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DETERMINANTS OF THE CHANGE IN ELECTORAL PREFERENCES AND THE EFFECT OF TURNOVERS IN A TWO POLITICAL BLOC SYSTEM IN MEXICO

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ABSTRACT

This thesis seeks to elaborate a description of the political tendency of the Mexican voter over the last 20 years or so. This search for the political tendency among different democracies and other systems of government has already been explored by Piketty (2021). However, it has yet to be econometrically demonstrated in the case of our country. Such verification can be derived from multinomial logit and multinomial probit models, which will give us the main characteristics of the composition of the left-wing voting base in our country. Once we have established how over the period studied, there is a trend of political change, especially among groups with higher incomes and higher levels of schooling, we will be able to define a current political space.

Once we have defined the trends in the electorate, we can establish various parameters that allow us to see the political and social results of these changes. We will use the results of several state-level Senate elections to do so. As to Benjamin Marx et al. (2022), the dynamism caused by continuous electoral changes favors economic and social variables. Following this working theme, two blocks of political positioning are generated, derived from the Manifest Data Project and the analysis of political alliances. For constructing the regression discontinuity model, we use data from the results of the state-level senatorial elections (2000, 2003, 2006, 2006, 2009, 2012, 2015, and 2018) and analyze the impact on the change of the ruling political bloc. As a result, like the previous authors, a significant impact on the economic variables proposed to have economic dynamism in the states is observed. In contrast, the social variables do not show the same behavior.

Keywords: Electoral Preferences, Electoral Turnovers, RDD, Economic Dynamism, Party System.

Contents

Chapter 1

State of Art

Within the literature that has been established so far to have a first approach to what we intend to do, we will see that a large number of authors have focused on materializing and presenting the different patterns of choice comparatively and see what the determinants or characteristics that guide a group of people to vote for a particular political party or faction are. Piketty (2019) shows that the tendency of higher income groups and those whose years of education are greater than 90% of the voting population show changes in their election patterns towards the various established parties in their countries[1].

This trend towards voters with the above characteristics shifting to bloc-switching voters has been accentuated more recently. Vowles (2017) tells us that the lessons in New Zealand for the year 2014 were that this change of trend was expected to be present in that year for the parliamentary elections in that country due to a growing connotation of inequality that was assumed to be a central element for the Labour party in that country to have a proportion of the population with more income on its side, but the general results show that not only did this not happen, but that variables such as the perception of security and living standards did not favor that left-wing political bloc.

In a more extensive study, Galbraith Travis (2008) use a set of econometric tools, such

[1] This change in trend is not explained by a completely linear change from one distribution peak to another, but rather by a generalized process in which there is a progressive transition within the countries studied.

as cross-sectional, fixed-effects, and multilevel analyses, to analyze how inequality has influenced electoral choices, using two main data sources, the first is a set of observations from 1969 to 2004, which present annual estimates of the Gini coefficient of income inequality, and the second is the use of within-state censuses from 1999 onwards. The paper's main results are that the cross-sectional effect of inequality on electoral preference change is ambiguous. At the same time, fixed-effects find that higher levels of inequality are linked to lower voter turnout, as are multilevel results once controlling for individual and state wealth levels. This shows how inequality can permeate and prevent certain political regime changes and thus provoke changes at the economic and social level[2].

They are establishing then that democratic changes when there is a high level of inequality are more difficult to bring about. However, we must also think that there is a certain ceiling at which inequality prevents a change of political bloc, and this can be done by encouraging the political agenda of the left bloc and increasing the likelihood of an electoral transition. Tavis and Potter (2015) show that inequality changes the proportion of the economy that is below a certain income level, i.e., the greater the inequality, the more the socio-economic conditions of the population are reconfigured, which means that the electorate is much more interested in redistributive policies, mainly used more frequently by left-wing partiesĠiven this growing inequality, the policies offered by the right-wing bloc will not generate enough interest to have a strong base to maintain this group in power.

According to Bowen (2011), this first shift could explain why the Latin American right has implemented redistributive policies that resemble the policies of the opposing bloc. This shift also justifies the growing need for and use of such policies, regardless of the political bloc to which they belong. What is still incomprehensible, however, is why these policies, which are no longer simply propaganda or a slogan exclusive to a single party, but are seen as a prevailing social necessity, cannot explain why a high-income class is beginning to lean towards the left vote.

[2]The main result of these changes in the social composition is that there is pressure to improve conditions for the bulk of the economy. As we can read in the report of FMI (2015), equality is an important value in most societies. Having that inequality expresses a lack of income mobility and opportunities, leading to political instabilities that can lead to economic crises.

Continuing with the idea, since we already saw that this change in the socio-economic composition of people is sufficient to make the left bloc have a larger electoral base due to the widening of this income distribution, no tangible explanation has been reached up to this point that tells us why people with the highest income level and the highest number of years of education had been the ones to tangentially change their electoral preferences in the case of our country starting with an increasing trend from 2010 and concluding in the majority elections that were seen in the results for senatorial seats in the 2015 and 2018 elections for the left-wing blocs.

From Ottone Sojo (2007), we can understand that high poverty rates, extreme inequality, and behaviors such as social cohesion make these problems the main ones to be solved since they not only have adverse effects on a specific population segment. Instead, they are social distortions that affect all inhabitants directly or indirectly. Increased pressure from citizens to solve these problems has led to increased efforts focused on this task, translating into increased political agendas that seek to solve these phenomena from the macroeconomic, competition, and partisan system areas. The development and efforts of civil society as a whole will bring about a change in political and economic ideals. All this is why the parties that present a set of proposals to resolve these societal distortions will be those that manage to win democratically.

I thought that, as Campos R. (2022) proposes, income inequality is a phenomenon and a distortion that affects all of us in society, the level of impact depends on what situation you are in, but it is a problem that significantly fractures the interaction between individuals [3]. This change in the tendency of these groups may be due, especially to the distortions generated by inequality itself, such as insecurity, corruption, lack of trust in institutions, lack of economic competition, and various other problems, which could be an important source of the transition in terms of partisan groups. As Saéz Tagina (2016) mentioned, not only was there an important economic reconfiguration from 2015 and 2016 throughout Latin America, but it also emphasizes how electoral behavior makes political alternation increasingly

[3] Taking into account that the different dimensions of inequality are presented as an accumulation of problems due to social fractures that do not allow a correct distribution of income. Therefore, in the political sphere, these problems begin to generate a set of essential tensions.

present.

To analyze that certain conditions generated by the same degree of lack of political succession, caused as explained above by a high degree of inequality, generate the ideal conditions for the distortions caused in society to be significant enough for political alternation to be more than a requirement. That is where we find the honest answer as to why voting groups were transitioned to the left. It was the same democratic, economic, and social system worn down by a lack of political transition that led to a higher percentage of voters with higher incomes and educational levels. The vote of confidence was due to the exhaustion of hope among these voting groups for change in an already worn-out democratic system.

This is why it was difficult for more conservative constituencies to develop left-wing policies before this new left-wing upsurge across Latin America. Fairfield Garay (2017) point out that there has been an expansion of social policy and a push for progressive tax reforms to implement redistributive policies for this group [4]. The constant electoral competition generates an environment in which these bases are based on the search for favorable policies for the most vulnerable sectors of society, which in turn are expressed as a source of incentives to decide the vote of our interest group since a society with fewer inequalities also represents a space for coexistence and social union in which spaces can be developed that generate such policy formulation.

1.1 Party system in Mexico

As Herrera (1999) mentions, the party system in our country was concentrated in a single party with prevalence and political dominance in all spheres of power in Mexico. This party had been governing our country in various spheres of power, from politics to the administration of justice. Therefore, this concentration of power in a single political entity was also broken when a political transition occurred. It is only since the 1994 federal elections and the 1996 reform that we can begin to speak of a freer and more competitive political system. Herrera bases his work on three political entities, PRI, PAN, and PRD, representing the cen-

[4] As mentioned in Ashworth (2000), politicians present themselves as vote maximizers, therefore the choice of a higher or lower tax rate will depend on the economic composition of the moment so that their agenda will depend on the need and demand of the bulk of citizens.

ter, the right, and the left. In this work, he first shows us how, for the 1994 federal elections, there was an inverse relationship between the votes the left received and the people's per capita income.

Although there was talk of a broader competition, as a result of inherited structures and repetitive practices by the alternating National Action Party (PAN), which at the time was presented as the strongest party, in 2012, the presidency of the republic was retaken by the Institutional Revolutionary Party (PRI). In 2014, the party known as Movimiento Regeneración Nacional (MORENA) emerged as a new option for left-wing ideals, and just four years after its creation, they were already the most-voted party in the whole of Mexico, winning the presidency of the country in 2018. According to Greene Sánchez-Talanquer (2018), with their leftist formation and dogma, they quickly replaced the PRD as the representative of the Mexican left, leaving the PAN as the prominent opposition leader. Thus generating only two political blocs in our country, the current left-wing bloc of parties such as MORENA, PT, and PVEM, and the right-wing bloc of PAN, PRD, and PRI. In turn, these authors show three essential elements within our country. In 2018 Andrés Manuel López Obrador (AMLO) won the republic's presidency with 53% of the votes, the president with the highest victory percentage since 1982.

Three main reasons for MORENA to win the 2018 presidential elections can be identified. In the first place, we can locate the generalized discontent in society due to the lack of development and economic growth that should have occurred due to privatizations and various neoliberal reforms that were authorized at the time, promising significant development in society that never materialized in full in sectors such as education, health and the general development of the Mexican population. In the second place, we can locate the problem of crime, which was detonated in the government of former President Felipe Calderón, who led the country on behalf of the PAN in his six-year term with his public security strategy, homicide figures were reached that had not been seen since 1940. Finally, the last problem identified by these authors, but presented personally as one of the fundamental problems that led to the transition to this party after a short period, is corruption. This problem was more than unpunished, permitted, and underhanded behavior on the part of the leading public policymakers and leaders of the central bodies in our country. For the surveys conducted

in 2017, there was significant disagreement regarding this problem, with 91.1% of the population participating in the survey saying that corruption was a phenomenon that occurred frequently or very frequently in their entity.

This set of nonconformities that were becoming more and more notorious in our country caused not only the most unfavorable socioeconomic class to decide to vote for MORENA in the 2018 elections but also a group of intellectuals to show their open and total support for this new standard bearer of the left in our country. In Morlino (2016), our country is ranked as one of the members of Latin America with the lowest democratic quality, below countries such as Argentina, Chile, and Honduras. Our country is placed in this position because the power of certain elites puts a large percentage of credibility at stake in this aspect. For these reasons, alleged electoral frauds have even led sectors of the population to believe that such anti-democratic behavior is plausible.

Finally, about party funding, we will look at how the amounts allocated to the different political parties were designated. From Córdova (2011), we can read that the relevance of political party financing and the mechanisms of control over it were only a relevant issue in the last four decades. Thus, the financing system is presented in two significant moments, the 1996 and 2007-2008 reforms. The first reform incorporated elements such as the total amounts to be distributed to parties to finance their ordinary activities, which were based on minimum campaign expenses, the total number of deputies and senators to be elected, and, finally, the number of representatives in the Congress of the Union. This way, the money was divided equally between 30 and 70 percent depending on the number of deputies obtained in the last vote.

The essential aspects of the reform took place almost ten years ago. With this reform, the amount of financing that parties obtain for ordinary activities changes concerning the previous formulation; now, the number of registered citizens are multiplied by 0.65% of the minimum legal income. Unlike in the past, this means excellent stability, reduced variability, and greater predictability of the amounts the State allocates yearly to finance politics. At the same time, the amount referred to is still distributed among the parties as follows:

30% equally and the remaining 70% in proportion to the vote obtained by each of them in the last deputy election. Moreover, finally, the financing for campaign expenses is no longer equivalent to the amount each party received for ordinary activities in the year of the election and becomes a percentage thereof. Let us take the example that every six years, when elections for Thus, every six years, when elections for president, senators, and deputies are held, the parties receive an amount equivalent to the amount that each party received for ordinary deputies, the parties receive an amount equivalent to 50% of their ordinary the resources that ordinarily correspond to them, and in the years in which only elections for the elections are held only to renew the Chamber of Deputies or Senators; they receive an additional 30% of their funding for ordinary activities.

1.2 Multinomial models for choice of variables

To use econometric tools such as multinomial logit and probit regressions, we will have to establish elements such as why these types of models are useful for analyzing the determinants of the electorate to vote for a certain party. As we can read in Dow & Endersby (2004), the use of these models is based on underlying assumptions about the nature of the decision-making they employ about the party they choose. Their article mentions that multinomial logit and multinomial probit models are more accurate than their univariate versions. In turn, an important comparison is made between m. logit and m. probit, through 3 robustness tests, it is determined that a very simple multinomial logit model has a greater advantage over a multinomial probit model. For reasons of methodology and robustness of our results, both models will be established throughout the paper for our data.

1.3 Electoral Turnovers

To evaluate the effect of political alternations in both the economic and social spheres, we will use as a basis the article published by Benjamin Marx et al. (2022), which analyzes a set of presidential and parliamentary elections since 1945. Their analysis focuses on the impact of political alternations on results such as HDI, economic growth, perception of security, and trade, among other variables. My analysis, similar to that of Benjamin Marx, uses the R.D.D. Discontinuous Regression Design method to estimate the effects on both

economic and social variables of the political alternations between two political blocs that are present in the partisan system of our country. In terms of model development and orientation, I focus on Cattaeno et al. (2015), as they use a regression discontinuity model to see the impact of being a candidate who has been governing before versus a candidate unknown to the people; this they develop with their methodology and rigor for U.S. Senate elections. In turn, for the mathematical understanding of the model, Imbens Lemieux (2007) elaborate on the algebraic and econometric rigor so that, through diagrams of the model, a better understanding of the model can be obtained (see Appendix).

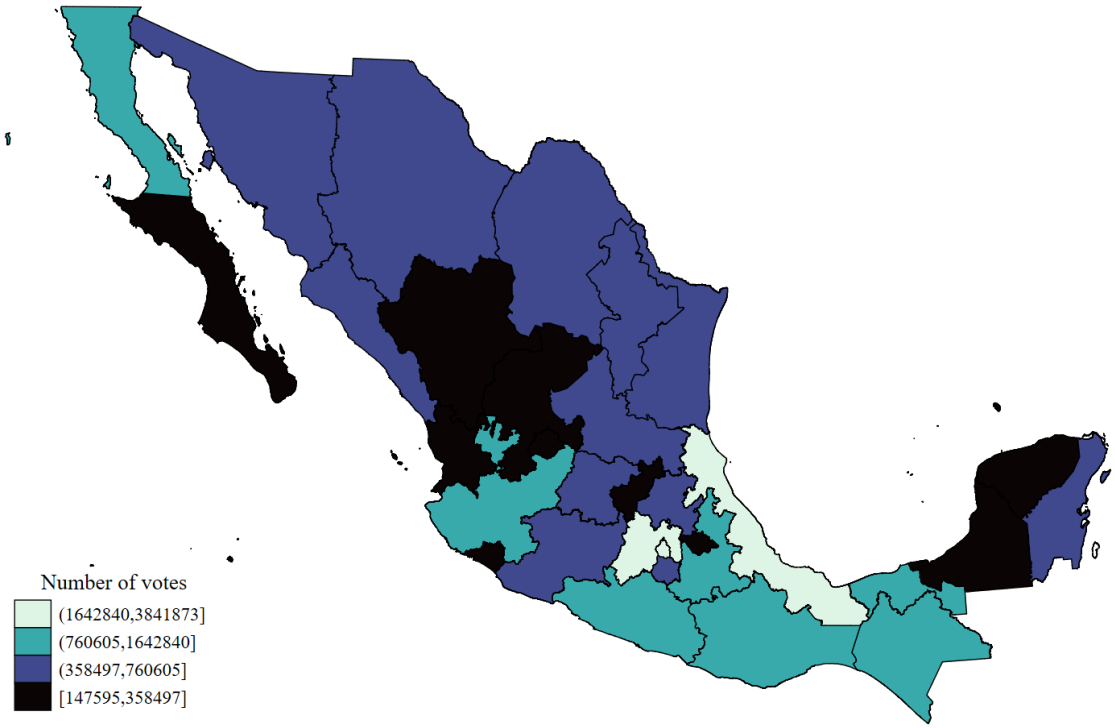
Chapter 2

Description of electoral space in Mexico

As we mentioned in chapter *Description of the electoral space in Mexico* 2 after the dominant party in Mexico was the PRI for a period of close to 70 years. Starting in 2000, Mexico experienced a series of presidential elections that were more competitive and with a more reliable voting system. In order to enumerate how the current electoral landscape was defined, we could start by summarizing the relevant actors and results in each election.

First, in the 2000 presidential election, there were two primary contenders to win: on the side of the National Action Party (PAN), the then-opposition leader, Vicente Fox Quesada, faced Francisco Labastida on the side of the PRI. As we know, the PAN not only won the election but also made an essential contribution to what would become a competitive democratic system in Mexico, as it was the first time in approximately 70 years that an opposition candidate won the presidential election.

In 2006, a leftist bloc began to show itself again with a vital weight that placed it as a viable option to win the presidential elections. Within the 2006 elections, it is worth mentioning that the result was quite controversial, and Mexican democracy was questioned for a moment. In this race, the two main characters that were in the race were Felipe Calderón Hinojosa, who was on the side of the former winner of the past elections PAN, and Andrés Manuel López Obrador on the side of the PRD, who appeared as a viable option to give an alternation to the first six-year term of the PAN in Mexico. The result was a continuity of government.



Source: Own elaboration based on the data obtained from the National Electoral Institute (INE). Chamber of Deputies Election Results 2018.

