.* , 2001) in two stages: first, we estimate the probability that a locality is treated by POP as a function of the marginality index. Second, we estimate the effect of the programme on vote shares and voter turnout as follows:

$$y = \alpha_0 + \alpha_1 T + u \tag{15}$$

$$T = \beta_0 + \beta_1 D + f(iml) + \epsilon \tag{16}$$

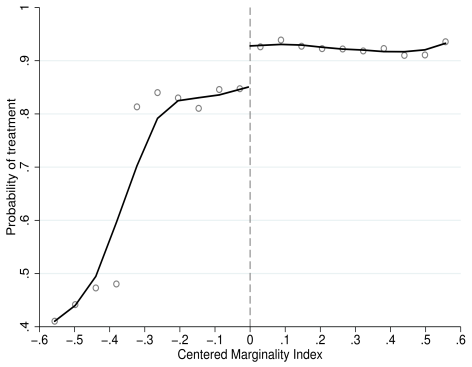
where $T$ measures programme treatment assignment, $D$ identifies those localities with a high marginality index, and $f$ is a polynomial function of the marginality index. The treatment effect of POP is captured by the parameter $\alpha_1$ in Equation 15. The results of the fuzzy RD estimators are presented in Table 4 and Figure A5 in the Appendix.

[36] In 2000, localities with high marginality had an index in the range [-0.6, 0.04], whereas localities with medium marginality had an index in the range [-1.2, 0.6]. In 2006, localities with high marginality had an index in the range [-0.8,0.5], whereas localities with medium marginality had an index in the range [-1.3, -0.8]. By 2012, localities with medium marginality had an index in the range [ -1, -0.7], whereas localities with high marginality had an index in the range [-0.7,0.6].

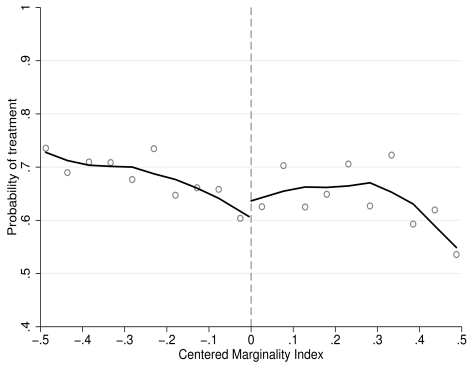
[37] In 2000, $a$ had a value of 0.586, in 2006 $a$ had a value of 0.513, and in 2012 $a$ had a value of 0.326.

[38] During the Fox administration (2000–2006), the expansion of POP was concentrated (besides urban areas) on rural localities with very high marginality indices, while during the Calderon administration (2006–2012), the targeting criteria were based on marginality index plus other local-level indicators.

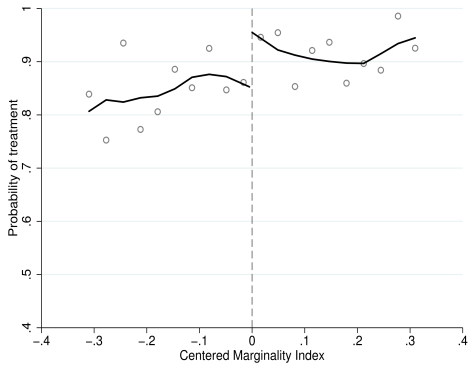
Figure 2: Relation between probability of treatment and marginality index of rural poor localities by year of presidential election .




(A) 2000




(B) 2006




(C) 2012

Source: authors, based on data described in Section 5.
Note: For the 2000 election (Panel A), we used a sample of rural localities—with a population size between 50 and 2,499 inhabitants—that in 1995 had high and medium marginality indices. The circles indicate the average probability of programme treatment in the interval 0.058. For the 2006 election (Panel B) the sample contains localities that in 2000 were classified as having high and medium marginality indices, and which did not receive POP at the end of that year. The circles indicate the average probability of programme treatment in the interval 0.051. For the 2012 election (Panel C) we used a sample of localities that in 2005 were classified with high and medium marginality levels, and which by that year had not been treated by POP. The circles indicate the average probability of programme treatment in the interval 0.032. The vertical dashed line in the centre of each graph indicates the cut-off point, whereas the solid line shows the probability of programme treatment as a function of the centred marginality index, based on a weighted regression at the local level. The RD estimate for the 2000 presidential election (Panel A) is 0.13***; for the 2006 presidential election (Panel B) is 0.068, and for the 2012 presidential election (Panel C) is 0.005. In each panel, the bandwidth was selected following the cross-validation method. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

# 7 Descriptive statistics

Before turning to the results, it is pertinent to discuss some descriptive statistics. In Tables A2, A3, and A4 in the Appendix, we present the descriptive statistics of key indicators included in the analysis for the presidential elections of 2000, 2006, and 2012, respectively. At first glance we note, as pointed out earlier, that control localities are, on average, poorer than treated localities. This is the result of POP's targeting criteria that by design, together with logistic considerations, left the poorest, and often most isolated localities, out of reach.

As an initial examination of voting behaviour, we present in Table 2 transition matrices of vote shares received by the main political parties in the 2000, 2006, and 2012 presidential elections. In panel A, we present the transitions matrices for treated localities, while panel B shows the transition matrices for control localities. We note that 81.78 per cent of treated localities where PRI had a majority of votes in 1994 continued to vote for PRI in the 2000 presidential election, whereas in control localities this percentage was 3.54 percentage points lower.

Table 2: Transition matrix by federal election and by localities treated and untreated

| | | A. Treatment | | | B. Control | | |
|---|---|---|---|---|---|---|---|
| **2000** | | | | | | | |
| | | PRI | PAN | PRD | PRI | PAN | PRD |
| 1994 | PRI | 81.78 | 11.34 | 6.56 | 78.24 | 13.90 | 7.43 |
| | PAN | 30.65 | 66.90 | 1.23 | 37.68 | 62.32 | 0.00 |
| | PRD | 34.09 | 2.49 | 62.91 | 44.65 | 3.69 | 50.55 |
| | | N = 33,793 | | | N = 3,402 | | |
| **2006** | | | | | | | |
| | | PRI | PAN | PRD | PRI | PAN | PRD |
| 2000 | PRI | 48.52 | 22.35 | 28.88 | 45.50 | 28.07 | 26.22 |
| | PAN | 5.60 | 79.90 | 14.25 | 7.36 | 76.69 | 15.64 |
| | PRD | 11.48 | 6.46 | 81.34 | 17.26 | 11.07 | 71.34 |
| | | N = 2,785 | | | N = 2,096 | | |
| **2012** | | | | | | | |
| | | PRI | PAN | PRD | PRI | PAN | PRD |
| 2006 | PRI | 82.01 | 7.32 | 10.51 | 84.97 | 7.25 | 7.77 |
| | PAN | 42.17 | 55.25 | 2.39 | 60.38 | 39.62 | 0.00 |
| | PRD | 45.78 | 10.16 | 43.75 | 64.60 | 4.35 | 30.43 |
| | | N = 1,813 | | | N = 460 | | |

Source: authors, based on data described in Section 5.
Note: Sample of localities having population size between 50 and 2,499 inhabitants and classified as having high and very high marginality indices.

Interestingly, 31 per cent of treatment localities that in 1994 gave a majority vote to the PAN gave the vote to the PRI in 2000, and that pattern was greater (about 7 percentage points) in control localities. A small percentage of treated localities that voted for the incumbent PRI in 1994 (11.34 per cent) voted for the winning PAN in the 2000 election, and that percentage was slightly higher in control localities (13.9 per cent).

A clear shift in political preferences happened between 2000 and 2006. In treated localities, just about half of those localities that voted for the PRI in 2000 continued to support that party in 2006. About one-fifth of localities shifted their support to the incumbent PAN in 2006, while almost 29 per cent gave support to the PRD. It is worth pointing out here that in control localities, a larger percentage of localities that supported the PRI and PRD in 2000, shifted their support to the incumbent PAN, relative to treated localities.

By 2012, voting preferences had again changed substantially. Only 55 per cent of treated localities that voted for the incumbent PAN in 2006 continued to support the party, as a very significant share of localities (42.17 per cent) went to elect the PRI, and that pattern was even more pronounced in control localities where that percentage went up to 60 per cent. What could explain this peculiar voting behaviour?

As a further step, we looked at the voting behaviour of rural localities that although classified as having high and very high marginality indices and thus eligible to receive POP, had not been treated by election time in 2006. We present the transition matrices in Table 3. Interestingly, half of the control localities that gave a majority vote to the PAN in 2006 voted for the PRI in 2012. The difference between treatment and control localities in terms of their support to the PAN in the political transition of 2012 was 10.66 per cent. This seems to suggest that while the rural poor living in control localities may have supported the incumbent PAN in 2006, in the (ex-ante) expectation of receiving the programme after the election, they became disillusioned for remaining untreated and decided to penalize the PAN and voted for the PRI in the 2012 election. In the next section we explore this issue in more detail.

Table 3: Transition matrix by federal election and by localities treated and untreated. Sample restricted to localities that were in the control group in 2006.

| | | A. Treatment | | | B. Control | | |
|---|---|---|---|---|---|---|---|
| | | **2012** | | | | | |
| | | PRI | PAN | PRD | PRI | PAN | PRD |
| 2006 | PRI | 86.21 | 8.03 | 5.58 | 87.20 | 9.15 | 3.66 |
| | PAN | 40.96 | 57.51 | 1.19 | 50.45 | 46.85 | 1.80 |
| | PRD | 55.28 | 11.90 | 32.82 | 67.18 | 6.87 | 24.43 |
| | | N = 1,684 | | | N = 407 | | |

Source: authors, based on data described in Section 5.
Note: Sample of localities with population size between 50 and 2,499 inhabitants and with high and very high marginality indices. The control group is made of localities that, while eligible, remained untreated by POP prior to the 2012 presidential election.

# 8 Results

To begin the discussion, we present in Table 4 the results from the DD and RD estimators. The first row of panel A, B, and C presents the results from the reduced form equation of the DD model presented in Equation 11. The second row of each panel (DD w/c), presents the results from Equation 12, which includes a vector of covariates in the DD equation to control for observed heterogeneity at locality level. The third row of each panel (SDD) presents the results from our preferred semi-parametric DD model described in Equation 12. Finally, the fourth row of panel A presents the results from the RD design derived in

Equation 15. Taking as a baseline the reduced form equation, we observe that the average treatment effect of POP on vote shares for the incumbent PRI and voter turnout in treated localities in the 2000 presidential election was negative and in the order 2.1 percentage points. The results reflect the fact that, in the pre-treatment period, the control group had a lower percentage of localities that gave majority support to the PRI than localities of the treatment group. The gap in PRI support between the two groups was considerably reduced in the post-treatment period, which explains the negative sign. This becomes clear in Table A8 of the Appendix, where we present the vote shares received by the main political parties and their differences across presidential elections.

As discussed earlier, the introduction and subsequent roll-out phases of POP were not random, and were driven by observed characteristics related to the level of marginality and the availability of social infrastructure, which is reflected in the observed heterogeneity in key covariates between treatment and control localities in the pre-treatment period (see Table A2 in the Appendix). This indicates that the DD estimates are likely to be biased.

In order to control for observed heterogeneity, we computed Abadie's (2005) semiparametric DD matching estimator. Overall, we find a small positive effect of the programme on vote shares for the incumbent PRI in the 2000 presidential election, but the effect is statistically insignificant. The effect remain insignificant even after comparing the electoral advantage of the incumbent, in terms of the difference in vote shares received, relative to its immediate opponent, PAN, which won the election. We also find that the average treatment effect of POP on electoral participation, measured by voter turnout, was positive, in the order of 2 per cent, and statistically significant, relative to control localities.

Turning our attention to the 2006 presidential election, our results may appear at first glance surprising. We find that the average treatment effect of POP on the vote share received by the then incumbent PAN is negative and statistically significant. Our preferred SDD model shows an ATT estimate with a magnitude of -1.2 percentage points, which is equivalent to a 5.7 per cent reduction in vote shares for the PAN relative to the control localities in the pre-treatment period. From Figure A4 in the Appendix, it is clear that the average treatment effect of POP for the incumbent PAN was negative across all regions of the country, although largely driven by localities in the north and north-centre regions where PAN has had historically a stronger presence. We also find a positive and statistically significant average treatment effect of POP on the vote shares received by the immediate opponent, PRD, which represents an increase in votes to the incumbent's challenger in the order of 4.2 per cent, relative to the mean of control localities at baseline.

The effect of POP on electoral participation was again, as in the presidential election of 2000, positive and statistically significant at the 1 per cent level. Overall, POP increased voter turnout by 1 percentage point, which is equivalent to an increase of 1.9 per cent with respect to the mean of control localities in the year 2000. The increase in voter turnout occurred in almost all regions of the country, with the exception of the south-central region, which was close to zero. By 2012, the presence of POP alone does not seem to have influenced the vote shares to the incumbent PAN and its main political adversaries, PRI, and PRD, at least to the extent that it did in the previous election, nor did it affect the political participation of poor rural localities in the presidential election of 2012.

