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Redistribution, inequality and political participation: Evidence from Mexico during the 2008 financial crisis

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WIDER Working Paper 2016/140

Redistribution, inequality and political participation

Evidence from Mexico during the 2008 financial crisis

Patricia Justino* and Bruno Martorano*

November 2016

Abstract: This paper explores the relationship between a large government cash transfer programme, changes in inequality, and political participation in Mexico. The results show that increases in the coverage of the programme during the 2008 financial crisis resulted in greater individual participation in the last presidential elections and in higher individual propensity to vote, particularly for the incumbent party. The programme was particularly effective in increasing political participation among rural and indigenous groups, and had a mitigating effect on participation in presidential elections and the propensity to vote among the urban unskilled. The programme resulted also in reductions in individual participation in protests. Further analysis suggests that these changes were driven by redistributive gains following the changes to the cash transfer programme.

Keywords: conditional cash transfers, inequality, Mexico, protests, voting behaviour

JEL classification: D63, D70, D72, H23, I38

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1 Introduction

The effect of social and economic policy on political participation outcomes is a central question in political economy and political science. Recently, the literature has focused on the political participation impact of cash transfers (CTs), which have become a cornerstone in poverty and inequality reduction efforts across much of the developing world over the last 20 years. Empirical analyses of these effects have generated mixed findings. Manacorda et al. (2011), using a quasi-experimental setting generated by discontinuities in programme implementation, find that the *Plan de Asistencia Nacional a la Emergencia Social (PANES)* CT programme implemented in Uruguay between 2005 and 2007 led to improved support towards the incumbent government among programme beneficiaries. Similar results are reported by Baez et al. (2012) for the *Familias en Accion* programme in Colombia, which has contributed to higher voting turnout (particularly among women) and support for the incumbent party. Zucco (2013) shows that conditional cash transfer (CCT) programmes in Brazil benefited the incumbent party presidential candidate in elections in 2002, 2006, and 2010, independently of the party affiliation of the incumbent. Linos (2013) finds that a small CT programme implemented in Honduras between 2000 and 2005 resulted in increases in the re-election probabilities of local mayors, but had no effect on presidential election outcomes. Using an ambitious experimental design, De La O (2013) shows that the *Oportunidades* programme in Mexico increased voter turnout in the 2000 presidential election and improved the incumbent's share of the votes. This result mirrors previous analyses of the relationship between the *Oportunidades* programme and voting behaviour (Diaz-Cayeros et al. 2012). However, after correcting for coding and model specification errors, Imai et al. (2016) report that the same programme (as well as another welfare programme, the *Seguro Popular de Salud*) did not have an effect on the voter turnout or on electoral support for the incumbent party in the Mexican 2000 presidential elections.

This paper revisits this literature and analyses the effect of the *Oportunidades*¹ CCT programme on individual political participation in Mexico during the recent 2008 global financial crisis, using four distinct measures: interest in politics, participation in the last presidential election, propensity to vote, and propensity to vote for the incumbent party. In addition, we extend the existing literature to analyse also how government transfers may affect other forms of political engagement, such as participation in protests. To the best of our knowledge, this is one of the first studies to analyse the effect of government transfers on civil protests. This dual focus on conventional forms of political participation and on participation in civic protests is important, because it allows us to uncover the different ways in which citizens mobilize in times of economic upheaval. In this way, the paper contributes also to a longstanding literature on social mobilization (e.g. Tilly and Tarrow 2015) by using the Mexico case to derive lessons for similar phenomena across the world, such as the 'Occupy' movement in the United States or protests against austerity in Europe.

Assessing the causal effect of government programmes on political behaviour is not a trivial exercise as it requires an exogenous source of variation in the receipt of the income transfer, as well as detailed individual-level data on political choices. Recent studies on the effect of the *Oportunidades* programme on voting outcomes (De La O 2013; Imai et al. 2016) have used an experimental design based on the random allocation of the programme benefits, and matched this information with administrative data on voting patterns and turnout. Unfortunately, similar

¹ *Oportunidades* is now called *Prospera*.

administrative data are not available for individual participation in protests. Our analysis is therefore based on a difference-in-differences (DID) model applied to a quasi-experimental setting using two main sources of data. We analyse the benefits of the *Oportunidades* programme using the *Encuesta Nacional de Ingresos y Gastos de los Hogares* (ENIGH), a representative cross-sectional household survey conducted in Mexico in 2008 and 2014. Political participation is measured using data from the 2008 and 2014 AmericasBarometer survey, which is representative of all individuals of voting age. We make use of these datasets to construct a pseudo-panel and compare the political effect of the *Oportunidades* programme on comparable cohorts of beneficiaries and non-beneficiaries using propensity score matching techniques. In this way, our paper is closer in spirit to the studies conducted by Zucco (2013) in Brazil, and an earlier study of the *Oportunidades* programme by Diaz-Cayeros et al. (2012).

The main results show that changes implemented to the *Oportunidades* programme between 2008 and 2014 resulted overall in higher levels of participation in presidential elections, in increased propensity to vote, in rising support for the incumbent party, and in reduced engagement in protests among beneficiaries of the programme. When examining the effect of the programme across different social groups, the results show that the programme contributed to increasing political participation (voting) among rural and indigenous groups, and among female-headed households in the urban unskilled group. The programme contributed also towards mitigating a reduction in participation in voting in the last presidential election and the propensity to vote among male-headed households in the urban unskilled group.

With regards to protests, participation in the *Oportunidades* programme had a reducing effect on individual participation in protests among indigenous and urban unskilled households, as well as a mitigating effect on individual participation in protests among rural households. Further analysis strongly suggests that these results are driven by redistributive gains among these groups that resulted from changes in the coverage of the programme in the aftermath of the 2008 financial crisis.

The voting results are in line with Diaz-Cayeros et al. (2012) and De La O (2013), but contrast those of Imai et al. (2016). There are two reasons why this may be the case. The first is the fact that our paper is based on observational rather than experimental data and it is therefore possible that omitted variables and measurement error from self-reported variables may bias our results. In order to investigate these potential biases, we have used a non-experimental technique that helps us recreate an experimental setting and test several alternative specifications and key assumptions without any noticeable change in the main results.

The second reason may have to do with the time period of the analysis. Imai et al. (2016) focus on the 2000 presidential elections, while our paper examines the effects of the *Oportunidades* programme on changes in voting patterns between the 2006 and 2012 presidential elections, which followed the 2008 financial crisis. This crisis had profound effects on the Mexican economy and society, which led to substantial changes in the coverage of the programme. These changes have, in turn, significantly affected Mexico's economic and social context. Notably, after two terms, the National Action Party in Mexico lost the presidential election in 2012 to the Institutional Revolutionary Party, and Enrique Peña Nieto was elected as president, signalling a shift in the political preferences of the median voter from the right to centre and left party agendas.

In addition to examining the effect of changes in the *Oportunidades* programme on political outcomes, the paper also offers important insights into the factors that may explain the main results. The pathways through which redistributive policies, such as the *Oportunidades* CT programme, may affect individual political choices are complex. One of the most dominant

mechanisms in the literature is the fact that government social policies signal a distributional commitment of the government to improving social outcomes (Acemoglu and Robinson 2000, 2006; North and Weingast 1989) and their preferences towards redistribution (Drazen and Eslava 2010; Rogoff 1990). Therefore, individuals may choose to vote (most likely in favour of the incumbent government) when redistributive programmes benefit them. Expected gains may generate an overall increase in voting turnout in response to the implementation of redistributive programmes when those programmes are perceived to benefit the median voter (Persson and Tabellini 2002). In addition, by reducing inequality, government redistributive programmes may also improve the political voice of excluded groups (Gleason 2001), who tend to participate less when political processes are dominated by those at the top of the income distribution (Piketty 1998, 2014).

Government redistributive programmes may also affect other forms of political participation, such as protests and demonstrations. This is because redistributive programmes may reduce social discontent by improving levels and perceptions of inequalities (Gurr 1970; Justino 2015; Justino and Martorano 2016a, 2016b), and increasing trust and support for government institutions (Finan and Schechter 2010; Justino and Martorano 2016a; Manacorda et al. 2011; Pop-Eleches and Pop-Eleches 2012). But redistributive programmes may intensify protests when inequalities are reinforced through the use of the programmes to buy the votes and loyalty of specific social groups that are not necessarily at the bottom of the income distribution (Drazen and Eslava 2010; Robinson and Verdier 2002). The main results discussed in the paper suggest that the *Oportunidades* programme led to higher levels of voting and lower engagement in protests due to improvements in the redistributive impact of the programme—which ended up benefiting more those that had been most affected by the 2008 financial crisis.

The paper proceeds as follows. Section 2 describes the effect of the 2008 financial crisis on the Mexican economy, and discusses recent changes in the *Oportunidades* programme and trends in political participation in Mexico. Section 3 presents the main empirical strategy to examine the causal effect of the *Oportunidades* programme on political participation, provides a detailed analysis of a number of heterogeneous effects of the programme on different social groups, and discusses several robustness tests. Section 4 analyses key mechanisms that may explain the main results, and Section 5 concludes.

