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MASTER THESIS

**Political favoritism and social protection policies: Evidence
from a cash transfer program in Colombia**

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Abstract

The present study analyzes if political favoritism, expressed as a differential treatment to politically aligned municipalities, is present in the allocation of resources and admission of beneficiaries from Más Familias en Acción (MFA), the largest conditional cash transfer program in Colombia. Using a close-elections regression discontinuity design, the results indicate no evidence that this social assistance program as a whole has been used as a political tool between 2014 and 2018. These results persist even upon studying each of the different targeting mechanisms that the program contemplates. This lack of evidence might be a directly related to the major reforms that the program suffered in 2012.

1 Introduction

Allocation of public funds from the central government to local municipalities and districts can be subject to a number of distortions that would divert the actual allocation of funds from a utility maximization distribution. Politicians can be persuaded to use their political power to favor certain segments of the population based on religion, ethnicity, hometown, among others (De Luca et al., 2018; Do et al., 2017). Recent studies have documented how this type of behavior can have significant effects on economic dynamics (Burgess et al., 2015) and the quality of life (Franck & Rainer, 2012) in the affected localities.

The present document will be focused on studying political favoritism based on party alignment, more specifically, if central governments allocate more resources to municipalities ruled by the

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same political party at the local level. The idea behind is that politicians at the national level can improve their odds of achieving better outcomes in the upcoming elections by helping their political allies at the local level with higher resources than those allocated to localities managed by political opponents. This behavior has been labeled in the literature as “*tying your enemy’s hands*” (Brollo & Nannicini, 2012). Depending on the institutional framework and targeting rules, social protection policies such as conditional cash transfers (CCT) can also be subject to political favoritism. However, the number of studies that analyze political favoritism in CCT programs is still very low.

Colombia appears to be an interesting study case to analyze the issue. Its most important CCT program, Más Familias en Acción (MFA), gives regular cash payments to vulnerable families with children under 18 years old under some conditions such as regular school attendance and health checks for the young members of the household. To identify vulnerable families, the program uses four different targeting methods: i) a multidimensional poverty score calculated using a national survey instrument (SISBEN), ii) the registry of victims of civil conflict (RUV), iii) the indigenous census, and iv) the registry of beneficiaries from the UNIDOS network.¹

MFA has been surrounded by numerous corruption scandals since its inception. Camacho and Conover (2011) provided suggestive evidence that the program’s targeting system (based on a poverty score) suffered from political manipulation at the local level during its first years of operation. Nupia (2011) found that incumbent governing coalitions had used the program to reward historically loyal municipalities. Additionally, some national newspapers have documented several corruption scandals surrounding the program.² As a response, the program has adopted a number of reforms to limit the political manipulation of its benefits with the most important redesign taking place in 2012. Nevertheless, most of the reforms were focused on strengthening the SISBEN target mechanism over the other three channels. This could raise some concerns given that, by 2018, one out of two beneficiary families entered the program by one of the other aforementioned mechanisms (see Table 1).

This study will analyze if political favoritism is present in the reported transfers at the municipality level after the 2012 restructuring, more specifically, it will be focused on studying average per capita transfers and total number of beneficiaries that were reported between 2014

¹ESTRATEGIA UNIDOS, or RED UNIDOS in the past, is a social assistance program that focus households living in extreme poverty conditions. The program does not transfer cash to their beneficiaries but offers personalize advice services to households and guarantees a preferential access to some public services to its beneficiaries, included MFA.

²The most recent one, an official report released in 2020 from the current Mayor’s office in the municipality of Cartagena found several irregularities involving significantly overpaid contracts for the administration of the program by previous administrations.

and 2018. Furthermore, by taking advantage of data availability on disaggregated benefits by targeting mechanism, this study also explores if individual entry channels are subject to political favoritism: SISBEN, displaced victims registry or UNIDOS. Because of the highly geographical concentration of indigenous communities in a limited number of municipalities, the indigenous census mechanism is left out from the analysis.

To address endogeneity issues, this study relies on a close elections regression discontinuity design (RDD). By comparing municipalities where the national ruling party candidates *barely* won the run against municipalities where they *barely* lost, point estimates can overcome potential endogeneity biases as long as the election results are “*as good as random*” close to the winning threshold. Obtained estimations show no evidence of favoritism in the allocation of total funds to politically aligned municipalities, nor in the number of beneficiary families. These results hold when analyzing only those municipalities where the candidate from the president’s party lost or won a close race against a candidate that was not representing any of the allied political parties that joined the presidential coalition in the previous national elections. When analyzing each targeting mechanism individually, similar results are observed. It is worth noticing that data reflects some significant differences between the number of beneficiary families in politically aligned municipalities and localities ruled by the opposition entering through the displaced mechanism when using an allied-restricted sample. Nonetheless, due to the noise present in the data, it is very difficult to assess if these results are systematically robust.

This study contributes to the existing literature in four ways. First, it sums empirical evidence to a recent but growing strand of literature analyzing the effects of political favoritism between central and local government authorities, focusing on CCT programs rather than on budget transfers to municipalities as most of the current studies focus on. Second, it emphasizes the importance of analyzing targeting mechanisms individually in institutional frameworks where each mechanism is ruled by a different state organization subject to different levels of autonomy from the executive. Third, it contributes to the analysis and understanding of the specific Colombian case. The few studies addressing potential political manipulation of MFA were carried out either before its major redesign in 2012 and/or relied on panel fixed effects regressions to attribute a causal effect. To my knowledge, no formal study using quasi-experimental methods have been carried out to analyze the MFA program in this specific matter. Fourth, by providing quasi-experimental evidence of the effectiveness that reforms had in Colombia, this study will help program designers around the world to understand the effectiveness that some designs have in strengthening social assistance programs against political manipulation.

This study is very close to the work of [Brollo and Nannicini \(2012\)](#) who find that municipalities where the opposition coalition won by a narrow margin receive less federal transfers than

municipalities where a politically aligned candidate won by a narrow margin in Brazil. In a similar manner, [Asher and Novosad \(2017\)](#) provide evidence that politically aligned municipalities in India where the ruling party won by a narrow margin presented significantly higher economic growth, measured by employment and nighttime lights, than municipalities where the ruling party lost by a narrow margin. According to the authors, the effect might be driven by regulatory obstacles imposed by the central government to hamper business in localities managed by political opponents. [Baskaran and Hessami \(2017\)](#), focusing on a close elections RDD strategy in Germany, extend previous findings by providing evidence that political favoritism in the allocation of intergovernmental transfers might have heterogenous effects depending on the degree of local support for the state government.

In a more specific case, the study of [Bonilla-Mejía and Higuera-Mendieta \(2017\)](#) is the only previous study to my knowledge that relies on a close election RDD to analyze political favoritism in Colombia. Their results suggest that candidates aspiring to office in a national election receive higher votes in municipalities where the politically aligned coalition narrowly won the run and, as a result, these municipalities receive higher funds to finance road construction. Political motives behind the allocation of resources of MFA have already been analyzed by [Nupia \(2011\)](#), who found that governing coalitions had used the program to reward historically loyal municipalities. Nevertheless, his work suffers from two caveats. First, he relies on a control of observables strategy by using a panel fixed effect regression and, as highlighted by [Brollo and Nannicini \(2012\)](#), these strategies might fall short in providing unbiased estimates because unobservable confounding factors might also be time varying. Second, its period of analysis is focused on an early version of the MFA program that suffered drastic changes in its administration, targeting and operation procedures after the major redesign that took place in 2012.