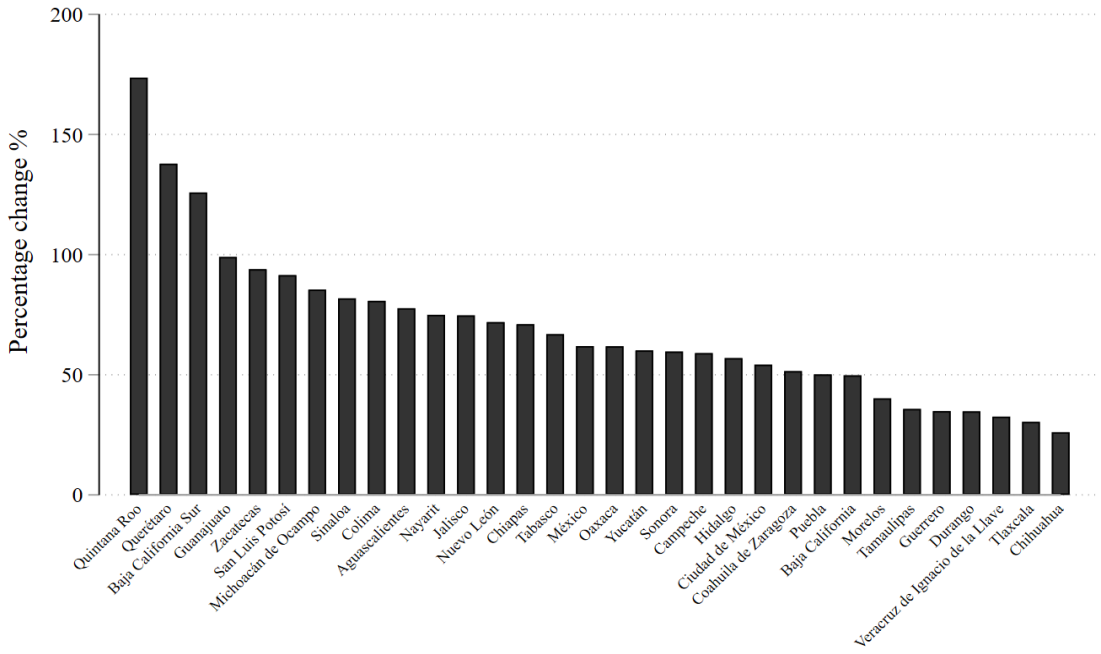
Figure 2.1: Total votes obtained by the Juntos Haremos Historia coalition for the 2018 presidential election.

In 2012, after several factors that did not favor PAN's perception in society, mainly due to its security strategy at the federal level to fight drug trafficking. The Mexican electoral space was now between two contenders again: Enrique Peña Nieto, who was running as the PRI candidate. While once again, Andres Manuel Lopez Obrador was running as the candidate not only of the PRD but also of a coalition formed by PRD-PT-MC, thus presenting the first pseudo-left-wing bloc. In these elections, the result was a victory for the PRI, having an electoral advantage difficult to dispute, unlike the one obtained in 2006.

Finally, for the last year of analysis, the electoral results for the presidency of the republic mostly favored the MORENA party and the Juntos Haremos Historia alliance formed by MORENA, PT, and PES, whose candidate was Andrés Manuel López Obrador, having electoral participation as seen in the figure 2.1.

As already mentioned in section *Description of electoral space in Mexico* 2, the victory was a real preamble for the recent elections since he is the candidate who managed to position himself as one of the presidents with the largest margin of victory concerning his opponents,

managing to materialize not only the past efforts in the sense of already generating a certain political block that would support him in this contest but taking advantage of the lack of dynamism concerning the political, economic and social structure that should have arisen due to the political alternation of the previous presidential elections. On that occasion, there were two other main contenders for the position of President of the Republic, Ricardo Anaya Cortes on behalf of the PAN and José Antonio Meade Kuribreña on behalf of the PRI.



Source: Own elaboration with IMSS data 2000-2018.

Figure 2.2: Employment Change 2000-2018 by State

Once this electoral space has been established, let us look at a fundamental component previously mentioned as a source of democratic alternation. The victory of the leftist bloc was not a coincidence but rather a response to the fact that specific components, such as the economy, security, and corruption, did not seem to be at their best level. In figure 2.2, we observe the change in the level of employment at the state level for the period 2000-2018; this image was elaborated with data from Mexican Institute of Social Security (Spanish: Instituto Mexicano del Seguro Social, IMSS) and presented us with an actual first result, in which we observe that some states that did not have a significant growth in the percentage of employment, were precisely those that voted for the Juntos Haremos Historia alliance, and

in which the left-wing bloc has continued to give continuity to said block in recent elections.

Let us remember that optimal economic results are fundamental to achieving political continuity as established in the conventional literature on party structures. Having good results in this aspect favors essential components ranging from assured social stability to avoiding the emergence of social conflicts. It also reinforces the legitimacy and power of the ruling party since the generation of employment means more significant economic growth. Therefore, the fulfillment by politicians of one of the fundamental and central promises of the campaign generates an essential link between voter and candidate. Finally, suppose the winning presidential candidate maintains above-average levels of employment. In that case, this guarantees a favorable environment for political continuity since we will be guaranteeing voter participation. This can be seen in Emmenegger et al. (2015), where they do a panel analysis of the Longitudinal Internet Studies for the Social Sciences and find that an increase in job loss increases the probability of not voting. In a later study, they examined data from the German Socioeconomic Panel and found higher unemployment rates are related to lower voter turnout, mainly among young people (aged 17-35).

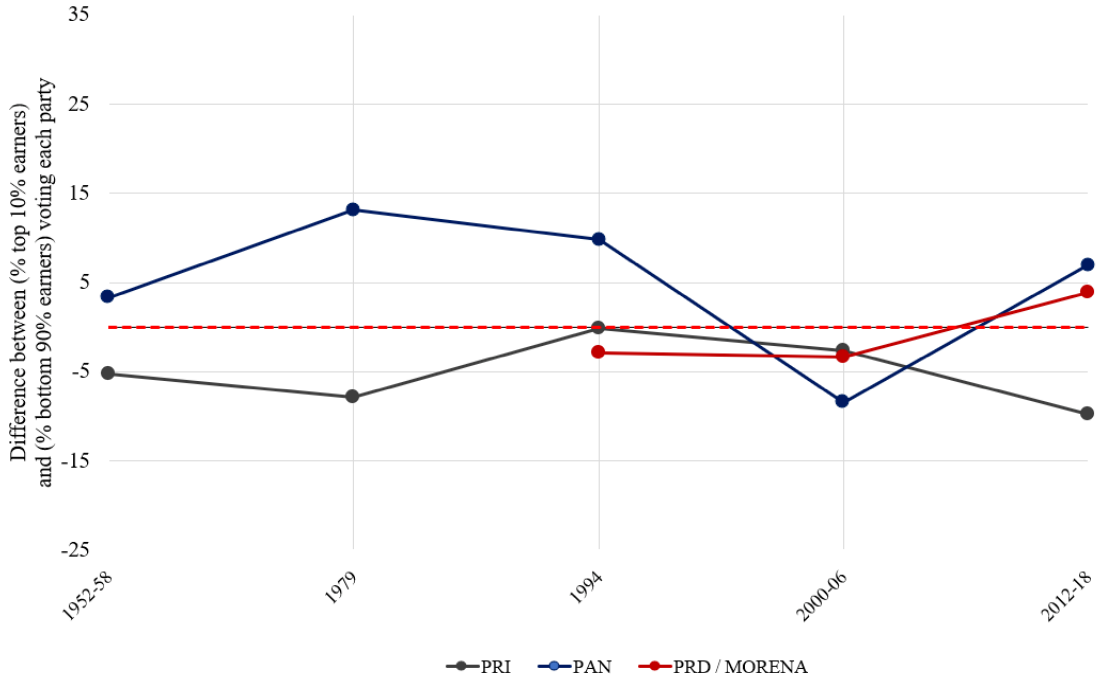
2.1 Voting composition by income and educational level

As Piketty (2021) establishes, one of the main results at a global level throughout the study of 50 different countries from 1948-2020 is how growing inequality has not provoked the outbreak of social conflicts but rather has reconfigured how political agendas and votes are redistributed to options that seem to imply greater social cohesion. Thus, the political divisions that were once present today are elucidated in terms of a much more important need to move away from the individualistic side and focus on the overall progress of society as a whole.

As can be seen in the figure 2.3, there is a change in the preferences of the percentage of the Mexican population that is in the top 10 percent of the population with the highest income in the country. Analyzing the graph, we observe that it goes from 1952 to 2018 when the most recent federal elections were held in Mexico. As can be seen, this group of the population had a strong preference to vote for the PAN for approximately 40 years until 1994,

it seems that the base with this level of income supported the PRI candidate, and after this period for both the PRI and the PAN, voters with an income level of the top 10% were 3% and 10% less likely to vote for them.

Similarly, the Mexican left is close to 5 percent less likely that this group will vote for them until before the 2012 elections; it seems that this group began to move their preferences since for the period 2012-2018, the probability that the group with the top 10% of income would vote for them was 5 percent more likely.

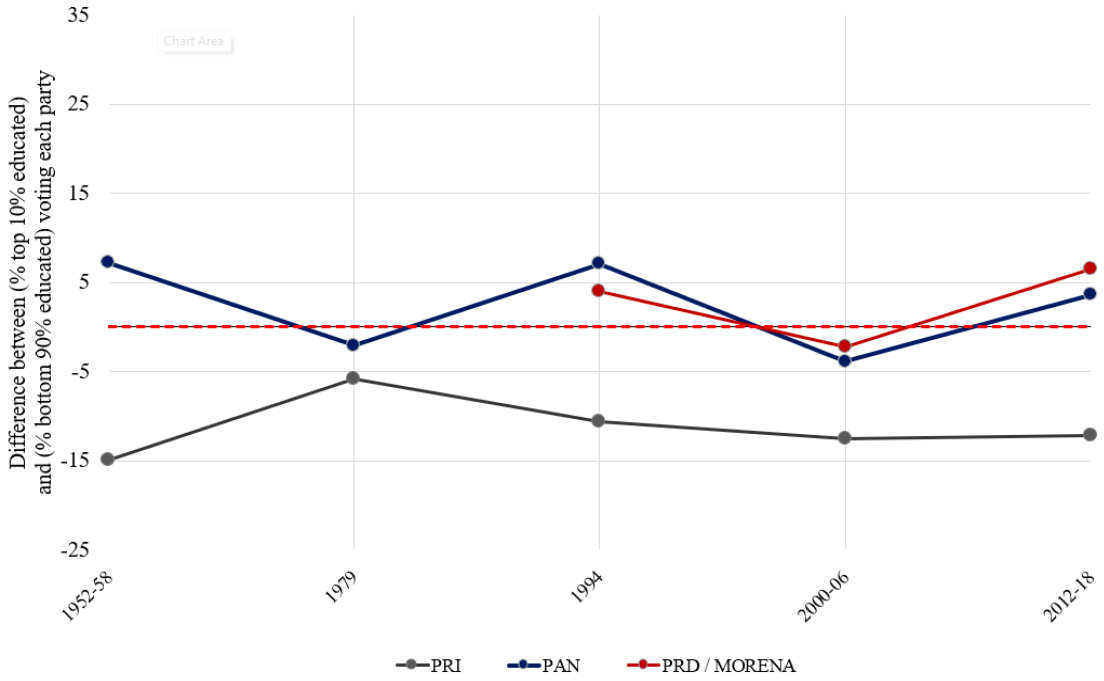


Source: Own elaboration based on the data obtained from the official election results. World Political Cleavages and Inequality Database (WPID).

Figure 2.3: Electoral preferences of the top 10% of income earners

For the case of educational levels, we proceed to interpret the figure 2.4. We can observe that the electoral behavior of this group for the different partisan groups differs significantly, in the sense that it does not present a similar trend in any of the cases compared to what we saw in the previous figure. In this case, we see that the 10% of the population with the highest income level presents a negative voting probability for the PRI in the entire period of the graph, that is, from 1952-2018, having its best moment in 1979. In the case of the PAN, we can see that although in certain periods of time it seems to have decreased, it never drops beyond 5 percentage points that this group does not vote for them. In the case of the PRD/MORENA group, we can see that in 1994, when it was presented for the first time as a

tangible option of alternation, the electoral base that was within this group showed its affinity for this movement, since for that year the probability of voting for the PRD was close to 5 percentage points, in 2000-2006, this percentage declined, so that in the 2012-2018 period, this group had a greater affinity for voting for MORENA.



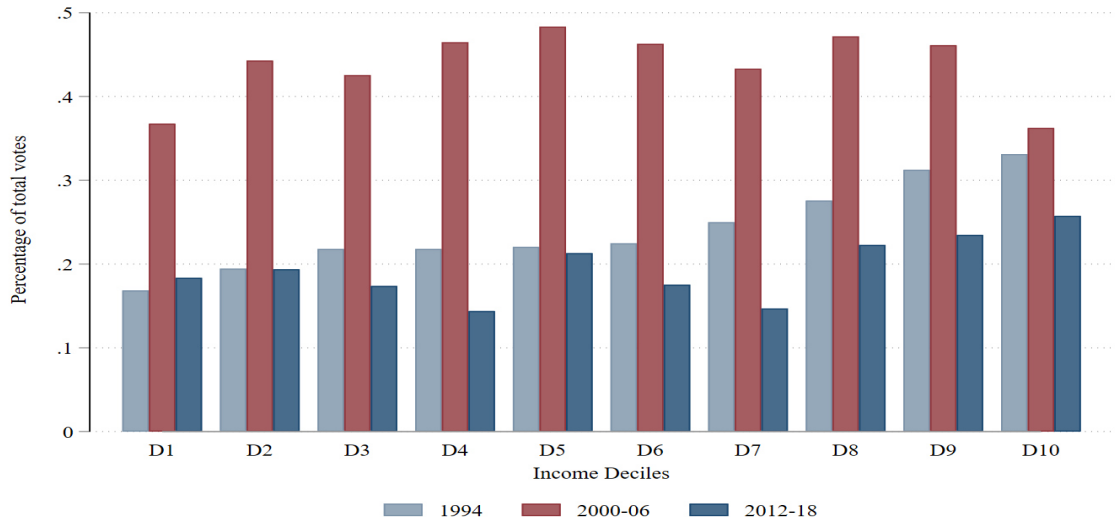
Source: Own elaboration based on the data obtained from the official election results. World Political Cleavages and Inequality Database (WPID).

Figure 2.4: Electoral preferences of the 10% with higher educational levels

As can be seen in both images, the group above 10 percent of income and those above 10 percent with the highest level of education had a significant transition to the left. Therefore, it should be assumed that even though the group above 10% with the highest educational level and that had already voted for the PRD in 1994, the conditions presented in the following years made them change their political affinity, and it was not until the 2012-2018 period that this tendency was resumed. The income group voted exclusively for the leftist option in this last electoral period.

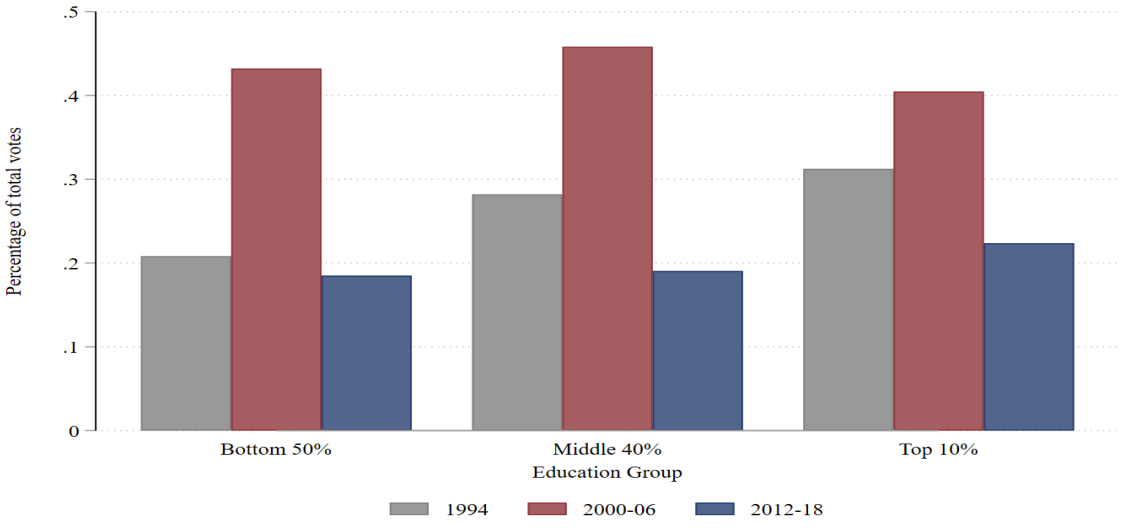
Following this descriptive analysis, in the case of the PAN, as we can observe in Figure 2.5, regardless of their income decile, people voted mostly for the PAN in the 2000-2006 elections, as we can assume is when this party won the presidency of the republic, thus presenting a generalized trend of voting for most of the deciles, accentuating in the middle class and the last two income deciles. For the periods 1994 and 2012-2018, it is analyzed that the

percentage of their vote is no longer given by the middle classes or a generalized response, but responds to the three highest income deciles. On the other hand, in Figure **??**, we see that in the case of groups with different educational levels, for the 2000-2006 period, again there is a significant support behavior of the groups in the three categories shown. While for the period 2012-2018. A significant drop is visualized, but its majority voting base continues to be that of the 10% with higher schooling.