2 The financial crisis, distributional consequences, and political participation in Mexico

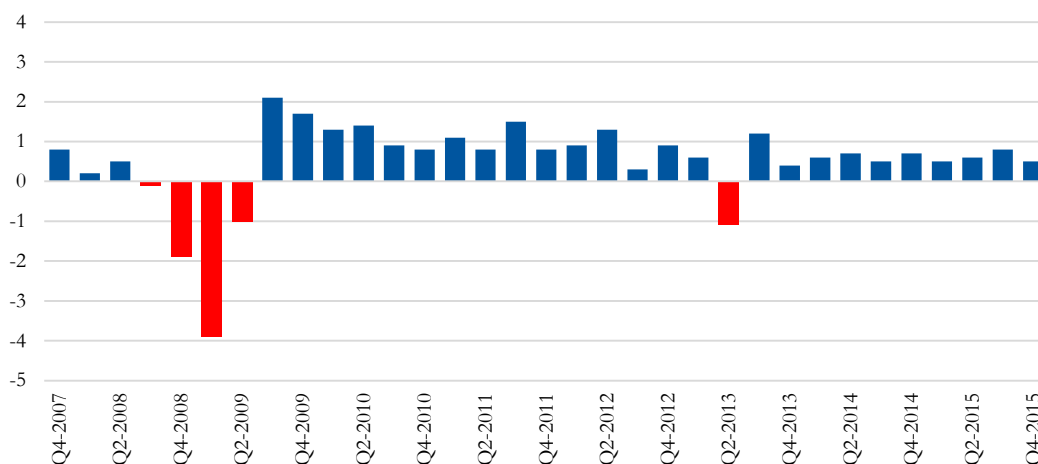
Mexico recorded high levels of economic growth and social performance before the onset of the 2008 financial crisis (Cornia 2014; López-Calva and Lustig 2010): over the period between 2003 and 2007, Mexico's gross domestic product (GDP) grew at an annual rate of 3.4 per cent,² while inequalities were substantially reduced.³ This situation changed during the 2008 global financial crisis (Figure 1). GDP in the United States decreased in 2008 (by 0.3 per cent) and in 2009 (by 3 per cent), with large negative consequences for exports. At the same time, international financial turbulence led to reductions in financial flows and remittances. As a result, the Mexican economy recorded a negative growth rate in the third quarter of 2008 and the first half of 2009.

² Data are extracted from the World Bank Development Indicators, available at: <http://databank.worldbank.org/data/reports.aspx?source = world-development-indicators#>.

³ See Figure A1 and Tables A1–A3 in the Appendix.

In the same period, the country was also hit by an epidemic of influenza A (H1N1), which caused a drop of 0.5 per cent in GDP (IMF 2010). The economy started to recover in the third quarter of 2009, recording positive growth rates in 2010 and 2011. The macroeconomic environment worsened again at the end of 2012, and the GDP growth rate recorded a negative value in the second quarter of 2013 as a consequence of changes in international prices and the stagnation of advanced economies (ECLAC 2014).

Figure 1: Growth rate compared to the previous quarter, seasonally adjusted

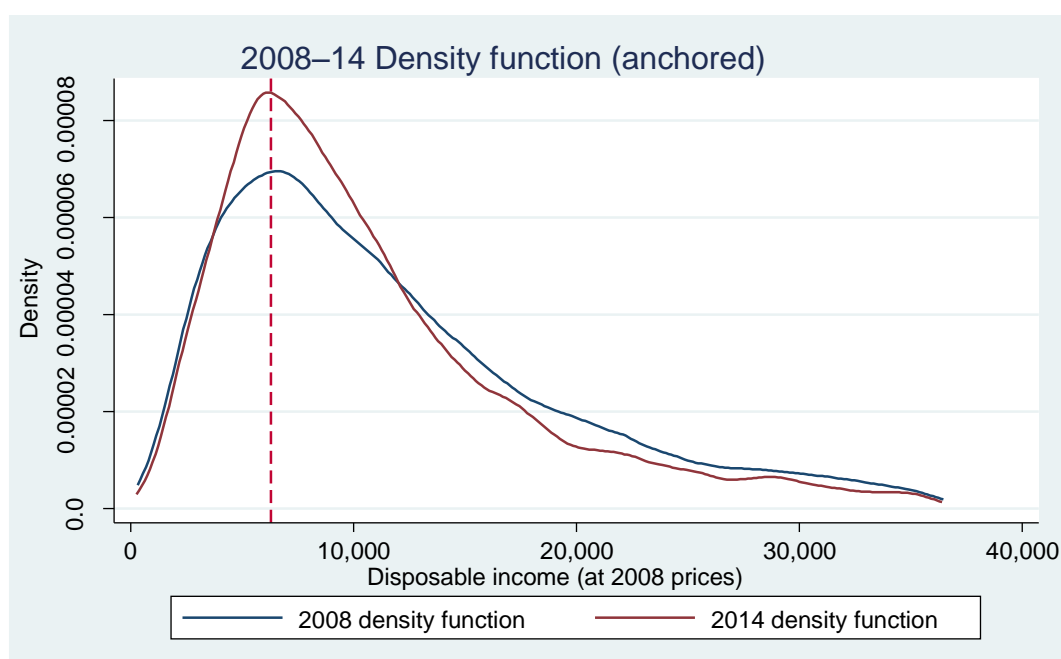


Source: authors' calculations based on OECD official statistics (<http://stats.oecd.org>).

The international crisis and the rapid worsening of national economic conditions in Mexico were accompanied by reductions in several social indicators. Figure 2 compares the kernel density functions for disposable incomes in 2008 and 2014,⁴ and shows that the density function for disposable incomes in 2014 moved to the left, signalling a worsening in people's living standard conditions.

⁴ In order to take into account different family sizes and compositions, income is equivalized using the OECD modified scale. This scale gives a score of 1 to the household head. Each of the other household members over the age of 14 years receives a score of 0.5. Each child below the age of 14 receives a score of 0.3 (Bradshaw et al. 2012). Following common practice in the empirical literature (see Atkinson et al. 2002; Smeeding 2014), we set a poverty line fixed at 60 per cent of the median disposable income in 2008 and adjust it for inflation in the following years. This approach is considered a more useful way to evaluate the real impact of the crisis, avoiding the issue of fluctuation of the median income in the short term, which may give misleading results. The data source is the ENIGH, available at www.inegi.org.mx/est/contenidos/Proyectos/encuestas/hogares/regulares/enigh/. This is a nationally representative household survey carried out by the National Statistical Institute (*Instituto Nacional de Estadística, Geografía e Informática*—INEGI) every two years since 1992 (with the exception of 2005). For our purpose, we use cross-sectional data from the ENIGH 2008, 2010, 2012, and 2014 rounds. The survey sampled 118,927 individuals in 2008, 107,781 in 2010, 33,726 in 2012, and 73,592 in 2014. The household sample included 29,468 households in 2008, 27,655 in 2010, 9,002 in 2012, and 19,479 in 2014. The survey includes valuable information on economic characteristics of individuals and households, as well as social indicators such as age, gender, and ethnicity.

Figure 2: Kernel density functions: 2008 and 2014 disposable income



Source: authors' calculations using ENIGH.

As a result, the poverty rate in Mexico increased by 1 percentage point in 2010, following the economic crisis, reduced slightly in 2012, and rose again by 2 percentage points in 2014 (Table 1). Table 1 shows, in addition, the level and changes in poverty rates across typically vulnerable socioeconomic groups over the period between 2008 and 2014 (Esquivel Hernández 2015; Puyana and Murillo 2011): households belonging to ethnic minorities; households living in rural areas (but not indigenous); and households living in urban areas with low levels of education, which can be considered unskilled (and not indigenous). As expected, the poverty rate for indigenous households and for households living in rural areas greatly exceed the national poverty rate, while poverty rates among urban unskilled households are close to the national average, and well below the national average for the fourth 'other' group—mainly skilled workers in the urban sector.

The 2008 financial crisis had differentiated effects across these groups. People living in urban areas experienced the largest decline in living conditions, possibly due to their exposure to changes in external economic conditions, given their likelihood of being employed in tradable sectors. This is in line with other literature showing that the 2008 financial crisis initially affected people in urban areas and at the top of the income distribution (Cornia 2014; Giugale 2009). The poverty rate for urban unskilled households increased by 5 percentage points, while that of (other) skilled households increased by 4.5 points. The poverty rate among indigenous households increased by 4 percentage points. In contrast, the poverty rate of households living in rural areas decreased by 3 percentage points in the same period.

Table 1: Overall poverty rate and poverty rate by groups, 2008–14

Year	Overall poverty rate	Indigenous	Rural	Urban unskilled	Other
2008	0.252	0.544	0.497	0.217	0.093
2010	0.265	0.567	0.486	0.251	0.105
2012	0.256	0.542	0.44	0.245	0.114
2014	0.277	0.58	0.467	0.271	0.138
Δ2008–14	0.025	0.036	-0.03	0.054	0.045

Source: authors' calculations using ENIGH.