The document is organized as follows. After this brief introductory section, a background section will summarize the most important information about Colombia's political system and the MFA program structure and functioning. The third section addresses the identification strategy and the empirical method used in the performed estimations followed by a brief section summarizing the generalities and sources of the data used in this study. Fifth section will present evidence on the suitability of the close elections RDD framework for the analysis of the MFA program along with the main results. The sixth section presents some robustness checks to support the main results and the final section concludes.

2 Study background

2.1 Colombia's Cash Transfer Program: Más Familias en Acción

MFA is a CCT program that offers support to families identified as living under vulnerability conditions. Support is delivered in cash, periodically and directly to the family under a certain set of conditions to fulfill. The amount of the transfer depends on the geographical location of the household,³ the number of children and teenagers living permanently in the household and their current school grade. The program demands two conditions in order to receive the transfer (DPS, 2017). First, families with children under 6 years old are required to attend all health checks scheduled by their corresponding health provider center. Second, families with children and teenagers under 18 years old are required to register them in school and have a minimum attendance of 80 percent of all class hours.

The program has gone through three phases (Arteaga et al., 2019). During the first phase, comprised between 2000-2006, the program⁴ was mainly attending rural municipalities with less than 100,000 inhabitants and focalizing families considered to be living under poverty conditions according to the first edition of the Identification System for Potential Social Program Beneficiaries (SISBEN I). During this phase, the program was managed by the Presidential Agency for Social Action and International Cooperation (Acción Social) and reached around 644 municipalities.

During the second phase (2007-2011), the program secured higher funds and reached a higher coverage to include urban centers and major cities. During this phase, the main focalization tool was the SISBEN II, which introduced a multidimensional measure of poverty and improved the processes regarding the data collection and flow of information given that SISBEN I was prone to political manipulation (Camacho & Conover, 2011; DNP, 2001). Additionally, the program now counted with a displaced and indigenous targeting mechanism separately from the SISBEN and it was also committed to give preferential access to households registered as part of the UNIDOS strategy to fight poverty.

During the third phase (2012-present), the program⁵ suffered a major redesign. First, it was set as a permanent policy with national coverage by law. Second, the new legal normative gave a higher autonomy to the institution in charge by detaching it from the Presidential office and

³Municipalities are divided in four categories: i) the capital metropolitan area of Bogotá, ii) other major cities, iii) municipalities that reported less than 70 percent of households living under multidimensional poverty and, iv) municipalities that reported more than 70 percent of households living under multidimensional poverty.

⁴Named Familias en Acción originally.

⁵Now named Más Familias en Acción.

introducing the Department for Social Prosperity (DPS) which manages the program up until present. Third, a new edition of the identification instrument was introduced (SISBEN III) in which tighter measures in order to reduce individual (not only political) manipulation were introduced as well as a geographical conglomeration in order to account for regional differences. Later in 2020, a transition to SISBEN IV was announced in order to provide digital measures to the collection of data, to update the data from SISBEN III and to provide a new score classification along with a permanent collection process based on demand.⁶

A household can enter the program through one of the four different targeting mechanisms: SISBEN, Displaced, Indigenous and UNIDOS. Even though the DPS is in charge of managing the MFA program, it is only capable of determining beneficiaries that enter through the UNIDOS channel. Families entering through any of the other three mechanisms are either directly or indirectly classified as potential beneficiaries by other institutions.

- a.* SISBEN: The National Department for Planning (DNP) is in charge of collecting the SISBEN IV survey and classify households according to a multidimensional poverty score.
- b.* Displaced: The Unit for Attention and Comprehensive Repair to Victims (UARIV) is in charge of keeping a registry of victims of civil conflict (RUV). Households registered in the RUV that are classified as displaced families are entitled to receive benefits from MFA.
- c.* UNIDOS strategy: Is a social assistance program managed by the DPS that targets households living under extreme poverty conditions. The program does not give cash to its beneficiaries but offers personalized advice services to households and guarantees preferential access to certain public services, including being part of the MFA program. Most of the households that entered through this channel were identified as potential beneficiaries using the SISBEN II. Therefore, many of the families that entered through this mechanism could not be potential beneficiaries when using the SISBEN IV score (Medellín & Sánchez, 2015).
- d.* Indigenous census: Local indigenous authorities are in charge of collecting a census in their communities and presenting it to the Ministry of the Interior, who consolidates and endorse a unique census. All households registered in this census are entitled to receive benefits from the MFA program.

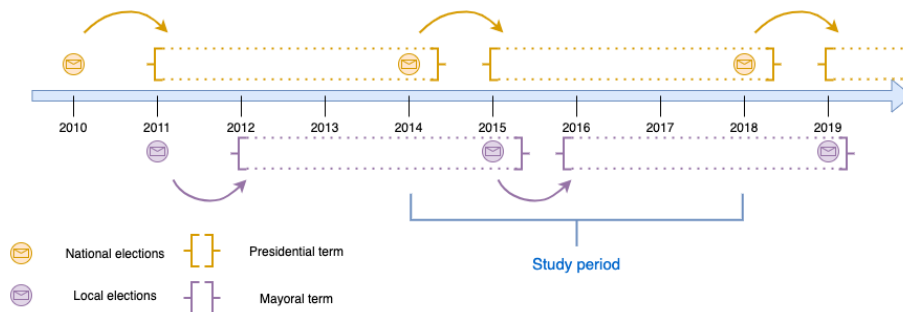
Because of the highly geographical concentration of indigenous communities in a limited number of municipalities, the indigenous targeting mechanism is not part of the present analysis.

⁶With SISBEN IV there are no data collection periods but rather, interested beneficiaries ask DNP to be surveyed and categorized.

2.2 Colombia's political system

Colombia has a presidential political system in which its executive power has three different levels: the presidency, state governors and municipal mayors. All three positions are for a four-years term duration with no option for re-election. However, presidential re-election for a single following term was allowed between 2005 and 2015. The president and vice-president of Colombia, along with members of the senate and the chamber of representatives, are elected during the national elections. State governors and deputies, along with municipal mayors and councilors, are elected during the local elections that take place one year after the national elections (See Figure 1).

Figure 1: Electoral cycles in Colombia



Juan Manuel Santos was elected president of the Republic of Colombia during the national elections of 2010 representing the Partido Social de Unidad Nacional (PSUN) political party. As mentioned earlier, presidential re-election for a single following term was allowed until 2015. In 2014, he ran for a re-election term in the national elections, winning the presidency for another four-years term. Given that our study period ranges from 2014 to 2018, our analysis is only focused on studying if the elected mayor in the local elections of 2011 and 2015 represented the same political party that president Santos, i.e. the PSUN political party.

Colombia have registered several active political parties in the last ten years. At least 12 different political parties presented candidates for different municipalities in the local elections that took place in 2011 and 2015, with newly formed political parties⁷ gaining more spaces than the long standing traditional parties (Partido Liberal and Partido Conservador). Additionally, electoral coalitions are an increasing phenomena in the electoral field. The National Civil Registry of Colombia reported less than 150 coalitions in the local elections of 2011, a number that increased to 1,300 during the local elections of 2019. Coalitions are geographically delimited

⁷The two last political parties occupying the presidency, PSUN and Centro Democrático, were founded less than 20 years ago.

during local elections. During the same election, two different political parties could present a joint candidate for mayor in a certain municipality, but run with different candidates in another one. Nevertheless, during national elections, it is common to see different coalitions supporting a single presidential candidate, specially during the second round when only two candidates are left to compete. Likewise, citizens not representing any registered political party have the opportunity to run as independent candidates as long as they present support of a given percentage of the population registered within the constituency they would like to run for. These candidacies are legally known as Significant Group of Citizens (GSC by their initials in spanish) and it is also common to see them forming coalitions with established political parties during local elections.