Table 4: Impact of POP on party vote share and voter turnout. Results from 2000, 2006, and 2012 presidential election

| | A. Results from 2000 presidential election[1] | | | | |
|---|---|---|---|---|---|
| | PRI | PAN | PRD | Voter turnout | PRI-PAN |
| DD | -2.097 *** | -0.399 * | 2.549 *** | 2.798 *** | -1.698 *** |
| | (0.312) | (0.226) | (0.250) | (0.255) | (0.472) |
| DD w/c | 0.093 | -1.306 *** | 1.250 *** | 2.788 *** | 1.399 |
| | (0.556) | (0.502) | (0.435) | (0.603) | (0.969) |
| SDD | 0.598 | -1.350 | 0.910 | 1.965 *** | 1.948 |
| | (1.071) | (1.025) | (0.594) | (1.001) | (1.932) |
| RD | 4.158 | 10.356 | -7.536 | 1.650 | 6.6229 |
| | (16.688) | (17.006) | (15.962) | (11.096) | (23.602) |
| | Number of localities: 37,195 | | | | |
| | B. Results from 2006 presidential election[2] | | | | |
| | PRI | PAN | PRD | Voter turnout | PAN-PRD |
| DD | -0.203 | -1.213 *** | 1.314 *** | 0.539 | -2.526 *** |
| | (0.448) | (0.413) | (0.429) | (0.348) | (0.719) |
| DD w/c | 0.724 | -2.425 *** | 1.801 *** | 0.955 | -4.225 *** |
| | (0.572) | (0.709) | (0.668) | (0.645) | (1.256) |
| SDD | 0.065 | -1.196 *** | 0.993 ** | 1.024 *** | -2.189 *** |
| | (0.443) | (0.429) | (0.435) | (0.350) | (0.745) |
| | Number of localities: 4,895 | | | | |
| | C. Results from 2012 presidential election[3] | | | | |
| | PRI | PAN | PRD | Voter turnout | PAN-PRI |
| DD | -1.626 * | 0.860 | 1.440 ** | -0.765 | 2.487 * |
| | (0.857) | (0.720) | (0.715) | (0.666) | (1.405) |
| DD w/c | -2.461 *** | 1.765 *** | 1.182 * | 0.211 | 4.226 *** |
| | (0.880) | (0.683) | (0.686) | (0.592) | (1.414) |
| SDD | -2.338 | 1.853 | 0.361 | 0.515 | 4.191 |
| | (2.518) | (2.430) | (1.024) | (1.738) | (4.813) |
| | Number of localities: 2,284 | | | | |

Source: authors.
Notes: [1]Sample of localities that in 1995 were classified as having high and very high marginality level, and having population sizes between 50 and 2,499 inhabitants. [2] Sample of localities that in 2000 were classified as having high and very high marginality level, having population sizes between 50 and 2,499 inhabitants, that did not receive POP at the end of the year 2000. [3] Sample of localities that in 2005 were classified as having high and very high marginality level, having population sizes between 50 and 2,499 inhabitants, that did not receive POP at the beginning of the year 2005. Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

How can we reconcile this apparent irregularity? We conjecture that the results presented above capture a swing vote associated with the vote shares to the incumbent PAN in 2006. As discussed in Section 7, PAN gained votes overall but more so in control, non-POP (NPOP) localities than in POP ones. The incumbent PAN received votes first and foremost from localities that had voted predominantly for the PRI in 2000, and to a lesser extent for the PRD. In essence, we argue that voters in NPOP localities opted for the risky but promising choice, the incumbent PAN, in the expectation that they would receive the programme after election time. This expectation was generated by what we refer to as *campaign externalities*, which, as we discussed in Section 3, resulted from promises made in political rallies, by local political brokers, and also through an unprecedented mass media political campaign.

The transition matrices presented in Tables 2 and 3 show that PAN gained more votes from NPOP localities that voted for PRD in the 2000 election than those POP localities that voted predominantly for the PRD, whereas the PRI lost almost half of its votes to the PAN and PRD.[39] The observed swing differences seem consistent with the overall logic that we put forward in the next section.

# 9 Discussion

In the 2006 presidential election, the two front runners were clearly PAN (the incumbent) and PRD, with PRI consistently coming in third in the national polls. While PRD did not reject POP, its position was a critical one of 'support but reform' (Bruhn, 2009; Diaz-Cayeros *et al.* , 2016). PAN, on the other hand, was the incumbent and had expanded the programme considerably in the last six years. Voting for PRI became less appealing and also risky for POP beneficiaries as it may have meant letting PRD in, whose commitment to POP was not clear-cut.

Furthermore, voters in POP-treated localities were much more aware of the programmatic nature of the programme, mainly due to the programme itself, which constantly reminds beneficiaries of its apolitical nature. Also, in many places the programme had been in place for the 2000 elections already. Beneficiaries were hence able to directly observe that the allocation of benefits was not related to one's political affiliation.

In NPOP (control) localities, on the other hand, the apolitical character of the programme might have been much less evident. Voters there might have been more inclined to believe that their vote would count at the time of assigning benefits. Furthermore, there might not have been any significant presence in those localities of federal authorities of any kind, a circumstance that allowed local political brokers much more leverage in persuading voters to vote for the incumbent PAN (Larreguy *et al.* , 2016).

## 9.1 Vote swings and the politics of hope

A direct consequence of POP's targeting criteria and roll-out process was that, as discussed earlier, NPOP localities were on average relatively poorer that POP treated localities. This led, ironically, to 'ex ante' incomes in NPOP localities being lower than 'ex ante' incomes in POP localities because more geographically isolated communities tend to be poorer and lack social infrastructure needed to comply with the conditionalities of POP.

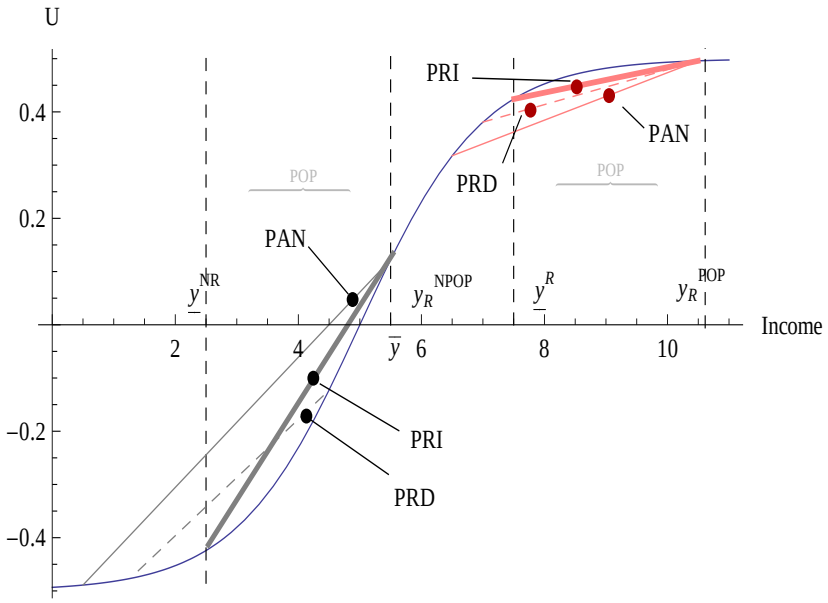
Thus, together with the ex-ante expectations that campaign externalities generated, one explanation for observing stronger vote swings in NPOP localities in favour of the incumbent was that people there were poorer and thus effectively risk-seeking. Figure 3 illustrates the rationale behind the 'atypical' voting behaviour in the 2006 election.

More formally, let $\underline{y}^N R$ denote the income in the non-POP locality prior to POP, while $\underline{y}^R$ stands for the income prior to POP in the POP locality. Moreover, $y_R^{POP}$ designates income after receiving POP in POP localities, while $y_R^{NPOP}$ denotes income after gaining POP in

[39] One must bear in mind the fact that, between them, PRI and PRD concentrated at least three-quarters of the total vote in 2000; thus the flows from PAN votes to PRI and PRD are in this case second order. These movements translate arithmetically into the positive swing difference observed for PRD.

an NPOP locality. The interpretation of the scenario illustrated in Figure 3 goes along the following lines:

Figure 3: Threshold utility index/logistic formulation.




Source: authors.

To the right of the income 'threshold', i.e. in non-POP poor rural localities, the lottery associated with voting for PAN offers voters the possibility of receiving POP with a very high probability, but at the risk of obtaining with a correspondingly small probability an income below their current one, i.e. below $\underline{y}^{N}R$ due to the perceived possible retaliation by the PRI.[40] The lottery associated with voting for PRI was less risky (the lowest prize is the original income) but the probability of PRI winning was low, and so it was the probability of obtaining POP if the voter chose to support that party.[41] Voting for PRD might lead with high probability to some increase in income, but not to the full extent of POP, due to that party's equivocal support for the programme. And again, favouring that party might expose one to retaliation by the local PRI authorities.

To the left of the threshold, i.e. in POP localities, the situation was different: there, voters were convinced that they will continue to enjoy the benefits of POP independently of which party they vote for (PAN or PRI). However, they still feared retaliation if they voted for PAN, but perhaps less than in non-POP localities; after all, the very presence of POP already put local authorities under federal scrutiny. Even if voting for PRD was not seen as leading for sure to an income below the POP income, it still seemed a better prospect to vote for PAN due to its proven commitment to POP. However, voting for PAN was

[40] In the 2006 election, voting for PAN in these historically PRI-dominated localities was a risky prospect, despite PAN being the national incumbent, especially since PAN's presence in these communities was generally scant. For many voters in these localities, voting for PRI represented a safer choice, since PRI was the party that introduced POP in the first place. Moreover, a vote for a local power-broker might have very well 'immunized' one against eventual retaliation by spurned parties, as in such small communities it might be possible to infer directly the sense of someone's vote just from that person's expressions and engagement.

[41] PRI was consistently ranked in third place in pre-election exit polls.

not as attractive a prospect as in non-POP localities as voters were more risk-averse and the additional risk associated with voting PAN might have been enough to prevent them from doing so. Voters in non-POP localities voted for PAN, led on by the risk-seeking disposition that their hope for a lasting improvement engenders. Voters in POP localities, due to the risk aversion resulting from their higher starting level of income, behaved more conservatively and did not shift as much to PAN.

### 9.2 The 2000 and 2012 presidential elections vis-à-vis the 2006 election

The other two elections were quite different from the 2006 election. The 2000 election offered an 'obvious' choice, namely PRI. This is because PRI was the incumbent, the local power broker, and the party putting forth POP. Faced with a safe choice, risk attitudes do not make a difference. Hence there is no apparent difference in vote swings between POP and NPOP.

Something similar happened in 2012. By then all three parties had declared their support for POP. PRD, in particular, muted its doubts regarding POP. In a way, POP was not 'on the table' in that election. Moreover, while PRI was not the incumbent, it was still the local power-broker in most poor rural communities, and was in the eyes of voters clearly committed to POP, and the clear front runner. Voting for PRI was again, as in 2000, the 'safe' obvious choice, as indeed the transition matrices in Tables 2 and 3 show, with a substantial movement of votes back to PRI, from both PRD and PAN. Thus it should not be surprising that there were no significant differences in vote shares and swings between POP and NPOP communities in both of those elections.

### 9.3 DD estimators under campaign externalities

How would the presence of *campaign externalities* influence our analysis?[42] To begin with, it makes the identification of the full causal effect of POP cumbersome. To illustrate, let $y_{it}$ be a given party's share of the vote at time $t$ at locality $i$.[43] Further, let $I_t$ be a dummy that equals 1 (0 otherwise) if POP is being implemented *somewhere* at time $t$. Correspondingly, let $I_{it}$ be a dummy that takes the value 1 if POP is being implemented at time $t$ in locality $i$. One can write:

$$y_{it} = c_i + \{\alpha I_{it} + \beta(1 - I_{it})\}I_t + \mu_{it} + \gamma t + \epsilon_{it} \tag{17}$$

In this expression, $c_i$ is a locality fixed effect; $\alpha$ stands for a *direct electoral impact*; $\beta$ stands for the *indirect electoral effect* or *externality*; $\mu_{it}$ stands for time-varying locality effects, which can be taken to be linear in local covariates, $X_{it}$, at time $t$, so that

$$\mu_{it} = \mu X_{it} \tag{18}$$

Finally, $\gamma$ stands for a common time trend across localities, and $\epsilon_{it}$ is an error term uncorrelated across time and uncorrelated with the other terms. Consider now the case in which $I_t = 0$ and $I_{i(t+1)} = 1$, which evidently implies that $I_{t+1} = 1$.

$$y_{i(t+1)} - y_{it} = \alpha + \gamma + \mu(X_{i(t+1)} - X_{it}) + (\epsilon_{i(t+1)} - \epsilon_{it}) \tag{19}$$

[42] Other mechanisms are conceivable even through non-informational channels. For example, as suggested in related literature (Cruz and Schneider, 2017; Bobba, 2011), incumbents may have incentives to reshuffle non-programme discretionary spending towards NPOP communities, and in this way, impact voting patterns there.

[43] The party sub-index is being left out so as not to clutter the formulation.

Now, consider a 'control' locality $j$ which is identical in covariates to $i$ at all times[44] but which has $I_{j(t+1)} = 0$ (note that $I_{jt} = 0$ since $I_t = 0$). The DD estimate is then

$$(y_{i(t+1)} - y_{it}) - (y_{j(t+1)} - y_{jt}) = (\alpha - \beta) + \left[(\epsilon_{i(t+1)} - \epsilon_{it}) - (\epsilon_{j(t+1)} - \epsilon_{jt})\right] \tag{20}$$

The finding here for the incumbent PAN in the DD model between 2000 and 2006 is then that $\alpha - \beta < 0$.[45]

### 9.3.1 The DD estimator between 2000 and 2006

The DD between 2000 and 2006 does not exactly correspond to the scenario just sketched above. In particular, in comparing PAN's vote share between 2000 and 2006 we clearly have $I_t = I_{t+1} = 1$, rather than $I_t = 0$ and $I_{t+1} = 1$ as assumed above. Moreover, PAN had an ambiguous position towards POP prior to the 2000 election but was in clear opposition to PRI, while once it became the incumbent, it expanded POP coverage. Thus, it seems appropriate to distinguish the coefficients of the 2000 equation from those of the 2006 one. We will denote the former by primes ($\alpha'$, $\beta'$).

As it can be easily verified, the DD estimator still identifies $\alpha - \beta$ under these conditions, since

$$(y_{i(t+1)} - y_{it}) - (y_{j(t+1)} - y_{jt}) = (\alpha - \beta') - (\beta - \beta') + \left[(\epsilon_{i(t+1)} - \epsilon_{it}) - (\epsilon_{j(t+1)} - \epsilon_{jt})\right] \tag{21}$$

and hence the $\beta'$ terms cancel out.

### 9.3.2 Campaign externalities and the RD design

In principle, an RD design should identify $\alpha - \beta$ modulo balancedness in covariates of the treated ($i$) and control ($j$) localities so that

$$y_{it} - y_{jt} = (\alpha - \beta) + \mu(X_{it} - X_{jt})(\epsilon_{it} - \epsilon_{jt}) \tag{22}$$

Thus an RD design should provide a robustness check for the DD implementation.

### 9.3.3 Towards identifying the causal effect of POP

Because of the presence of campaign externalities, the results presented in Section 8 mainly capture a 'net' effect of POP on voting decisions in rural localities. Without controlling for this mediating factor, we cannot claim the identification of 'full' causal relationship. The key to going beyond identifying a net electoral impact of POP is obviously to identify either $\alpha$ or $\beta$.

Short of finding communities which can reasonably be assumed not to have been 'contaminated' by national media campaigns during elections, and thus not have been subject to externalities of the sort that we focus on here, it is not clear how to go about this. One possible way is to make the strong assumption of parallel linear trends over two

[44] Or at least such that $X_{i(t+1)} - X_{it} = X_{j(t+1)} - X_{jt}$. Alternatively, if the covariates are all observable, one could directly control for them when differencing.