Despite the economic crisis, income inequality decreased in the same period of time, according to several standard measures (Table 2): the Gini coefficient fell from 0.475 in 2008 to 0.442 in 2010; it increased in the following years but remained below the 2008 level (0.453 in 2014). Group-based inequality also decreased between 2008 and 2012, and increased between 2012 and 2014 (but remained below the 2008 level). A possible explanation is that the 2008 economic shock affected mostly the top income earners in the first period due to the financial nature of the crisis (Cornia 2014; Giugale 2009). Subsequent effects on the labour market and the changes in social policies started to influence the income of households at the bottom of the distribution in later periods due to the subsequent rapid worsening of Mexico's fiscal indicators.

Table 2: Inequality at the national level and inequality by groups over the period 2008–14

	Vertical inequality			Horizontal inequality				
	Gini	Theil index GE (1)	Coefficient of variation	GCOV	GGini	GTheil	Fractionalization	Polarization
2008	0.475	0.470	1.784	0.395	0.211	0.079	0.697	0.796
2010	0.442	0.374	1.166	0.358	0.189	0.064	0.691	0.798
2012	0.448	0.387	1.169	0.345	0.181	0.060	0.690	0.792
2014	0.453	0.440	1.588	0.364	0.191	0.068	0.676	0.793
Δ 2008–14	-0.022	-0.030	-0.196	-0.032	-0.009	-0.012	-0.021	-0.003

Notes: group-based inequality is measured using the indices suggested by Stewart et al. (2010): GCOV is the group-weighted coefficient of variation, GGini is the group-weighted Gini coefficient, and GTheil is the group-weighted Theil index. These three measures are highly correlated. The GGini compares observations with each other and is a more sensitive measure to changes in the middle of the distribution. GCOV and GTheil compare each observation with the overall mean. The GCOV measures give more weight to extreme observations, while the GTheil is more sensitive to the lower end of the distribution.

Source: authors' calculations using ENIGH data.

The government reacted to the crisis by implementing several interventions (Powell 2012). In the first half of 2009, interest rates were cut by 375 basis points. External institutions such as the International Monetary Fund (IMF) and US Federal Reserve also played a key role in promoting the consolidation of the Mexican financial position. In addition, the government implemented a stimulus package equivalent to 1.5 per cent of GDP in 2009. This relied on a number of measures targeted to several sectors and with multiple objectives. Examples of interventions include the expansion of the *Programa Temporal de Empleo* by 40 per cent, the launch of the *Programa de Preservación del Empleo* to protect employment in more vulnerable businesses, and a series of investments in infrastructure, transfers to development banks, measures of support to the export sector and small- and medium-sized enterprises (Martorano 2014). The government also introduced specific measures to protect people in economic difficulties, increasing the spending on social protection by about 0.4 per cent of GDP (Valencia Lomelí et al. 2013). Part of these measures included substantial changes to the *Oportunidades* programme, which we discuss in more detail below.

2.1 Changes in *Oportunidades* following the 2008 financial crisis

The *Oportunidades* programme started by being called *Progresá*, one of the largest CT programmes in the world implemented by the government of Mexico in 1997 as a response to failures to reduce poverty. *Oportunidades* is a CCT programme targeted to poor households, whereby eligible households receive a mix of cash and in-kind benefits, provided their members access healthcare services and their children enrol and attend school (Levy 2006).⁵ In an attempt to mitigate the economic downturn caused by the 2008 crisis, changes were made to increase the number of beneficiaries of the *Oportunidades* programme from 5.2 million families in 2009 to 5.9 million in 2013.⁶ In addition, the transfer benefit was increased by Mex\$120 per month for both former and new beneficiaries (Grosh et al. 2014). Table 3 provides descriptive statistics about the beneficiaries of the programme in 2008 and 2014. The results highlight a number of relevant changes in the characteristics of the beneficiaries between the two rounds of the household surveys. We note in particular that the programme's beneficiaries in 2014 were more likely to be urban, unskilled, in higher income deciles, and more educated than in 2008.

Table 3: Beneficiaries of *Oportunidades*: descriptive statistics, 2008 and 2014

Variable	2008			2014		
	Obs.	Mean	Std dev.	Obs.	Mean	Std dev.
Rural household	5,023	0.67	0.47	3,728	0.53	0.50
Indigenous household	5,023	0.30	0.46	3,728	0.27	0.44
Urban unskilled household	5,023	0.24	0.43	3,728	0.37	0.48
Household income decile	5,023	2.72	1.92	3,613	3.20	2.06
Households below median income	5,023	0.86	0.34	3,728	0.87	0.33
Years of education of household head	5,023	8.53	2.83	3,728	9.14	2.79
Household size	5,023	5.94	2.30	3,728	5.72	2.29
Age of household head	5,023	55.74	14.26	3,613	47.81	13.66
Head of household is female	5,023	0.34	0.47	3,613	0.20	0.40
Head of household is married	5,023	0.63	0.48	3,613	0.63	0.48
Head of household is less than 18 years old	5,023	2.95	1.81	3,728	2.68	1.78
<i>Political participation</i>						
Interest in politics	5,023	1.07	0.16	3,613	1.24	0.13
Participation in the last presidential election	5,023	0.78	0.08	3,613	0.81	0.10
Propensity to vote	5,023	0.80	0.04	3,613	0.82	0.09
Propensity to vote for the incumbent party	5,023	0.24	0.04	3,613	0.30	0.08
Participation in protests	5,023	0.06	0.03	3,613	0.05	0.02

Source: authors' calculations using ENIGH and the AmericasBarometer survey (2008 and 2014).

⁵ On average, the amount transferred corresponds to nearly 20 per cent of overall household income (Niño-Zarazúa 2011).

⁶ www.worldbank.org/en/results/2014/12/09/in-times-of-crisis-mexico-protected-its-human-capital.

2.2 Recent trends in political participation in Mexico

Protests and demonstrations are important ingredients of the policymaking process across most countries in Latin America, including Mexico (Bruhn 2008). During the 2008 financial crisis, protests rose substantially across the region: Ortiz et al. (2013) report that Latin America and the Caribbean region experienced some of the largest incidences of protests in the world between 2006 and mid-2013 (141 protests). In Mexico, protests have become a significant feature of the country's social and political life since the onset of the 2008 global financial crisis and the resulting deterioration in economic conditions among several social groups (Ortiz et al. 2013). At the same time, voting turnout rose by around 5 percentage points (to 63 per cent) during the 2012 presidential elections in Mexico, in contrast to the dramatic decline experienced during the 1990s.⁷ These trends in protests and voting were seemingly motivated by growing social demands for redistribution among disadvantaged groups and led, in turn, to a shift in political preferences from right to centre and left parties (Ortiz et al. 2013).

Descriptive statistics about political participation in 2008 and 2014 are reported at the bottom of Table 3 and in Table 4. We measure individual political participation using five measures. The first is based on the question: 'How much interest do you have in politics?'. We have recoded the original answers, ranging from 1 (a lot) to 4 (none) so that they range from 0 (none) to 3 (a lot) in order to facilitate interpretation. The second measure is based on the question: 'Did you vote in the last presidential elections?'. Answers were yes or no. The third measure uses the question: 'If the next presidential elections were being held this week, what would you do?'. Answer categories to this question included (a) 'would not vote'; (b) 'would vote for the incumbent candidate or party'; (c) 'would vote for the candidate or party different from the current administration'; or (d) 'would go to vote but would leave the ballot blank or would purposely cancel my vote'. We have recoded the original variable into a binary indicator which assumes value 1 if people say they would vote for the incumbent candidate/party or they would vote for the candidate or party different from the current administration. The fourth measure uses the same question but counts only those that answer they will vote for the incumbent party. We report this measure separately in order to assess the extent to which changes in the *Oportunidades* programme may have benefited the government that made them (De La O 2013; Imai et al. 2016; Zucco 2013). Finally, we measure political participation in protests using the following question: 'In the past 12 months, have you participated in a public demonstration or protest?'. Respondents answered yes or no.⁸

Table 4 shows increases at the national level in individual interest in politics, in participation in the previous presidential election, in the overall propensity to vote, and in the propensity to vote for the incumbent party between 2008 and 2014. Results are similar at the group level, but indigenous and other groups are less likely to vote (or vote for the incumbent party) between 2008 and 2014. Table 4 shows further that individual participation in protests is lower in 2014 than in 2008 across all social groups, with the exception of the rural group. The bottom of Table 3 shows additional information about levels of political participation and protesting among

⁷ Voter turnout in presidential elections dropped from 66 per cent in 1994 to 60 per cent in 2000, while voter turnout in parliament elections decreased from 66 per cent in 1994 to 43 per cent in 2003. These data are extracted from the International IDEA Voter Turnout dataset, available at: www.idea.int/vt.

⁸ These data were extracted from the AmericasBarometer survey (2008 and 2014). These datasets are collected by the Latin American Public Opinion Project (LAPOP). Data are available at www.vanderbilt.edu/lapop/. The surveys include around 1,500 individuals interviewed in Mexico in each cross-sectional year and are representative of all individuals of voting age.

households that benefit from the *Oportunidades* programme. The results show that beneficiaries of *Oportunidades* were also more interested in politics, more like to participate in presidential elections, more likely to vote, more likely to vote for the incumbent party, and (slightly) less likely to protest in 2014 than in 2008.