Source: Own elaboration based on the data obtained from the official election results. World Political Cleavages and Inequality Database (WPID)

Figure 2.5: PAN Income Level

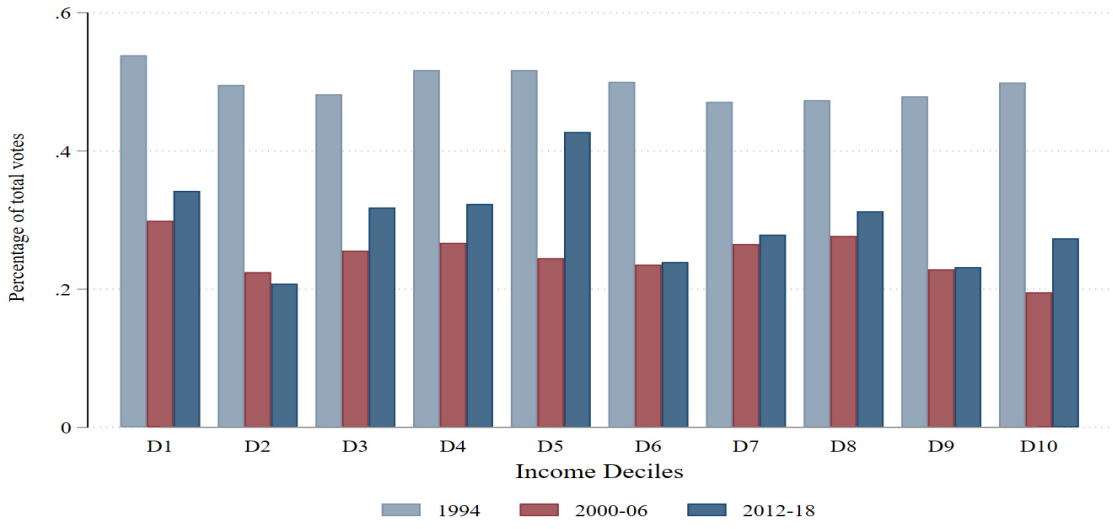


Source: Own elaboration based on the data obtained from the official election results. World Political Cleavages and Inequality Database (WPID)

Figure 2.6: PAN Education Level

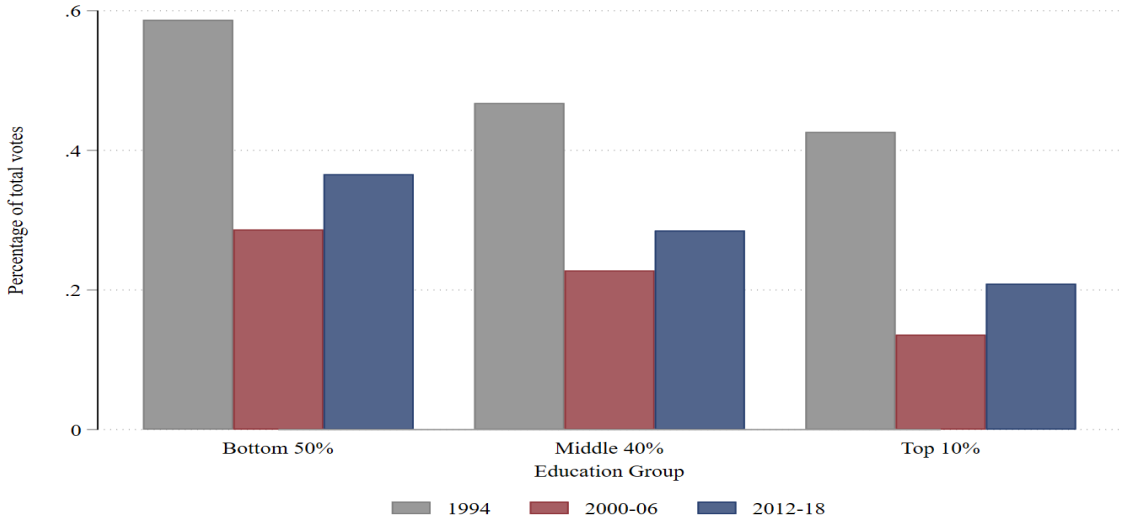
As for the PRI, as we can see in Figure 2.7, we can analyze that for the year 1994, its

most excellent support was found mainly in people who were located in the lowest income decile but the proportion of votes for this party was distributed almost homogeneously in all income levels, for the periods of 2000-2006. We observe that the behavior repeats itself, but the proportion of people decreases significantly. By the end of 2012-2018, we will have more excellent support from those in the middle class. Regarding what we see in the figure 2.8, we see that in the three periods with which we work, that is, 1994, 2000-2006, and 2012-2018 the group that most support this political party, are those people who are below 50% of the population with less education, having then that the percentage of people who belong to the percentages with the highest educational levels, do not electorally support this party.



Source: Own elaboration based on the data obtained from the official election results. World Political Cleavages and Inequality Database (WPID)

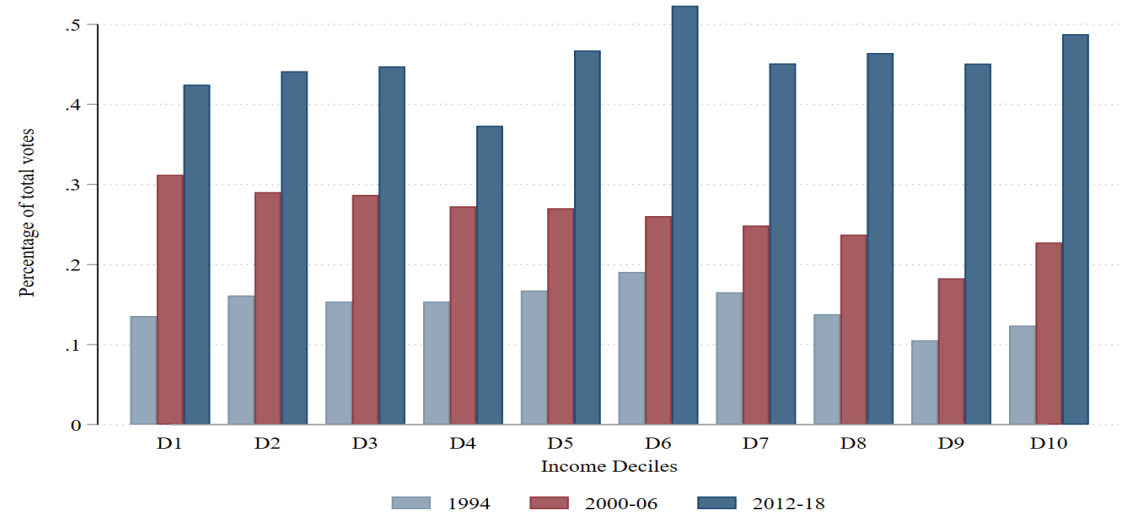
Figure 2.7: PRI Income Level



Source: Own elaboration based on the data obtained from the official election results. World Political Cleavages and Inequality Database (WPID)

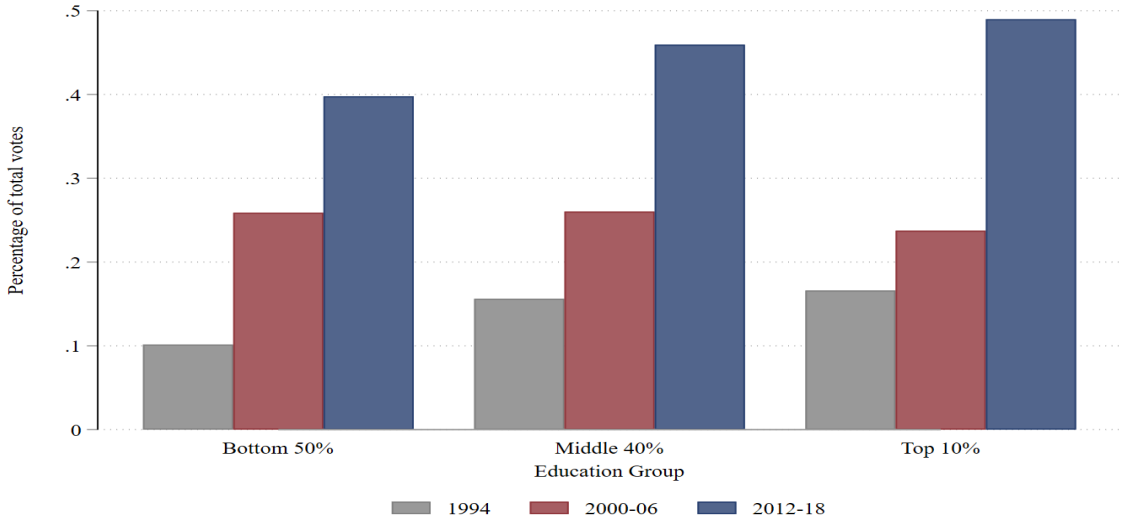
Figure 2.8: PRI Education Level

Finally, for the MORENA/PRD group, it can be analyzed in figure 2.9 that initially, the sector of the population that most supported this block belonged to the deciles that represented the middle class, as we observe for the year 2012-2018, it has an essential majority in practically all deciles, also highlighting the increase in the magnitude of percentages of votes coming mainly from the highest deciles of Mexican society and framing again the fact that this period that elapsed until the 2018 presidential elections took place did have a recomposition of the Mexican electorate derived from specific reasons. To describe what the figure tells us, it seems that people with higher levels of education have had a generalized tendency to support the Mexican left, except for the period 2000-2006, where we see that those people above 60% of education level are the ones who supported the PRD the most when the presidential elections took place at that time.



Source: Own elaboration based on the data obtained from the official election results. World Political Cleavages and Inequality Database (WPID)

Figure 2.9: MORENA Income Level



Source: Own elaboration based on the data obtained from the official election results. World Political Cleavages and Inequality Database (WPID)

Figure 2.10: MORENA Education Level

With these descriptive elements, we already had a first approach to understanding how the different educational and income groups changed their electoral preferences in our country in the period studied. Now, more formally, we will elaborate several models that will allow us to explain how these variables change throughout our proposed period 2000-2018 and which the main economic and social effects derived from the fact that electoral preferences are not static and encourage political alternation.

Chapter 3

Determinants of electoral preferences

3.1 Logit and Probit models

Table 3.1 column 1 shows a logit model to determine the probability of voting for the party representing the left in 2000 (PRD). This model shows that both educational level and income level are significant factors in the probability of supporting left-wing parties. The negative coefficients of the basic education and higher education variables indicate that as education becomes less advanced or more advanced, respectively, the probability of voting for left-wing parties decreases. Likewise, the significance of the coefficient of household income highlights the importance of taking into account the economic impact on voting for left-wing parties. As income increases, the probability of voting for left-wing parties also increases.

On the other hand, column 2 of the table 3.1 presents a probit model on the vote for the PRD in the year 2000. The model suggests that there is a lower probability of supporting the left-wing party as educational level becomes less or more advanced, and as income increases.

Table 3.1: Logit & Probit Models 2000

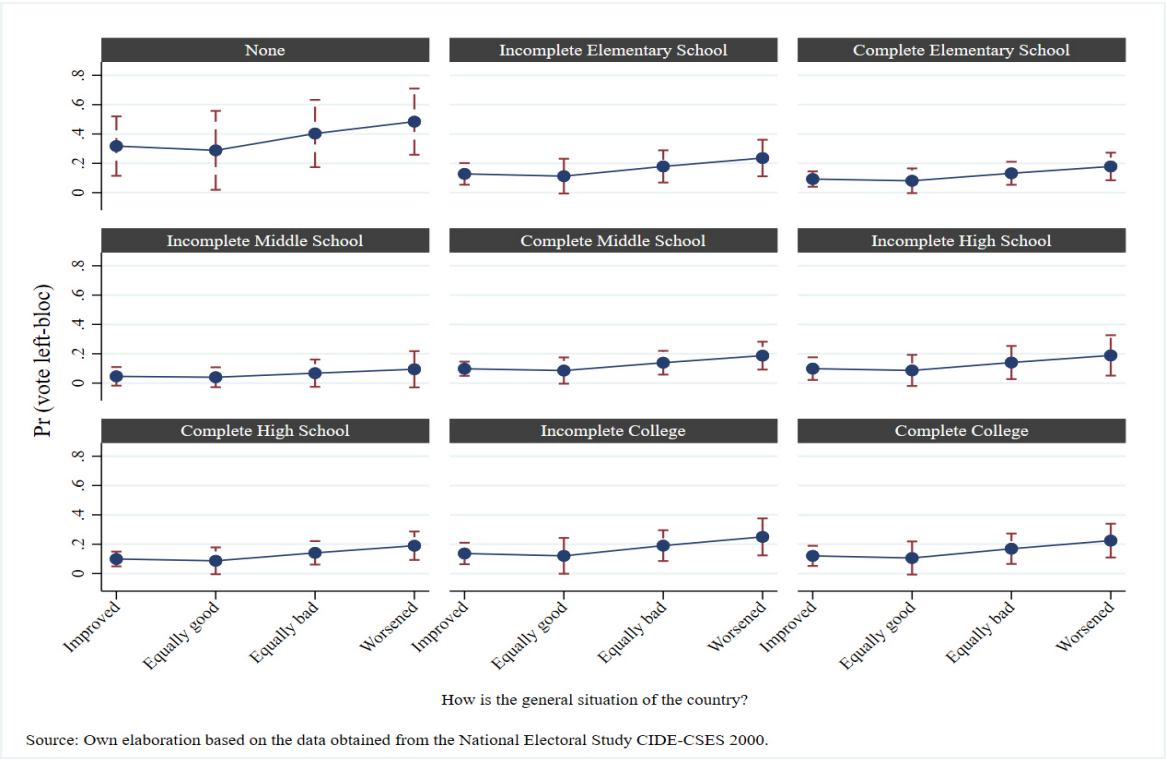
	(1) Logit	(2) Probit
Education Group		
High School or Lower	-0.314*	-0.257*
	(0.141)	(0.107)
University or Higher	-0.736**	-0.511**
	(0.267)	(0.202)
Family Income		
Total Household Income	0.0488*	0.0306*
	(0.0233)	(0.0145)
Constant	0.423**	0.440*
	(0.157)	(0.197)
Observations	792	792

Source: Own elaboration based on the National Electoral Study of Mexico (CIDE-CSES) 2000.

Standard errors in parentheses

Signif. codes: * p<0.05, ** p<0.001, *** p<0.001

Figure 3.1: Margins Plot by Educational Level Over the Regions 2000



Source: Own elaboration based on the data obtained from the National Electoral Study CIDE-CSES 2000.

Figure 3.2: Margins Plot by Educational Level and Perception of the Current Economy 2000

Table 3.2: Logit & Probit Models 2018

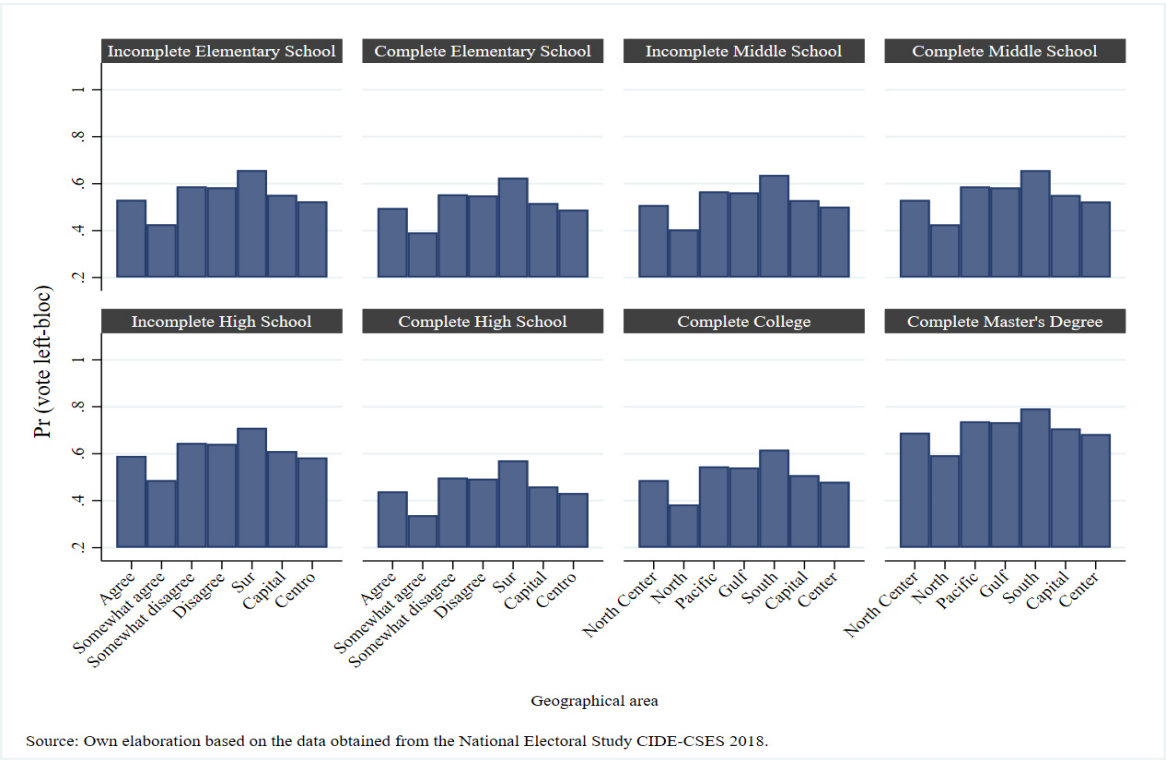
	(1) Logit	(2) Probit
Education Group		
High School or Lower	0.614**	0.527**
	(0.221)	(0.199)
University or Higher	0.536*	0.411*
	(0.225)	(0.202)
Family Income		
Total Household Income	0.0488*	0.0306*
	(0.0233)	(0.0145)
Constant	0.223*	0.340*
	(0.107)	(0.157)
Observations	792	792

Source: Own elaboration based on the National Electoral Study of Mexico (CIDE-CSES) 2018.
Standard errors in parentheses
Signif. codes: * p<0.05, ** p<0.001, *** p<0.001

Table 3.2 shows a logit and probit model to determine the probability of voting for the party representing the left in 2018, MORENA. The following conclusions are obtained in both

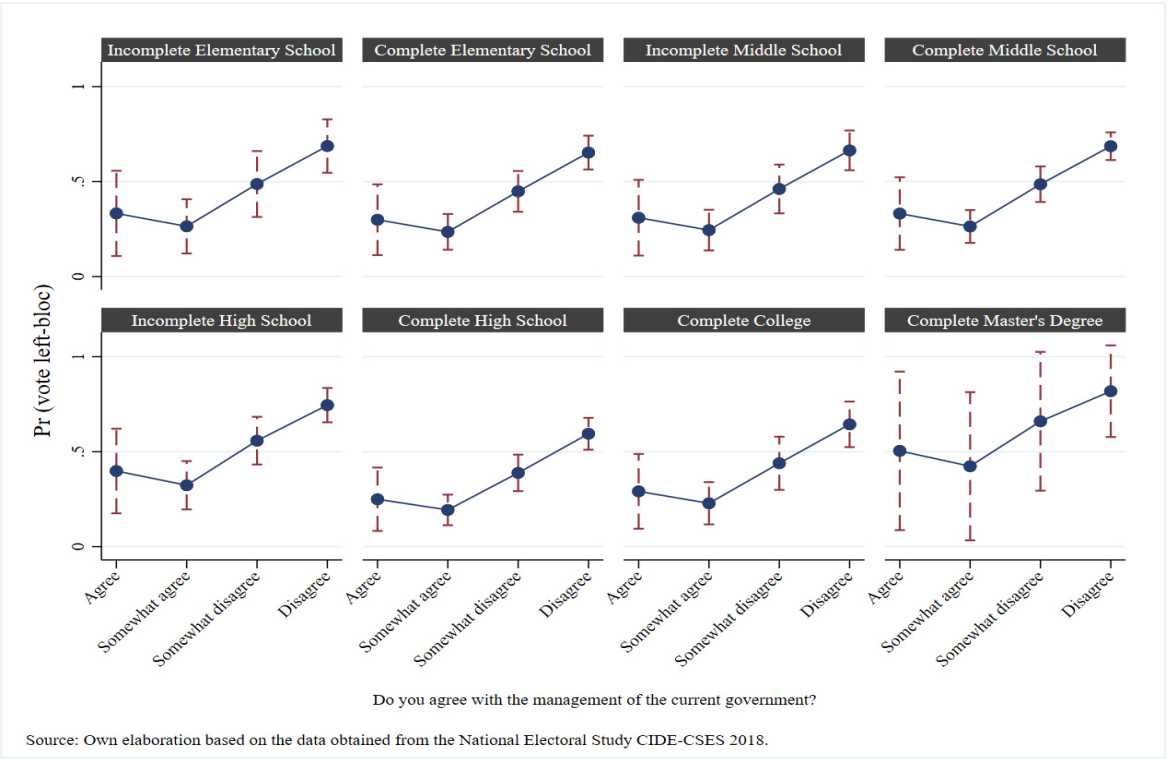
models: The positive coefficients of the education variables indicate that as education becomes less advanced or more advanced, respectively, the probability of voting for MORENA increases. Furthermore, the higher the income, the higher the probability of voting for the party representing the left.