[45] Note that the DD model presupposes—in the context of a three-party system as the Mexican—that the incumbent party is always one of the two front runners, facing the same rival at both time points. Moreover, the two front runners would occupy the same position, either incumbent or challenger, and if the incumbent, having the challenger taking the same stance vis-á-vis POP.

consecutive presidential elections as illustrated in Figure A6 in the Appendix.

Here, one would need to take treated localities in 2000 and subtract from the electoral shares in 2000 the corresponding shares in 1994, an election prior to the introduction of POP, which hence has $I_{1994} = 0$. For control, one would need to take untreated localities in 2000 and 2006 and subtract the vote shares in 2000 from the vote shares in those same—still untreated—communities in 2006. Finally, one would need to subtract the latter difference from the former to identify $\alpha$.

A key problem with this approach is that one has to make sure the external effect in 2000 is comparable to the external effect in 2006 so as to have them cancel out. This seems a tall order, given the considerable differences between those two elections. Perhaps less problematic would be to do a sort of 'non-simultaneous' RD, in which one takes as controls localities close to the treated ones in 2000, but use their voting shares from the preceding presidential election, rather than from the contemporaneous election. We leave these possibilities for future research.

## 10 Conclusion

In this study, we have examined the electoral effects of Mexico's Progresa-Oportunidades-Prospera, a programme that became a landmark in antipoverty policy design with multiple ramifications in Latin America, and beyond. Our analysis covers the past three presidential elections, in a period of profound political transitions that saw the country moving from an autocratic one-party regime towards a more competitive democratic system.

The scant literature on the electoral impact of CCTs, and POP in particular, has taken an approach that assumes that only voters in treated localities are influenced by the programme. We have presented evidence and a rationalization that question this approach and make the case for an alternative yet unexplored angle. Overall, we argue that the peculiarities of the programme, with its progressive expansion and conditionalities at the core of its design, together with campaign promises that incumbents make in election times, and the *prospective* expectations that this can generate among voters near a subsistence threshold—particular so among those with very low ex-ante incomes in non-treated localities, and which are more easily persuaded to incur risks—can be crucial in understanding the electoral impacts of this type of programme.

While we are certainly not in a position to claim the identification of a 'full' causal effect of the programme, just a 'net' one, we have provided tentative strategies to identify the indirect effects of campaign externalities in similar contexts. The implication of our study is relevant for CCTs and similar social policy interventions that are currently being implemented across the developing world and in settings characterized by still evolving democratic institutions.

## References

Abadie, Alberto. 2005. Semiparametric Difference-in-Differences Estimators. *The Review of Economic Studies*, **72**(1), 1–19.

Ades, Alberto, and Di Tella, Rafael. 1999. Rents, Competition, and Corruption. *American Economic Review*, **89**(4), 982–993.

Adsera, Alicia, Boix, Carles, and Payne, Mark. 2003. Are You Being Served? Political Accountability and Quality of Government. *The Journal of Law, Economics, and Organization*, **19**(2), 445–490.

Angelucci, Manuela, and Attanasio, Orazio. 2013. The Demand for Food of Poor Urban Mexican Households: Understanding Policy Impacts Using Structural Models. *American Economic Journal: Economic Policy*, **5**(1), 146–178.

Angelucci, Manuela, Attanasio, Orazio, and Di Maro, Vincenzo. 2012. The Impact of Oportunidades on Consumption, Savings and Transfers. *Fiscal Studies*, **33**(3), 305–334.

Arndt, Christoph. 2013. *The Electoral Consequences of Third Way Welfare State Reforms: Social Democracy's Transformation and its Political Costs*. Amsterdam: Amsterdam University Press.

Attanasio, Orazio, and Mesnard, Alice. 2006. The Impact of a Conditional Cash Transfer Programme on Consumption in Colombia. *Fiscal Studies*, **27**(4), 421–442.

Attanasio, Orazio, Battistin, Erich, and Mesnard, Alice. 2012. Food and Cash Transfers: Evidence from Colombia. *The Economic Journal*, **122**(559), 92–124.

Baez, Javier Eduardo, Camacho, Adriana, Conover, Emily, and Zárate, Román David. 2012. *Conditional Cash Transfers, Political Participation, and Voting Behaviour*. IZA Discussion Paper Series No. 6870. Bonn, Germany.

Baldwin, Kate, and Bhavnani Rikhil, R. 2015. Ancillary Studies of Experiments: Opportunities and Challenges. *Journal of Globalization and Development*, **6**(1), 113–146.

Barajas Martínez, Gabriela. 2016. Prospers, Program of Social Incorporation: A New Strategy of Attention to the Poverty in Mexico? *Gestion y Estrategia*, **50**(July–December), 103–119.

Barrientos, Armando, and Niño-Zarazúa, Miguel. 2010. *Effects of Non-contributory Social Transfers in Developing Countries: A Compendium*. Geneva: International Labour Organisation.

Bastagli, F., Hagen-Zanker, J., Harman, L., Barca, V., Sturge, G., Schmidt, T., and Pellerano, L. 2016. *Cash Transfers: What Does the Evidence Say? A Rigorous Review of Programme Impact and of the Role of Design and Implementation Features.* ODI Research Report. London, UK.

Behrman, J., and Todd, P. E. 1999. *Randomness in the Experimental Samples of Progresa (Education, Health, and Nutrition Program)*. IFPRI Discussion Paper. International Food Policy Research Institute, Washington, DC.

Bobba, Mateo. 2011. *Redistributive Politics and Cash Transfer Programs*. Unpublished manuscript.

Bojar, Abel. 2017. Do Political Budget Cycles Work? A Micro-level Investigation of Pre-electoral Budgeting and its Electoral Consequences. *Electoral Studies*, **45**, 29–43.

Braido, Luis H. B., Olinto, Pedro, and Perrone, Helena. 2012. Gender Bias in Intrahousehold Allocation: Evidence from an Unintentional Experiment. *The Review of Economics and Statistics*, **94**(2), 552–565.

Brinegar, Adam, Morgenstern, Scott, and Nielson, Daniel. 2006. The PRI's Choice. *Party Politics*, **12**(1), 77–97.

Brinkerhoff, Derick W, and Goldsmith, Arthur A. 2004. Good Governance, Clientelism, and Patrimonialism: New Perspectives on Old Problems. *International Public Management Journal*, **7**, 163–186.

Brown, David S., and Hunter, Wendy. 2014. Democracy and Social Spending in Latin America, 1980–92. *American Political Science Review*, **93**(4), 779–790.

Bruhn, Kathleen. 1996. Social Spending and Political Support: The "Lessons" of the National Solidarity Program in Mexico. *Comparative Politics*, **28**(2), 151–177.

Bruhn, Kathleen. 2009. Lopez Obrador, Calderon and the 2006 Presidential Campaign. *In:* Domínguez, Jorge, Lawson, Chappell, and Moreno, Alejandro (eds), *Consolidating Mexico's Democracy. The 2006 Presidential Campaign in Comparative Perspective*. Baltimore, MD: The Johns Hopkins University Press.

Carter-Center. 2000. *Pre-Election Statement on Mexico Election, July 2, 2000*. Report. Carter Center. Report available from https://www.cartercenter.org/news/documents/doc976.html.

Caselli, Francesco, and Morelli, Massimo. 2004. Bad Politicians. *Journal of Public Economics*, **88**(3), 759–782.

Chiripanhura, Blessing, and Niño-Zarazúa, Miguel. 2015. Aid, Political Business Cycles and Growth in Africa. *Journal of International Development*, **27**(8), 1387–1421.

CONAPO. 1998. Índices de marginación a nivel localidad, 1995. *México, DF Consejo Nacional de Población*.

CONAPO. 2002. Índices de marginación a nivel localidad, 2000. *México, DF Consejo Nacional de Población*.

CONAPO. 2007. Índices de marginación a nivel localidad, 2005. *México, DF Consejo Nacional de Población*.

CONAPO, National Population Council. 2013. *Índice absoluto de marginación 2000–2010*. Report. CONAPO. Report available from: http://siceef.ine.mx/atlas.html?p%C3%A1gin=1#siceen.

Cornelius, W. A. 2004. Mobilized Voting in the 2000 Elections: The Changing Efficacy of Vote Buying and Coercion in Mexican Electoral Politics. *In:* Domínguez, Jorge, and Lawson, Chappell (eds), *Mexico's Pivotal Democratic Election. Candidates, Voters and the Presidential Campaign of 2000*. Stanford: Stanford University Press.

Cornelius, Wayne. A. 2002. La Eficacia de la Compra y Coacción del Voto en las Elecciones de 2000. *Perfiles Latinoamericanos*, **10**(20), 11–31.

Cortina, Jeronimo, and Lasala-Blanco, Narayani. 2016. One Vote or Many Mexicos? Income, Heterogeneity, and the 2006–2012 Presidential Elections. *Social Science Quarterly*, **97**(2), 197–210.

Cox, Gary W. 2004. Swing Voters, Core Voters, and Distributive Politics. *In:* Shapiro, Ian, Stokes, Susan, Wood, Elisabeth Jean, and Kirshner, Alexander S. (eds), *Political Representation*. Cambridge: Cambridge University Press.

Cox, Gary W., and McCubbins, Mathew D. 1986. Electoral Politics as a Redistributive Game. *The Journal of Politics*, **48**(2), 370–389.

Cruz, Cesi, and Schneider, Christina J. 2017. Foreign Aid and Undeserved Credit Claiming. *American Journal of Political Science*, **61**(2), 396–408.

Cruz, Cesi, Keefer, Philip, and Labonne, Julien. 2016. *Incumbent Advantage, Voter Information and Vote Buying*. IDB Working Paper Series No 711. Washington, D.C.

Cukierman, Alex, and Meltzer, Allan H. 1986. A Positive Theory of Discretionary Policy, the Cost of Democratic Government and the Benefits of a Constitution. *Economic Inquiry*, **24**(3), 367–388.

Curto-Grau, Marta. 2017. Voters' Responsiveness to Public Employment Policies. *Public Choice*, **170**(1), 143–169.

Dalenius, Tore, and Hodges, Joseph L. 1959. Minimum Variance Stratification. *Journal of the American Statistical Association*, **54**(285), 88–101.

De La O, Ana. 2015. *Crafting Policies to End Poverty in Latin America*. Cambridge: Cambridge University Press.

De La O, Ana L. 2013. Do Conditional Cash Transfers Affect Electoral Behavior? Evidence from a Randomized Experiment in Mexico. *American Journal of Political Science*, **57**(1), 1–14.

Deaton, Angus. 2010. Instruments, Randomization, and Learning about Development. *Journal of Economic Literature*, **48**(2), 424–455.

Diaz-Cayeros, Alberto, Estévez, Federico, and Magaloni, Beatriz. 2016. *The Political Logic of Poverty Relief: Electoral Strategies and Social Policy in Mexico*. Cambridge: Cambridge University Press.

Diaz-Cayeros, Alberto, Estévez, Federico, and Magaloni, Beatriz. forthcoming. *Strategies of Vote Buying: Democracy, Clientelism, and Poverty Relief in Mexico*. New York: Cambridge University Press.

Dion, Michelle. 2000. La Economia Politica del Gasto Social: el Programa de Solidaridad de México, 1988–1994. *Estudios Sociológicos*, **18**(53), 329–362.

Dixit, Avinash, and Londregan, John. 1996. The Determinants of Success of Special Interests in Redistributive Politics. *The Journal of Politics*, **58**(4), 1132–1155.

Domínguez, Jorge. 2012. Mexico's Campaigns and the Benchmark Elections of 2000 and 2006. *In:* Camp, Roderic Ai (ed), *The Oxford Handbook of Mexican Politics*. Oxford: Oxford University Press.

Drazen, Allan, and Eslava, Marcela. 2010. Electoral Manipulation Via Voter-Friendly Spending: Theory and Evidence. *Journal of Development Economics*, **92**(1), 39–52.

Estrada, Luis, and Poiré, Alejandro. 2007. The Mexican Standoff: Taught to Protest, Learning to Lose. *Journal of Democracy*, **18**(1), 73–87.

Fair, Ray C. 1996. Econometrics and Presidential Elections. *Journal of Economic Perspectives*, **10**(3), 89–102.

Feddersen, Timothy J. 2004. Rational Choice Theory and the Paradox of Not Voting. *Journal of Economic Perspectives*, **18**(1), 99–112.

Fiorina, Morris P. 1978. Economic Retrospective Voting in American National Elections: A Micro-Analysis. *American Journal of Political Science*, **22**(2), 426–443.

Fiszbein, Ariel, and Schady, Norbert R. 2009. *Conditional Cash Transfers: Reducing Present and Future Poverty*. Washington, DC: World Bank.

Franzese, Robert J. 2002. Electoral and Partisan Cycles in Economic Policies and Outcomes. *Annual Review of Political Science*, **5**(1), 369–421.

Fukuyama, Francis. 2015. Why is Democracy Performing So Poorly? *Journal of Democracy*, **26**(1), 11–20.

Galiani, Sebastian, Hajj, Nadya, McEwan, Patrick J., Ibarrarán, Pablo, and Krishnaswamy, Nandita. 2017. *End Heuristics in Retrospective Voting: Evidence from a Conditional Cash Transfer Experiment*. Unpublished Work.

Geddes, Barbara. 1996. *Politician's Dilemma: Building State Capacity in Latin America*. Berkeley, CA: University of California Press.

Gertler, Paul J., Martinez, Sebastian W., and Rubio-Codina, Marta. 2012. Investing Cash Transfers to Raise Long-Term Living Standards. *American Economic Journal: Applied Economics*, **4**(1), 164–192.

Gibson, Edward L., and Calvo, Ernesto. 2000. Federalism and Low-Maintenance Constituencies: Territorial Dimensions of Economic Reform in Argentina. *Studies in Comparative International Development*, **35**(3), 32–55.

Giger, Nathalie. 2011. *The Risk of Social Policy?: The Electoral Consequences of Welfare State Retrenchment and Social Policy Performance in OECD Countries*. London: Routledge.

Gil-Díaz, Francisco, and Carstens, Agustín. 1996. One Year of Solitude: Some Pilgrim Tales About Mexico's 1994–1995 Crisis. *The American Economic Review*, **86**(2), 164–169.

Gilbreth, Chris, and Otero, Gerardo. 2001. Democratization in Mexico. *Latin American Perspectives*, **28**(4), 7–29.

Gisselquist, Rachel, M., and Niño-Zarazúa, Miguel. 2015. What Can Experiments Tell Us About How to Improve Government Performance? *Journal of Globalization and Development*, **6**(1), 1–45.