Table 4: Political participation at the national level and by groups, 2008–14

	Year	National average	Other	Indigenous	Rural	Urban unskilled
Interest in politics	2008	1.117	1.244	1.038	1.092	1.102
	2014	1.229	1.271	1.309	1.262	1.183
Participation in the last presidential election	2008	0.786	0.800	0.788	0.789	0.780
	2014	0.799	0.836	0.829	0.809	0.776
Propensity to vote	2008	0.777	0.759	0.781	0.820	0.768
	2014	0.780	0.735	0.877	0.844	0.746
Propensity to vote for the incumbent party	2008	0.252	0.285	0.228	0.274	0.240
	2014	0.261	0.208	0.307	0.347	0.233
Participation in protests	2008	0.061	0.061	0.101	0.035	0.061
	2014	0.048	0.046	0.048	0.046	0.050

Source: authors' calculations using ENIGH and the *AmericasBarometer* survey (2008 and 2014) LAPOP datasets.

3 The effect of *Oportunidades* on individual political participation

3.1 Empirical strategy

We use a DID model to measure the impact of the *Oportunidades* programme on individual political participation during the period of the 2008 financial crisis (between 2008 and 2014). The main objective of this analysis is to assess whether the people who benefited from the reforms of the *Oportunidades* programme in the aftermath of the crisis (treatment group) changed their political activities more than other people who did not benefit from those changes (control group). In doing so, we take advantage of the fact that the government promoted an expansion in coverage of *Oportunidades* during the period of analysis, as discussed in Section 2.

We measure the impact of the programme by comparing the average difference in outcome y before (time 0) and after (time 1) the treatment among the group of households benefiting from the programme, as:

$$\hat{\delta}_1 = \bar{y}_{t1} - \bar{y}_{t0} \quad (1)$$

However, this difference could be driven by factors other than the specific impact of the programme. Therefore, we need to compare the average difference in outcome y before (time 0) and after (time 1) the treatment among the group of households benefiting from the programme in relation to the average difference in outcome y before (time 0) and after (time 1) in the control group. Formally, we have:

$$\hat{\delta}_{dd} = \hat{\delta}_1 - (\bar{y}_{c1} - \bar{y}_{c0}) \quad (2)$$

which can be re-written as:

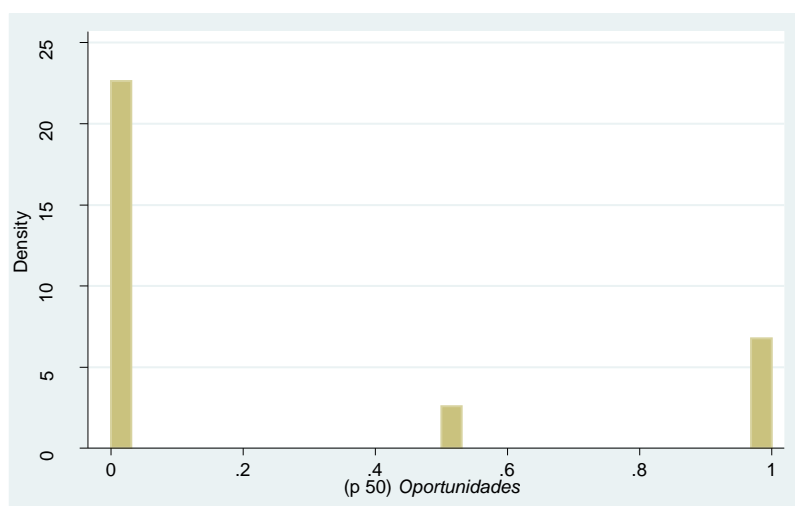
$$\hat{\delta}_{dd} = \bar{y}_{t1} - \bar{y}_{t0} - (\bar{y}_{c1} - \bar{y}_{c0}) \quad (3)$$

where y_t is the outcome observed for the treated group in the time 1 (\bar{y}_{t1}) and in the time 0 (\bar{y}_{t0}) while y_c is the outcome observed for the control group in the time 1 (\bar{y}_{c1}) and in the time 0 (\bar{y}_{c0}).

This analysis entails several data and methodological challenges. First, the ENIGH household survey data—our main source of information about the beneficiaries of the *Oportunidades* programme—reports information on economic and social individual and household characteristics, but lacks information about political participation. In order to document these changes, we have made use of recent waves of the AmericasBarometer survey (2008 and 2014) collected by the Latin American Public Opinion Project (LAPOP). The LAPOP datasets report information on civil mobilization and political participation, but information on individual participation in the *Oportunidades* programme is available only for 2012 and 2014 (which does not cover our period of interest when changes were made to *Oportunidades* around 2009 and 2010). We have therefore merged data from these two sources (for 2008 and 2014) following the empirical approach suggested by Manacorda et al. (2011). Specifically, we use the LAPOP data from 2008 to 2014 to predict (using an OLS model) the value of our five dependent variables in the ENIGH database using a series of controls that include gender, age (and age squared), civil status, occupational status, years of education, education status (whether the respondent is a student), and a dummy variable indicating the social group of the respondent (rural, indigenous, urban unskilled, and other).

Second, the ENIGH data lack a panel structure. In order to overcome this problem, we employ a pseudo-panel technique built through information at the cohort level extracted from two ENIGH waves collected in 2008 and 2014 (Deaton 1985). The use of this method means we have to deal with an important trade-off generated by the need to balance the number of cohorts with the number of observations, on one hand, and by the need to assure the necessary representativeness for the population cohort and for the entire sample, on the other hand (Baltagi 2005). Therefore, the selection of variables to build the cohorts is a crucial step in the analysis. With this in mind, we have decided to use the following variables: the social group to which an individual/household belong (urban unskilled, rural, indigenous, or other), the sex and age of the head of the household, civil status, and years of education. These variables are not affected by current factors and so they provide valuable information to improve the stability and representativeness of the cohorts. This exercise resulted in the construction of 1,617 cohorts (hereafter, when we mention ‘household(s)’ we refer to these cohorts or pseudo-households) in 2008 and in 2014 with matched characteristics. With respect to participation in *Oportunidades*, original information was collapsed using the median. This generates three different values: 0 (cohorts including only households that do not participate in the programme); 0.5 (cohorts that include at least half of the beneficiary households); and 1 (cohorts that include only households participating in the programme) (Figure 3). In order to define clear treatment and control groups, we assume as a benchmark reference that treated cohorts are those that have values at least higher than 0.5. We test in later sections the robustness of our results to changes in this assumption.

Figure 3: Participation in the programme at cohort level



Source: authors' calculations using ENIGH and the AmericasBarometer survey (2008 and 2014) LAPOP datasets.

Third, the lack of a perfect counterfactual could affect the validity of our analysis. Therefore, we use a matching estimation procedure to reduce the potential bias. This technique tries to reproduce an experimental background in two stages, giving the possibility to match 'quasi-identical' observations in the treatment and control groups (Blundell and Costa Dias 2009). In doing so, we first compute a propensity score using a probit model. The set of control variables included in the regression are: the income decile to proxy for the household economic situation; a dummy variable indicating the gender of the head of the household; a dummy variable indicating whether there were children in the household; and a dummy variable assuming a value indicating to which group the household belong (urban unskilled, rural, indigenous, and other). These variables were measured in 2008 in order to reproduce initial conditions. Satisfying the *balancing* and *unconfoundedness* properties,⁹ pseudo-households in the treatment group are matched with those in the control group that show the closest propensity score applying a 'caliper' estimator (0.03).¹⁰ In order to avoid incorrect matches, this process is allowed if the observations are within the caliper (i.e. the 'propensity range') (Caliendo and Koepf 2005). The pseudo-panel structure allows us to use a DID technique to assess the effect of social policy changes between 2008 and 2014 on individual political choices.

The validity of the balance is provided by a number of tests. Table 5 compares the *t*-tests for equality of means in the treated and non-treated groups, both before and after matching. As shown, these are not statistically significant, showing that covariates are well balanced. In addition, sample balance is confirmed by the standardized bias before and after matching: this is less than 5 per cent after matching, with the exception of the variable 'household with children'. However, looking at the overall balance, it is worth noting that the mean bias after matching is 2.4 per cent, while the median bias is 2.1 per cent (Table 6). In addition, Table 6 shows that the

⁹ In order to respect the balancing hypothesis, the effect of treatment should be estimated considering similar groups according to their characteristics—observable as well as non-observable. In order to satisfy the unconfoundedness hypothesis, it is necessary that the non-observable characteristics do not influence the final outcomes.

¹⁰ We have used the PSMATCH2 software (Leuven and Sianesi 2003).

Rubin's B is 7.5 (well below the suggested threshold of 25), while the Rubin's R is 1.15 and, therefore, between 0.5 and 2 (which is typically the suggested range for considering the sample sufficiently balanced). Finally, Figure 4 shows the distribution of propensity scores. The weighted graph (Figure 4, right graph) confirms the overall balance and shows the two groups are similar in their initial characteristics.