The tables 3.2 and 3.1 evidence a change in voting behavior over time, showing that in 2018 there was a greater inclination for the left-wing party. This reflects the social, economic and political changes in the country, and demonstrates the importance of considering the socioeconomic context when analyzing voters' political preferences.



Source: Own elaboration based on the data obtained from the National Electoral Study CIDE-CSES 2018.

Figure 3.3: Margins Plot by Educational Level Over the Regions 2018



Source: Own elaboration based on the data obtained from the National Electoral Study CIDE-CSES 2018.

Figure 3.4: Margins Plot by Educational Level and Management of Current Government 2018

3.2 Multinomial logit and probit models

Table 3.3 column 1 shows two logit models, the first is to determine the probability of voting for the party representing the right in 2000 (PRI), and the second is for the party representing the left (PRD). The latter shows that both the coefficient of the higher education variable and the coefficient of the household income variable are negative. This suggests that people with a lower level of education in 2000 were more inclined toward the PRD. It further suggests that voters with higher incomes voted less in favor of the PRD.

Two probit models are shown in the table 3.3 column. In the first model we observe a negative coefficient on elementary education. This indicates that people with less than a high school degree in 2000 had a lower inclination toward the right-wing party. The results for the PRD model are analogous to those in column 1.

Table 3.3: Multinomial Logit & Probit Models 2000

	(1)		(2)	
	PRI	PRD	PRI	PRD
Education Group				
High School or Lower	-0.436	-0.558	-0.308**	-0.424
	(0.504)	(0.443)	(0.217)	(0.329)
University or Higher	-0.858*	-0.772*	-0.623*	-0.590*
	(0.410)	(0.345)	(0.261)	(0.252)
Family Income				
Total Household Income	0.0330	-0.0649*	0.0247	-0.0523*
	(0.0350)	(0.0291)	(0.0255)	(0.0228)
Constant	0.338	1.114*	0.236	0.871**
	(0.499)	(0.537)	(0.352)	(0.325)
Observations	792		792	

Source: Own elaboration based on the National Electoral Study of Mexico (CIDE-CSES) 2000.

As control variables we use: *PAN and No Studies*

Standard errors in parentheses

Signif. codes: * p<0.05, ** p<0.001, *** p<0.001

Table 3.4 column 1 shows two logit models, the first one determining the probability of voting for the party representing the right in 2018 (PRI), and the second is for the party representing the left (MORENA). Column 2 refers to the two probit models. In both models it can be observed that the probability of voting for MORENA increases when household income increases. In addition, the positive coefficients of the education variables indicate that as education becomes less advanced or more advanced, the probability of voting for the left-wing party increases.

The tables 3.3 and 3.4 suggest that in 2018, MORENA managed to attract broader support in terms of educational level, overcoming traditional barriers and capturing voters from all educational segments. It is striking that the increase in support for MORENA was also observed among people with higher incomes, indicating that the party was able to gain acceptance even among those with higher economic status. These results imply a change in the political landscape and a greater support in votes for MORENA's platform and proposals in the 2018 elections. It is essential to remember that other factors, such as the political and socioeconomic context, may also have influenced this increase in voting.

Table 3.4: Multinomial Logit Probit Models 2018

	(1)		(2)	
	PRI	MORENA	PRI	MORENA
Education Group				
High School or Lower	-0.436*	0.458*	-0.378*	0.464*
	(0.204)	(0.223)	(0.157)	(0.219)
University or Higher	-0.658	0.872*	-0.623	0.590*
	(0.410)	(0.345)	(0.361)	(0.232)
Family Income				
Total Household Income	-0.0430*	0.0719*	-0.0447	0.0523*
	(0.0205)	(0.0291)	(0.0255)	(0.0228)
Constant	0.238	1.114**	0.136	0.871*
	(0.185)	(0.387)	(0.112)	(0.425)
Observations	792	792	792	792

Source: Own elaboration based on the National Electoral Study of Mexico (CIDE-CSES) 2018.

As control variables we use: *PAN and No Studies*

Standard errors in parentheses

Signif. codes: * p<0.05, ** p<0.001, *** p<0.001

Chapter 4

Effect of turnovers in Mexico

Within our country during the period studied from 2000-2018, 5 senatorial elections were held in the different states. Senate elections in Mexico are held on a rotating basis, that is, every 3 years, so some states have a vote and others do not. The Senate is made up of a total of 128 Senators, of which 64 are directly elected by the 32 states, another 32 by first minority and another 32 are elected by the principle of proportional representation.

In the case of our country, there are certain conditions established in Article 58 of the Political Constitution of the United Mexican States to be a senator, which correspond to the following parameters:

i) To be of Mexican nationality, by birth. be 25 years old at the time the elections are held.

ii) To be a native of the federative entity in which the election is held, or to have a residence permanence of at least 6 verifiable years before the election.

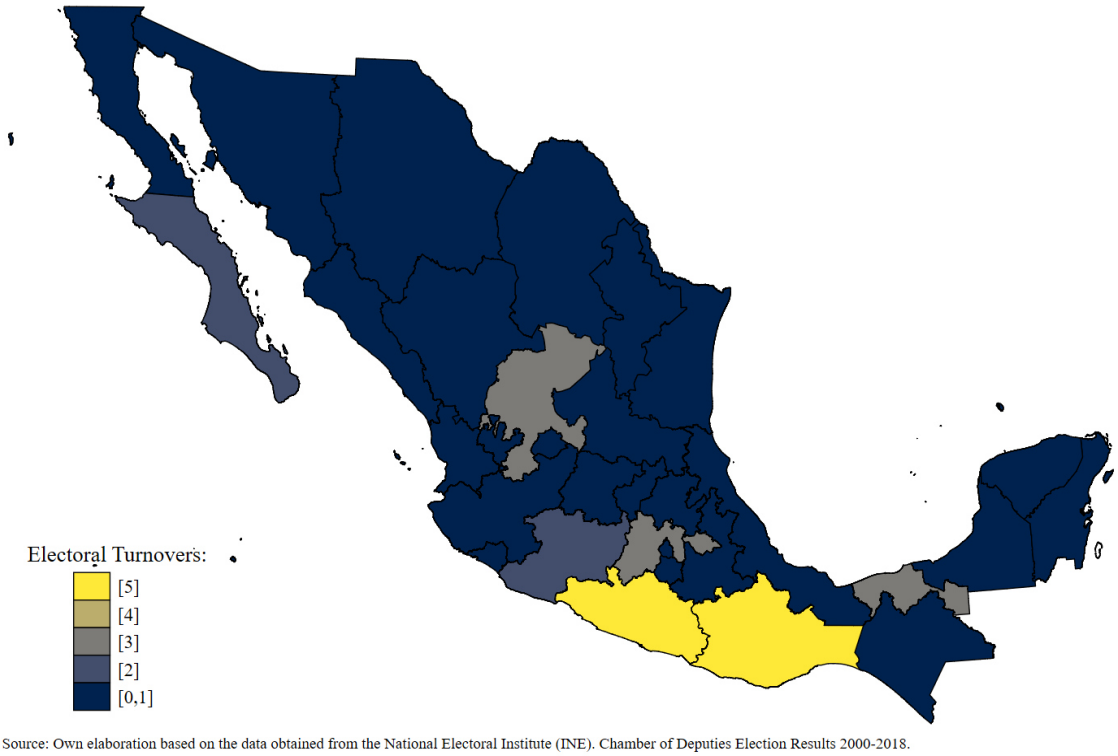
iii) Not to hold any public office in any autonomous institution. If so, they must resign from their functions at least 90 days before the election. In turn, it is forbidden to hold office if you are a minister of the Supreme Court, governor of any state or Electoral Counselor, etc.

iv) Not to have the leadership and control of any religious group.

v) Not to have any disability declared in Article 59 of the Constitution.

We also know that incumbents may be present, since senators by both principles may be reelected for two consecutive terms, thus having the presence of incumbents in the previous election gives them an important advantage for the election in $t + 1$. Therefore, there may be some advantage in this aspect if the parties for which they participated in the first period, offer them the possibility of repeating senatorships.

Within the methodology that we will propose, we will use a Discontinuous Regression model, which will provide us with the necessary tools to clearly designate the effects of the changes in terms of the majority of senators in that state. As we can see in the figure 4.1, the states that have had the most electoral shifts are Oaxaca and Guerrero. Those with 3 electoral turnovers are Zacatecas, Tlaxcala, State of Mexico and Tabasco. Those with only 2 are the states of Baja California Sur and Michoacan. Finally, the remaining states only had political alternation in this type of elections on one occasion or less.



Source: Own elaboration based on the data obtained from the National Electoral Institute (INE). Chamber of Deputies Election Results 2000-2018.

Figure 4.1: Electoral Turnovers by State in Mexico

To establish the methodology criteria we will have to separate our variables into treatment $Y_i(1)$ which will define those states that have had at least one electoral turnover regardless of party, while $Y_i(0)$ for those that did not have one at the time election j was held in state i in year t. Therefore, the following form will be used, which describes how the treatment

and control assignment will be performed.

$$Y_i = (1 - T_i) \cdot Y_i(0) + T_i \cdot Y_i(1) = \begin{cases} Y_i(0) & \text{if } X_i < c \\ Y_i(1) & \text{if } X_i \geq c \end{cases}$$

For the democratic transition election for senatorial seats, I created two main blocks, the first one conformed by left-wing parties (MORENA, PT, PVEM) and another block conformed by parties that have recently presented themselves in coalition (PRI, PAN, PRD). These blocks do not remain static in time, let's remember that in 2015 the MORENA party was not yet created, while the PRD was in charge of representing the Mexican left. But as the electoral preferences of individuals are dynamic, so are the political agendas of political parties and groupings.

Therefore, to determine in which bloc each party is in a given election, we resort to two main elements, the first of which is the coalition with which it ran in that given election, taking as a criterion to choose a bloc the party that has a majority in the senate chamber. Exemplifying this, for 2018, it was in alliance PAN, PRD and MC, with the name of *Por México al Frente*, therefore we will classify in the right-wing block all these parties, since the party that has a majority in the senate of that alliance is the PAN, which has an agenda with right-wing dyes. Now, the second criterion to assign in which block each party will be found is the right-left index developed by the Manifesto Data Project, which elaborates this index and places the political parties or alliances of different countries according to their political agenda, speeches, pro-environmental policies, proposals and other characteristics related to them.

As can be seen in the table 4.1 for the period 2000-2018, there have been 54 changes of power in the majority of senators in all the states of Mexico. While 170 occasions out of the total 224 elections that were held to designate people for such change, the party that has held the majority of senators has remained unchanged. That is, there has been no change from a right-wing bloc to a left-wing bloc, nor vice versa.

In the figure 4.2 we can see that each of the observations have been represented correctly, on the ordinate axis, we have the treatment status ranking, jumping from 0 to 1 for our

Table 4.1: Treatment and Control Classification

Political Bloc name	Classification	Assigned binary variable	Number of observations
`Left-wing bloc`	Treatment	1	54
`Right-wing bloc`	Control	0	170

Own elaboration based on the data obtained from the National Electoral Institute (INE).

observations. On the abscissa axis we can get to observe the margin of victory or defeat that the left bloc obtained. As we can interpret, in those elections where this bloc lost, Y_i0 will be assigned, since, as we can see in the graph, there was no transition, while in those where there was a change, Y_i1 will be assigned. This will be valid for the first period; later on, if there is alternation of the opposite order, it will also be taken as an electoral turnover because there would be a change of party. Now, since this almost does not happen, the interesting thing will be to see the dynamism caused by the alternation, especially that resulting from the years 2015 and 2018.

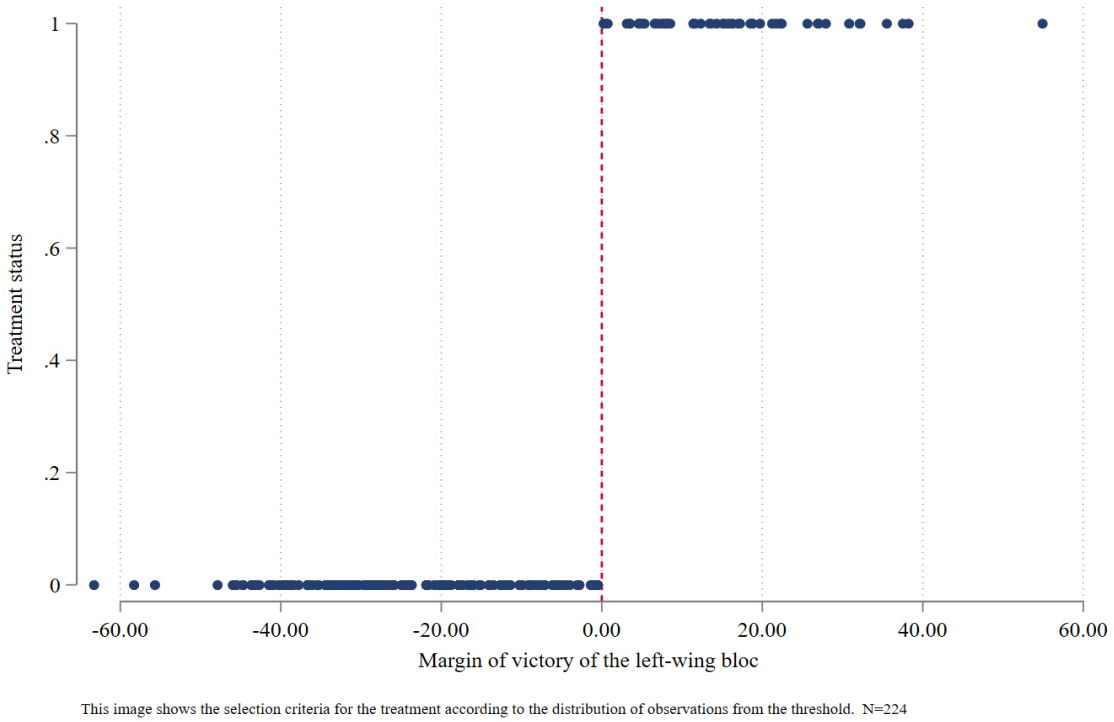


Figure 4.2: Treatment and Control Selection Criteria

Our analysis will then focus on how political changes have both a positive and negative effect on certain variables. We will propose both economic variables (see table ”Economic Variables of Relevance”) and social variables (see table 4.2). The number of observations

for each of the variables will be 513, the respective observations per month and year from 2000-2020. Note that, although the last election with which we will do the exercise is 2018, the variables give us two years of extra margin to analyze such changes caused by political alternation.

Within the proposed economic variables, we will have GDP, which is the indicator par excellence of economic activity. The Employment variable that outlines how much dynamism there is in the labor market. HDI, which is an index that is the sum of three main dimensions: Health, Education and Income. Transfers and Subsidies, this variable refers to what each state designates for the acquisition of certain fiduciary values, to promote productive activities in the state. FDI, which is the variable that quantifies how much foreign investment is coming into our country, whether it is translated as the participation of foreign investors in the capital stock of Mexican companies or the participation of these businessmen in the activities covered by the law. Net Income, which are basically the resources available to the federal government to finance various projects, programs and services, this section generates what is known as public investment.

Table 4.2: Economic Variables of Relevance

Variables	Direction of the Variable	Period	Database
GDP	+ is better	2000-2020	INEGI
Employment	+ is better	2000-2020	IMSS
HDI	+ is better	2000-2020	PNUD
Transfers & Subsidies	+ is better	2000-2020	EFIPEM
FDI	+ is better	2000-2020	INEGI
Net Income	+ is better	2000-2020	INEGI
Public Debt	+ is better	2000-2020	INEGI

Total number of observations 2000-2020. N=513

Finally, we will have the Public Debt variable, which expresses the amounts owed at different levels of government, this variable could be used to finance various projects, save financial or public entities. The level of public debt, therefore, can be seen from two sides, one that is called non-productive debt which does not generate projects that increase the capital in the country, and the second which is productive debt in which we can see certain strategies in the sphere of public policy to engage in projects that generate greater develop-

ment in the country.