Gonzalez-Ocantos, Ezequiel, de Jonge, Chad Kiewiet, Meléndez, Carlos, Osorio, Javier, and Nickerson, David W. 2012. Vote Buying and Social Desirability Bias: Experimental Evidence from Nicaragua. *American Journal of Political Science*, **56**(1), 202–217.

Grafstein, Robert. 2009. The Puzzle of Weak Pocketbook Voting. *Journal of Theoretical Politics*, **21**(4), 451–482.

Green, Tina R. 2005. *The Political Economy of a Social Transfer Program: Evidence from PROGRESA in Mexico*. Unpublished manuscript.

Grzymala-Busse, Anna. 2008. Beyond Clientelism. *Comparative Political Studies*, **41**(4–5), 638–673.

Hahn, Jinyong, Todd, Petra, and Van der Klaauw, Wilbert. 2001. Identification and Estimation of Treatment Effects with a Regression-Discontinuity Design. *Econometrica*, **69**(1), 201–209.

Handa, Sudhanshu, Peterman, Amber, Davis, Benjamin, and Stampini, Marco. 2009. Opening Up Pandora's Box: The Effect of Gender Targeting and Conditionality on Household Spending Behavior in Mexico's Progresa Program. *World Development*, **37**(6), 1129–1142.

Healy, Andrew, and Malhotra, Neil. 2009. Myopic Voters and Natural Disaster Policy. *American Political Science Review*, **103**(3), 387–406.

Healy, Andrew, and Malhotra, Neil. 2013. Retrospective Voting Reconsidered. *Annual Review of Political Science*, **16**, 285–306.

Hevia de la Jara, Felipe. 2008. De Progresa a Oportunidades: efectos y límites de la corriente cívica en el gobierno de Vicente Fox. *Sociológica*, **24**(70), 43–81.

Hicken, Allen. 2011. Clientelism. *Annual Review of Political Science*, **14**(1), 289–310.

Hoddinott, John, and Skoufias, Emmanuel. 2004. The Impact of PROGRESA on Food Consumption. *Economic Development and Cultural Change*, **53**(1), 37–61.

Imai, Kosuke, King, Gary, and Velasco Rivera, Carlos. 2016. *Do Nonpartisan Programmatic Policies Have Partisan Electoral Effects? Evidence from Two Large Scale Randomized Experiments*. Unpublished manuscript.

Imam, Mohamed A., Barke, Samuel, Stafford, Giles H., Parkin, David, and Field, Richard E. 2014. Loss to Follow-up After Total Hip Replacement: A Source of Bias in Patient Reported Outcome Measures and Registry Datasets? *Hip International*, **24**(5), 465–472.

Imbens, Guido W., and Lemieux, Thomas. 2008. Regression Discontinuity Designs: A Guide to Practice. *Journal of Econometrics*, **142**(2), 615–635.

INE (Instituto Nacional Electoral). 2017. *Atlas de Resultados de las Elecciones Federales 1991–2015*. Report. Data available from INE at: http://siceef.ine.mx/atlas.html?p%C3%A1gina=1#siceen.

INE-INEGI. 2012. *Census Statistics on Geo-electoral Scales*. Database. INE-INEGI. Data available from: http://siceef.ine.mx/atlas.html?p%C3%A1gin=1#siceen.

INEGI (National Institute of Statistics and Geography). 2016. *Geo-statistical Framework*. Database. INEGI. Data available from: http://www.beta.inegi.org.mx/temas/mapas/mg/.

Jacobson, Gary C. 1990. The Effects of Campaign Spending in House Elections: New Evidence for Old Arguments. *American Journal of Political Science*, **34**(2), 334–362.

Jones, Mark P., Meloni, Osvaldo, and Tommasi, Mariano. 2012. Voters as Fiscal Liberals: Incentives and Accountability in Federal Systems. *Economics Politics*, **24**(2), 135–156.

Kabeer, Naila, and Waddington, Hugh. 2015. Economic Impacts of Conditional Cash Transfer Programmes: A Systematic Review and Meta-Analysis. *Journal of Development Effectiveness*, **7**(3), 290–303.

Kramer, Gerald H. 1983. The Ecological Fallacy Revisited: Aggregate- vrs. Individual-level Findings on Economics and Elections, and Sociotropic Voting. *The American Political Science Review*, **77**, 92–111.

Kurer, Oskar. 1993. Clientelism, Corruption, and the Allocation of Resources. *Public Choice*, **77**(2), 259–273.

Larreguy, Horacio, Marshall, John, and Querubin, Pablo. 2016. Parties, Brokers, and Voter Mobilization: How Turnout Buying Depends Upon the Party's Capacity to Monitor Brokers. *American Political Science Review*, **110**(1), 160–179.

Lazarus, Jeffrey, and Reilly, Shauna. 2010. The Electoral Benefits of Distributive Spending. *Political Research Quarterly*, **63**(2), 343–355.

Lazarus, Jeffrey, Glas, Jeffrey, and Barbieri, Kyle T. 2012. Earmarks and Elections to the U.S. House of Representatives. *Congress and the Presidency*, **39**, 254–269.

Levitt, Steven. 1994. Using Repeat Challengers to Estimate the Effect of Campaign Spending on Election Outcomes in the U.S. House. *Journal of Political Economy*, **102**(4), 777–798.

Levitt, Steven D., and Snyder, James M. 1997. The Impact of Federal Spending on House Election Outcomes. *Journal of Political Economy*, **105**(1), 30–55.

Levy, Santiago. 2006. *Progress Against Poverty: Sustaining Mexico's Progresa-Oportunidades Program*. Washington, DC: Brookings Institution Press.

Levy, Santiago, and Schady, Norbert. 2013. Latin America's Social Policy Challenge: Education, Social Insurance, Redistribution. *The Journal of Economic Perspectives*, **27**(2), 193–218.

Lewis-Beck, Michael S., and Stegmaier, Mary. 2000. Economic Determinants of Electoral Outcomes. *Annual Review of Political Science*, **3**, 183–219.

Lindbeck, Assar, and Weibull, Jorgen W. 1987. Balanced Budget Redistribution as the Outcome of Political Competition. *Public Choice*, **52**(3), 273–297.

Litschig, Stephan, and Morrison, Kevin. 2012. *Government Spending and Re-election: Quasi-Experimental Evidence from Brazilian Municipalities*. Barcelona GSE Working Paper Series, No. 515.

Lockerbie, Brad. 1991. Prospective Economic Voting in U.S. House Elections, 1956-88. *Legislative Studies Quarterly*, **16**(2), 239–261.

Lujambio, Alonso, and Segl, Horacio V. 2000. *El poder compartido: un ensayo sobre la democratización mexicana*. Mexico City: Editorial Océano de Mexico.

Macours, Karen, Premand, Patrick, and Vakis, Renos. 2012. *Transfers, Diversification and Household Risk Strategies: Experimental Evidence with Lessons for Climate Change Adaptation*. World Bank Policy Research Working Paper 6053. Washington, DC.

Maluccio, John, and Flores, Rafael. 2005. *Impact Evaluation of a Conditional Cash Transfer Program: The Nicaraguan Red de Protección Social*. Tech. rept. 0896291464. International Food Policy Research Institute, Washington, DC.

Manacorda, Marco, Miguel, Edward, and Vigorito, Andrea. 2011. Government Transfers and Political Support. *American Economic Journal: Applied Economics*, **3**(3), 1–28.

Masino, Serena, and Niño-Zarazúa, Miguel. 2014. *Social Service Delivery and Access to Financial Innovation: The Impact of Oportunidades' Electronic Payments in Mexico*. WIDER Working Paper 34. Helsinki, Finland.

Mayhew, David R. 2008. Incumbency Advantage in U.S. Presidential Elections: The Historical Record. *Political Science Quarterly*, **123**(2), 201–228.

Niño-Zarazúa, Miguel. 2011. *Mexico's Progresa-Oportunidades and the Emergence of Social Assistance in Latin America*. BWPI Working Paper 142. Manchester, UK.

Parker, Susan W., Rubalcava, Luis, and Teruel, Graciela. 2007. Evaluating Conditional Schooling and Health Programs. *In:* Schultz, T. Paul, and Strauss, John, A. (eds), *Handbook of Development Economics*, vol. Volume 4. New York: Elsevier.

Perova, Elizabeta, and Vakis, Renos. 2012. 5 Years in Juntos: New Evidence on the Program's Short and Long-term Impacts. *Economía*, **35**(69), 53–82.

PNUD. 2007. *Encuesta nacional sobre la protección de los programas sociales ENAPP 2006*. Report. Programa de las Nacionales Unidas para el Desarrollo, Mexico City.

Pop-Elches, Cristian, and Pop-Elches, Grigore. 2008. *Government Spending and Pocketbook Voting: Quasi-Experimental Evidence from Romania*. Unpublished manuscript.

Pérez Dámazo, Ana Yely. 2014. Campañas negativas en las elecciones 2000 y 2006 en México. *Revista Mexicana de Ciencias Políticas y Sociales*, **59**(222), 87–115.

Ravallion, Martin. 2009. Should the Randomistas Rule? *Economists' Voice*, **6**(2).

Robinson, James A., and Verdier, Thierry. 2013. The Political Economy of Clientelism*. *The Scandinavian Journal of Economics*, **115**(2), 260–291.

Rodríguez Chamussy, Lourdes. 2015. *Local Electoral Rewards from Centralized Social Programs: Are Mayors Getting the Credit?* Tech. rept. Washington, DC.

Rogoff, Kenneth, and Sibert, Anne. 1988. Elections and Macroeconomic Policy Cycles. *The Review of Economic Studies*, **55**(1), 1–16.

Ruiz-Arranz, Marta, Davis, Benjamin, Stampini, Marco, Winters, Paul, and Handa, Sudhanshu. 2002. *More Calories or More Diversity? An Econometric Evaluation of the Impact of the PROGRESA and PROCAMPO Transfer Programmes on Food Security in Rural Mexico*. ESA Working Paper 09. Rome, Italy.

Samuels, David J. 2002. Pork Barreling Is Not Credit Claiming or Advertising: Campaign Finance and the Sources of the Personal Vote in Brazil. *The Journal of Politics*, **64**(3), 845–863.

Schady, Norbert R. 2000. The Political Economy of Expenditures by the Peruvian Social Fund (FONCODES), 1991–95. *American Political Science Review*, **94**(2), 289–304.

SEDESOL, Secretaria de Desarrollo Social. 2002. *Medición de la Pobreza. Variantes metodológicas y estimación preliminar*. Report. Comité Técnico para la Medición de la Pobreza., Mexico City; Mexico.

SEDESOL, Secretaria de Desarrollo Social. 2015. Acuerdo por el que se emiten las Reglas de Operación de PROSPERA Programa de Inclusión Social, para el ejercicio fiscal 2015. *Diario Oficial de la Federación*.

Singer, Eleanor. 2006. Introduction: Nonresponse Bias in Household Surveys. *Public Opinion Quarterly*, **70**(5), 637–645.

Skoufias, Emmanuel. 2005. *PROGRESA and Its Impacts on the Welfare of Rural Households in Mexico*. Tech. rept. International Food Policy Research Institute, Washington, DC.

Skoufias, Emmanuel, and McClafferty, Bonnie. 2001. *Is Progresa Working: Summary of the Results of an Evaluation by IFPRI*. Tech. rept. International Food Policy Research Institute, Washington, DC.

Spalding, Rose J. 1998. *Political Parties in Yucatán: Regionalism, Strategy and Prospects for the PRI*. Paper Presented in the XXI Congress of the Latin American Studies Association. Chicago.

Stokes, Susan C. 2005. Perverse Accountability: A Formal Model of Machine Politics with Evidence from Argentina. *American Political Science Review*, **99**(3), 315–325.

Takahashi, Yuriko. 2008. La Economia Politica del Alivio a la Pobreza: El Caso de Progresa en Mexico. *Análisis. Mexico y la Cuenca del Pacifico*, **11**(31), 59–94.

Todd, Petra E., and Wolpin, Kenneth I. 2006. Assessing the Impact of a School Subsidy Program in Mexico: Using a Social Experiment to Validate a Dynamic Behavioral Model of Child Schooling and Fertility. *The American Economic Review*, **96**(5), 1384–1417.

Vergne, Clémence. 2009. Democracy, Elections and Allocation of Public Expenditures in Developing Countries. *European Journal of Political Economy*, **25**(1), 63–77.

Vicente, Pedro C., and Wantchekon, Leonard. 2009. Clientelism and Vote Buying: Lessons from Field Experiments in African Elections. *Oxford Review of Economic Policy*, **25**(2), 292–305.

Villa, Juan Miguel, and Niño-Zarazúa, Miguel. 2014. *Poverty Dynamics and Programme Graduation from Social Protection: A Transitional Model for Mexico's Oportunidades Programme*. WIDER Working Paper 109. Helsinki, Finland.

Wantchekon, Leonard. 2002. Why do Resource Dependent Countries Have Authoritarian Governments. *Journal of African Finance and Economic Development*, **5**(2), 57–77.

Wantchekon, Leonard. 2003. Clientelism and Voting Behavior: Evidence from a Field Experiment in Benin. *World Politics*, **55**, 399–422.

Weyland, Kurt. 1998. Swallowing the Bitter Pill. *Comparative Political Studies*, **31**(5), 539–568.

Zucco, Cesar. 2013. When Payouts Pay Off: Conditional Cash Transfers and Voting Behavior in Brazil 2002–10. *American Journal of Political Science*, **57**(4), 810–822.