3 Identification Strategy

From an empirical perspective, answering this research question comes with a few practical issues. For example, politically aligned municipalities may exhibit, on average, higher (or lower) poverty incidence, conflict-related events or displaced families reception (among other factors), than opposition-controlled municipalities. Differences in the reception of funds or the number of beneficiaries between these two groups of municipalities could be driven by inherent differences that, when not properly controlled for, could bias simple OLS estimates. In the same manner, a higher number of MFA beneficiaries in a given municipality could lead to a higher support for the incumbent presidential political party in the upcoming elections, producing a reverse causality bias in the estimates (Bonilla-Mejía & Higuera-Mendieta, 2017). To address these endogeneity issues, this study will rely on a close elections RDD strategy (Imbens & Lemieux, 2008; Lee & Lemieux, 2010).

We start by defining the margin of victory π of the ruling national party in municipality m and time t as:

$$\pi_{m,t} = \frac{v_{m,t}^r - v_{m,t}^{nr}}{v_{m,t}^T}, \quad (1)$$

Where v is the amount of votes casted for: i) the ruling national party's candidate (r), ii) a non-ruling party's candidate (nr) or iii) the total amount of valid votes casted (T). As explained before, Colombia has a multiparty political system. Therefore, this paper takes the amount of votes casted for the best non-aligned contender candidate as the value of v^{nr} . In other words, the candidate that won the mayoral elections in case that the opposition won the municipality, or, the second place candidate in case that the ruling party won the municipality. Then, $\pi_{m,t}$

can serve as a forcing variable for which the political alignment status (τ) sharply changes at $\pi_{m,t} = 0$, more formally:

$$\tau_{m,t} = \begin{cases} 1, & \text{if } \pi_{m,t} > 0 \\ 0, & \text{if } \pi_{m,t} < 0 \end{cases} \quad (2)$$

Under this setting, the local Average Treatment Effect (ATE) of political alignment on an outcome variable $Y_{m,t}$ can be defined as:

$$\beta = E[\tau_{m,t}(1) - \tau_{m,t}(0) | \pi_{m,t} = 0] = \lim_{\epsilon \downarrow 0} E[\tau_{m,t} | \pi_{m,t} = \epsilon] - \lim_{\epsilon \uparrow 0} E[\tau_{m,t} | \pi_{m,t} = \epsilon], \quad (3)$$

Where ϵ is a purely random error in the generating process of the analyzed outcome. The main assumption behind this definition of β is that municipalities where the politically aligned mayor barely won the election are, on average, similar in observed and unobserved characteristics to those municipalities where the politically aligned mayor barely lost. Empirical estimates of [Equation 3](#) will be obtained using the following specification:

$$Y_{m,t} = \beta_1 \tau_{m,t} + \beta_2 f_1(\pi_{m,t}) + \beta_3 f_2(\pi_{m,t}) 1\{\pi_{m,t} > 0\} + \mathbf{X}'_m \gamma_t + \delta_s + \epsilon_{m,t}, \quad (4)$$

Where Y will be an outcome variable measuring the benefits of the MFA program allocated to each municipality in a given year. These benefits will also be disaggregated by targeting mechanism: SISBEN, Displacement and UNIDOS. Given that less than 5 percent of all the total benefits are accounted under the indigenous ethnicity mechanism and just a few municipalities report to have received part of these funds due to the highly geographical concentration of ethnic communities, this mechanism is not taken into account in the present study.

Polynomial functions $f_1(\cdot)$ and $f_2(\cdot)$ describing the relationship between the correspondent outcome and the forcing variable π are going to be used for municipalities at the left and right of the threshold, respectively. Linear functions will be used for the main results; however, specifications using quadratic polynomials will also be used to check for robustness checks. Higher order polynomials are not used in order to avoid fitting issues and narrows confidence intervals ([Gelman & Imbens, 2019](#)). \mathbf{X} is a vector of municipality baseline characteristics, γ_t is a set of year fixed effects and δ_s represent state fixed effects. As long as the RDD remains valid, these three elements are not required for identification but are kept to improve precision of $\hat{\beta}_1$. Only two additional control variables are considered due to their importance in defining the

number of beneficiaries and transfers within the MFA setting: GDP per capita in 2005 and the total amount of attacks against civilian populations between 2000 and 2009.⁸

Estimation of Equation 4 will be performed in two different samples. The first sample will include all municipalities where the candidate from the same political party as the president ended as one of the best two contenders in the electoral run. Estimates using this sample will reflect the effect of political alignment with the president’s political party in general; therefore, it will be referred as *general sample* across the study. The second sample follows the same definition with the only exception that it rules out all those municipalities where the two best contenders are the politically aligned candidate and another candidate representing any of the political allies of the ruling party. In other words, only municipalities where the counterpart of the ruling party, in either treatment or control group, is a non-allied party or GSC are left in the sample. In this study, political ally is defined as those political parties that joined the presidential coalition in the previous national elections. Estimates using this sample will reflect the effect of political alignment with the president’s political party taking into account that allied parties could also be benefited from the treatment; therefore, it will be henceforth referred as *allied-restricted sample*.

Both samples are local in their design given that they are restricted to municipalities for which $\pi_{m,t} \in [-b, +b]$, where b is a predefined bandwidth for each outcome set. This bandwidth interval will be estimated following Imbens and Kalyanaraman (2012) suggestion on an optimal bandwidth based on minimizing the mean square error (MSE). However, as argued by Calonico et al. (2014), traditional statistical inference on estimates derived from these bandwidths could lead to misleading conclusions due to the assumption of inference being done on unbiased estimates. Therefore, as suggested by the same authors, robust bias-corrected confidence intervals are calculated for the resulting estimates. For the sake of transparency, calculations using a set of *ad-hoc* bandwidths would also be shown as robustness checks to see how sensible the results are to changes in the width of the neighborhood.

Estimations of Equation 4 weight observations using a triangular kernel and resulting standard errors are clustered at the municipality level using heteroskedasticity-robust estimators (MacKinnon & White, 1985). In order to test the internal validity of the RDD identification strategy, tests for the continuity in the density of the forcing variable as suggested by McCrary (2008) as well as balance checks for multiple baseline covariates between treatment and control group were performed.

⁸The total amount of attacks is calculated as the sum of attacks against civilian populations coming from any of the armed groups in Colombia: Revolutionary Armed Forces of Colombia (FARC), United Self-Defense Forces of Colombia (AUC) and the National Liberation Army (ELN). Attacks whose authorship is unknown are not taken into account.

As explained by [Lee and Lemieux \(2010\)](#), internal validity of a sharp RDD like the one presented in [Equation 3](#) also requires that the probability of winning or losing narrow elections are the same for the main contesting candidates. As argued by [Caughey and Sekhon \(2011\)](#) and [Grimmer et al. \(2011\)](#), candidates from incumbent political parties can have structural advantages to win narrow runs, jeopardizing the validity of the estimates. For this study, checks on the continuity in the share of candidates that run for the incumbent political party along the forcing variable will be performed in order to check for similar structural advantages.

4 Data

In order to perform the aforementioned estimations, three different data sources were used. First, administrative records published by the DPS were used to construct the outcome variables to be analyzed. This office publishes data at the municipal level of all social protection programs operated by the national government. Data for the total benefits received by a municipality through the MFA program is available from 2014 to 2018 and disaggregated by target mechanism. Due to this data availability, our study period is delimited to this exact period of time. Outcome

Table 1: Evolution of the MFA cash transfer program 2014-2018.