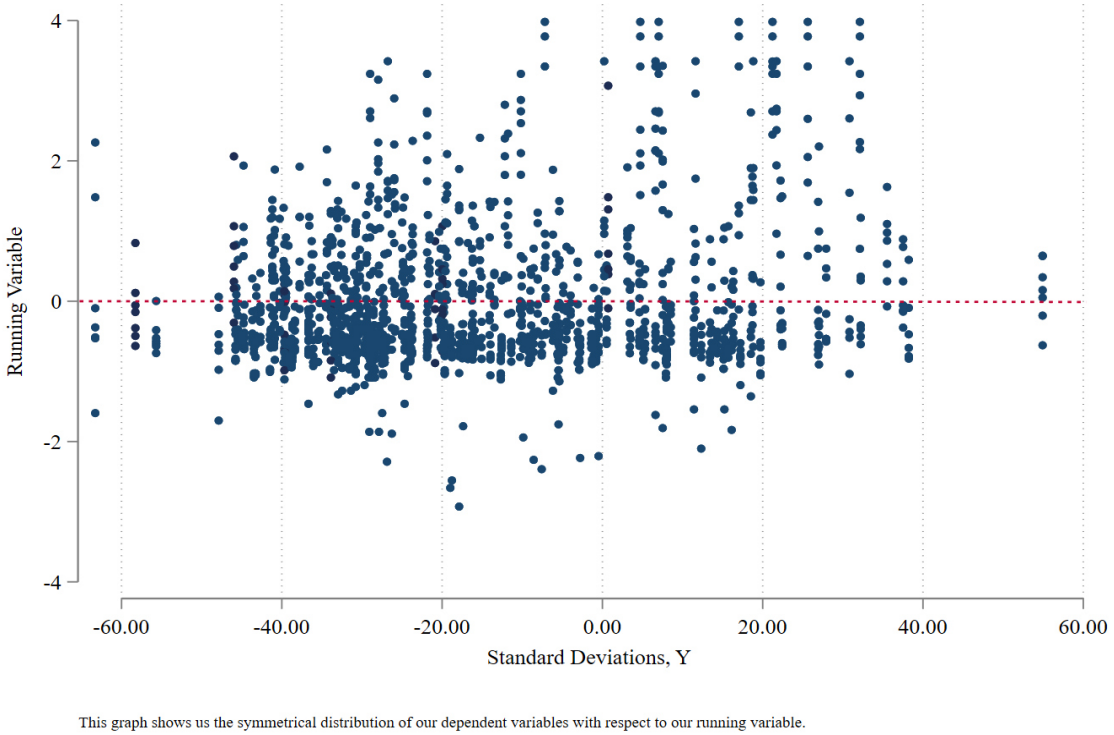


Figure 4.3: Distribution of Economic Variables

For the relevant social variables, first, we have the number of homicides at the state level, which represents an important indicator of the material and social conditions within the nation. The perception of security is that variable that comes out of the ENVIPE survey, in which a number of individuals are asked about how safe they feel in their state. Both the variables of men and women in the informal sector tell us an important part of the composition of the informal market, that is, what proportion of these people perform economic activities that are not regulated and do not have certain benefits such as social security and contract relationships. The next variable that we will present is the Perception of corruption in the government, we understand this fact as those acts that are not regulated and that come from public officials taking advantage of their authority as an administrative and legal entity to favor and generate opportunities and connections that are against the law and established moral principles. Finally, we will have the net migration from a federal entity to another country, as we know these migratory movements occur mainly because in the states from

which these people come from, there are not the economic and social conditions for these individuals to want to carry out their lives there. These actions on the part of the people are in turn related to the variables shown in the table, i.e., migratory flows may be due to security problems, labor market structure, corruption and other factors that affect their living conditions.

From figure 4.3, we can observe how the proposed variables are distributed through their standard deviations and with a cut-off point c, which is zero since being in votes of only two participating blocks, any result above 50% gives the coalition in question as the winner. As we observe in figure 4.4, the data are symmetrically distributed so that we will have a good model specification.

The model will be specified as in Benjamin Marx et al. (2022):

$$\Delta Y_E = \alpha + \beta_1 X_E + \beta_2 X_E T_E + \gamma T_E + \varepsilon_E$$

Table 4.3: Social Variables of Relevance

Variables	Direction of the Variable	Period	Database
`Homicides`	+ is worse	2000-2020	ENVIPE
`Perception of the security`	+ is better	2000-2020	ENVIPE
`Women in the informal sector`	+ is worse	2000-2020	ENOE
`Men in the informal sector`	+ is worse	2000-2020	ENOE
`Perception of government corruption`	+ is worse	2000-2020	ENVIPE
`Migration`	+ is worse	2000-2020	CONAPO

Total observations 2000-2018 period: 225

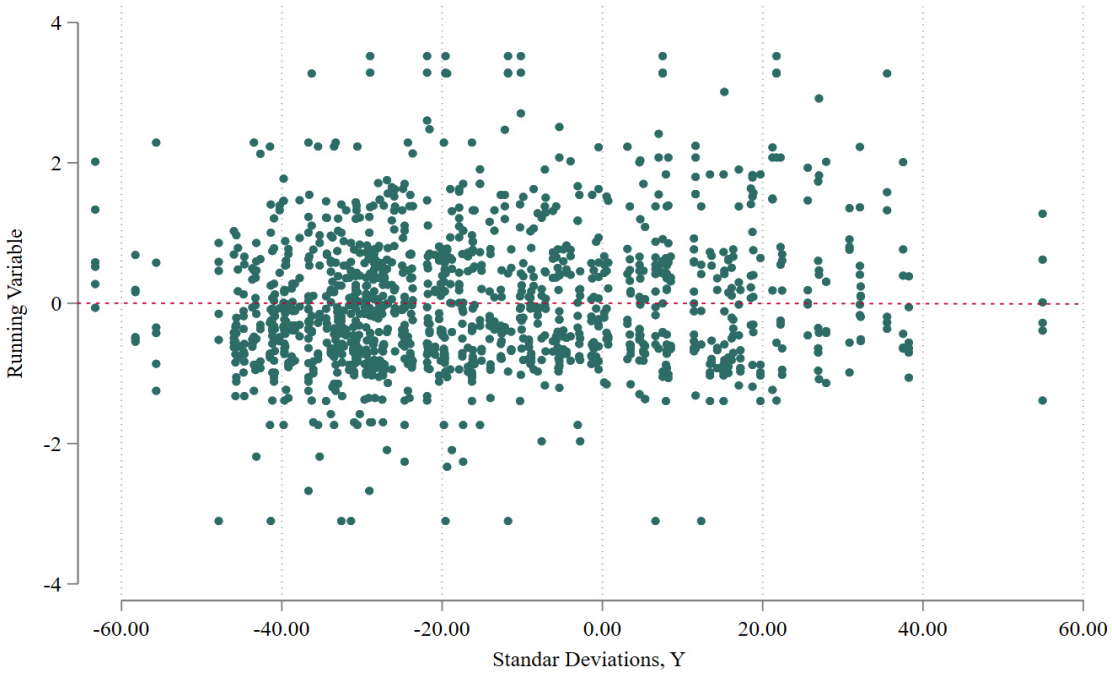


Figure 4.4: Distribution of Social Variables

where X_E, will be the margin of victory of the bloc that wins the majority in the senatorial vote, i.e. our running variable and $T_E = 1(X_E > 0)$ which will be equal to q if the state experienced a turnover in that category. Delta Y_E measures the difference in results between the post-election average and the pre-election value of both the social and economic variables we use. ε_E is our error term.

4.1 Impact on economic variables

Within the interpretation of the results, we will be based on the coefficients described within the table 4.4, as the name reads, we will be describing the results obtained by the equation 4 proposed in the previous section. In turn, these coefficients are read as standard deviations with respect to the independent variables. We should also mention that both the data obtained in the table and the figures proposed in this section (4.5 4.6 4.7 4.8 4.9, 4.10, 4.11) are posed using polynomial degree one, since the cut-off results of the model, allow us to make use of different polynomial degrees to better adjust our results. Therefore, both in the case of the economic variables and the social variables, the polynomial degree that provides us with the most significance is degree 1. Even with this, the same results are esti-

mated for the other polynomial degrees. (See in 5).

Table 4.4: Effects of Electoral Turnovers on Economic Variables.
Polynomial Degree 1

	(1) GDP Growth	(2) Employment	(3) HDI	(4) Transfers & Subsidies	(5) FDI	(6) Net Income	(7) Public Debt
Conventional	0.637*	0.909*	1.680***	0.788*	1.866*	0.939*	1.581
	(0.320)	(0.399)	(0.478)	(0.389)	(0.747)	(0.415)	(0.879)
Bias-corrected	0.547	0.801*	1.839***	0.742	2.010**	0.942*	1.697
	(0.320)	(0.399)	(0.478)	(0.389)	(0.747)	(0.415)	(0.879)
Robust	0.547	0.801	1.839***	0.742	2.010*	0.942*	1.697
	(0.380)	(0.459)	(0.524)	(0.448)	(0.838)	(0.474)	(0.999)
Observations	224	224	224	224	224	224	216

This table reports RD estimates corresponding to equation (1) for its polynomial form of degree 1.
Thus having two other types of models, one estimated with Bias-Reported and the next a Robust RD.
These coefficients were obtained by using the results of the senatorial votes.
Standard errors in parentheses
Signif. codes: * p<0.05, ** p<0.001, *** p<0.001

Establishing the main results of interest, we see that the variables that have statistical significance with respect to the three regression discontinuity methods we applied (Conventional, Bias-Corrected, Robust), are the HDI, Transfers Subsidies, FDI, and Net Income variables. Since the conventional interpretation of these coefficients is a bit confusing, I decided to normalize the variables from the beginning of the paper to read them in terms of standard deviations.

Thus showing that electoral shifts positively affect all the proposed economic variables. That is, the defeat of the incumbent bloc or coalition at time t will result in an improvement of about 1.7 standard deviations for the HDI, while for T S it will be one of about 0.79 standard deviations. For the case of Foreing Direct Investment, we see that the change of majority in the Senate favors in an improvement of approximately 1.9 standard deviations, while in variables such as Net Income, such improvement is of approximately 1 standard deviation. These effects, as can be seen in the table, are of great magnitude and prevail even when robustness tests are applied as in the last row.

For the variables that only possess statistical significance with the conventional RD method, we see that GDP has a positive impact on its growth of approximately .064 SD. In the case of Employment, when we have a transition between the defined blocks, we will have as a result an improvement of 0.91 standard deviations. Finally, for the case of the Public Debt variable, we will see that none of the coefficients obtained was statistically significant but its positive magnitude lets us see that it can also grow when there is a change in the Senate majority.