# Appendix

Table A1: Evolution of POP through Mexico's political transitions

| Year | Name | Coverage in millions of people | Coverage in % of total population | Budget in billions of constant (2008) pesos | Budget in per capita pesos | Incumbent (party) |
|---|---|---|---|---|---|---|
| 1997 | Progresa | 1.6 | 1.66 | 2.52 | 1,553 | Zedillo (PRI) |
| 1998 | Progresa | 8.6 | 8.65 | 7.31 | 848 | Zedillo (PRI) |
| 1999 | Progresa | 12.5 | 12.30 | 13.74 | 1,104 | Zedillo (PRI) |
| 2000 | Progresa | 12.4 | 12.04 | 15.45 | 1,247 | Zedillo (PRI) |
| 2001 | Oportunidades | 15.6 | 14.95 | 19.41 | 1,246 | Fox (PAN) |
| 2002 | Oportunidades | 21.6 | 20.48 | 24.70 | 1,142 | Fox (PAN) |
| 2003 | Oportunidades | 21.6 | 20.23 | 30.28 | 1,400 | Fox (PAN) |
| 2004 | Oportunidades | 25.0 | 23.09 | 32.09 | 1,283 | Fox (PAN) |
| 2005 | Oportunidades | 24.5 | 22.32 | 36.23 | 1,479 | Fox (PAN) |
| 2006 | Oportunidades | 25.0 | 22.45 | 37.33 | 1,493 | Fox (PAN) |
| 2007 | Oportunidades | 25.0 | 22.10 | 39.01 | 1,560 | Calderon (PAN) |
| 2008 | Oportunidades | 25.2 | 21.96 | 41.73 | 1,653 | Calderon (PAN) |
| 2009 | Oportunidades | 26.0 | 22.30 | 45.16 | 1,734 | Calderon (PAN) |
| 2010 | Oportunidades | 27.2 | 22.97 | 58.04 | 2,130 | Calderon (PAN) |
| 2011 | Oportunidades | 28.6 | 23.72 | 50.58 | 1,771 | Calderon (PAN) |
| 2012 | Oportunidades | 28.6 | 23.46 | 47.22 | 1,649 | Calderon (PAN) |
| 2013 | Prospera | 29.0 | 23.45 | 55.39 | 1,909 | Peña Nieto (PRI) |
| 2014 | Prospera | 28.2 | 22.49 | 59.33 | 2,104 | Peña Nieto (PRI) |
| 2015 | Prospera | 28.2 | 22.19 | 58.50 | 2,075 | Peña Nieto (PRI) |

Source: constructed by the authors based on the SAPI database.

Table A2: Descriptive statistics for variables in 1994 for results of the presidential election of the year 2000

| | Treatment | Control | t-stat |
|---|---|---|---|
| Logarithm of population size | 5.345 | 4.774 | 43.258*** |
| % older than 15 years | 56.34 | 56.20 | 0.916 |
| % between 6 and 14 years | 26.17 | 25.36 | 7.808*** |
| % between 6 and 14 years who can not read or write | 0.261 | 0.315 | -13.744*** |
| % illiterate older than 15 years | 29.91 | 30.94 | -3.041*** |
| % aged 5 or older speaking an indigenous language | 22.40 | 22.60 | -0.302 |
| % of dwellings with piped water | 34.77 | 27.93 | 10.263*** |
| % of dwellings with sewer system | 10.33 | 10.21 | 0.311 |
| % of dwellings with electricity | 60.54 | 42.61 | 23.53*** |
| Average number of people living in the dwelling | 5.542 | 5.518 | 1.221 |
| Marginality index | 0.417 | 0.601 | -13.504*** |
| Distance to the municipal head (km) | 21.38 | 31.98 | -16.094*** |
| North | 9.899 | 17.86 | -11.771*** |
| North-Central | 21.03 | 11.25 | 16.721*** |
| Centre | 3.744 | 1.880 | 7.31*** |
| South-Central | 27.37 | 14.48 | 19.831*** |
| South-South East | 37.96 | 54.54 | -18.567*** |
| Vote share for PRI | 60.26 | 57.77 | 6.412*** |
| Vote share for PAN | 8.954 | 9.573 | -3.08*** |
| Vote share for PRD | 19.84 | 21.82 | -5.02*** |
| Voter turnout | 71.87 | 69.00 | 10.095*** |
| % loc. where PRI won | 84.26 | 82.11 | 3.13*** |
| % loc. where PAN won | 1.714 | 2.056 | -1.352 |
| % loc. where PRD won | 14.19 | 16.01 | -2.771*** |
| % loc. where PRI and PAN were in the first two positions | 36.06 | 36.21 | -0.177 |
| % loc. where PAN and PRD were in the first two positions | 0.148 | 0.323 | -1.759* |
| % loc. where PRI and PRD were in the first two positions | 62.10 | 61.44 | 0.760 |
| # households | 1,957,385 | 105,460 | |
| # households beneficiaries in 2000 | 1,390,100 | 0 | |
| Coverage in 2000[2] | 64.27(20.82) | 0 | |
| Average monetary transfer in 2000[1] | 1,222.405 | 0 | |
| Monetary transfer as % of household labour income[2] | 39.52(10.75) | 0 | |
| # Localities | 33,793 | 3,405 | |

Source: constructed by the authors.
Note: sample of localities that in 1995 were classified as having high and very high marginality level and having population sizes between 50 and 2,499 inhabitants. [1]Constant Mexican pesos of May 2016. The labour income is the one reported by the households in the survey that determined their incorporation in the programme, that is to say, is the labour income prior to starting to receive the programme. [2]Standard deviation in parentheses. Significant difference at *10%, **5%, ***1%.

Table A3: Descriptive statistics for variables in 2000 for results of the presidential election of the year 2006

| | Treatment | Control | t-stat |
|---|---|---|---|
| Logarithm of population size | 5.019 | 4.765 | 10.901*** |
| % females | 49.84 | 49.43 | 3.075*** |
| % between 6 and 14 years | 25.09 | 24.89 | 1.118 |
| % between 15 and 17 years | 6.588 | 6.683 | -1.268 |
| % older than 18 years | 50.37 | 48.68 | 6.297*** |
| % without affiliation to a social security | 86.90 | 87.38 | -0.828 |
| % of workers who earn at most two minimum wages | 12.57 | 14.77 | -7.493*** |
| % unemployed | 0.945 | 0.986 | -0.582 |
| % older than 15 years with at most primary incomplete | 63.23 | 66.69 | -7.421*** |
| % between 6 and 14 years who attend to school | 81.34 | 76.91 | 8.43*** |
| % illiterate older than 15 years | 27.18 | 30.91 | -7.436*** |
| % aged 5 or older speaking an indigenous language | 20.92 | 26.39 | -5.056*** |
| % of dwellings with dirt floor | 55.427 | 60.487 | 5.323*** |
| % of dwellings with one room | 13.21 | 16.68 | -7.221*** |
| % of dwellings that use firewood for cooking | 76.71 | 77.47 | -0.893 |
| % of dwellings with sanitary service | 50.49 | 48.61 | 2.006** |
| % with own housing | 89.44 | 85.81 | 6.612*** |
| % of dwellings with radio | 67.01 | 63.66 | 5.659*** |
| % of dwellings with TV | 44.40 | 40.18 | 4.486*** |
| % of dwellings with video | 7.060 | 5.395 | 6.055*** |
| % of dwellings with fridge | 22.42 | 17.50 | 6.872*** |
| % of dwellings with washing machine | 10.69 | 8.559 | 4.442*** |
| % of dwellings with telephone | 2.292 | 2.389 | -0.553 |
| % of dwellings with automobile | 12.91 | 10.38 | 5.32*** |
| % of households with male head | 14.87 | 12.57 | 7.863*** |
| Logarithm of average number of person per room | 0.989 | 1.049 | -5.883*** |
| Marginality index | 0.308 | 0.524 | -8.776*** |
| Distance to the municipal head (km) | 25.79 | 29.48 | -3.634*** |
| North | 12.87 | 11.92 | 1.005 |
| North-Central | 18.14 | 13.72 | 4.226*** |
| Centre | 0 | 4.843 | -10.348*** |
| South-Central | 19.47 | 10.92 | 8.447*** |
| South-South East | 49.52 | 58.59 | -6.345*** |
| Vote share for PRI | 51.90 | 51.18 | 1.348 |
| Vote share for PAN | 20.19 | 21.12 | -1.836* |
| Vote share for PRD | 22.16 | 21.60 | 1.066 |
| Voter turnout | 54.11 | 52.64 | 3.558*** |
| % loc. where PRI won | 70.71 | 69.85 | 0.650 |
| % loc. where PAN won | 14.52 | 15.76 | -1.199 |
| % loc. where PRD won | 15.27 | 14.67 | 0.585 |
| % loc. where PRI and PAN were in the first two positions | 36.03 | 35.47 | 0.408 |
| % loc. where PAN and PRD were in the first two positions | 0.789 | 1.045 | -0.921 |
| % loc. where PRI and PRD were in the first two positions | 49.01 | 47.96 | 0.732 |
| # households | 138,582 | 70,492 | |
| # households beneficiaries in 2005 | 102,180 | 0 | |
| Coverage in 2005[2] | 71.59(26.17) | 0 | |
| Average monetary transfer in 2005[1] | 1,251.926 | 0 | |
| Monetary transfer as % of household labour income[2] | 31.68(11.49) | 0 | |
| # Localities | 2,789 | 2,106 | |

Source: constructed by the authors.
Note: sample of localities that in 2000 were classified as having high and very high marginality level and having population sizes between 50 and 2,499 inhabitants that did not receive POP at the end of the year 2000. [1]Constant Mexican pesos of May 2016. The labour income is the one reported by the households in the survey that determined their incorporation to the programme, that is to say, is the labour income prior to starting to receive the program. [2]Standard deviation in parentheses. Significant difference at *10%, **5%, ***1%.

Table A4: Descriptive statistics for variables in 2006 for results of the presidential election of the year 2012

| | Treatment | Control | t-stat |
|---|---|---|---|
| Logarithm of population size | 4.923 | 4.451 | 15.325*** |
| Average schooling years | 3.979 | 3.760 | 2.801*** |
| % females | 50.02 | 49.79 | 0.886 |
| % between 6 and 14 years | 24.75 | 25.81 | -3.075*** |
| % between 6 and 14 years who do not attend to school | 14.340 | 20.612 | -5.5*** |
| % aged 5 or older speaking an indigenous language | 35.236 | 40.567 | -2.328** |
| % illiterate older than 15 years | 29.025 | 30.083 | -1.119 |
| % between 15 and 24 years | 18.54 | 19.31 | -2.405** |
| % aged 18 or older | 51.31 | 48.70 | 4.968*** |
| % without affiliation to a social security | 81.63 | 83.56 | -1.455 |
| % between 0 and 4 years | 13.21 | 14.11 | -3.276*** |
| % beneficiaries of the Seguro Popular | 9.783 | 6.578 | 3.377*** |
| % older than 60 years | 7.650 | 5.806 | 7.88*** |
| % of households with female head | 14.82 | 12.08 | 4.815*** |
| % of dwellings with dirt floor | 42.73 | 38.88 | 2.147** |
| % of dwellings with one room | 16.03 | 17.65 | -1.470 |
| % of dwellings with sanitary service | 61.26 | 56.91 | 2.325** |
| % of dwellings with piped water | 32.40 | 26.64 | 2.951*** |
| % of dwellings with sewer system | 32.62 | 29.46 | 1.781* |
| % of dwellings with electricity | 70.50 | 59.28 | 5.363*** |
| % of dwellings with TV | 45.01 | 35.06 | 5.639*** |
| % of dwellings with fridge | 24.99 | 19.65 | 3.838*** |
| % of dwellings with washing machine | 11.80 | 9.889 | 2.006** |
| Marginality index | 0.621 | 0.827 | -4.14*** |
| Distance to the municipal head (km) | 26.57 | 33.55 | -3.373*** |
| North | 9.046 | 13.913 | -2.783*** |
| North-Central | 10.800 | 14.348 | -1.983** |
| Centre | 8.059 | 5.217 | 2.328** |
| South-Central | 18.257 | 8.043 | 6.538*** |
| South-South East | 53.838 | 58.478 | -1.798* |
| Vote share for PRI | 34.87 | 39.38 | -5.079*** |
| Vote share for PAN | 25.92 | 22.03 | 4.072*** |
| Vote share for PRD | 32.52 | 31.62 | 0.921 |
| Voter turnout | 50.02 | 46.81 | 4.837*** |
| % loc. where PRI won | 34.76 | 41.96 | -2.814*** |
| % loc. where PAN won | 29.66 | 23.04 | 2.958*** |
| % loc. where PRD won | 35.69 | 35 | 0.277 |
| % loc. where PRI and PAN were in the first two positions | 13.60 | 16.74 | -1.639 |
| % loc. where PAN and PRD were in the first two positions | 8.333 | 7.391 | 0.682 |
| % loc. where PRI and PRD were in the first two positions | 48.41 | 52.83 | -1.695* |
| # households | 77,644 | 9,707 | |
| # households beneficiaries in 2012 | 56,553 | 0 | |
| Coverage in 2012[2] | 63.08(29.87) | 0 | |
| Average monetary transfer in 2012[1] | 1,564.83 | 0 | |
| Monetary transfer as % of household labour income[2] | 46.65(14.93) | 0 | |
| # Localities | 1,824 | 460 | |

Source: constructed by the authors.
Note: sample of localities that in 2006 were classified as having high and very high marginality level and having population sizes between 50 and 2,499 inhabitants, that did not receive POP at the beginning of the year 2005. [1]Constant Mexican pesos of May 2016. The labour income is the one reported by the households in the survey that determined their incorporation to the programme, that is to say, is the labour income prior to starting to receive the programme. [2]Standard deviation in parentheses. Significant difference at *10%, **5%, ***1%.

Table A5: Covariate balance matrix across treatment and control localities: sample 2000

| | Original sample | | | Reweighted sample | | |
|---|---|---|---|---|---|---|
| | T | C | SD | T | C | SD |
| Logarithm of population size | 5.34 | 4.78 | 70.80 * | 5.34 | 5.35 | -0.90 |
| % between 6 and 14 years | 26.17 | 25.35 | 15.30 * | 26.17 | 26.22 | -1.14 |
| % older than 15 years | 56.34 | 56.20 | 1.78 | 56.34 | 56.11 | 3.34 |
| % illiterate older than 15 years | 29.91 | 30.95 | -5.95 | 29.91 | 30.52 | -3.93 |
| % between 6 and 14 years who can not read or write | 26.12 | 31.47 | -27.16 * | 0.26 | 0.27 | -3.01 |
| % aged 5 or older speaking an indigenous language | 22.40 | 22.57 | -0.44 | 22.40 | 24.38 | -5.20 |
| % of dwellings with piped water | 34.77 | 27.93 | 18.08 * | 34.77 | 35.66 | -2.29 |
| % of dwellings with electricity | 60.54 | 42.63 | 43.19 * | 60.54 | 61.85 | -3.26 |
| % of dwellings with sewer system | 10.33 | 10.21 | 0.57 | 10.33 | 11.06 | -3.55 |
| Marginality index | 0.42 | 0.60 | -25.44 * | 0.42 | 0.44 | -2.97 |
| Distance to the municipal head (km) | 21.38 | 31.97 | -31.54 * | 21.38 | 20.86 | 1.77 |
| North | 9.90 | 17.87 | -23.21 * | 9.90 | 6.55 | 12.21 * |
| North-Central | 21.03 | 11.23 | 26.89 * | 21.03 | 19.41 | 4.04 |
| Centre | 3.75 | 1.85 | 11.50 * | 3.75 | 3.90 | -0.80 |
| South-Central | 27.36 | 14.55 | 31.88 * | 27.36 | 29.07 | -3.80 |
| South-South East | 37.96 | 54.50 | -33.63 * | 37.96 | 41.07 | -6.37 |
| % loc. where PRI won in 1994 | 84.27 | 82.04 | 5.96 | 84.27 | 83.70 | 1.55 |
| % loc. where PAN won in 1994 | 1.71 | 2.06 | -2.53 | 1.71 | 2.21 | -3.58 |
| % loc. where PRI and PAN were in the first two positions | 36.06 | 36.18 | -0.26 | 36.06 | 35.88 | 0.37 |
| % loc. where PAN and PRD were in the first two positions | 0.15 | 0.32 | -3.62 | 0.15 | 0.06 | 2.70 |
| % loc. where PRI and PRD were in the first two positions | 62.10 | 61.46 | 1.31 | 62.10 | 61.85 | 0.52 |

Source: constructed by the authors.
Note: sample of localities that in 1995 were classified as having high and very high marginality level and having population sizes between 50 and 2,499 inhabitants. T indicates treatment group. C indicates control group. SD indicates the standarized mean difference. The reweighted sample follows the Abadie (2005) method. * Absolute value of the standardized mean above 10%.