Table 5: Comparison between treated and control groups

Variable	Treated	Control	Percentage bias	T	$p > t$
Household income decile	4.491	4.410	3.400	0.360	0.721
Household with children	0.819	0.843	-6.500	-0.650	0.516
Head of household is female	0.386	0.386	0.000	0.000	1.000
<i>Group</i>					
Indigenous	0.357	0.357	0.000	0.000	1.000
Rural	0.376	0.367	2.200	0.200	0.840
Urban	0.262	0.271	-2.000	-0.220	0.826

Notes: all variables defined as above.

Source: authors' calculation.

Table 6: Distribution of bias and Hotelling test results

Summary of the distribution of bias					Hotelling test	
Mean bias	Median bias	B	R	Percentage variance	F test statistic	p -value
2.4	2.1	7.5	1.15	0	0.065	0.998

Notes: B is the Rubin's B calculation (number of standard deviations between the means of the distributions of the two groups). R is the Rubin's R calculation (the ratio of the variances of the distributions of the two groups).

Source: authors' calculation.

Figure 4: *Oportunidades*: distribution of propensity scores, unweighted and weighted



Source: authors' calculations using ENIGH and AmericasBarometer survey (2008 and 2014) LAPOP datasets.

3.2 Results

Table 7 reports the results of this analysis. The main findings show that the *Oportunidades* programme significantly influenced individual political participation in Mexico. Beneficiaries from the *Oportunidades* programme experienced higher levels of interest in politics, with a difference between the treatment and control groups of 6.2 percentage points. With respect to voting in the previous presidential election (which in 2008 refers to the 2006 election and in 2014 refers to the 2012 election), Table 7 shows that turnout for the treated group increased by 3.5 percentage points, while it fell by 3.7 percentage points among the control group. The programme increased also the propensity to vote among beneficiaries by 5.9 percentage points, while it decreased for the control group by 0.2 percentage points. The propensity to vote for the incumbent party rose by 8.9 percentage points among the treated group and fell by 0.5 percentage points among the control group.

The final row of Table 7 shows that participation in the *Oportunidades* programme affected also participation in protests among the treated group, which decreased by 2.4 percentage points between 2008 and 2014, while remaining almost constant for the control group.

Table 7: Impact of *Oportunidades* on political participation 2008–14, caliper (0.03)

	T	C	DID	SD
Interest in politics	0.168	0.106	0.062**	0.024
Participation in the last presidential elections	0.035	-0.037	0.073***	0.014
Propensity to vote	0.059	-0.002	0.061***	0.012
Propensity to vote for the incumbent party	0.089	-0.005	0.094***	0.017
Participation in protests	-0.024	-0.005	-0.019***	0.006
	N = 210	N = 957		

Notes: DID is the difference between groups; C is the control group; T is the treatment group. *, **, *** significant at 10, 5, and 1 per cent, respectively.

Source: authors' calculation.

3.3 Heterogeneous effects of *Oportunidades* on political participation

We discussed in Section 2 how the 2008 financial crisis affected different social groups in different ways. In this section, we examine how the results above vary across different social groups—rural households, indigenous households, and urban unskilled households—and across gender.

Table 8 shows that the *Oportunidades* programme has also had a strong impact on political participation among different social groups, with some differences between groups. The programme increased political interest among the ‘treated’ indigenous and unskilled urban groups, but the impact on rural households was not statistically significant. Participation in the previous presidential elections increased by 3.7 percentage points among the treated rural households, and by 7.2 percentage points among the treated indigenous households. In contrast, participation in the previous presidential elections decreased by 1.6 percentage points among the treated unskilled urban group. However, the difference between the treated and control unskilled urban households is positive and statistically significant, with the control group having reduced their participation in the previous presidential elections by a much larger margin (9.3 percentage points).

The programme also positively influenced the propensity to vote and the propensity to vote for the incumbent party among rural and indigenous groups: there was an increase between 2008 and 2014 of 3.9 and 12.7 percentage points in the propensity to vote among treated rural and indigenous households, respectively. The increases in the propensity of these groups to vote for the incumbent party were 9.9 and 10.7 percentage points, respectively. The results for the unskilled urban group are somewhat different. The propensity to vote among this group was slightly reduced between 2008 and 2014 by 0.1 percentage points. However, the propensity of the treated unskilled urban households to vote for the incumbent party rose by 5.5 percentage points.

Finally, Table 8 shows that participation in the *Oportunidades* programme reduced the likelihood of indigenous and urban unskilled households participating in protests (by 5.7 and 1.5 percentage points, respectively). There is a small positive effect of the programme on the likelihood of treated rural households participating in protests (an increase of 0.1 percentage points), but the difference between the treated and control in the rural group is negative and statistically significant, with the control group having increased their participation in protests by a much larger margin (2.2 percentage points). This effect suggests that participation in the *Oportunidades* programme had a mitigating effect on the likelihood of rural beneficiaries engaging in protests.

Table 8: Impact of *Oportunidades* on political participation by social groups 2008–14

	T	C	DID	SD
<i>Rural</i>				
Interest in politics	0.155	0.129	0.025	0.035
Participation in the previous presidential elections	0.037	-0.033	0.070***	0.024
Propensity to vote	0.039	-0.015	0.054***	0.011
Propensity to vote for the incumbent party	0.099	0.027	0.072***	0.017
Participation in protests	0.001	0.022	-0.020**	0.009
	<i>N</i> = 79	<i>N</i> = 161		
<i>Indigenous</i>				
Interest in politics	0.246	0.158	0.088*	0.048
Participation in the previous presidential elections	0.072	0.003	0.068***	0.023
Propensity to vote	0.127	0.068	0.059***	0.022
Propensity to vote for the incumbent party	0.107	0.029	0.078***	0.026
Participation in protests	-0.057	-0.038	-0.020*	0.012
	<i>N</i> = 75	<i>N</i> = 87		
<i>Unskilled urban population</i>				
Interest in politics	0.083	0.003	0.080***	0.027
Participation in the previous presidential elections	-0.016	-0.093	0.077***	0.020
Propensity to vote	-0.001	-0.068	0.067***	0.013
Propensity to vote for the incumbent party	0.055	-0.091	0.146***	0.035
Participation in protests	-0.015	0.002	-0.017***	0.006
	<i>N</i> = 55	<i>N</i> = 469		

Notes: DID is the difference between groups; C is the control group; T is the treatment group. *, **, *** significant at 10, 5, and 1 per cent, respectively.

Source: authors' calculation.

One interesting feature of the *Oportunidades* programme, which it shares with most other CCT programmes implemented in other countries, is the fact that benefits are paid directly to women—under the assumption that money given to women is more likely to be spent on household expenses, particularly on children. Therefore, it is possible that the effect of participating in *Oportunidades* may differ between men and women. Tables 9 and 10 show the same results as above for male and female household heads separately.

The results shown in Table 9 (for male household heads) are very similar to the aggregate results in Table 8. Table 10 shows, in contrast, different results when considering only female-headed households. Among treated rural female-headed households, the programme has only a statistically significant (and positive) effect on the propensity to vote and the propensity to vote for the incumbent party. All other difference coefficients are now statistically insignificant. The effect of the programme among indigenous female-headed households becomes also statistically insignificant across all variables, with the exception of their propensity to vote (which remains positive). Interestingly, the effect of being an *Oportunidades* beneficiary on the participation of female-headed households among the urban unskilled group in the previous presidential election and their propensity to vote is now positive (it is negative in the aggregate results in Table 8 and among male-headed households in Table 9). This suggests that the programme had a particularly strong effect on female-headed unskilled households living in urban areas.

Table 9: Impact of *Oportunidades* on political participation by social groups among male-headed households, 2008–14

	T	C	DID	SD
<i>Rural</i>				
Interest in politics	0.183	0.118	0.066	0.043
Participation in the previous presidential elections	0.025	-0.048	0.073***	0.024
Propensity to vote	0.035	-0.022	0.057***	0.013
Propensity to vote for the incumbent party	0.097	0.024	0.073***	0.024
Participation in protests	0.002	0.023	-0.020*	0.012
	<i>N</i> = 51	<i>N</i> = 101		
<i>Indigenous</i>				
Interest in politics	0.277	0.185	0.092	0.071
Participation in the previous presidential elections	0.057	-0.042	0.099***	0.022
Propensity to vote	0.126	0.064	0.063**	0.028
Propensity to vote for the incumbent party	0.120	0.019	0.100***	0.036
Participation in protests	-0.060	-0.036	-0.025	0.020
	<i>N</i> = 47	<i>N</i> = 51		
<i>Unskilled urban population</i>				
Interest in politics	0.099	0.007	0.092***	0.031
Participation in the previous presidential elections	-0.041	-0.106	0.066***	0.025
Propensity to vote	-0.005	-0.071	0.066***	0.017
Propensity to vote for the incumbent party	0.055	-0.047	0.102**	0.041
Participation in protests	-0.012	0.004	-0.016**	0.008
	<i>N</i> = 29	<i>N</i> = 261		

Notes: DID is the difference between groups; C is the control group; T is the treatment group. *, **, *** significant at 10, 5, and 1 per cent, respectively.