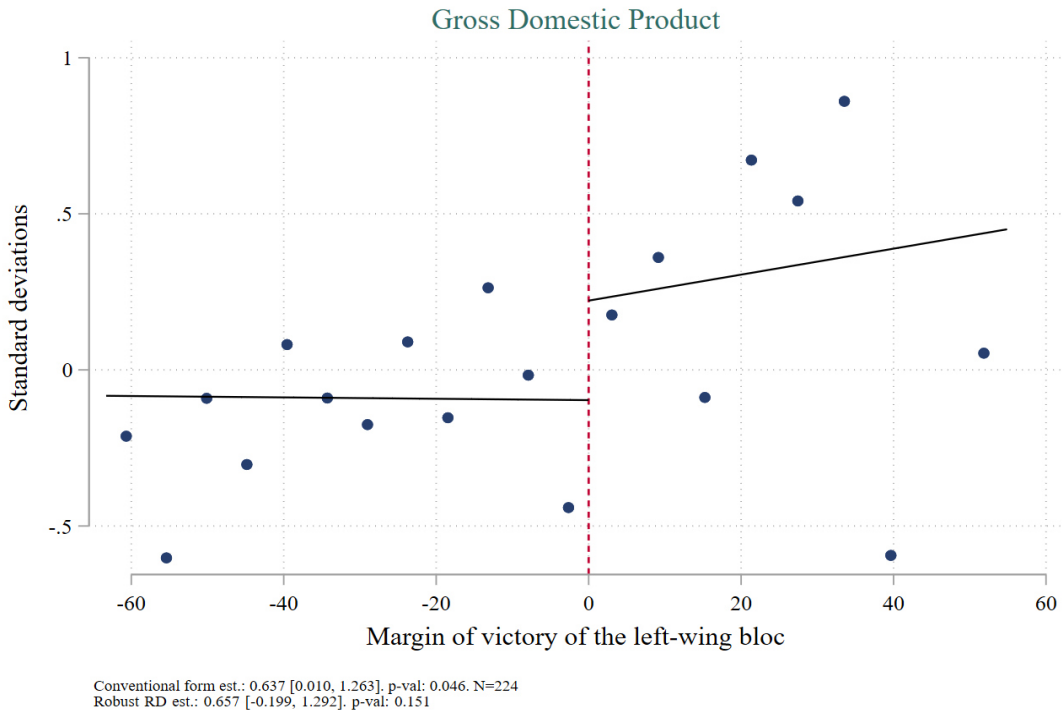


Figure 4.5: Effect of Electoral Turnovers in GDP Growth

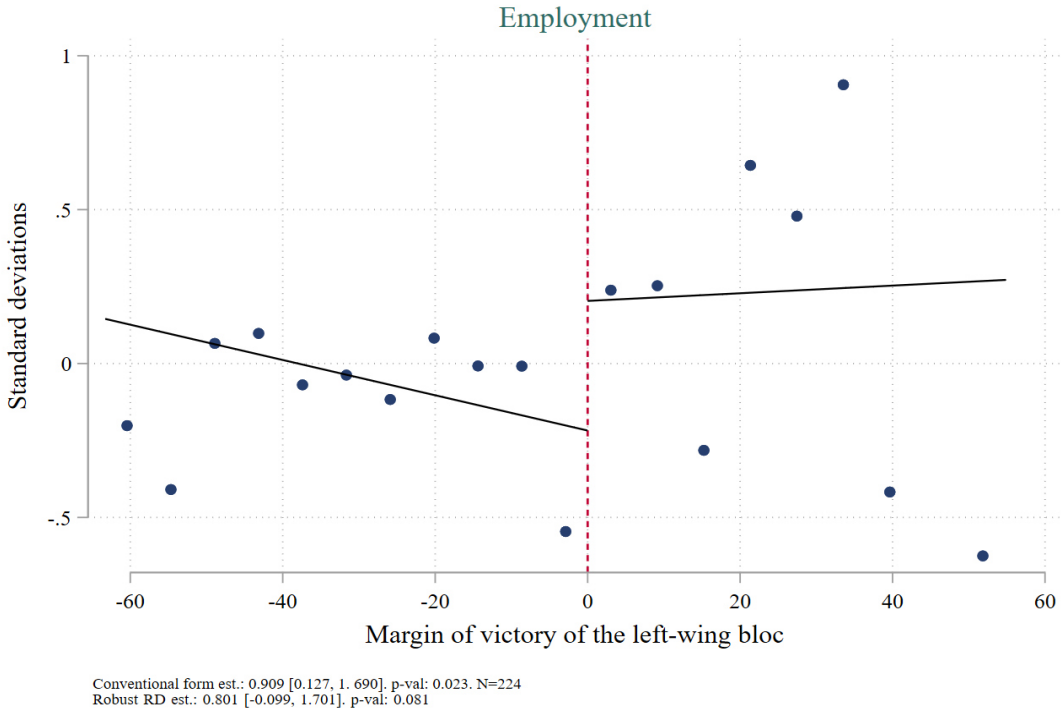


Figure 4.6: Effect of Electoral Turnovers in Employment

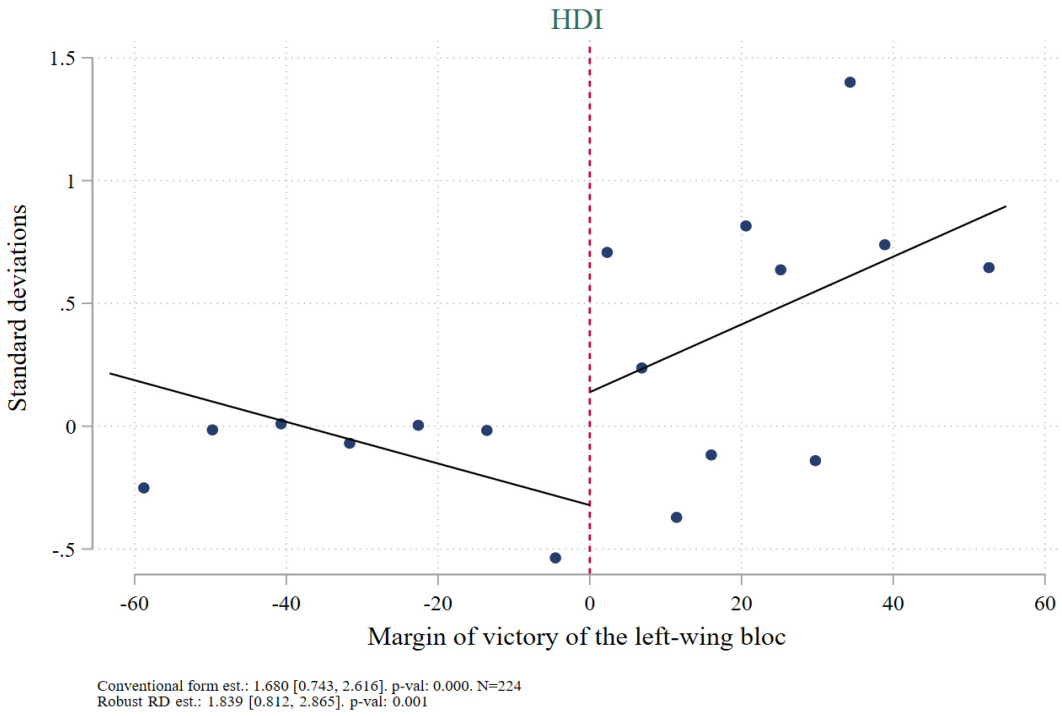


Figure 4.7: Effect of Electoral Turnovers in HDI

Figure 4.8: Effect of Electoral Turnovers in Transfers and Subsidies

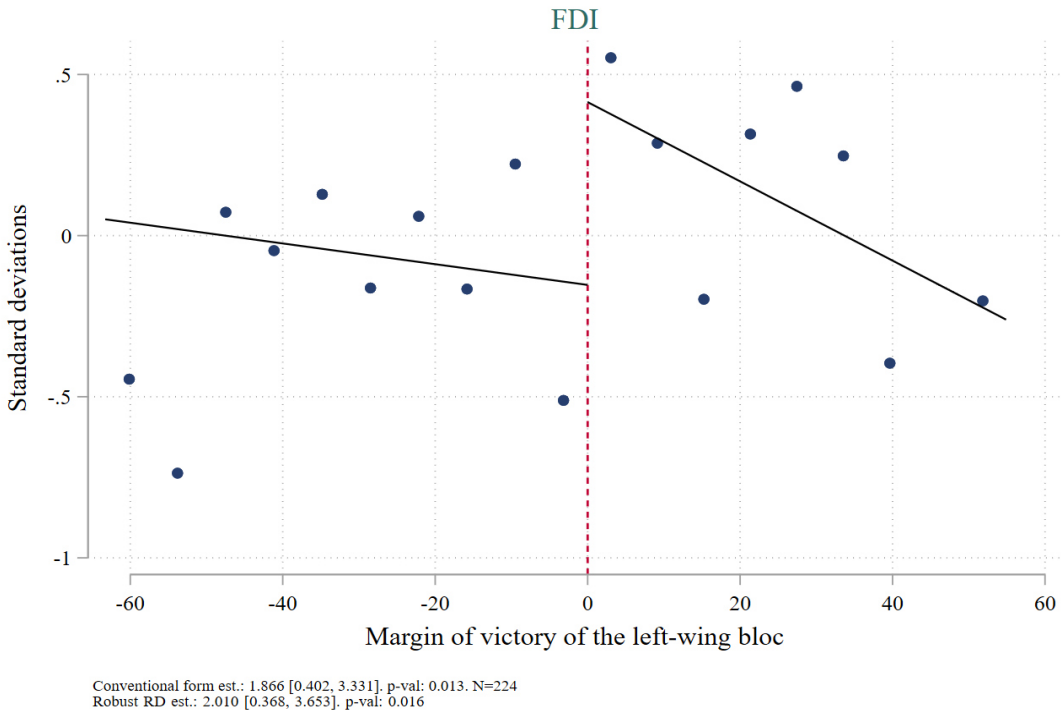


Figure 4.9: Effect of Electoral Turnovers in Foreign Direct Investment

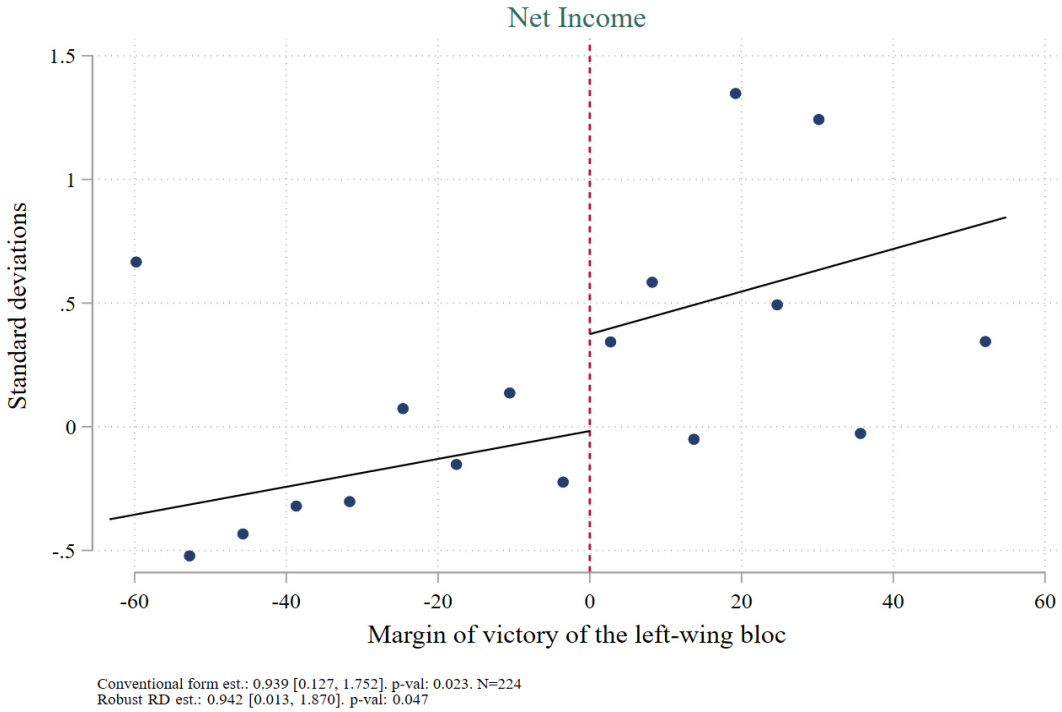


Figure 4.10: Effect of Electoral Turnovers in Net Income

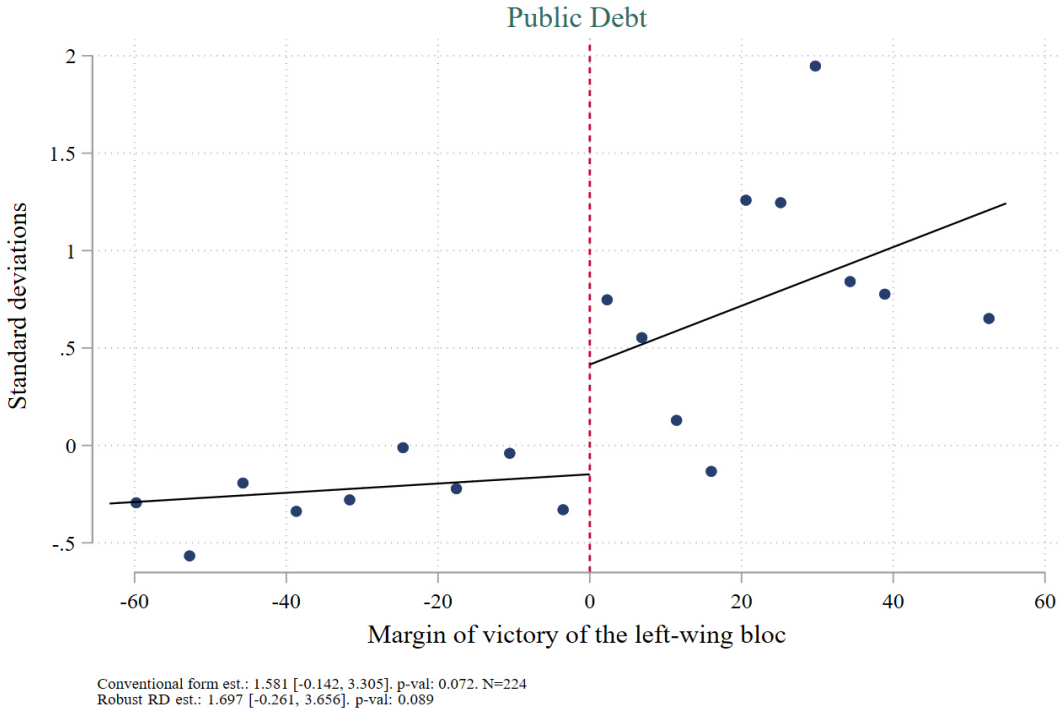


Figure 4.11: Effect of Electoral Turnovers in Public Debt

4.2 Impact on social variables

Within the interpretation of the results, we will rely on the coefficients described within the table 4.5, as in the case of the economic variables, our results are also obtained from the equation. 4. The polynomial degree of the following graphs is degree 1 (4.12 4.13 4.14 4.15 4.16, 4.17).

For the variable Perception of Security, we will have that an electoral defeat of the incumbent results in a worsening of 1.48 SD for this variable, while in the variable Perception of Corruption, we will have an increase of almost 1.6 SD. These two results do not lead us to think that regardless of whether there is a change between political blocs with different agendas, these problems seem to transcend the alternation. This would begin to speak of an already established structure in which, regardless of who comes to govern, crime and corruption are phenomena that are maintained due to other established characteristics. Another interesting result is that although there is no statistical significance for the variables of women and men in the informal sector, it is possible to think that due to the direction of the variable, the rotations of power may have an effect on the decrease of this type of employment.

Table 4.5: Effects of Electoral Turnovers on Social Variables.
Polynomial Degree 1

	(1) Homicides	(2) Perception of Security	(3) Women in the Informal Sector	(4) Men in the Informal Sector	(5) Net Migration	(6) Perception of Corruption
Conventional	0.745	-1.481*	0.000846	-0.273	0.153	1.642***
	(0.471)	(0.674)	(0.240)	(0.361)	(0.202)	(0.391)
Bias-corrected	0.839	-1.699*	-0.0528	-0.333	0.0815	1.811***
	(0.471)	(0.674)	(0.240)	(0.361)	(0.202)	(0.391)
Robust	0.839	-1.699*	-0.0528	-0.333	0.0815	1.811***
	(0.524)	(0.762)	(0.285)	(0.419)	(0.236)	(0.425)
Observations	224	224	224	224	224	224

This table reports RD estimates corresponding to equation (1) for its polynomial form of degree 1.

Thus having two other types of models, one estimated with Bias-Reported and the next a Robust RD.

These coefficients were obtained by using the results of the senatorial votes.

Standard errors in parentheses

Signif. codes: * p<0.05, ** p<0.001, *** p<0.001

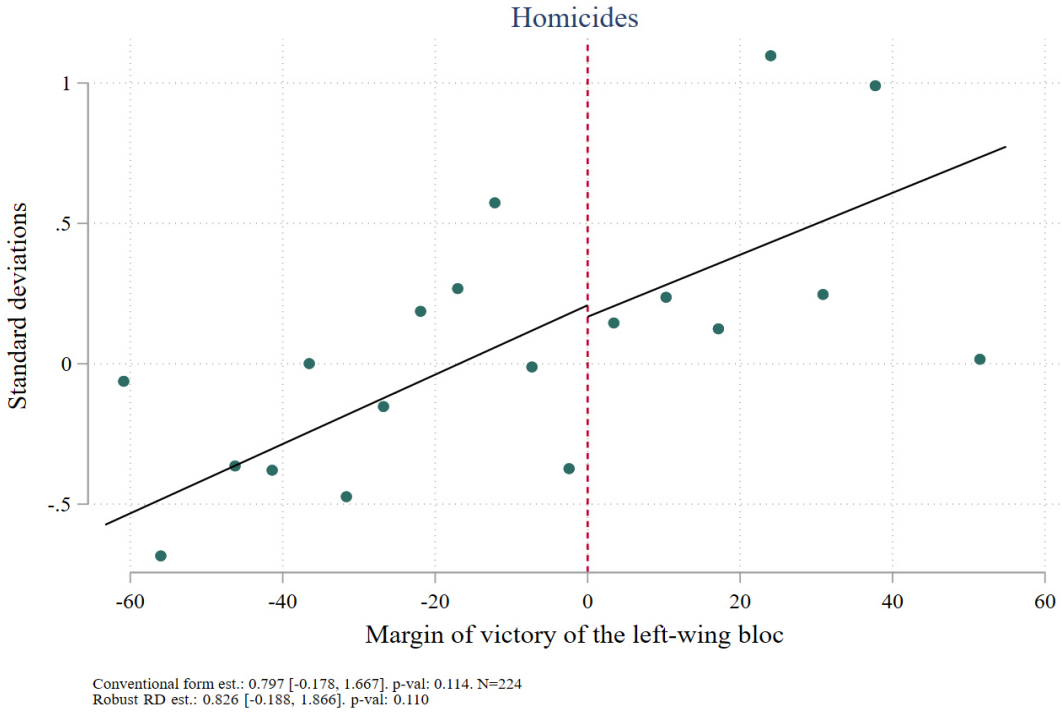


Figure 4.12: Effect of Electoral Turnovers in Homicides

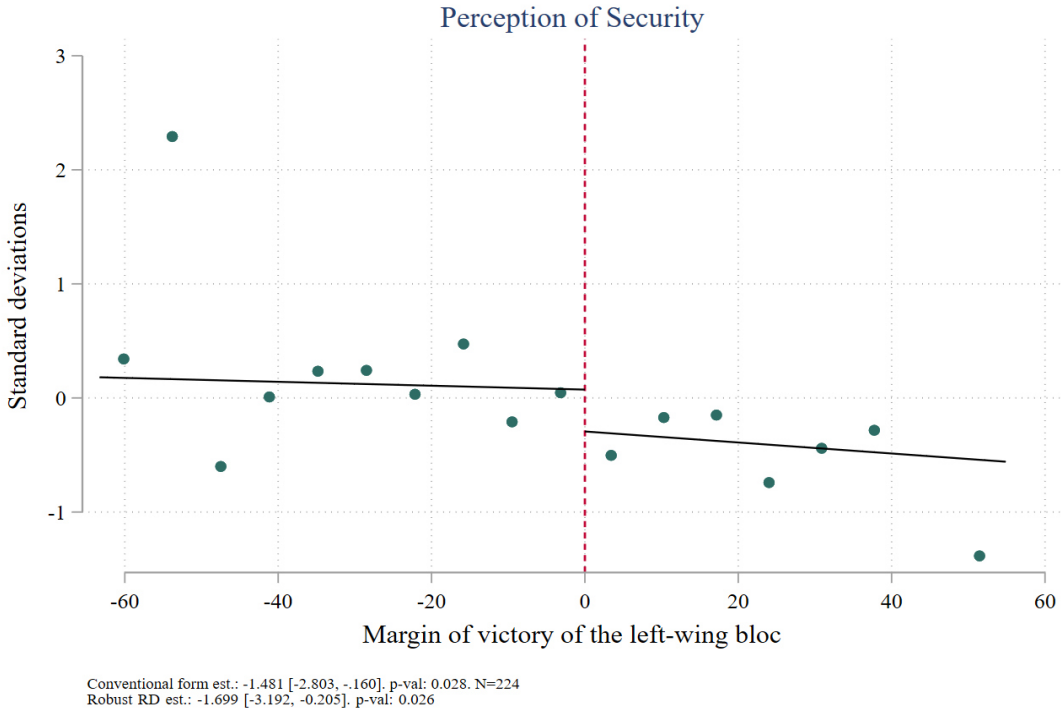


Figure 4.13: Effect of Electoral Turnovers in Percepction of Security

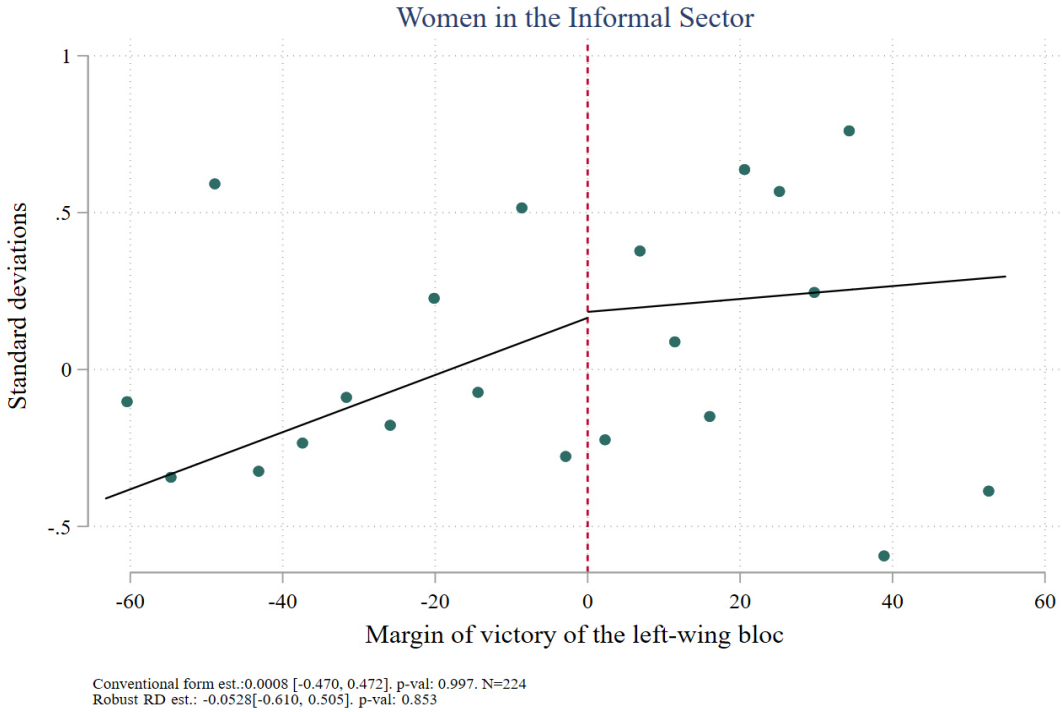


Figure 4.14: Effect of Electoral Turnovers in Women in the Informal Sector

Figure 4.15: Effect of Electoral Turnovers in Men in the Informal Sector

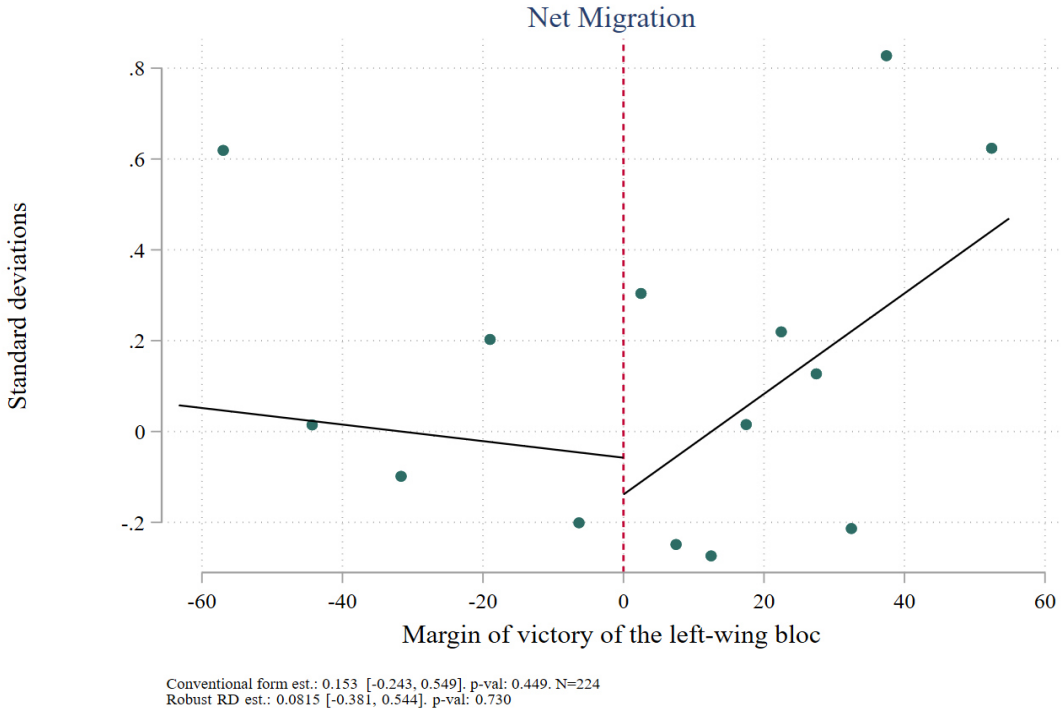


Figure 4.16: Effect of Electoral Turnovers in Net Migration

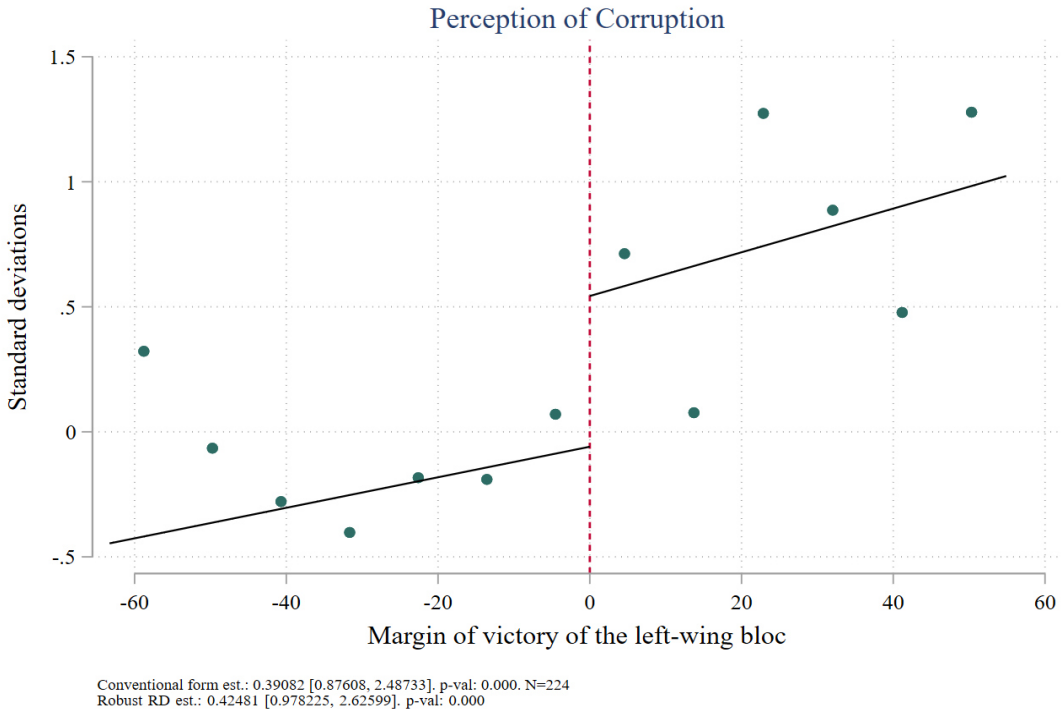


Figure 4.17: Effect of Electoral Turnovers in Perception of Corruption

Although neither the perception of corruption nor the perception of security should have a coefficient that indicates a greater incidence in these areas, since we have been outlining

throughout the paper that political changes improve social and economic conditions. Building on Benjamin Marx et al. (2022), we hypothesize that the main force driving the positive effects of alternations is the role they play in renewing a country's political leadership, which causes new political leaders to ascend to power. This causes them to take care of their reputation and that of their party in order to do a good job.