Outcome	2014	2015	2016	2017	2018
Total MFA					
Families	2,668,192.00	2,551,886.00	2,495,698.00	2,503,480.00	2,400,807.00
Transfer (million COP)	2,023,124.22	1,970,654.28	1,991,384.20	1,891,586.80	1,800,652.19
Avg. transfer p.c. (thousand COP)	415.88	429.47	451.42	456.95	456.30
SISBEN					
Families	1,393,993.00	1,205,431.00	1,135,646.00	1,091,155.00	1,024,540.00
Transfer (million COP)	1,030,446.63	903,762.16	874,905.24	780,479.36	717,388.48
Avg. transfer p.c. (thousand COP)	416.43	426.06	439.85	433.85	425.20
Displaced					
Families	575,008.00	672,119.00	728,459.00	806,632.00	812,194.00
Transfer (million COP)	468,665.88	557,834.94	623,132.50	664,774.78	668,869.63
Avg. transfer p.c. (thousand COP)	434.84	460.01	495.26	516.45	527.10
UNIDOS					
Families	568,203.00	540,185.00	501,834.00	479,247.00	441,717.00
Transfer (million COP)	402,969.54	388,296.06	371,468.73	335,820.15	307,673.18
Avg. transfer p.c. (thousand COP)	388.45	407.16	427.74	433.59	433.79

Notes: The average transfer per capita is calculated by dividing the total amount of the transfer to the municipalities by the number of families that are registered as beneficiaries and using the size of the respective household as weights.

variables can be measured either as the per capita transfer in local currency (Colombian pesos, COP),⁹ which are referred as the intensive margin, or using the total number of beneficiary families in each municipality, which are referred as the extensive margin. This differentiation between outcomes is done in order to check for behaviors between different institutions. While the DPS office is in charge of the intensive margin, other state institutions are also involved in the management of the extensive margin. [Table 1](#) shows the recent evolution of the analyzed outcomes.

As we can observe, the total amount of resources transferred to the municipalities have been decreasing since 2014. This could be due to a combination of two factors: higher economic conditions in Colombia ([EIU, 2018](#)) and a lower capacity of the SISBEN III to capture actual poverty status due to its outdated profile information ([DNP, 2016](#)). An exception to this pattern is the increasing trend shown by the Displaced mechanism, which has been increasing over time in despite of the reduction in the intensity and frequency of conflict in the country in the last decade according to the Uppsala Conflict Data Program ([Sundberg & Melander, 2013](#)). Due to the numerous corruption scandals involving the registry of families that were not affected by the conflict as displaced victims,¹⁰ it is difficult to assess if these yearly changes reflect the actual increase of correctly defined beneficiaries.

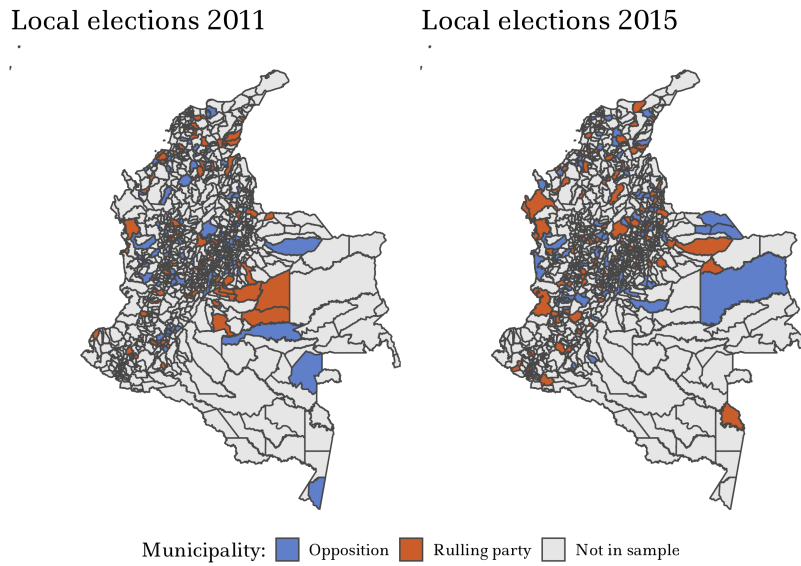
Second, political alignment at the municipal level was identified using the official electoral records shared by the National Civil Registry of Colombia for the local elections that took place in 2011 and 2015. Electoral results for 2011 define the political alignment of a municipality for the years 2014 and 2015 and, in the same manner, the elected mayors in 2015 define which municipalities were politically aligned in 2016, 2017 and 2018. [Figure 2](#) shows the geographical spread of politically aligned and opposing municipalities in the national territory. As we can see, there are no signs of a high geographical concentration of *treated* and *control* municipalities.

Third, municipal characteristics to perform baseline balance checks and retrieve control variables for the estimation of [Equation 4](#) were obtained from the municipal panel datasets published by the Center of Economic Development Studies (CEDE) at the University of the Andes in Bogotá ([Acevedo & Bornacelly Olivella, 2014](#)). These datasets contain general socioeconomic information as well as conflict and governance indicators by municipality since 1993. However, not all variables are available for every year. All indicators come from different publicly available records mainly coming from state institutions in Colombia.

⁹This outcome is calculated by dividing the total amount of money transferred to a given municipality by the total amount of people that the program reach, which is an approximation using the household size that beneficiaries reported during their last information update.

¹⁰See the news articles published by [Gossaín \(2017\)](#) and [Torres \(2015\)](#).

Figure 2: Political alignment in Colombia



Notes: Maps show the political alignment at the municipality level with the national ruling party (PSUN) after the 2011 and 2015 local elections within a given bandwidth. Because the optimal bandwidth changes depending on the studied outcome, both maps show an approximation of the study sample using a bandwidth of 11 percentage points in the margin of victory, which is a close approximation of the average of all optimal bandwidths used in the following estimations.

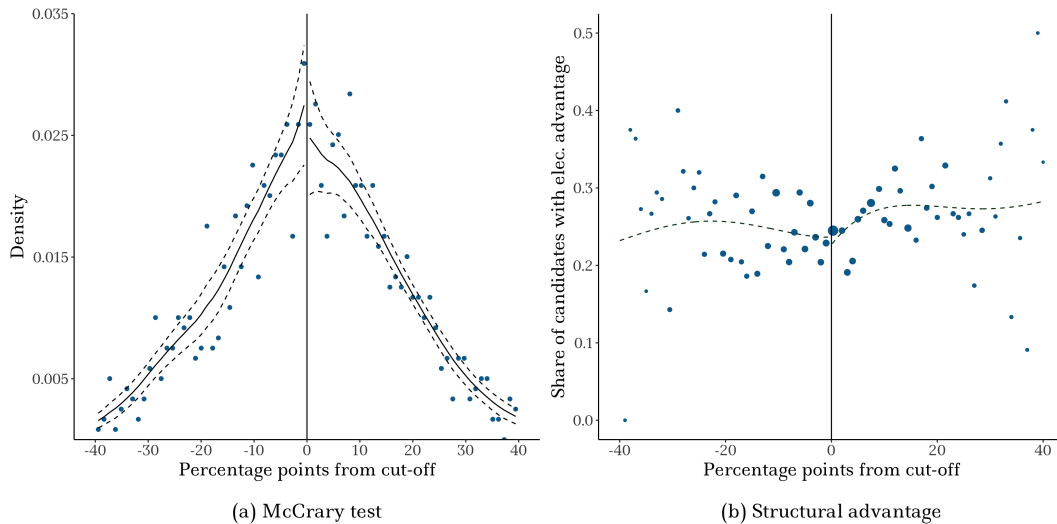
5 Results

5.1 RDD validity

Before proceeding to the main results, it is important to check the validity of the identification assumptions of the empirical design presented above. As explained by [Lee and Lemieux \(2010\)](#), a sharp RDD is valid when individuals have imprecise control over the assignment variable (electoral margin of victory in our specific case), making the variation in treatment *as good as random* in a small neighborhood around the victory threshold. This has two testable implications in our setting: i) there should be no self-selection or sorting between politically aligned and opposition-controlled municipalities, and ii) if treatment assignment is close to a random distribution, observed baseline covariates should be similar between groups on average.