Table A6: Covariate balance matrix across treatment and control localities: sample 2006

| | Original sample | | | Reweighted sample | | |
|---|---|---|---|---|---|---|
| | T | C | SD | T | C | SD |
| Logarithm of population size | 5.02 | 4.77 | 31.03 * | 5.02 | 5.02 | 0.22 |
| % females | 49.84 | 49.43 | 8.93 | 49.84 | 49.90 | -1.30 |
| % aged 5 or older speaking an indigenous language | 20.90 | 26.36 | -14.64 * | 20.90 | 20.37 | 1.49 |
| % of dwellings without property | 22.40 | 26.34 | -18.19 * | 22.40 | 22.14 | 1.23 |
| % of dwellings with dirt floor | 2.97 | 3.99 | -22.93 * | 2.97 | 3.00 | -0.73 |
| % of dwellings with one room | 13.20 | 16.69 | -21.34 * | 13.20 | 13.16 | 0.34 |
| % of dwellings that use firewood as a source of energy for cooking | 76.74 | 77.39 | -2.20 | 76.74 | 75.64 | 3.78 |
| % of dwellings with sanitary service | 50.45 | 48.62 | 5.65 | 50.45 | 49.83 | 1.95 |
| % with own housing | 89.44 | 85.81 | 19.60 * | 89.44 | 89.33 | 0.74 |
| % of dwellings with radio | 67.04 | 63.70 | 16.43 * | 67.04 | 67.11 | -0.38 |
| % of dwellings with tv | 44.41 | 40.18 | 12.93 * | 44.41 | 45.06 | -2.00 |
| % of dwellings with video | 7.07 | 5.40 | 17.33 * | 7.07 | 7.05 | 0.17 |
| % of dwellings with fridge | 22.42 | 17.56 | 19.51 * | 22.42 | 22.82 | -1.55 |
| % of dwellings with washing machine | 10.71 | 8.60 | 12.60 * | 10.71 | 10.93 | -1.31 |
| Marginality index | 0.31 | 0.52 | -25.25 * | 0.31 | 0.31 | 0.31 |
| Logarithm of average number of person per room | 0.99 | 1.05 | -16.67 * | 0.99 | 0.99 | -0.15 |
| Distance to the municipal head (km) | 25.79 | 29.47 | -10.56 * | 25.79 | 25.79 | 0.01 |
| % loc. where PRI won | 70.70 | 69.80 | 1.98 | 70.70 | 70.12 | 1.29 |
| % loc. where PAN won | 14.49 | 15.79 | -3.64 | 14.49 | 15.52 | -2.89 |
| % loc. where PRI and PAN were in the first two positions | 36.09 | 35.31 | 1.64 | 36.09 | 36.45 | -0.76 |
| % loc. where PAN and PRD were in the first two positions | 0.79 | 1.00 | -2.24 | 0.79 | 0.66 | 1.54 |
| % loc. where PRI and PRD were in the first two positions | 48.99 | 48.14 | 1.71 | 48.99 | 47.67 | 2.64 |

Source: constructed by the authors.
Note: sample of localities that in 2000 were classified as having high and very high marginality level and having population sizes between 50 and 2,499 inhabitants that did not receive POP at the end of the year 2000. T indicates treatment group. C indicates control group. SD indicates the standarized mean difference. The reweighted sample follows the Abadie (2005) method. * Absolute value of the standardized mean above 10%.

Table A7: Covariate balance matrix across treatment and control localities: sample 2012

| | Original sample | | | Reweighted sample | | |
|---|---|---|---|---|---|---|
| | T | C | SD | T | C | SD |
| Logarithm of population size | 4.91 | 4.45 | 68.97 * | 4.91 | 4.96 | -6.12 |
| % between 6 and 14 years | 24.73 | 25.81 | -16.66 * | 24.73 | 24.24 | 7.58 |
| % between 6 and 14 years who do not attend to school | 14.39 | 20.61 | -31.54 * | 14.39 | 13.75 | 4.09 |
| % aged 5 or older speaking an indigenous language | 35.20 | 40.57 | -12.28 * | 35.20 | 31.81 | 7.92 |
| % of illiterate older than 15 years | 29.04 | 30.08 | -5.90 | 29.04 | 28.08 | 5.93 |
| % between 15 and 24 years | 18.52 | 19.31 | -13.61 * | 18.52 | 18.16 | 6.88 |
| % aged 18 or older | 51.35 | 48.70 | 26.88 * | 51.35 | 52.04 | -6.57 |
| % without affiliation to a social security | 81.64 | 83.56 | -7.53 | 81.64 | 80.54 | 4.37 |
| % between 0 and 4 years | 13.20 | 14.11 | -17.67 * | 13.20 | 13.11 | 1.77 |
| % beneficiaries of the Seguro Popular | 9.74 | 6.58 | 16.60 * | 9.74 | 9.83 | -0.46 |
| % older than 60 years | 7.67 | 5.81 | 39.58 * | 7.67 | 7.67 | -0.14 |
| % of dwellings with dirt floor | 42.70 | 38.88 | 11.35 * | 42.70 | 45.03 | -7.07 |
| % of dwellings with one room | 16.01 | 17.65 | -8.27 | 16.01 | 15.54 | 2.61 |
| % of dwellings with sanitary service | 61.33 | 56.91 | 12.58 * | 61.33 | 64.89 | -10.72 * |
| % of dwellings with piped water | 32.45 | 26.64 | 15.19 * | 32.45 | 35.96 | -8.99 |
| % of dwellings with sewer system | 32.68 | 29.46 | 9.54 | 32.68 | 36.83 | -12.19 * |
| % of dwellings with electricity | 70.34 | 59.28 | 28.66 * | 70.34 | 70.50 | -0.44 |
| % of dwellings with fridge | 24.98 | 19.65 | 19.47 * | 24.98 | 26.24 | -4.47 |
| % of dwellings with washing machine | 11.81 | 9.89 | 10.39 * | 11.81 | 14.60 | -14.10 * |
| Average schooling years | 3.97 | 3.76 | 14.39 * | 3.97 | 3.99 | -1.05 |
| % of dwelling without assets | 48.94 | 57.90 | -24.96 * | 48.94 | 48.00 | 2.66 |
| Marginality index | 0.62 | 0.83 | -21.95 * | 0.62 | 0.55 | 7.54 |
| Distance to the municipal head (km) | 26.70 | 33.55 | -17.92 * | 26.70 | 31.18 | -12.15 * |
| % loc. where PRI won | 34.76 | 41.96 | -14.84 * | 34.76 | 37.58 | -5.88 |
| % loc. where PAN won | 29.82 | 23.04 | 15.41 * | 29.82 | 33.87 | -8.69 |
| % loc. where PRI and PAN were in the first two positions | 13.58 | 16.74 | -8.81 | 13.58 | 15.11 | -4.37 |
| % loc. where PAN and PRD were in the first two positions | 8.43 | 7.39 | 3.83 | 8.43 | 7.38 | 3.87 |
| % loc. where PRI and PRD were in the first two positions | 48.17 | 52.83 | -9.31 | 48.17 | 43.64 | 9.10 |

Source: constructed by the authors.
Note: sample of localities that in 2006 were classified as having high and very high marginality level and having population sizes between 50 and 2,499 inhabitants, that did not receive POP at the beginning of the year 2005. T indicates treatment group. C indicates control group. SD indicates the standarized mean difference. The reweighted sample follows the Abadie (2005) method. * Absolute value of the standardized mean above 10%.

Table A8: Vote shares received by the main political parties and their differences across presidential elections: reduced form DD estimates

| | **1994**[1] | | | **2000** | | | |
|---|---|---|---|---|---|---|---|
| | Treatment | Control | Diff. | Treatment | Control | Diff. | DD |
| PRI | 60.257 | 57.768 | 2.488*** | 53.419 | 53.027 | 0.392 | -2.097*** |
| | (0.108) | (0.373) | | (0.099) | (0.323) | | |
| PAN | 8.954 | 9.573 | -0.619*** | 19.210 | 20.227 | -1.018*** | -0.399* |
| | (0.056) | (0.193) | | (0.087) | (0.285) | | |
| PRD | 19.837 | 21.825 | -1.988*** | 21.610 | 21.048 | 0.562* | 2.549*** |
| | (0.108) | (0.380) | | (0.100) | (0.316) | | |
| PRI-PAN | 51.303 | 48.196 | 3.107*** | 34.210 | 32.800 | 1.409*** | -1.698*** |
| | (0.129) | (0.442) | | (0.157) | (0.519) | | |
| Voter turnout | 71.875 | 68.998 | 2.877*** | 58.554 | 52.879 | 5.675*** | 2.798*** |
| | (0.075) | (0.275) | | (0.065) | (0.241) | | |
| Obs. | 33,790 | 3,405 | | 33,790 | 3,405 | | |
| | **2000**[2] | | | **2006** | | | |
| | Treatment | Control | Diff. | Treatment | Control | Diff. | DD |
| PRI | 51.905 | 51.184 | 0.721 | 35.822 | 35.305 | 0.517 | -0.203 |
| | (0.366) | (0.391) | | (0.324) | (0.352) | | |
| PAN | 20.186 | 21.116 | -0.931* | 26.273 | 28.416 | -2.143*** | -1.213*** |
| | (0.331) | (0.383) | | (0.358) | (0.431) | | |
| PRD | 22.163 | 21.598 | 0.565 | 31.567 | 29.688 | 1.879*** | 1.314*** |
| | (0.367) | (0.383) | | (0.381) | (0.404) | | |
| PAN-PRD | -1.978 | -0.482 | -1.496* | -5.294 | -1.272 | -4.022*** | -2.526*** |
| | (0.596) | (0.658) | | (0.662) | (0.752) | | |
| Voter turnout | 54.108 | 52.636 | 1.473*** | 51.273 | 49.262 | 2.011*** | 0.539 |
| | (0.255) | (0.327) | | (0.262) | (0.280) | | |
| Obs. | 2,789 | 2,106 | | 2,789 | 2,106 | | |
| | **2006**[3] | | | **2012** | | | |
| | Treatment | Control | Diff. | Treatment | Control | Diff. | DD |
| PRI | 34.873 | 39.378 | -4.505*** | 43.795 | 49.927 | -6.131*** | -1.626* |
| | (0.376) | (0.804) | | (0.375) | (0.749) | | |
| PAN | 25.918 | 22.026 | 3.893*** | 25.972 | 21.219 | 4.753*** | 0.860 |
| | (0.461) | (0.838) | | (0.406) | (0.697) | | |
| PRD | 32.521 | 31.623 | 0.898 | 24.098 | 21.759 | 2.338*** | 1.440** |
| | (0.468) | (0.856) | | (0.401) | (0.699) | | |
| PAN-PRI | -8.955 | -17.353 | 8.398 *** | -17.823 | -28.708 | 10.884*** | 2.487* |
| | (0.701) | (1.414) | | (0.662) | (1.247) | | |
| Voter turnout | 50.020 | 46.813 | 3.207 *** | 65.441 | 63.004 | 2.437*** | -0.765 |
| | (0.310) | (0.587) | | (0.272) | (0.622) | | |
| Obs. | 1,824 | 460 | | 1,824 | 460 | | |

Source: authors, based on data described in Section 5.
Note: [1]Sample of localities having population size between 50 and 2,499 inhabitants. [1]Localities that in 1995 were classified as having high and very high marginality level. [2]Localities that in 2000 were classified as having high and very high marginality level and did not receive the programme at the end of the year 2000. [3]Localities that in 2005 were classified as having high and very high marginality level and did not receive the programme at the beginning of the year 2005. Standard errors in parentheses. ***$p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A9: Impact of POP on party vote share and voter turnout by geographical region: results from 2000 presidential election

| | DD | DD w/c | SDD |
|---|---|---|---|
| **PRI** | | | |
| North | 3.140 *** | 4.956 *** | 4.731 ** |
| | (0.631) | (1.257) | (2.047) |
| North-Central | -6.463 *** | -4.401 *** | 0.969 |
| | (0.828) | (1.612) | (6.988) |
| Centre | -0.503 | 1.506 | 0.608 |
| | (1.696) | (2.160) | (4.030) |
| South-Central | -2.009 *** | -0.881 | 1.650 |
| | (0.742) | (1.532) | (3.481) |
| South-South East | 0.155 | 0.082 | -0.816 |
| | (0.454) | (0.600) | (2.080) |
| **PAN** | | | |
| North | -3.070 *** | -4.562 *** | -3.307 |
| | (0.533) | (1.127) | (4.944) |
| North-Central | 2.187 *** | 0.241 | -4.369 |
| | (0.739) | (1.422) | (8.107) |
| Centre | 0.433 | -0.773 | -1.599 |
| | (1.453) | (2.137) | (6.319) |
| South-Central | 0.845 * | -0.440 | -1.097 |
| | (0.435) | (0.913) | (2.713) |
| South-South East | -1.906 *** | -0.934 | 0.138 |
| | (0.307) | (0.635) | (1.114) |
| **PRD** | | | |
| North | -1.201 *** | 0.140 | -0.976 |
| | (0.454) | (0.933) | (2.163) |
| North-Central | 2.649 *** | 2.908 *** | 1.619 |
| | (0.619) | (0.783) | (2.588) |
| Centre | 1.765 | -0.128 | 3.705 |
| | (1.558) | (1.977) | (3.557) |
| South-Central | 2.810 *** | 0.501 | 0.088 |
| | (0.606) | (1.504) | (3.410) |
| South-South East | 2.577 *** | 1.286 ** | 1.255 |
| | (0.397) | (0.509) | (1.410) |
| **PRI-PAN** | | | |
| North | 6.210 *** | 9.518 *** | 8.038 |
| | (1.035) | (2.211) | (6.524) |
| North-Central | -8.650 *** | -4.642 | 5.338 |
| | (1.389) | (2.890) | (14.976) |
| Centre | -0.936 | 2.279 | 2.207 |
| | (2.649) | (3.736) | (9.624) |
| South-Central | -2.854 *** | -0.441 | 2.746 |
| | (1.025) | (2.012) | (5.789) |
| South-South East | 2.060 *** | 1.016 | -0.954 |
| | (0.657) | (1.135) | (2.897) |
| **Voter turnout** | | | |
| North | 3.838 *** | 2.066 ** | 2.486 |
| | (0.632) | (0.958) | (4.265) |
| North-Central | 0.174 | 1.478 | 1.917 |
| | (0.760) | (1.062) | (2.680) |
| Centre | 3.600 *** | 4.200 *** | 2.738 |
| | (1.214) | (1.430) | (2.071) |
| South-Central | 1.471 ** | 0.734 | 1.046 |
| | (0.653) | (1.051) | (3.865) |
| South-South East | 3.865 *** | 3.473 *** | 3.716 *** |
| | (0.348) | (0.879) | (1.275) |