In principle, this implies that perceptions of corruption and security should be variables that improve like all others. However, I posit three central answers to why this may not be the case. The first is that the work of Marx, Pons and Rollet (2022) found that the frequency of shifts at the national level has increased considerably since the early 1990s and has averaged 40% in recent years, focusing more globally on the effect of political shifts and having a more significant number of observations rather than doing the study on a case-by-case basis. The overall and total result of the existence of shifts in democracies and other systems of government does lead to a decrease in corruption and insecurity.

The next point is related to the fact that the effects of decreasing corruption and security need time to see their main effects. Marx, Pons and Rollet (2022) tell us that corruption rates do not fall sharply during the year of change or shortly thereafter. On the contrary, their effects are dynamic over time, having a behavior in which, at the beginning of the period of change, the effects of a change in corruption are minor and increase over time. Thus, in our study, these levels of perception may change negatively when they should not. However, it is possible that the positive effect manifests itself in later periods, and that citizens do not perceive an improvement in these areas for some time.

Finally, we can see that the development and behavior of corruption in our country is a complex problem. From Rodríguez-Sánchez (2018), we can read that Mexico is a paradigmatic example of how corruption has expansive effects on society and how it was subsequently normalized. It is no longer only the public sector from where corruption is perceived, it is also reported in the private sector. That corruption is somehow normalized in society, with popular phrases or sayings that accept and reinforce it, makes the fight against corruption a complex problem. What must be stated in the first instance is that the primary objective must be to prevent corruption from becoming systematized.

Chapter 5

Conclusions

As was seen throughout the paper, the hypothesis proposed by Piketty et al. (2021) is fulfilled for our country. Through the models developed, we were able to determine how people with higher levels of education and income modified their electoral preferences over the 18 years analyzed. The change in the trend of the vote received by leftist parties leads us to think that the cause is due to a tiredness of the intellectual and higher income classes in the face of the agendas coordinated by parties that were previously in power, but did not solve problems such as corruption, lack of economic growth, insecurity and growing inequality. As we estimate, the vote obtained by MORENA, was obtained with the support of practically all academic levels, and furthermore, this support was driven by almost all regions, with the exception of the northern part of the country.

In the second part of the thesis, we observe that once certain conditions are established for the rotation of incumbents in power, in our case in the Senate. There will be favorable economic effects, but negative for social variables. More specifically, we observe how the change of the political bloc in power favors the improvement of variables such as GDP, Employment, HDI, Transfers and Subsidies, FDI, Net Income, showing statistically significant results. The explanation for this is that when a political bloc gains access to power, it tries to generate the necessary conditions through a public agenda different from that of its predecessors in order to achieve achievements that differentiate it and guarantee the support of those who voted for it and those who did not.

In the case of social variables, the phenomenon occurs in a different way. In the first instance, we should be surprised that only the variables Perception of Insecurity and Perception of Corruption have statistical significance and that despite the fact that there is electoral alternation, the perception of corruption and insecurity has not been reduced. We must analyze that these problems may be rooted in structures that go beyond the change of power between parties, being problems that are not solved with the arrival of a new administration, but with the application of the law and respect for the rule of law.

Therefore, in our country we see that electoral alternations promote favorable effects on economic variables, since the political blocs that come to power generate an environment of good proposals through a new political agenda and the support of institutions that emerge from the political sphere, such as the Ministry of Finance and Public Credit (SHCP) and Banxico. However, such alternations in the conventional political parties operating in Mexico are not enough to eliminate such accentuated and deep-rooted problems in public institutions as corruption and insecurity.

We must also emphasize that the positive effects derived from political shifts are not immediately transmitted to social variables. In turn, power structures that have managed to normalize corruption, or have given rise to increased insecurity. These are important barriers that do not allow the positive effects of a change in the coalition in power to be transmitted. Let us understand that the shifts may be necessary conditions to improve the economic and social variables, but they are not enough to see an immediate improvement. Thus, the case of Mexico represents a paradigm in terms of the visible effects of social variables. It would be worthwhile to follow the behavior of the coefficients in the next elections.

Appendix

Multinomial Logit & Probit Methodology

Probit model

Returning to the methodology shown in Arroyo (2009) and Wooldridge (2002), we can begin to exemplify how a model of this nature can be useful to know in our case, how education and income are explanatory variables that change in magnitude depending on whether the electoral base decides to vote for the proposed leftist candidate or not. Thus, this decision can be represented in the following way

$$y_i = \begin{cases} 1 \Leftrightarrow y_i^* = \mathbf{X}_1\beta + \mathrm{v_i} > 0 \\ \\ 0\text{o.c.} \end{cases}$$

As mentioned in these papers, presenting a model using an OLS technique would give us different estimation problems and would give rise to problems related to estimation:

1. If, in a given case, we were to propose an ordinary model of the form

$$y_i = \beta X_i + u_i$$

the probability obtained from this model would give us as a result that the range presented by our logit model (0,1) would not be fulfilled.

2. Hetereocedasticity:

$$\text{Si } y_i = \beta X_i + u_i \text{where } y_i = \begin{cases} 1 \\ \\ 0 \end{cases}, \text{then } u_i = \begin{cases} 1 - \beta X_i & \text{si } y_i = 1 \\ \\ -\beta X_i & \text{si } y_i = 0 \end{cases}$$

Thus showing that as the size of our sample tends to a larger number of observations, the variance of the sample will increase as well.

Assuming the following two cases to pose in our equation and express the value of

$$E(u_i)$$

.

Then:

$$\begin{aligned} E(u_i) &= (1-\beta X_i)\,\pi_i + (-\beta X_i)\,(1-\pi_i) \\ &= \pi_i - \beta X_i = 0 \\ \therefore \quad \pi_i &= \beta X_i \end{aligned}$$

By substituting our variance:

$$\begin{aligned} E\left(u_i^2\right) &= V(u_i) \\ &= \beta X_i\,(1-\beta X_i)^2 + (1-\beta X_i)\,(-\beta X_i)^2 \\ &= \beta X_i\,(1-\beta X_i) \\ &= E(y_i \mid X_i)\,[1 - E(y_i \mid X_i)] \end{aligned}$$

$$\begin{aligned} E(u_i) &= (1-\beta X_i)\,\pi_i + (-\beta X_i)\,(1-\pi_i) \\ &= \pi_i - \beta X_i = 0 \\ \therefore \quad \pi_i &= \beta X_i \end{aligned}$$

$$\begin{aligned} E\left(u_i^2\right) &= V(u_i) \\ &= \beta X_i\,(1-\beta X_i)^2 + (1-\beta X_i)\,(-\beta X_i)^2 \\ &= \beta X_i\,(1-\beta X_i) \\ &= E(y_i \mid X_i)\,[1 - E(y_i \mid X_i)] \end{aligned}$$

The way to solve the problem of inefficiency in terms of the estimators obtained, would then be to propose a way to transform our mco model, so that it complies with the conditions proposed by the logit model. Here is where the use of a Cumulative Probability Function (CPF) is necessary, therefore, we will designate the following functions as those that accumulate

the probability over the entire distribution, so that:

$$p(y = 1) = F(\mathbf{X}, \beta)$$

$$p(y = 0) = 1 - F(\mathbf{X}, \beta)$$

Being this probability model a model that will allow us to elaborate the shape we want, so that:

$$\begin{aligned} E(y \mid \mathbf{X}) &= 0\left[1 - F\left(\beta'\mathbf{X}\right) + 1\left[F\left(\beta'\mathbf{X}\right)\right]\right. \\ &= F\left(\beta'\mathbf{X}\right) \end{aligned}$$

The following form follows:

$$\begin{aligned} \frac{\partial E(y \mid \mathbf{X})}{\partial \mathbf{X}} &= \left\{\frac{\partial F\left(\beta'\mathbf{X}\right)}{\partial\left(\beta'\mathbf{X}\right)}\right\}\beta \\ &= f(\beta'\mathbf{X})\,\beta, \end{aligned}$$

And when we designate that the cumulative distribution function is a normal one, and furthermore that y_i is a random variable, which behaves with a normal distribution. Then our probit model will be given by the following equation:

$$\begin{aligned} p(y = 1) &= \int_{-\infty}^{'x} \varphi(t)dt \\ &= \Phi\left(\beta' x\right) \end{aligned}$$

Since the coefficients should not be read as we usually do for an OLS model, we should obtain the marginal values of the model, which show us how the impact of these variables impact the cumulative distribution of the model.

$$\frac{\partial E(y \mid \mathbf{X})}{\partial \mathbf{X}} = \varphi\left(\beta'\mathbf{X}\right)\beta$$

To estimate now the Multinomial Logit Model, we will specify that the utility of voting for one of the candidates no longer depends only on this fact, but now it is also a function of a vector of characteristics of the candidate and of an error that is stochastically distributed:

$$U_{i,j} = \beta' X_{ij} + \alpha_j' Z_i + \varepsilon_{ij}$$

Therefore when assigning the probabilities, once the vector of characteristics of the candidate designated as X_{ij} and similarly the vector of eigencharacteristics of the votate i Z_j. Assuming that the errors will be identically distributed (i.i.d):

$$P\left(\text{voto } = j \mid \beta, \alpha_j, X_{ij}, Z_i\right) = \frac{\exp\left(\beta' X_{ij} + \alpha_j' Z_i\right)}{\sum_{k=1}^{p} \exp\left(\beta' X_{ik} + \alpha'_k Z_i\right)}$$

By normalizing the model, and making $\beta_o = 0$, this is because the characteristics of the individuals that do not vary within the time intervals are not added to the probability:

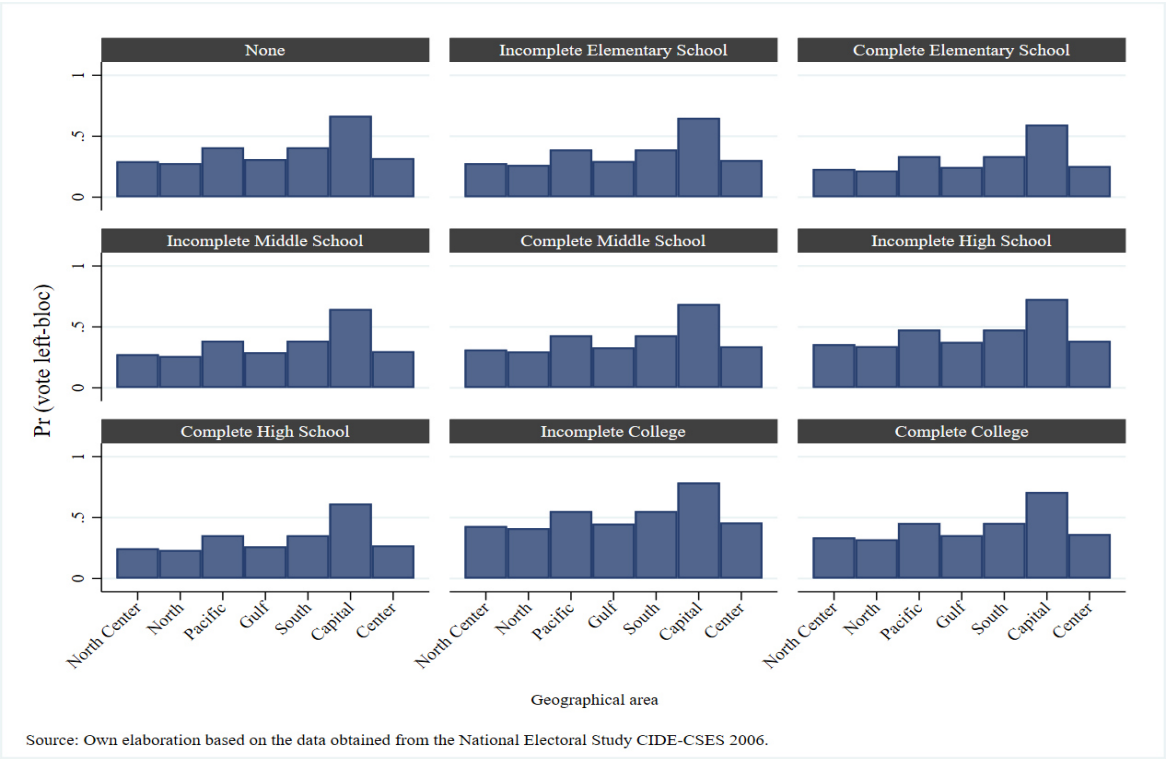
$$P\left(\text{voto } = j \mid \beta, \alpha_j, X_{ij}, Z_i\right) = \frac{\exp\left(\beta_j' X_{ij}\right)}{1 + \sum_{k=1}^{J} \exp\left(\beta_k' X_{ik}\right)} \quad \text{para } j = 1, 2, 3, \ldots, J$$

$$P\left(\text{voto } = 0 \mid \beta, \alpha_j, X_{ij}, Z_i\right) = \frac{1}{1 + \sum_{k=1}^{J} \exp\left(\beta_k' X_{ik}\right)}$$

Finally we will have that the coefficient will be given as:

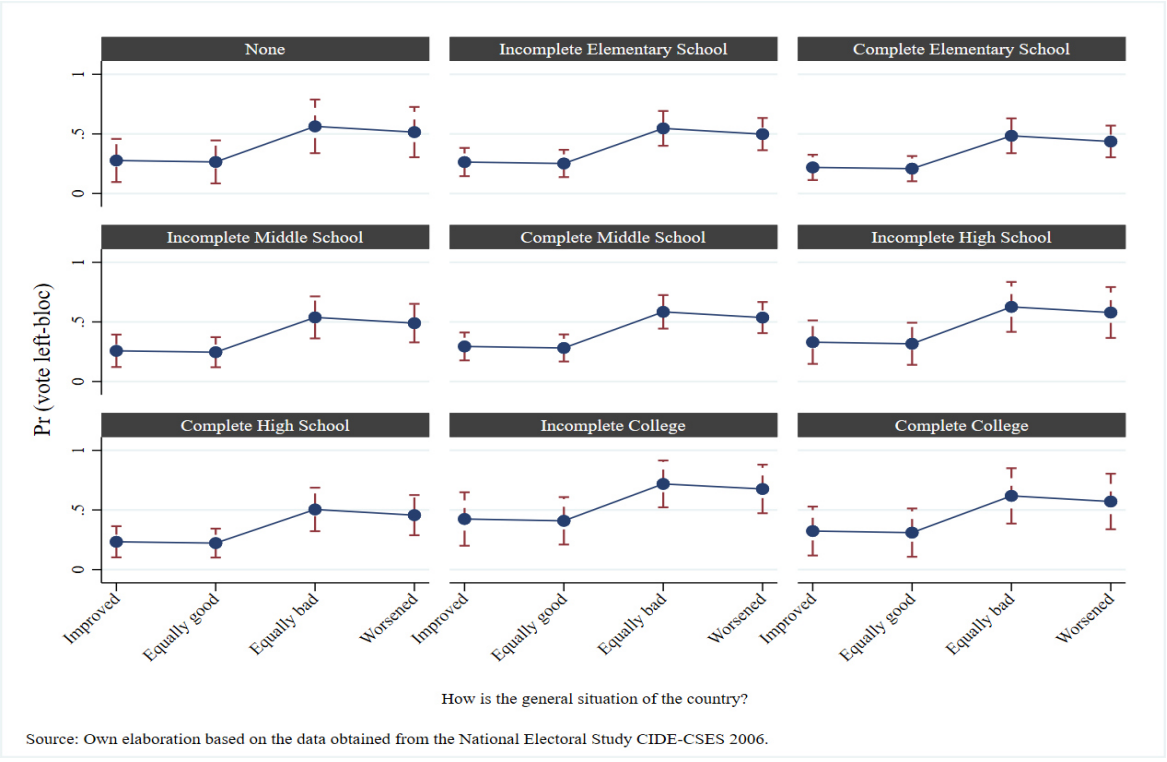
$$\ln\left[\frac{P_{ij}}{P_{i0}}\right] = \beta_j' X_{ij}$$