To assess the first implication, a density test to check for continuity in the density of observations around the cut-off threshold was performed ([McCrary, 2008](#)). Panel A of [Figure 3](#) presents a visual summary of the results. As observed, there is no significant change in the density of observations around the electoral cut-off. If the ruling party had significant control over the

Figure 3: Continuity of the forcing variable



Notes: Panel (a) displays the results of a McCrary test on the continuity in the density of the forcing variable. Panel (b) shows the results of running a RD estimation on the share of candidates that had an incumbent local advantage for every given value of the running variable. Points in panel (b) represent binned observations, which size represents the number of observations within each bin.

forcing variable, we would appreciate a higher density of municipalities where the ruling party *barely* won the election.

As explored by [Caughey and Sekhon \(2011\)](#), randomness in the assignment of the treatment could be jeopardized if some political parties enjoy of some structural advantages that would allow them to make use of certain resources that are determinant in deciding close runs. If these differences in resources are correlated with the transfers or the number of beneficiaries from the MFA program, our RDD would fail to identify a casual estimate of political alignment as stated by [Equation 3 \(Grimmer et al., 2011\)](#). In this study, we test for local incumbency as a structural advantage determinant in close elections. Panel B of [Figure 3](#) presents the RD estimates of the share of candidates that had an incumbent local advantage using the margin of victory as the forcing variable. Following the same logic as the McCrary test, if these candidates were able to use their local incumbency to win close runs, we would observe a higher proportion of candidates winning close elections. However, there is no statistically significant discontinuity in the proportion of candidates with a local incumbency around the cut-off ($t\text{-stat} = 0.311$).

In order to test the second implication, a set of difference in means tests as well as RD estimations for a group of selected observable characteristics were performed. [Table 2](#) presents the results of these balance tests. As it can be observed, in most of the observable covariates there are no significant differences between the values reported for politically aligned and opposition-controlled municipalities during the baseline period (2000-2009). Nonetheless, some covariates exhibit some $t\text{-statistics}$ with $p\text{-values} < 0.05$. For example, if we consider the political alignment derived from the results of the 2011 local elections (Panel A), politically aligned municipalities

Table 2: Balance tests on observable covariates

Variable	Mean values		Diff. in Means			RDD estimation		
	Opposition	Aligned	Difference	t-stat	p-value	Estimate	t-stat	p-value
Panel A: 2011 Local Elections								
Total revenues (millions COP)	48912.36	14097.926	34814.44	0.844	0.400	46799.04	0.868	0.386
Total SGP transfers (millions COP)	17119.50	8180.211	8939.29	0.737	0.462	18818.41	1.176	0.241
Population	76540.21	34309.398	42230.81	0.767	0.444	86827.69	1.201	0.231
Rurality index	0.54	0.558	-0.02	-0.511	0.610	-0.12	-2.119	0.035
Distance to state capital (km)	77.11	79.310	-2.20	-0.304	0.762	-25.93	-2.024	0.044
Total (sq. km)	771.88	745.352	26.53	0.097	0.922	-633.97	-1.223	0.223
Poverty index	0.51	0.506	0.00	0.025	0.980	-0.02	-1.089	0.277
Gini Coeff.	0.45	0.448	0.00	-0.357	0.722	0.00	-0.374	0.709
GDP (constant million COP)	993273.12	283015.750	710257.37	0.844	0.400	1036787.41	0.949	0.344
GDP per capita (constant thousand COP)	7.03	7.419	-0.39	-0.670	0.503	2.04	2.045	0.042
Rural GDP (million COP)	22171.93	27880.207	-5708.28	-1.515	0.131	18448.57	2.790	0.006
Literate index	84.36	84.737	-0.38	-0.373	0.710	3.80	2.283	0.023
Avg. years of study	7.28	7.260	0.02	0.119	0.905	0.81	3.427	0.001
Child mortality rate	22.57	22.329	0.24	0.216	0.829	-3.36	-1.901	0.059
Attacks agains civilian pop. (FARC)	2.60	2.975	-0.37	-0.544	0.587	1.97	1.706	0.089
Attacks agains civilian pop. (ELN)	0.84	0.844	-0.01	-0.016	0.987	0.49	1.094	0.275
Attacks agains civilian pop. (Unkown)	14.20	26.598	-12.40	-1.464	0.145	37.81	2.374	0.018
Attacks agains civilian pop. (AUC)	1.03	1.615	-0.58	-1.773	0.078	1.26	2.079	0.039
Demobilized	40.36	18.098	22.26	0.777	0.438	46.55	1.207	0.229
Displaced pop. (sending)	3529.40	3950.074	-420.67	-0.450	0.653	903.16	0.520	0.604
Displaced pop. (reception)	6052.94	4718.459	1334.48	0.401	0.689	9551.25	2.010	0.046
Panel B: 2015 Local Elections								
Total revenues (millions COP)	51262.72	9630.780	41631.94	0.986	0.326	-9244.21	-0.135	0.893
Total SGP transfers (millions COP)	17286.68	5845.471	11441.20	0.927	0.356	-2514.54	-0.125	0.900
Population	78233.79	24945.253	53288.53	0.949	0.344	-11421.36	-0.125	0.901
Rurality index	0.59	0.593	-0.01	-0.252	0.801	0.04	0.790	0.430
Distance to state capital (km)	80.10	78.186	1.91	0.262	0.794	-16.43	-1.419	0.157
Total (sq. km)	1160.48	712.143	448.34	0.800	0.425	-1362.80	-1.265	0.207
Poverty index	0.50	0.507	-0.01	-0.546	0.586	-0.01	-0.455	0.650
Gini Coeff.	0.45	0.450	0.00	0.228	0.820	-0.01	-1.493	0.137
GDP (constant million COP)	1040157.76	193396.124	846761.64	0.975	0.332	-215514.71	-0.155	0.877
GDP per capita (constant thousand COP)	7.80	7.428	0.37	0.428	0.669	0.02	0.012	0.990
Rural GDP (million COP)	25887.24	24471.075	1416.17	0.433	0.666	-5398.54	-0.984	0.326
Literate index	83.79	84.631	-0.84	-0.860	0.391	0.33	0.210	0.834
Avg. years of study	7.18	7.090	0.09	0.685	0.494	-0.25	-1.117	0.265
Child mortality rate	22.61	23.211	-0.60	-0.532	0.595	-2.12	-1.185	0.237
Attacks agains civilian pop. (FARC)	3.64	2.677	0.96	1.214	0.226	-0.65	-0.565	0.572
Attacks agains civilian pop. (ELN)	0.96	1.383	-0.42	-0.823	0.411	1.94	1.783	0.076
Attacks agains civilian pop. (Unkown)	15.64	14.015	1.62	0.351	0.726	-3.92	-0.500	0.618
Attacks agains civilian pop. (AUC)	1.48	1.466	0.01	0.034	0.973	0.28	0.457	0.648
Demobilized	39.48	11.857	27.62	0.961	0.338	-12.18	-0.261	0.795
Displaced pop. (sending)	3784.55	4602.105	-817.56	-0.747	0.456	1153.10	0.686	0.493
Displaced pop. (reception)	5653.86	3402.594	2251.27	0.707	0.481	287.14	0.055	0.956