Source: constructed by the authors.
Note: sample of localities that in 1995 were classified as having high and very high marginality level, and having population sizes between 50 and 2,499 inhabitants. Standard error in parentheses. North includes localities in the states of Baja California, Baja California Sur, Coahuila de Zaragoza, Chihuahua, Nuevo León, Sinaloa, Sonora and Tamaulipas. North-Central includes localities in Aguascalientes, Colima, Durango, Guanajuato, Jalisco, Nayarit, San Luis Potosí and Zacatecas. Centre includes localities in Mexico City, and State of México. South-Central includes localities in Guerrero, Hidalgo, Michoacán de Ocampo, Morelos, Puebla, Querétaro and Tlaxcala. South-South East includes localities in Campeche, Chiapas, Oaxaca, Quintana Roo, Tabasco, Veracruz de Ignacio de la Llave, and Yucatán *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A10: Impact of POP on party vote share and voter turnout by geographical region: results from 2006 presidential election

| | DD | DD w/c | SDD |
|---|---|---|---|
| **PRI** | | | |
| North | 2.451 ** | 3.728 *** | 3.811 ** |
| | (1.226) | (0.915) | (1.752) |
| North-Central | -1.232 | -0.129 | -0.887 |
| | (0.948) | (0.878) | (1.356) |
| South-Central | 2.624 * | 2.368 ** | 3.370 |
| | (1.404) | (1.145) | (2.597) |
| South-South East | -0.857 | -0.639 | -1.030 |
| | (0.604) | (0.853) | (0.685) |
| **PAN** | | | |
| North | -0.340 | -2.532 ** | -2.677 |
| | (1.351) | (1.245) | (1.880) |
| North-Central | -1.214 | -1.724 | -2.532 * |
| | (0.996) | (1.081) | (1.308) |
| South-Central | -1.761 * | -2.234 * | -0.615 |
| | (0.901) | (1.170) | (0.881) |
| South-South East | -2.550 *** | -1.524 | -1.348 ** |
| | (0.565) | (0.999) | (0.647) |
| **PRD** | | | |
| North | -2.841 *** | -2.065 ** | -1.866 * |
| | (0.895) | (0.924) | (1.045) |
| North-Central | 1.565 ** | 1.257 | 2.334 ** |
| | (0.693) | (0.846) | (0.917) |
| South-Central | -0.107 | 0.566 | -2.465 |
| | (1.424) | (1.609) | (2.594) |
| South-South East | 3.691 *** | 2.337 *** | 2.506 *** |
| | (0.616) | (0.900) | (0.787) |
| **PAN-PRD** | | | |
| North | 2.502 | -0.467 | -0.811 |
| | (1.934) | (1.953) | (2.458) |
| North-Central | -2.779 * | -2.981 * | -4.866 *** |
| | (1.436) | (1.729) | (1.731) |
| South-Central | -1.654 | -2.800 | 1.850 |
| | (1.939) | (2.570) | (2.858) |
| South-South East | -6.241 *** | -3.860 ** | -3.854 *** |
| | (1.023) | (1.705) | (1.273) |
| **Voter turnout** | | | |
| North | 4.179 *** | 3.527 ** | 2.842 *** |
| | (1.067) | (1.721) | (1.074) |
| North-Central | 0.915 | 1.710 * | 2.296 ** |
| | (0.981) | (0.906) | (1.000) |
| South-Central | 0.156 | 0.554 | 0.796 |
| | (0.915) | (0.960) | (1.165) |
| South-South East | 0.480 | 0.508 | 0.916 * |
| | (0.438) | (0.831) | (0.516) |

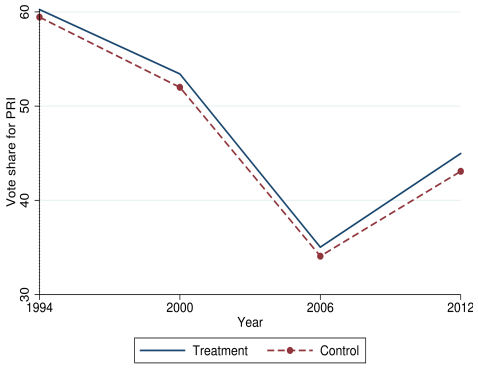
Source: constructed by the authors.
Note: sample of localities that in 2000 were classified as having high and very high marginality level, having population sizes between 50 and 2,499 inhabitants, that did not receive POP at the end of the year 2000. Standard error in parentheses. North includes localities in the states of Baja California, Baja California Sur, Coahuila de Zaragoza, Chihuahua, Nuevo León, Sinaloa, Sonora, and Tamaulipas. North-Central includes localities in Aguascalientes, Colima, Durango, Guanajuato, Jalisco, Nayarit, San Luis Potosí, and Zacatecas. South-Central includes localities in Guerrero, Hidalgo, Michoacán de Ocampo, Morelos, Puebla, Querétaro, and Tlaxcala. South-South East includes localities in Campeche, Chiapas, Oaxaca, Quintana Roo, Tabasco, Veracruz de Ignacio de la Llave, and Yucatán *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A11: Impact of POP on party vote share and voter turnout by geographical region: results from 2012 presidential election

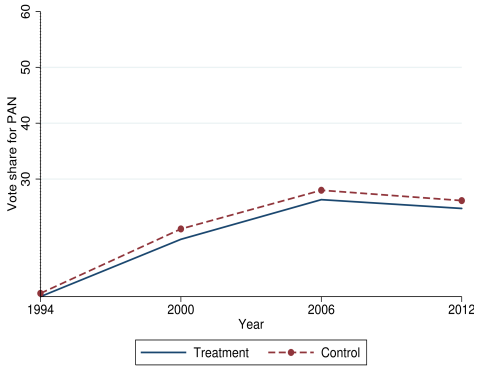
| | DD | DD w/c | SDD |
|---|---|---|---|
| **PRI** | | | |
| North-Central | 2.197 | 1.059 | -0.229 |
| | (1.909) | (1.412) | (7.486) |
| Centre | 0.865 | -4.456 ** | 11.315 |
| | (3.461) | (1.982) | (31.195) |
| South-Central | -6.306 ** | -4.827 ** | -9.897 |
| | (2.916) | (2.199) | (913.638) |
| South-South East | -0.679 | -2.640 ** | -3.603 |
| | (1.050) | (1.051) | (10.913) |
| **PAN** | | | |
| North-Central | -3.338 * | -1.805 | 0.801 |
| | (2.006) | (1.405) | (6.036) |
| Centre | -1.944 | 1.767 | -3.039 |
| | (2.330) | (1.749) | (7.728) |
| South-Central | 4.454 ** | 0.731 | 13.887 |
| | (2.145) | (1.884) | (740.147) |
| South-South East | 0.025 | 2.090 ** | 3.312 |
| | (0.776) | (0.823) | (13.292) |
| **PRD** | | | |
| North-Central | 2.133 | 1.357 | 0.402 |
| | (1.625) | (1.138) | (2.721) |
| Centre | 1.252 | 2.586 | -6.900 |
| | (2.597) | (2.213) | (19.122) |
| South-Central | 1.235 | 4.148 ** | -5.441 |
| | (2.769) | (1.798) | (53.444) |
| South-South East | 1.728 * | 1.036 | -0.683 |
| | (0.945) | (1.000) | (4.265) |
| **PAN-PRI** | | | |
| North-Central | -5.535 | -2.864 | 1.030 |
| | (3.581) | (2.564) | (13.431) |
| Centre | -2.809 | 6.223 ** | -14.354 |
| | (5.179) | (3.038) | (37.970) |
| South-Central | 10.760 ** | 5.558 | 23.784 |
| | (4.318) | (3.699) | (1653.785) |
| South-South East | 0.704 | 4.729 *** | 6.914 |
| | (1.572) | (1.593) | (23.744) |
| **Voter turnout** | | | |
| North-Central | 0.993 | 1.574 | 2.146 |
| | (1.366) | (1.172) | (2.214) |
| Centre | -0.319 | 0.137 | -4.468 |
| | (2.047) | (1.658) | (33.400) |
| South-Central | 6.090 ** | 1.317 | 11.348 |
| | (2.559) | (1.566) | (80.904) |
| South-South East | -3.102 *** | -0.948 | -2.118 |
| | (0.818) | (0.764) | (14.966) |

Source: constructed by the authors.
Note: sample of localities that in 2005 were classified as having high and very high marginality level, having population sizes between 50 and 2,499 inhabitants, that did not receive POP at the beginning of the year 2005. Standard error in parentheses. North-Central includes localities in Aguascalientes, Colima, Durango, Guanajuato, Jalisco, Nayarit, San Luis Potosí, and Zacatecas. Centre includes localities in Mexico City, and State of México. South-Central includes localities in Guerrero, Hidalgo, Michoacán de Ocampo, Morelos, Puebla, Querétaro, and Tlaxcala. South-South East includes localities in Campeche, Chiapas, Oaxaca, Quintana Roo, Tabasco, Veracruz de Ignacio de la Llave, and Yucatán *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

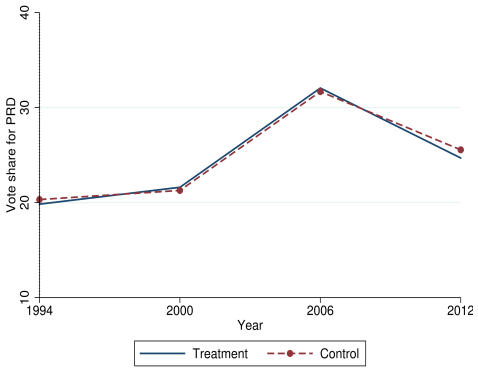
Figure A1: Parallel trend after matching: sample 2000.



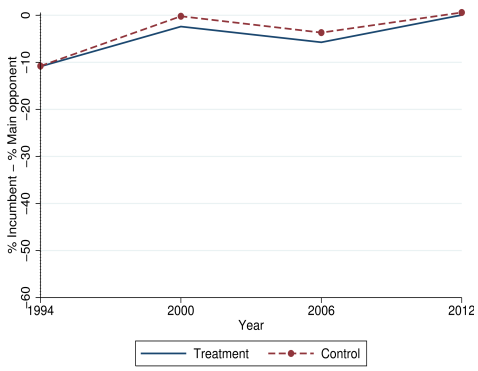

(A) Vote share for PRI



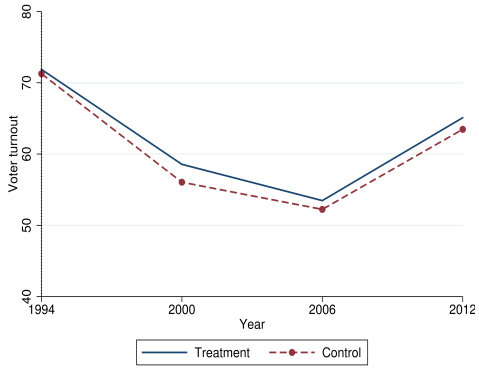

(B) Vote share for PAN




(C) Vote share for PRD



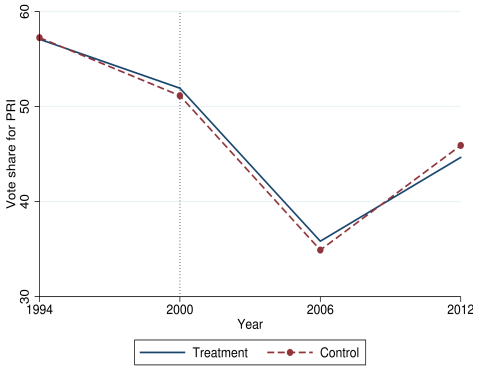

(D) Difference votes between the incumbent and the main opponent



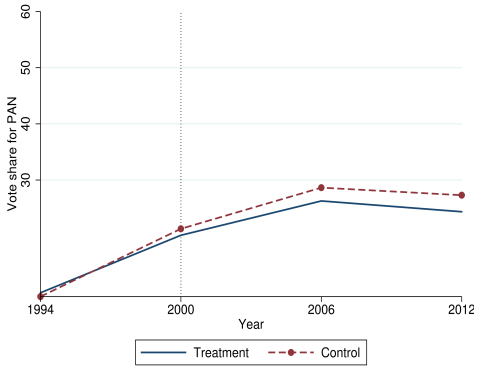

(E) Voter turnout

Source: constructed by the authors.
Note: sample of localities that in 1995 were classified as having high and very high marginality levels and having population sizes between 50 and 2,499 inhabitants.

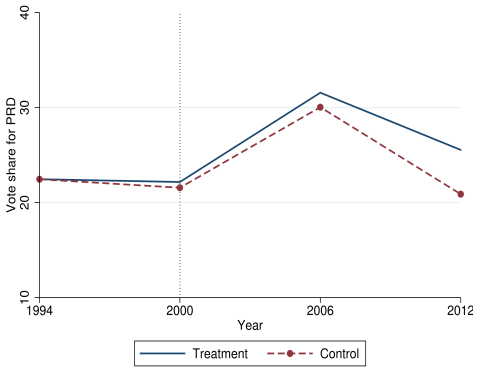
Figure A2: Parallel trend after matching: sample 2006.