Source: authors' calculation.

Table 10: Impact of *Oportunidades* on political participation by social groups among female-headed households, 2008–14

	T	C	DID	SD
<i>Rural</i>				
Interest in politics	0.111	0.162	-0.050	0.057
Participation in the previous presidential elections	0.061	-0.010	0.071	0.044
Propensity to vote	0.046	0.001	0.044**	0.018
Propensity to vote for the incumbent party	0.100	0.039	0.061***	0.023
Participation in protests	0.001	0.015	-0.014	0.013
	<i>N</i> = 26	<i>N</i> = 60		
<i>Indigenous</i>				
Interest in politics	0.175	0.102	0.073	0.046
Participation in the previous presidential elections	0.095	0.082	0.013	0.026
Propensity to vote	0.129	0.066	0.064**	0.032
Propensity to vote for the incumbent party	0.081	0.036	0.045	0.036
Participation in protests	-0.053	-0.042	-0.012	0.011
	<i>N</i> = 26	<i>N</i> = 36		
<i>Unskilled urban population</i>				
Interest in politics	0.065	-0.001	0.066	0.052
Participation in the previous presidential elections	0.011	-0.078	0.089***	0.033
Propensity to vote	0.003	-0.066	0.068***	0.021
Propensity to vote for the incumbent party	0.055	-0.139	0.194***	0.059
Participation in protests	-0.018	-0.001	-0.017	0.012
	<i>N</i> = 26	<i>N</i> = 208		

Notes: DID is the difference between groups; C is the control group; T is the treatment group. *, **, *** significant at 10, 5, and 1 per cent, respectively.

Source: authors' calculation.

Taken together, the results show that participation in the *Oportunidades* programme led to increases in conventional forms of political participation among the rural and indigenous groups, and among female-headed households in the urban unskilled group. All of these groups experienced an increase in voting in the previous presidential elections and in their overall propensity to vote, including their propensity to vote for the incumbent party. Among the male-headed urban unskilled households, participation in the programme increased the propensity to vote for the incumbent party and mitigated the reduction in voting in the previous presidential election and in the propensity to vote among beneficiaries in this group in relation to non-beneficiaries. In addition, the *Oportunidades* programme had a reducing effect on individual participation in protests among all groups.

3.4 Robustness test

In this section we report a number of tests to check the validity of the results above. First, we test the sensitivity of the empirical analysis to a series of alternative estimators. Second, we verify the robustness of the analysis using an alternative set of variables to compute the propensity score. Third, we test the validity of our results using a different specification to build the treated group.

Alternative estimators

Our baseline estimates are derived from a ‘caliper’ estimator (0.03). To check the validity of the results discussed above, we model the relationships of interest using alternative estimators. First, we calculate bootstrapped standard errors (100 replications) to verify the consistency of our results. Second, we adopt the nearest neighbour matching as an alternative estimator. This estimator selects households in the control group as matching partners for beneficiaries considering the closest propensity scores (Caliendo and Koeppenig 2005). An important advantage of this estimator is related to the reduction of the potential bias in the evaluation procedure. Following the same procedure as Martorano and Sanfilippo (2012), we adopt the ‘four-nearest neighbour matching estimator’, which allows us to increase the probability of matching similar observations. Third, we apply kernel matching as another possible estimator. This is a non-parametric matching estimator, which builds the counterfactual using all the observations included in the control group. This procedure reduces the variance in the estimation even though it increases the probability of matching observations that are not similar (Caliendo and Koeppenig 2005). Lastly, we use an OLS regression technique weighted using the inverse probability weights (IPW). This is considered a simple and attractive way to generate robust estimates, allowing alignment of the distribution of probability scores between the treated and the control groups (Wooldridge 2007).

Table 11 reports the results of these tests. The bootstrapping procedure and the four-nearest neighbours estimator provide similar results to our baseline specification. The only noticeable difference between the four-nearest neighbours estimator and our baseline specification is related to the size of the DID coefficients. These are reduced when using the four-nearest neighbours estimator due to differences in the matching procedures. The results when using the kernel matching and IPW approaches are still statistically significant with regard to the participation in the previous presidential elections, the propensity to vote, and the propensity to vote for the incumbent party. However, the results related to interest in politics and the participation in protests are no longer statistically significant under these two estimators. This is related to the fact, as explained above, that both estimators include observations that are more distant with respect to treated observations. This procedure helps to reduce the variance, but there is a risk of matching observations which are less comparable. It is, however, reassuring to observe similar results between our baseline model and the other models.

Table 11: Impact of *Oportunidades* on political participation 2008–14

		DID	SD
Baseline model: caliper (0.03 replications)	Interest in politics	0.062**	0.024
	Participation in the previous presidential elections	0.073***	0.014
	Propensity to vote	0.061***	0.012
	Propensity to vote for the incumbent party	0.094***	0.017
	Participation in protests	-0.019***	0.006
Caliper + bootstrapping of the standard error (100 replications)	Interest in politics	0.062***	0.017
	Participation in the previous presidential elections	0.073***	0.015
	Propensity to vote	0.061***	0.008
	Propensity to vote for the incumbent party	0.094***	0.016
	Participation in protests	-0.019***	0.005
Four-nearest neighbours	Interest in politics	0.040***	0.015
	Participation in the previous presidential elections	0.039***	0.009
	Propensity to vote	0.035***	0.008
	Propensity to vote for the incumbent party	0.059***	0.010
	Participation in protests	-0.010**	0.004
Kernel matching	Interest in politics	0.007	0.012
	Participation in the previous presidential elections	0.019**	0.008
	Propensity to vote	0.015**	0.006
	Propensity to vote for the incumbent party	0.017**	0.008
	Participation in protests	0.000	0.003
IPW	Interest in politics	0.003	0.011
	Participation in the previous presidential elections	0.020***	0.007
	Propensity to vote	0.013**	0.005
	Propensity to vote for the incumbent party	0.015**	0.007
	Participation in protests	0.001	0.003

Notes: DID is the difference between groups. *, **, *** significant at 10, 5, and 1 per cent, respectively.

Source: authors' calculations.

Sensitivity to propensity scores

We analyse in this section how the main results discussed above are sensitive to changes in the computation of the propensity score used to match treatment and control groups. The propensity score tends to be influenced by the number and type of variables included in the regression and the assumptions made with respect to potential trade-offs. For instance, while propensity score matching may provide a more accurate matching when one employs additional controls, this may reduce the goodness of the balancing. The aim of this section is to verify whether the results above are robust to the inclusion or exclusion of a number of variables. We estimate three alternative models in Table 12. In Model 2 we exclude from our baseline estimation the dummies identifying the demographic characteristics of the households (i.e. having children and the gender of the head of the household). In Model 3, we exclude only the variable related to the gender of the head of the household. In Model 4, we add regional dummies to our baseline estimation. Table 12 shows that Models 2 and 3 provide similar results to our baseline estimation. By contrast, Table 12 shows that the results related to the interest in

politics and the participation in protests are no longer statistically significant in Model 4. However, this specification does not satisfy the balancing conditions because the mean and median bias are higher than 5, while the Rubin's B is higher than 25 per cent (authors' calculations available upon request).

Table 12: Impact of *Oportunidades* on political participation 2008–14: alternative propensity score matching

	Model	T	C	DID	SD
Interest in politics	Baseline	0.168	0.106	0.062**	0.024
	Model 2	0.168	0.082	0.086***	0.022
	Model 3	0.168	0.109	0.059*	0.030
	Model 4	0.165	0.138	0.027	0.020
Participation in the previous presidential elections	Baseline	0.035	-0.037	0.073***	0.014
	Model 2	0.035	-0.076	0.111***	0.014
	Model 3	0.035	-0.061	0.096***	0.015
	Model 4	0.035	0.001	0.033***	0.013
Propensity to vote	Baseline	0.059	-0.002	0.061***	0.012
	Model 2	0.059	-0.020	0.079***	0.015
	Model 3	0.059	-0.010	0.070***	0.014
	Model 4	0.059	0.021	0.038***	0.010
Propensity to vote for the incumbent party	Baseline	0.089	-0.005	0.094***	0.017
	Model 2	0.089	-0.030	0.119***	0.018
	Model 3	0.089	-0.004	0.093***	0.019
	Model 4	0.088	0.029	0.059***	0.014
Participation in protests	Baseline	-0.024	-0.005	-0.019***	0.006
	Model 2	-0.024	0.004	-0.028***	0.006
	Model 3	-0.024	-0.001	-0.023***	0.008
	Model 4	-0.024	-0.015	-0.009	0.006

Notes: DID is the difference between groups; C is the control group; T is the treatment group. Model 2 includes decile and dummy variable for the group. Model 3 includes decile and dummy variable assuming value 1 if the pseudo-household has at least one child. Model 4 is the baseline specification with the inclusion of regional dummies. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

Source: authors' calculation.