Mean values for each group represent the average yearly value of the correspondent variable during the baseline period (2000-2009). Opposition-controlled and politically aligned groups in each panel are defined as the result of the local elections in 2011 and 2015, respectively. Tests of difference in means are based on a two samples Welch test using a two-sided alternative hypothesis. RDD estimates are based on a local linear estimation using a 10 percentage points as bandwidth on observations weighed using a triangular kernel.

seemed to be significantly farther away from their respective state capital. The RD estimate shows that politically aligned municipalities were, on average, 25.9 kilometers farther away than opposition-controlled municipalities. This difference is significant at traditionally used significance levels ($p\text{-value} = 0.044$). Similar notable gaps are observed in other covariates like GDP per capita, rurality and education. However, none of these differences are robust to both tests and, moreover, when looking at the resulting political alignment from the 2015 local elections (Panel B), none of these differences persist. Additionally, given the high number of hypotheses performed, we would expect some of these high $t\text{-stats}$ to be false positives. Therefore, although the different tests detect some significant differences in some specific characteristics, we could conclude that the groups are quite balanced overall.

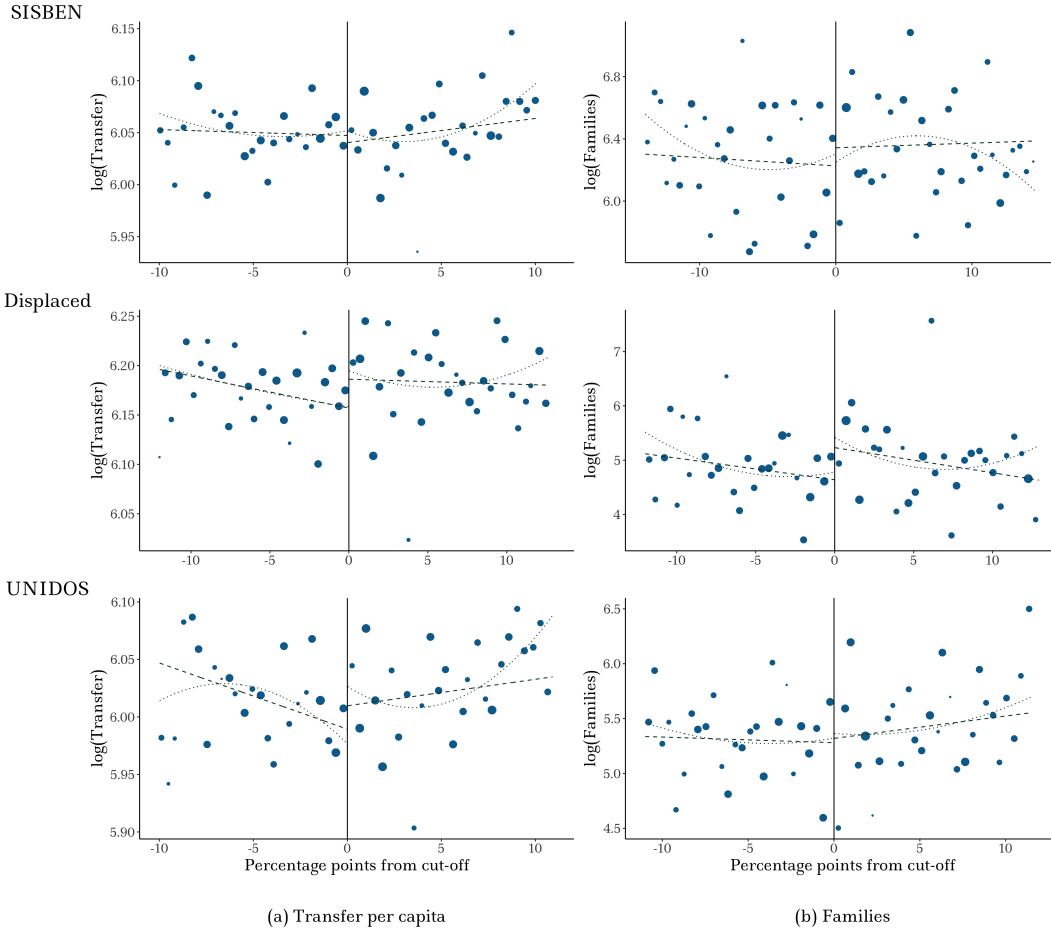
Finally, local estimations of [Equation 4](#) are performed using linear and quadratic polynomial fit. In order to check if these functional forms do not incur in notable misspecification errors, RD estimations using a global fit of a 4th degree polynomial were performed for all the outcomes analyzed in this study. [Appendix A.3](#) shows the graphical results of these estimations for all municipalities that matched the political alignment definition from the general sample. As we can visually inspect, linear and quadratic polynomials could have a high degree of fit within the average bandwidth for all these outcomes (≈ 10 percentage points from cut-off).

5.2 Political alignment with the ruling party: general sample

Results of performing a RD estimation on the per capita transfer and total number of beneficiary families using the general sample are shown in this subsection. [Figure 4](#) shows the graphical results of these estimations. Given the high similarity between the total benefits from the program and the SISBEN mechanism, the plot displays only the results from the disaggregated outcomes. There are three things worth noticing from this plot. First, we can observe that the outcomes present a high degree of noise in their variation across the different municipalities in the sample. At the same time, we can distinguish a few municipalities with some atypically low or high values. These outliers are specially present when analyzing the average per capita transfer.

Second, we can see that the estimated discontinuities could be significantly different depending on the functional form used. On one hand, the use of a quadratic polynomial (dotted line) seems to close the observed gaps between politically aligned and opposition-controlled municipalities when analyzing the SISBEN mechanism in comparison to the use of a linear functional form (dashed line). But on the other hand, using quadratic polynomials seem to wider the gaps between two groups of municipalities when analyzing the Displaced and UNIDOS mechanisms

Figure 4: Effect of political alignment on selected MFA outcomes: General sample



Notes: Figure displays the results of the effect of political alignment on MFA transfers and beneficiaries through a local estimation approach on the general sample controlling for state fixed effects and additional baseline covariates interacted with time fixed effects. Points represent binned observations, which size represents the number of observations within each bin. Size and location of bins was estimated using an evenly-spaced variance mimicking regression method. Dashed line represents the estimated linear fit while dotted line represents the estimated quadratic fit.

in comparison to the results when using a linear functional form. Because of the high noise in the variation of the outcomes and the minimum gains in *goodness-of-fit* from using a quadratic functional form, a linear polynomial fit is preferable and seems more reasonable to use. However, results of these estimations using a quadratic polynomial are kept as robustness checks in the following section.

Third, from a simple visual inspection, we can appreciate that most estimated discontinuities are small in magnitude when compared to the variation of their respective outcome and, therefore, they might not be statistically significant. Nonetheless, the estimated discontinuity when analyzing the number of beneficiary families (Panel B) that entered through the displaced mechanism is specially high in magnitude and we can also observe a “breach” in the scatter pattern of municipalities around the cut-off. To see if this and the other estimated discontinuities are significant, it is necessary to assess their confidence intervals that, as explained previously,

were constructed using a robust bias-corrected procedure. Table 3 presents the results in greater detail. Columns (1) and (4) present the results of a purely RDD approach, i.e. with no fixed effects nor additional control variables. Columns (2) and (5) present the results when controlling for state and year fixed effects and columns (3) and (6) add additional control variables.¹¹ These last four specifications are not required for identification, but rather to improve precision of the estimates of interest.