5.0.1 Probit Logit Margins



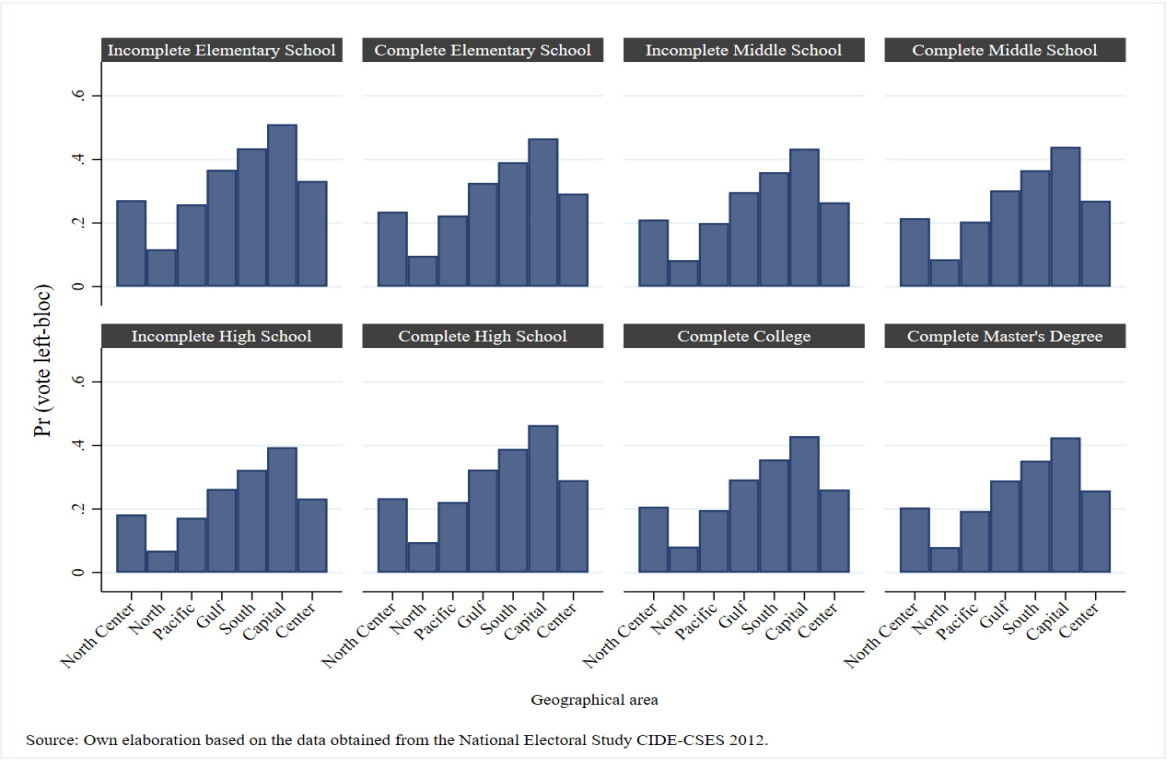
Source: Own elaboration based on the data obtained from the National Electoral Study CIDE-CSES 2006.

Figure 5.1: Margins Plot by Educational Level Over the Regions 2006



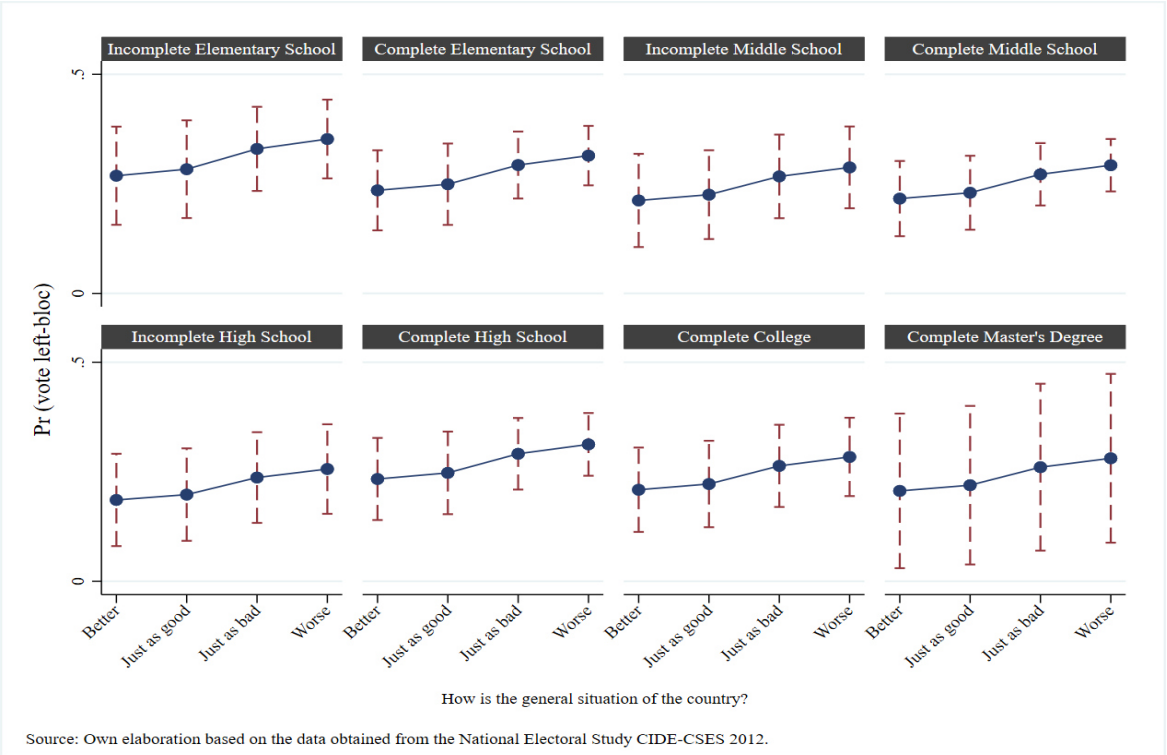
Source: Own elaboration based on the data obtained from the National Electoral Study CIDE-CSES 2006.

Figure 5.2: Margins Plot by Educational Level and Perception of the Current Economy 2006



Source: Own elaboration based on the data obtained from the National Electoral Study CIDE-CSES 2012.

Figure 5.3: Margins Plot by Educational Level Over the Regions 2012



Source: Own elaboration based on the data obtained from the National Electoral Study CIDE-CSES 2012.

Figure 5.4: Margins Plot by Educational Level and Perception of the Current Economy 2012

Electoral Turnovers Methodology

From Cattaeno et.al (2023), we will obtain the following methodology to understand the construction of our continuous regression and Fuzzy RD models. Which we use to obtain the changes associated with an electoral turnover for our economic and social variables.
To elaborate the methodology we assume that we will have two potential outcomes, $Y_i(1)$ and $Y_i(0)$, which correspond to the approach of assigning our treatment and control methodology- At this point, we must see that the differences in the two groups are not due to differences in means. If in our case state i performs the treatment, which would be to change the government in power, we will observe that the states under the treatment, $Y_i(1)$, but $Y_i(0)$ remains unchanged if state i continues with the same government in power, observing in this case $Y_i(0)$ but not $Y_i(1)$. Thus having the fundamental problem of casual inference. The observed outcome Y_i is therefore defined as:

$$Y_i = (1 - T_i) \cdot Y_i(0) + T_i \cdot Y_i(1) = \begin{cases} Y_i(0) & \text{if } X_i < c \\ \\ Y_i(1) & \text{if } X_i \geq c \end{cases}$$

.

For the elementary design of the Canonical Sharp Regression Discontinuous RD, it assumes that the potential outcomes $(Y_i(1), Y_i(0)), i = 1, \ldots, n$, already have a random character, mainly due to the sample obtained, and in addition a cutoff is assigned, where it is assumed that from that point on, the individual i, will become part of the average of the treatment.

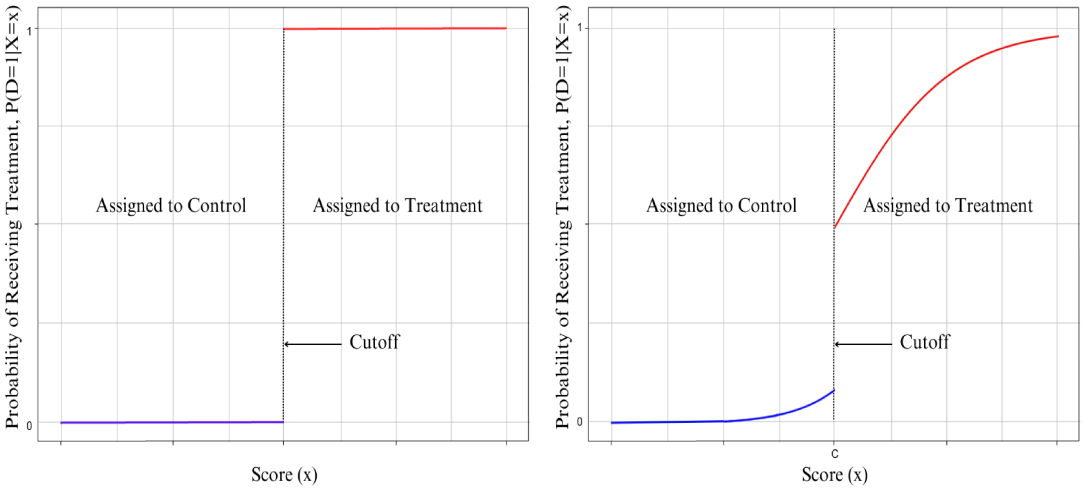
$$\tau_{\text{SRD}} \equiv \mathbb{E}\left[Y_i(1) - Y_i(0) \mid X_i = c\right] = \mu_1(c) - \mu_0(c)$$

where$\mu_0(x) \equiv \mathbb{E}\left[Y_i(0) \mid X_i = x\right]$ y $\mu_1(x) \equiv \mathbb{E}\left[Y_i(1) \mid X_i = x\right]$. This parameter is known as the Sharp RD treatment effect. Since in this scenario it is assumed that the regression functions will be of continuous character $x = c$ the following equation will be estimated:

$$\tau_{\text{SRD}} = \lim_{x \downarrow c} \mathbb{E}\left[Y_i \mid X_i = x\right] - \lim_{x \uparrow c} \mathbb{E}\left[Y_i \mid X_i = x\right]$$

Now, we must take into account that although the design of the experiment to run our values should be correctly specified, that is to say that all the units $X_i < c$ receive the treat-

ment when they pass the cutoff. We will have that there are situations in which this does not happen, having now a design that does not comply with the established. From going from the Sharp RD estimation where we will have perfect compliance. Now we will establish what is known as ”Fuzzy RD”. The major change that happens, is that the probability no longer changes from 0 to 1 when passing the c cutoff point. Therefore, we will drop another variable to the one we already had, since in the first Sharp RD model design, we would have that our binary variable D_i, in case of being treated would get a value of 1. We will now have that the treatment assigned will be T_i We use the binary variable D_i to indicate if the unit i really received the treatment and the treatment received, D_i. Therefore, the biggest difference we will have caused by non-compliance will be that $T_i \neq D_i$ for different i.



(a) Sharp RD (b) Fuzzy RD

Source: Own elaboration with the proposed design of Cattaneo (2023).

Figure 5.5: Sharp vs Fuzzy RD Designs

5.0.2 Effects of Electoral Turnovers on Economic Variables.

Table 5.1: Effects of Electoral Turnovers on Economic Variables.
Polynomial Degree 2

	(1) GDP Growth	(2) Employment	(3) HDI	(4) Transfers & Subsidies	(5) FDI	(6) Net Income	(7) Public Debt
Conventional	0.517	0.742	1.446*	0.673	1.915*	0.960	1.796
	(0.399)	(0.471)	(0.690)	(0.438)	(0.893)	(0.494)	(0.967)
Bias-corrected	0.444	0.627	1.349	0.573	1.787*	0.891	1.787
	(0.399)	(0.471)	(0.690)	(0.438)	(0.893)	(0.494)	(0.967)
Robust	0.444	0.627	1.349	0.573	1.787	0.891	1.787
	(0.442)	(0.521)	(0.787)	(0.485)	(0.984)	(0.553)	(1.127)
Observations	224	224	224	224	224	224	216

This table reports RD estimates corresponding to equation (1) for its polynomial form of degree 2.

Thus having two other types of models, one estimated with Bias-Reported and the next a Robust RD.

These coefficients were obtained by using the results of the senatorial votes.

Standard errors in parentheses

Signif. codes: * p<0.05, ** p<0.001, *** p<0.001

Table 5.2: Effects of Electoral Turnovers on Economic Variables.
Polynomial Degree 3

	(1) GDP Growth	(2) Employment	(3) HDI	(4) Transfers & Subsidies	(5) FDI	(6) Net Income	(7) Public Debt
Conventional	0.503	0.628	1.368	0.522	2.030*	0.919	2.336
	(0.431)	(0.516)	(0.786)	(0.479)	(0.895)	(0.554)	(1.402)
Bias-corrected	0.461	0.561	1.293	0.448	1.939*	0.908	2.651
	(0.431)	(0.516)	(0.786)	(0.479)	(0.895)	(0.554)	(1.402)
Robust	0.461	0.561	1.293	0.448	1.939*	0.908	2.651
	(0.480)	(0.566)	(0.888)	(0.524)	(0.963)	(0.609)	(1.508)
Observations	224	224	224	224	224	224	216

This table reports RD estimates corresponding to equation (1) for its polynomial form of degree 3.

Thus having two other types of models, one estimated with Bias-Reported and the next a Robust RD.

These coefficients were obtained by using the results of the senatorial votes.

Standard errors in parentheses

Signif. codes: * p<0.05, ** p<0.001, *** p<0.001

Table 5.3: Effects of Electoral Turnovers on Economic Variables.
Polynomial Degree 4

	(1) GDP Growth	(2) Employment	(3) HDI	(4) Transfers & Subsidies	(5) FDI	(6) Net Income	(7) Public Debt
Conventional	0.678	0.781	1.494	0.0527	1.855	0.860	2.816
	(0.621)	(0.699)	(1.227)	(0.656)	(1.027)	(0.789)	(1.564)
Bias-corrected	0.769	0.875	1.599	-0.0383	1.998	0.807	3.126*
	(0.621)	(0.699)	(1.227)	(0.656)	(1.027)	(0.789)	(1.564)
Robust	0.769	0.875	1.599	-0.0383	1.998	0.807	3.126
	(0.706)	(0.792)	(1.394)	(0.750)	(1.043)	(0.890)	(1.734)
Observations	224	224	224	224	224	224	216

This table reports RD estimates corresponding to equation (1) for its polynomial form of degree 4.

Thus having two other types of models, one estimated with Bias-Reported and the next a Robust RD.

These coefficients were obtained by using the results of the senatorial votes.

Standard errors in parentheses

Signif. codes: * p<0.05, ** p<0.001, *** p<0.001

5.0.3 Effects of Electoral Turnovers on Social Variables.

Table 5.4: Effects of Electoral Turnovers on Social Variables.
Polynomial Degree 2

	(1) Homicides	(2) Perception of Security	(3) Women in the Informal Sector	(4) Men in the Informal Sector	(5) Net Migration	(6) Perception of Corruption
Conventional	0.797	-1.717*	-0.0484	-0.273	-0.00706	2.168***
	(0.515)	(0.769)	(0.282)	(0.405)	(0.201)	(0.410)
Bias-corrected	0.826	-1.965*	-0.0843	-0.324	-0.0866	2.304***
	(0.515)	(0.769)	(0.282)	(0.405)	(0.201)	(0.410)
Robust	0.826	-1.965*	-0.0843	-0.324	-0.0866	2.304***
	(0.558)	(0.854)	(0.321)	(0.450)	(0.229)	(0.447)
Observations	224	224	224	224	224	224

This table reports RD estimates corresponding to equation (1) for its polynomial form of degree 2.

Thus having two other types of models, one estimated with Bias-Reported and the next a Robust RD.

These coefficients were obtained by using the results of the senatorial votes.

Standard errors in parentheses

Signif. codes: * p<0.05, ** p<0.001, *** p<0.001

Table 5.5: Effects of Electoral Turnovers on Social Variables.
Polynomial Degree 3

	(1) Homicides	(2) Perception of Security	(3) Women in the Informal Sector	(4) Men in the Informal Sector	(5) Net Migration	(6) Perception of Corruption
Conventional	0.727	-2.019*	-0.0310	-0.318	-0.182	2.394***
	(0.566)	(0.946)	(0.354)	(0.518)	(0.221)	(0.576)
Bias-corrected	0.730	-2.082*	-0.0464	-0.334	-0.200	2.482***
	(0.566)	(0.946)	(0.354)	(0.518)	(0.221)	(0.576)
Robust	0.730	-2.082*	-0.0464	-0.334	-0.200	2.482***
	(0.616)	(1.054)	(0.404)	(0.590)	(0.263)	(0.659)
Observations	224	224	224	224	224	224

This table reports RD estimates corresponding to equation (1) for its polynomial form of degree 3.

Thus having two other types of models, one estimated with Bias-Reported and the next a Robust RD.

These coefficients were obtained by using the results of the senatorial votes.

Standard errors in parentheses

Signif. codes: * p<0.05, ** p<0.001, *** p<0.001

Table 5.6: Effects of Electoral Turnovers on Social Variables.
Polynomial Degree 4

	(1) Homicides	(2) Perception of Security	(3) Women in the Informal Sector	(4) Men in the Informal Sector	(5) Net Migration	(6) Perception of Corruption
Conventional	1.101	-2.159*	0.451	-0.0000877	-0.317	1.416
	(0.679)	(1.084)	(0.667)	(0.906)	(0.321)	(0.824)
Bias-corrected	1.216	-2.117	0.542	0.0867	-0.324	1.210
	(0.679)	(1.084)	(0.667)	(0.906)	(0.321)	(0.824)
Robust	1.216	-2.117	0.542	0.0867	-0.324	1.210
	(0.760)	(1.191)	(0.733)	(1.017)	(0.363)	(0.904)
Observations	224	224	224	224	224	224

This table reports RD estimates corresponding to equation (1) for its polynomial form of degree 4.

Thus having two other types of models, one estimated with Bias-Reported and the next a Robust RD.

These coefficients were obtained by using the results of the senatorial votes.

Standard errors in parentheses

Signif. codes: * $p<0.05$, ** $p<0.001$, *** $p<0.001$

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List of Tables

List of Figures