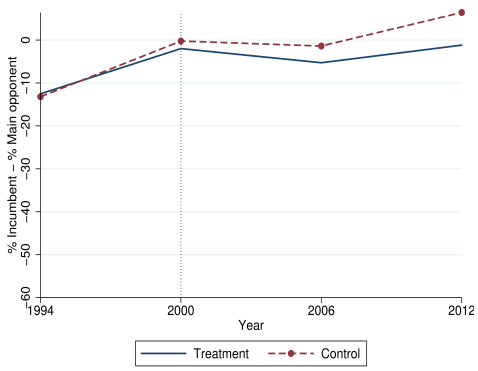

(A) Vote share for PRI



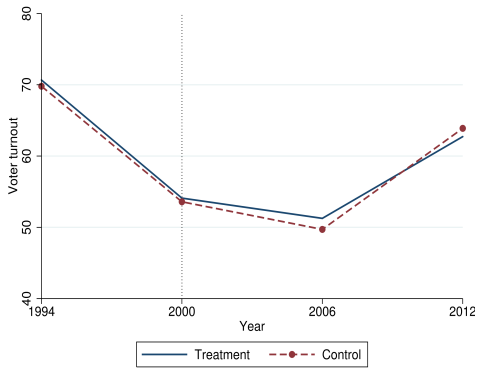

(B) Vote share for PAN




(C) Vote share for PRD



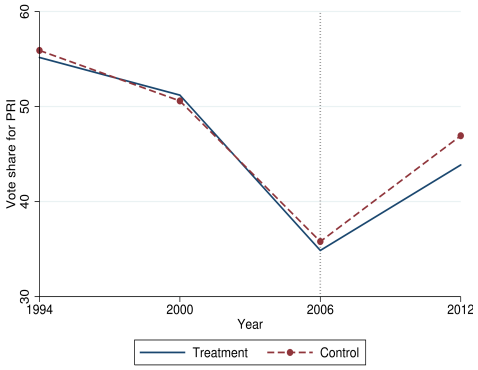

(D) Difference votes between the incumbent and the main opponent



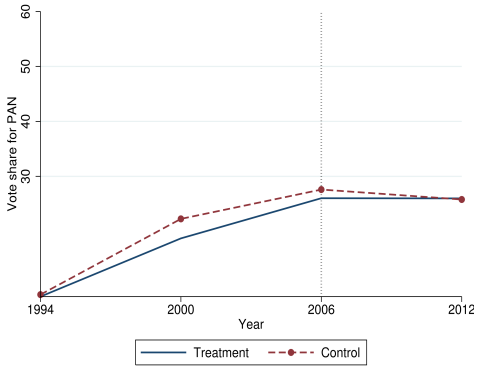

(E) Voter turnout

Source: constructed by the authors.
Note: sample of localities that in 2000 were classified as having high and very high marginality levels and having population sizes between 50 and 2,499 inhabitants and that did not receive POP at the end of the year 2000.

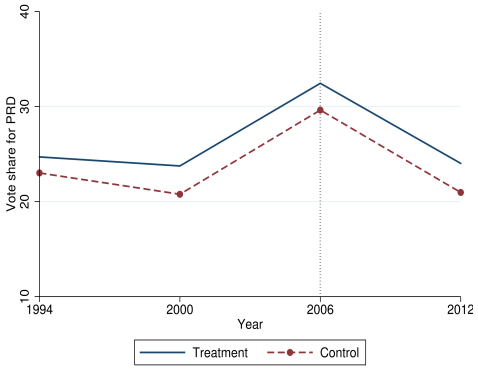
Figure A3: Parallel trend after matching: sample 2012.



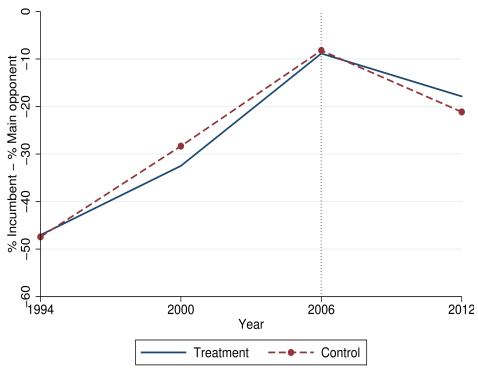

(A) Vote share for PRI



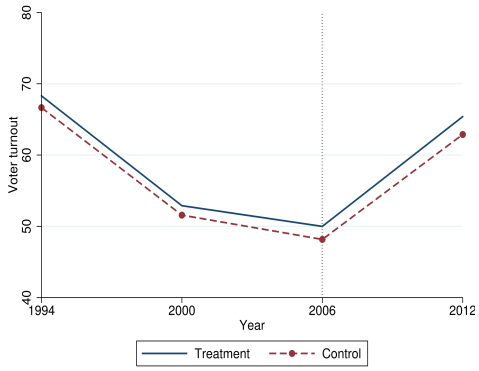

(B) Vote share for PAN




(C) Vote share for PRD



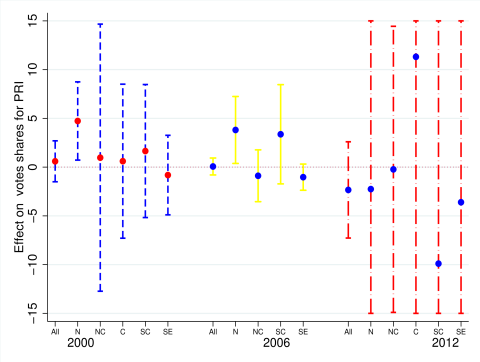

(D) Difference votes between the incumbent and the main opponent



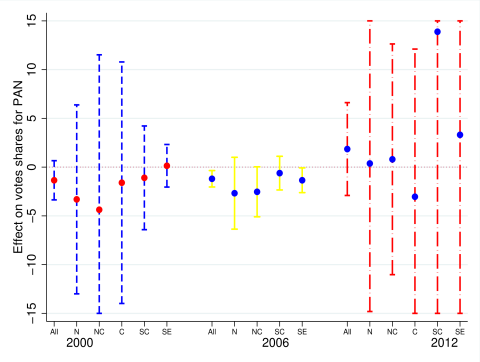

(E) Voter turnout

Source: constructed by the authors.
Note: sample is comprised of localities that in 2005 were classified as having high and medium marginality levels and having population sizes between 50 and 2,499 inhabitants and that did not receive POP at the beginning of the year 2005.

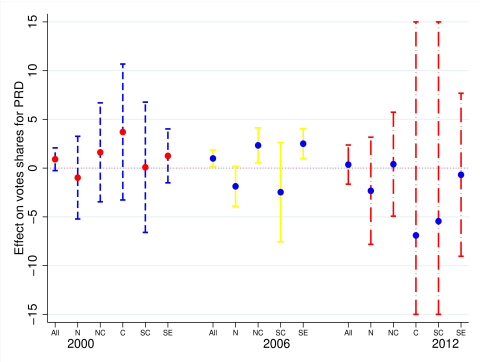
Figure A4: Impact of POP on party vote share and voter turnout by geographical region.



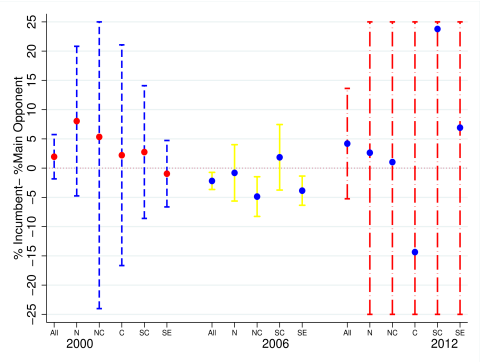

(A) Vote share for PRI



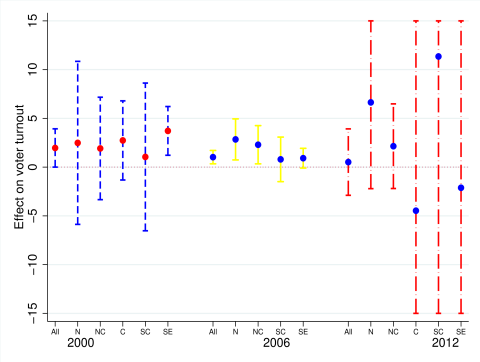

(B) Vote share for PAN




(C) Vote share for PRD



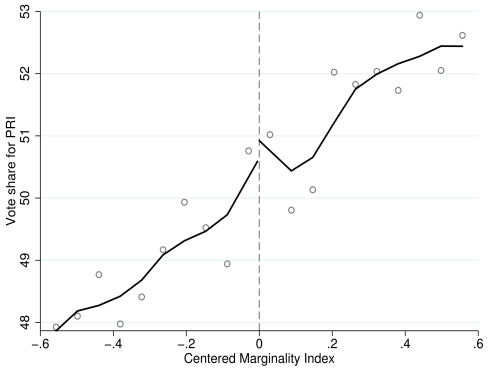

(D) Percentage difference in vote shares between the incumbent PAN and the main opponent PRD



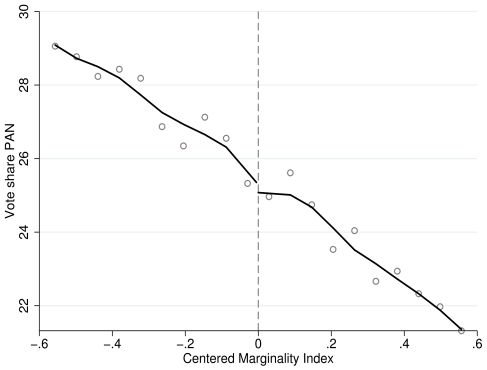

(E) Voter turnout

Source: authors, based on data described in Section 5.
Note: estimated effects using Abadie's (2005) semiparametric DD matching estimator. **N** includes localities in the states of Baja California, Baja California Sur, Coahuila, Chihuahua, Nuevo León, Sinaloa, Sonora, and Tamaulipas. **NC** includes localities in Aguascalientes, Colima, Durango, Guanajuato, Jalisco, Nayarit, San Luis Potosí, and Zacatecas. **C** includes localities in Mexico City, and State of México. **SC** includes localities in Guerrero, Hidalgo, Michoacán, Morelos, Puebla, Querétaro, and Tlaxcala. **SE** includes localities in Campeche, Chiapas, Oaxaca, Quintana Roo, Tabasco, Veracruz, and Yucatán. Confidence intervals at 5 per cent.

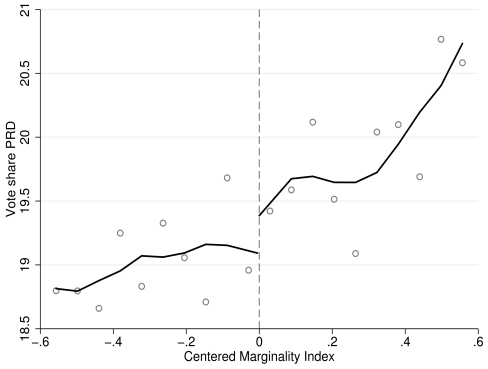
Figure A5: RD estimator for the impact of POP on party vote share and voter turnout: results from 2000 federal election using rural localities.



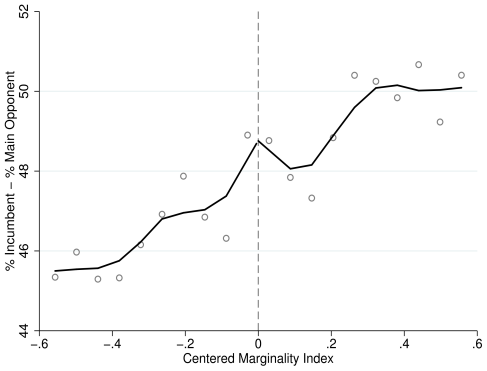

(A) Vote share for PRI



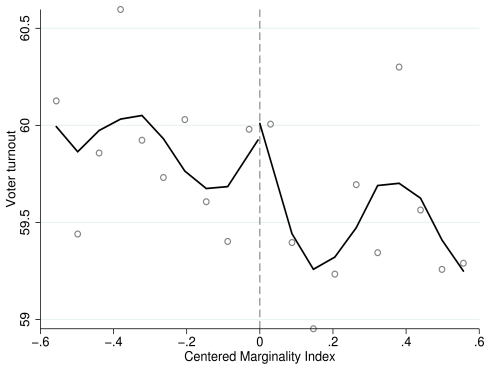

(B) Vote share for PAN




(C) Vote share for PRD



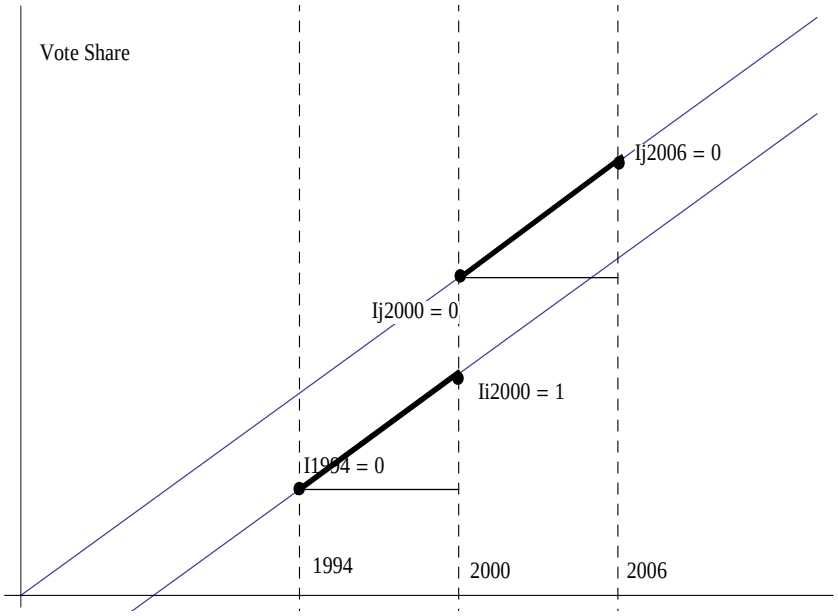

(D) Percentage of difference votes between the incumbent and the main opponent




(E) Voter turnout

Source: constructed by the authors.
Note: sample of localities that in 1995 were classified as having high and medium marginality levels and having population sizes between 50 and 2,499 inhabitants. The vertical dashed line in the centre of each graph designates a cut-point, localities having a high marginality level are located to the right of the line. The circles represent the mean of the variable in an interval of size 0.029. The solid line is a relation between the variable and centred marginality index based on locally weighted regression. Discontinuity estimate is in panel A 4.158, in panel B is 10.356, in panel C is -7.5, in panel D is 6.6, and in panel E is 1.650. In each panel, bandwidth is selected by the cross-validation method. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Figure A6: Identifying electoral advantage.




Source: authors.