Results show that estimated discontinuities when analyzing per capita transfers are lower in magnitude in comparison to the estimated discontinuities obtained when analyzing the number of beneficiary families. For the overall program, the estimated difference in the average transfer between politically aligned and opposition-controlled municipalities across specifications is less than 1 percent and the sign of the point estimate changes depending on the specification used, partly due to their low magnitude. When analyzing the effect on the average per capita transfer by target mechanism, we find higher magnitudes but these do not surpass more than 3 percent between groups. Additionally, while the point estimates for the SISBEN channel seem to be negative, implying that families living in politically aligned municipalities receive a lower per capita transfer, the point estimates when analyzing the displaced and UNIDOS channels are positive, suggesting the opposite. Nevertheless, it is important to notice that these point estimates present wide confidence intervals in despite of having quite significant bandwidths (more than 10 percentage points around the margin of victory). Due to their high imprecision and low magnitudes, none of these differences is statistically significant at traditionally used significance levels as stated by their *t-stats* < 1.96 , which could be interpreted as absence of evidence that the program has been used for political purposes to favor families living in politically aligned municipalities with higher per capita transfers.

On the other hand, when analyzing the total number of beneficiary families entering the program, the estimated magnitudes are quite notable. For the overall program, the estimated effects suggest that politically aligned municipalities report to have, depending on the specification used, between 21 and 32 percent more beneficiary families¹² than similar municipalities where the mayor is not aligned with the ruling party. When looking at the disaggregated results per target mechanism, we can see some heterogeneities in the estimated magnitudes of the effect. While in the displaced channel the point estimates suggest that politically aligned municipalities have at least 60 percent more beneficiaries than their political counterparts, in the UNIDOS channel the point estimates suggest just a difference of 13 percent (at most) in favor of politically

¹¹Because the selected baseline characteristics do not vary over time and measure either a single point value (GDP) or a sum over the whole period (attacks against civilians), they are interacted with the year fixed effects in the full specification shown in columns (3) and (6).

¹²After applying the correspondent semilogarithmic transformation (Halvorsen & Palmquist, 1980).

Table 3: Effect of political alignment on selected MFA outcomes: General sample (linear specification)

	log(Avg. p.c. transfer)			log(Families)		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Total investment						
Estimate	-0.002 (0.888)	-0.002 (0.873)	0.008 (1.266)	0.271 (0.944)	0.280 (1.019)	0.191 (0.495)
Bandwidth	11.683	11.683	11.683	13.105	13.105	13.105
Observations	715 - 732	715 - 732	676 - 702	772 - 812	772 - 812	729 - 782
Panel B: SISBEN						
Estimate	-0.018 (-0.199)	-0.018 (-0.217)	-0.007 (-0.014)	0.204 (0.347)	0.214 (0.430)	0.118 (-0.202)
Bandwidth	10.224	10.224	10.224	14.722	14.722	14.722
Observations	620 - 654	620 - 654	592 - 627	836 - 871	836 - 871	784 - 836
Panel C: Displaced						
Estimate	0.023 (1.117)	0.024 (1.396)	0.029 (1.603)	0.654 (1.650)	0.705 (1.875)	0.592 (1.615)
Bandwidth	12.773	12.773	12.773	12.944	12.944	12.944
Observations	752 - 791	752 - 791	714 - 761	759 - 799	759 - 799	719 - 769
Panel D: UNIDOS						
Estimate	0.003 (1.048)	0.001 (0.899)	0.020 (1.433)	0.104 (0.489)	0.123 (0.590)	0.039 (0.128)
Bandwidth	10.936	10.936	10.936	11.540	11.540	11.540
Observations	674 - 688	674 - 688	641 - 661	700 - 723	700 - 723	664 - 693
State FE	No	Yes	Yes	No	Yes	Yes
Time FE	No	Yes	No	No	Yes	No
Time FE x controls	No	No	Yes	No	No	Yes

Notes:

Table displays the results of estimating the local average treatment effect of political alignment on selected outcomes of the MFA using a RD approach. Performed estimations fit a linear polygon for observations within a local neighborhood. Observations are weighted using a triangular kernel and std. errors are adjusted using heteroskedasticity-consistent estimators clustered at the municipality level. Robust bias-corrected confidence intervals were calculated, for which t-stats are shown within parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

aligned municipalities. Point estimates are consistently positive across specifications and target mechanism analyzed. However, it is still worth noticing that none of these estimates is significant at traditionally used significance levels¹³ due to their high imprecision as stated by their low

¹³Although the high magnitudes reported in the displaced channel could be considered significant when using higher levels of significance, e.g., $\alpha = 0.10$.

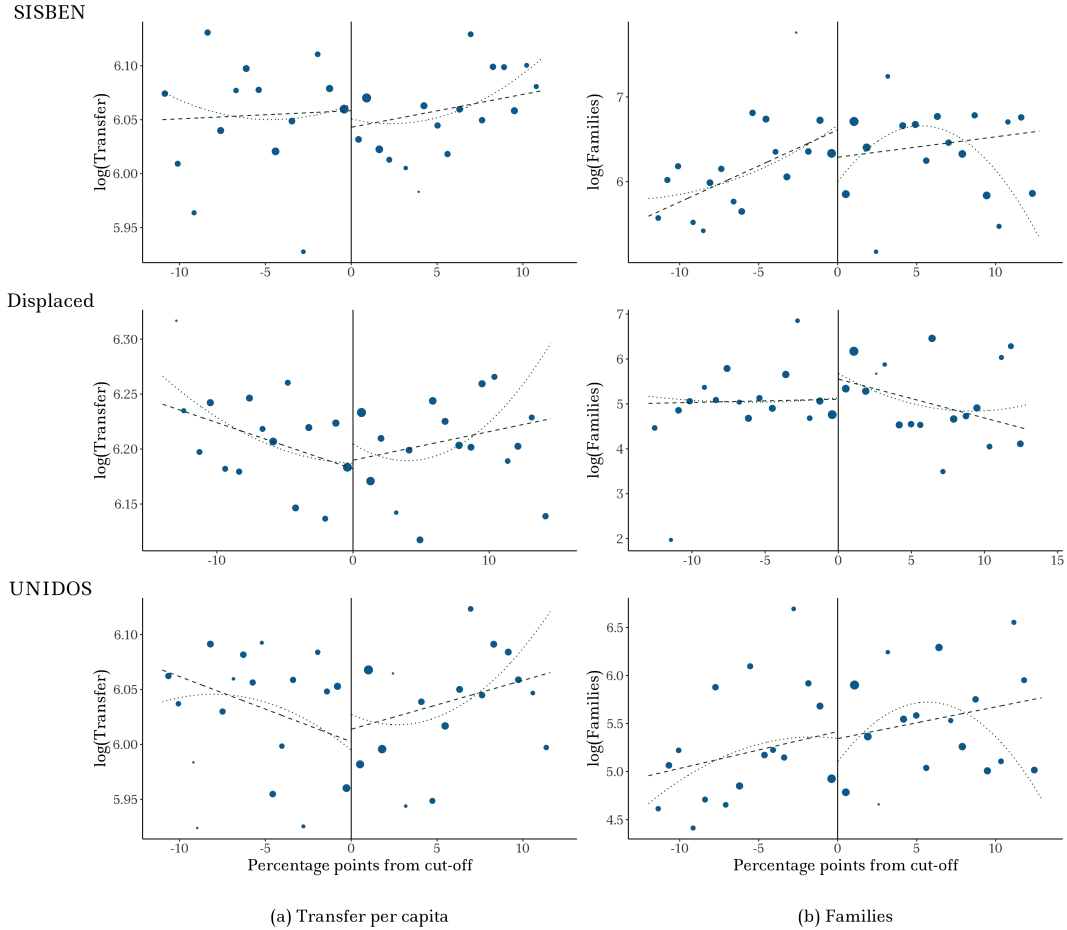
t-stats. Therefore, these results also suggest an absence of evidence that the program has been used for political purposes to allow more beneficiaries in politically aligned municipalities.