Alternative assumptions about the composition of the treatment group

As discussed earlier, when building the pseudo-panel we obtained three groups with different treatment values (0, 0.5, and 1). The main assumption followed in the sections above is that households within cohorts with a treatment value of 0.5 and those within cohorts with a treatment value of 1 should be included in the same group. In this section, we check the sensitivity of the results to this assumption. In doing so, we first increase the threshold of treatment by moving cohorts with a treatment value of 0.5 into the control group. Second, we exclude the cohorts with a treatment value of 0.5 from the analysis. Table 13 shows that the results are quite consistent with our baseline model. The only exception is interest in politics: the

difference in this coefficient is no longer statistically significant when excluding cohorts with a value of 0.5.

Table 13: Impact of *Oportunidades* on political participation 2008–14: alternative composition of the treatment group

		T	C	DID	Std err.
Baseline	Interest in politics	0.168	0.106	0.062**	0.024
	Participation in the previous presidential elections	0.035	-0.037	0.073***	0.014
	Propensity to vote	0.059	-0.002	0.061***	0.012
	Propensity to vote for the incumbent party	0.089	-0.005	0.094***	0.017
	Participation in protests	-0.024	-0.005	-0.019***	0.006
Moving 0.5 into the control group ^a	Interest in politics	0.183	0.101	0.082***	0.019
	Participation in the previous presidential elections	0.042	0.015	0.026**	0.012
	Propensity to vote	0.071	0.017	0.054***	0.010
	Propensity to vote for the incumbent party	0.096	0.013	0.082***	0.015
	Participation in protests	-0.026	-0.016	-0.011**	0.005
Excluding 0.5	Interest in politics	0.173	0.149	0.024	0.019
	Participation in the previous presidential elections	0.040	0.012	0.027**	0.014
	Propensity to vote	0.065	0.039	0.025***	0.010
	Propensity to vote for the incumbent party	0.090	0.055	0.035***	0.012
	Participation in protests	-0.027	-0.017	-0.010*	0.006

Notes: DID is the difference between groups; C is the control group; T is the treatment group. *, **, *** significant at 10, 5, and 1 per cent, respectively.

^a This model excludes the dummy indicating the groups to which the household belongs in order to achieve sample balance.

Source: authors' calculation.

4 Mechanisms

The previous results showed a strong positive effect of the *Oportunidades* programme on voting turnout and propensity to vote, and a negative effect on individual participation in protests. In this section, we discuss some of the reasons that may explain those results. In particular, the existing literature suggests that fiscal policy may be a powerful tool that governments could use to reduce inequalities and gain legitimacy among population groups (Justino and Martorano 2016b). Notably, redistribution via social transfers could lower grievances by improving people's living conditions. Redistribution may also influence attitudes and voting choices by increasing support towards governments and gain consensus from marginal constituencies (Weingast et al. 1981) or swing voters (Dixit and Londregan 1996).

However, the pathways through which changes in inequalities (and redistribution) may shape political participation outcomes are complex and largely under-researched. Several studies have postulated that inequalities may affect the political participation of certain fractions of the population when they result in economic and time costs that are not affordable by all (McCarthy and Zald 1977; Tilly 1975; Verba et al. 1995). As a consequence, inequalities may translate into the asymmetrical involvement of some population groups or individuals in the decision-making process (Solt 2010). Furthermore, increases in inequality may also reduce political participation if

accompanied by lower levels of trust in political institutions. As argued by Gaventa and Martorano (2016), in highly unequal societies, the rich are more able to set the political agenda in order to pursue their specific interests, at the cost of others. The persistent exclusion of some groups from political decision-making processes may in turn negatively affect the likelihood of poorer citizens engaging in politics (Gaventa 1980; Lukes 2005; Pateman 1971; Schattschneider 1960). A vicious cycle may then result, whereby low rates of political participation among the poor lead to ‘the suppression of the options and alternatives that reflect the needs of the nonparticipants’ (Schattschneider 1960: 102).

However, high levels of or rising inequality may lead to an increase in aversion to inequality (Runciman 1966). In that case, some citizens—particularly those that may find themselves worse-off in the aftermath of economic crises—may have stronger incentives to engage in the political process due to higher levels of social discontent (Gurr 1970). As a response to social discontent, individuals may attempt to influence policymaking processes using conventional democratic channels, such as voting in elections, increasing participation in political parties, and so forth. At the same time, unfulfilled expectations may lead to lower trust in formal institutions, particularly when people blame the government for fuelling (perceived) inequalities (Anderson and Singer 2008; Fischer and Torgler 2013) or for failing to redistribute resources adequately or provide public goods and services (Shapiro 2002). In these settings, higher levels of inequality may lead to frustration, anger, and social discontent and, consequently, increase the propensity of individuals or groups engaging in protests (Flechtner 2014; Gurr 1970; Lipsky 1968).

As discussed above, the Mexican government reacted strongly to the 2008 financial crisis, and the measures implemented—such as changes in the *Oportunidades* programme—may have had important distributional consequences. We discuss in this section whether these consequences may offer an explanation for the results discussed above. This analysis is again based on ENIGH datasets, which contain valuable information that allows us to disaggregate income according to some of its main components, notably private income and transfers.¹¹ This information has allowed us to conduct an analysis of fiscal incidence in order to evaluate the ability of the government to promote redistribution through the *Oportunidades* programme.

Table 14 shows that the share of *Oportunidades* of household disposable income rose from 3.0 per cent in 2008 to 3.4 per cent in 2014. Looking at the incidence of the transfers across different income deciles, it is worth noting that changes in the *Oportunidades* programme benefited especially families in the middle or at the bottom of the income distribution. For instance, the share of *Oportunidades* transfers over disposable income went up by almost 1 percentage point between the two years (Figure 5). This share increased by nearly 2 percentage points for the fifth decile, while it remained stable for those occupying the upper part of the distribution (Figure 5).

¹¹ The survey does not, however, provide information on taxes paid.

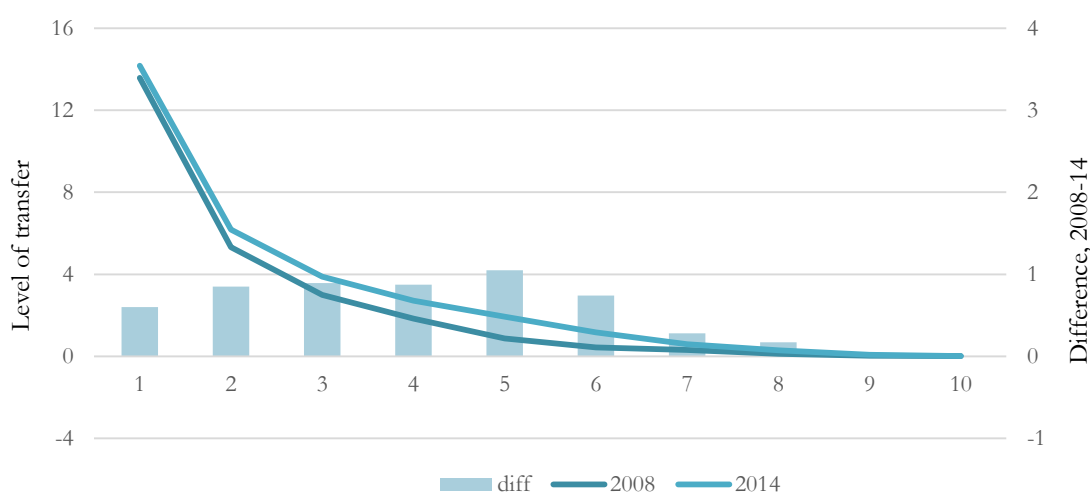
Table 14: Share of *Oportunidades* transfers over disposable income (percentages)

Year	National average	Other	Indigenous	Rural	Urban unskilled
2008	3.010	0.433	9.926	7.510	1.275
2010	3.244	0.448	10.218	7.993	1.752
2012	3.090	0.623	10.116	6.646	1.720
2014	3.373	0.821	11.292	6.594	2.413
Δ2008–14	0.363	0.388	1.367	-0.915	1.138

Note: The share is computed as the ratio of the *Oportunidades* transfer on the disposable income for each group.

Source: authors' calculations using ENIGH data.

Figure 5: *Oportunidades* transfer share across deciles



Notes: the two lines represent the *Oportunidades* transfer share across deciles in 2008 and 2014. The share is computed as the ratio of the *Oportunidades* transfer on the disposable income for each decile. The bars represent the difference between 2008 and 2014.

Source: authors' calculations using ENIGH data.

Although overall all those that participated in the programme benefited from these distributional changes, the main winners of government interventions related to *Oportunidades* were indigenous households and unskilled households living in urban areas—which are also those less likely to protest in 2014 than in 2008. Their share of *Oportunidades* of disposable income increased respectively from 9.9 to 11.3 per cent and from 1.3 to 2.4 per cent (Table 14). The remaining share of the population living in urban areas also gained from policy changes, since their share of *Oportunidades* over their disposable income rose by near 0.4 points (to 0.8 per cent). In contrast, people living in rural areas benefited less from these changes: their share of *Oportunidades* over their disposable income decreased slightly from 7.5 to 6.6 per cent in the same period of time (Table 14). This result could be explained by the fact that transfers were targeted to people in economic difficulties and, as we discussed before, this group was less affected by the crisis than other groups. A second explanation could be related to the traditional targeting error associated with interventions such as *Oportunidades* (Azevedo and Robles 2013; Coady and Parker 2009).

The changes in the *Oportunidades* programme that followed the 2008 financial crisis also influenced vertical inequality and improved the government's ability to redistribute. For example, *Oportunidades* transfers were associated with a reduction in the Gini coefficient of 0.8 and 1.1 percentage points in 2008 and in 2014, respectively (Table 15). In addition, these transfers contributed to promoting equality within and between groups. In particular, the ability of the

programme to promote a reduction of inequality increased for all groups, with the exception of the rural group (which remained almost stable) (Table 15). Table 15 shows, in addition, that the GCOV after government interventions decreased by 1 percentage point in 2008 and 1.4 percentage points in 2014, the GGini dropped by 0.6 percentage points in 2008 and 0.8 percentage points in 2014, and the GTheil remained stable. Overall, this analysis shows that the *Oportunidades* programme was associated with important improvements in the living conditions of their beneficiaries, with particular benefits for indigenous and urban unskilled groups.

Table 15: Inequality before and after *Oportunidades*

	2008			2014		
	Income before transfers	Disposable income	Difference	Income before transfers	Disposable income	Difference
Gini coefficient	0.483	0.475	0.008	0.464	0.453	0.011
Other	0.457	0.456	0.001	0.456	0.453	0.003
Indigenous	0.491	0.459	0.032	0.478	0.44	0.038
Rural	0.456	0.432	0.024	0.392	0.369	0.023
Urban unskilled	0.365	0.36	0.005	0.324	0.314	0.010
Theil index GE(1)	0.484	0.47	0.014	0.458	0.44	0.018
Other	0.434	0.432	0.002	0.445	0.441	0.004
Indigenous	0.463	0.410	0.053	0.451	0.389	0.062
Rural	0.478	0.437	0.041	0.296	0.266	0.030
Urban unskilled	0.267	0.261	0.006	0.195	0.185	0.010
Coefficient of variation	1.803	1.784	0.019	1.612	1.588	0.024
Other	1.713	1.710	0.003	1.570	1.565	0.005
Indigenous	1.332	1.262	0.070	1.358	1.266	0.092
Rural	1.988	1.905	0.083	1.004	0.955	0.049
Urban unskilled	1.041	1.032	0.009	0.780	0.763	0.017
GCOV	0.405	0.395	0.010	0.377	0.363	0.014
GGini	0.217	0.211	0.006	0.199	0.191	0.008
GTheil	0.084	0.079	0.005	0.073	0.068	0.005

Notes: GCOV is the group-weighted coefficient of variation, GGini is the group-weighted Gini coefficient, and GTheil is the group-weighted Theil index. These three measures are highly correlated. The GGini compares observations with each other and is a more sensitive measure of changes in the middle of the distribution. GCOV and GTheil compare each observation with the overall mean. The GCOV measures give more weight to extreme observations, while GTheil is more sensitive to the lower end of the distribution.

Source: authors' calculations based on ENIGH data.

5 Conclusions

This paper has discussed how the 2008 financial crisis affected poverty, inequality, and political participation among individuals and groups in Mexico. The paper shows that redistributive policies in the form of a large CCT programme can play a key role in influencing voting and reducing protests. The results show that changes implemented to the *Oportunidades* programme between 2008 and 2014 as a result of the economic downturn caused by the 2008 crisis led to

higher levels of participation in presidential elections, increased propensity to vote, rising support for the incumbent party, and reduced engagement in protests among beneficiaries of the programme. The results also indicate that the programme increased political participation among rural and indigenous groups, mitigated the reduction in participation in presidential elections and in the propensity to vote of the urban unskilled group, and was particularly effective in promoting political participation among female-headed households in the same group. The *Oportunidades* programme had a reducing effect on individual participation in protests among indigenous and urban unskilled households—those that have benefited in particular from lower levels of inequality associated with the programme—as well as a mitigating effect on individual participation in protests among rural households. These results suggest that government transfers could potentially be an important tool in the processes of consolidation of formal democracies.

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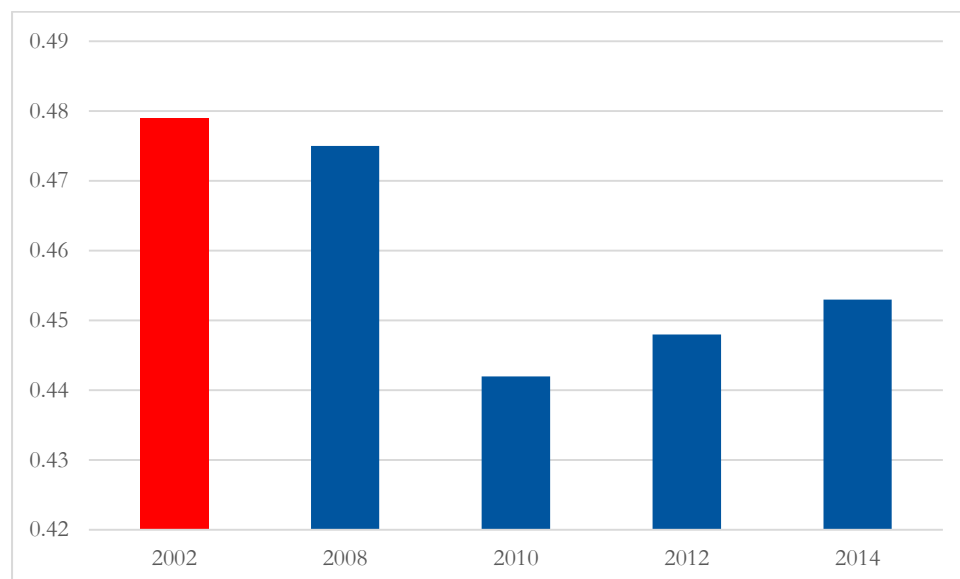
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Appendix

Figure A1: Gini coefficient



Source: authors' calculations based on ENIGH data.

Table A1: Measures of horizontal inequality: income

	Year	Ethnicity	Language	Region	Gender	Rural/urban	Capital/others
GCOV	2002		0.307		0.000	0.261	
	2010	0.126	0.141	0.276	0.000	0.237	0.179
GGini	2002		0.148		0.011	0.111	
	2010	0.055	0.043	0.153	0.000	0.100	0.048
GTheil	2002		0.051		0.000	0.039	
	2010	0.008	0.011	0.037	0.000	0.031	0.014

Notes: GCOV is the group-weighted coefficient of variation, GGini is the group-weighted Gini coefficient, and GTheil is the group-weighted Theil index. These three measures are highly correlated. The GGini compares observations with each other and is a more sensitive measure to changes in the middle of the distribution. GCOV and GTheil compare each observation with the overall mean. The GCOV measures give more weight to extreme observations, while GTheil is more sensitive to the lower end of the distribution.

Source: authors' calculations based on ENIGH data.

Table A2: Measures of horizontal inequality: years of education (15+)

	Year	Ethnicity	Language	Region	Gender	Rural/urban	Capital/others
GCOV	2002		0.214		0.045	0.173	
	2010	0.063	0.089	0.110	0.000	0.126	0.063
GGini	2002		0.105		0.019	0.073	
	2010	0.029	0.028	0.062	0.007	0.054	0.016
GTheil	2002		0.024		0.001	0.016	
	2010	0.002	0.004	0.006	0.000	0.009	0.002

Notes: GCOV is the group-weighted coefficient of variation, GGini is the group-weighted Gini coefficient, and GTheil is the group-weighted Theil index. These three measures are highly correlated. The GGini compares observations with each other and is a more sensitive measure to changes in the middle of the distribution. GCOV and GTheil compare each observation with the overall mean. The GCOV measures give more weight to extreme observations, while GTheil is more sensitive to the lower end of the distribution.

Source: authors' calculations based on ENIGH data.

Table A3: Measures of horizontal inequality: years of education (25+)

	Year	Ethnicity	Language	Region	Gender	Rural/urban	Capital/others
GCOV	2002		0.257		0.045	0.224	
	2010	0.089	0.118	0.141	0.000	0.173	0.077
GGini	2002		0.126		0.026	0.094	
	2010	0.04	0.037	0.081	0.013	0.071	0.023
GTheil	2002		0.035		0.001	0.028	
	2010	0.004	0.008	0.011	0	0.016	0.003

Notes: GCOV is the group-weighted coefficient of variation, GGini is the group-weighted Gini coefficient, and GTheil is the group-weighted Theil index. These three measures are highly correlated. The GGini compares observations with each other and is a more sensitive measure to changes in the middle of the distribution. GCOV and GTheil compare each observation with the overall mean. The GCOV measure gives more weight to extreme observations, while GTheil is more sensitive to the lower end of the distribution.

Source: authors' calculations based on ENIGH data.