5.3 Political alignment with the ruling party: allied-restricted sample

Assuming that only municipalities where the mayor is politically aligned with the president's political party would receive certain benefits could be a strong (and misleading) assumption for the Colombian case. As explained before, Colombia has a multi-party political system in which alliances and electoral coalitions are quite common, specially in the last decade. Due to these complex relationships, other political parties besides the ruling one could also receive specific benefits due to their condition of "*allies*". If this were the case, our previous definition of treatment and control groups using political alignment might incur on substantial biases due to spillovers. For example, under a strict political alignment approach, a municipality where the ruling party *barely* lost the electoral run against a candidate representing an allied party would be assigned to the control group. However, this same municipality could still benefit from preferential allocations of resources due to a common support between the political party that won the local elections and the ruling party. In order to assess if this happens in the Colombian setting, this section estimates the effect of political alignment on selected MFA outcomes in an allied-restricted sample. This sample is constructed by excluding from the analysis, those municipalities where the counterpart (winner or best contender) of the ruling party is a candidate that represents an allied political party. For the purposes of this study, a political ally is defined as any political party that joined the president's coalition in the previous national elections. [Figure 5](#) summarizes the obtained results by target mechanism.

As we may notice, the density of observations is reduced in comparison to [Figure 4](#) due to the restrictions applied. Nevertheless, the variation in the outcomes did not change significantly and, therefore, we should not expect significant changes with the previous results. There are two things that are worth noticing in this graph. First, when dropping the allied counterparts from the sample, we can observe a less noisy pattern when analyzing observations along the negative values of the forcing variable but not along the positive values. This is particularly noticeable when analyzing the number of beneficiaries that entered through the SISBEN and Displaced mechanisms. In other words, dropping municipalities in which "*allies*" of the ruling party won the local elections from the control group is helping to uncover and better understand the relationship between the forcing variable and the selected outcomes. However, this is not the case when dropping municipalities where the ruling party won the local elections against an allied candidate as the best contender, which might be interpreted as a weakness in our definition of political alliances.

Figure 5: Effect of political alignment on selected MFA outcomes: Allied-restricted sample



Notes: Figure displays the results of the effect of political alignment on MFA transfers and beneficiaries through a local estimation approach on the allied-restricted sample controlling for state fixed effects and additional baseline covariates interacted with time fixed effects. Points represent binned observations, which size represents the number of observations within each bin. Size and location of bins was estimated using an evenly-spaced variance mimicking regression method. Dashed line represents the estimated linear fit while dotted line represents the estimated quadratic fit.

Second, these new patterns in the control groups change our prior estimations in some specific cases. For example, point estimates when analyzing the number of beneficiaries in the SISBEN mechanism now suggest that politically aligned municipalities report fewer families entering through this channel than similar opposition-controlled municipalities. In the same case, the relationship between the forcing variable and beneficiary families entering through the displaced channel in control municipalities is now almost orthogonal, which makes it easier to detect significant differences between groups when analyzing this outcome on this specific mechanism. In order to check if these new estimates are statistically significant, [Table 4](#) presents a summary of the results in greater detail.

For the overall program, the point estimates of the effect of political alignment on the average per capita transfer are similar to the results obtained when using the general sample. However, we can observe that the estimated coefficients are now consistently positive; but then again,

these estimates are not statistically significant at traditionally used significance levels. When focusing on the results on average per capita transfers by target mechanism, no major changes with the previous estimates are observed.

More noticeable changes with respect to the previous results are present when looking at the effect on the amount of families that entered in each target mechanism. As mentioned before, the point estimates for the effect of political alignment on the number of beneficiary families that enter through the SISBEN mechanism now suggest a negative effect. According to the results, politically aligned municipalities received, on average, between 13.8 and 27.2 percent less beneficiaries depending on the specification used. Nonetheless, due to their high imprecision,¹⁴ these estimates are not distinguishable from zero at traditional significance levels. On the contrary, now the point estimates for the effect on the number of beneficiaries that entered through the displaced channel are statistically significant at the 5 percent significance level. According to these estimates, politically aligned municipalities introduce, on average, around 75 percent more beneficiaries than similarly opposition-controlled municipalities. However, these estimates are not robust when controlling for additional characteristics of the municipalities, in which case the magnitude of the point estimate drops to 0.44. Results for the overall program and the UNIDOS mechanism are similar in magnitude, direction and significance to those obtained when using the general sample.

This last issue raises an important point regarding our identification strategy. A valid RDD gives a distribution *as good as random* around the cut-off threshold and therefore, the addition of any combination of covariates should not affect the consistency of the estimators. As we can see in the estimations presented above, the inclusion of additional baseline characteristics¹⁵ in columns (3) and (6) in the previous tables, derives in significant changes to our point estimates. Given that we have tested the absence of additional discontinuities in these baseline covariates, these changes could only imply either a misspecification error or a structural discontinuity correlated with these characteristics that is not explored in this study (Lee & Lemieux, 2010). In consequence, results obtained from estimations that control for these additional covariates should be taken carefully.

Overall, our main results support the argument that the MFA is not prone to political favoritism in the sense of using it as a platform to favor politically aligned municipalities or to punish opposition-controlled ones. However, results for the number of beneficiary families entering through the displaced channel suggest some potential favoritism when we exclude those municipalities were the counterpart of the ruling party, either as winner or best contender in the

¹⁴This high imprecision is specially present on the observed values for the outcome variable in the treatment group as portrayed by [Figure 4](#).

¹⁵Specially the total number of attacks against civilian populations.

election run, is a candidate representing a political ally. Therefore, the following section is focused on exploring if this result holds to a different set of robustness tests.

Table 4: Effect of political alignment on selected MFA outcomes: Allied-restricted sample (linear specification)

	log(Avg. p.c. transfer)			log(Families)		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Total investment						
Estimate	0.006 (1.266)	0.006 (1.368)	0.007 (1.176)	0.167 (0.380)	0.162 (0.332)	0.036 (-0.623)
Bandwidth	12.880	12.880	12.880	19.186	19.186	19.186
Observations	310 - 347	310 - 347	293 - 341	381 - 471	381 - 471	362 - 465
Panel B: SISBEN						
Estimate	-0.026 (-0.720)	-0.025 (-0.678)	-0.015 (-0.541)	-0.148 (-0.723)	-0.154 (-0.755)	-0.317 (-1.936)
Bandwidth	11.308	11.308	11.308	12.862	12.862	12.862
Observations	285 - 309	285 - 309	271 - 303	304 - 347	304 - 347	290 - 341
Panel C: Displaced						
Estimate	0.010 (0.676)	0.015 (1.105)	0.008 (0.573)	0.746* (2.147)	0.764* (2.185)	0.440 (1.244)
Bandwidth	14.633	14.633	14.633	13.186	13.186	13.186
Observations	324 - 371	324 - 371	308 - 365	309 - 346	309 - 346	295 - 340
Panel D: UNIDOS						
Estimate	-0.002 (0.435)	0.002 (0.514)	0.011 (0.675)	0.017 (0.215)	0.042 (0.276)	-0.069 (-0.636)
Bandwidth	11.645	11.645	11.645	12.945	12.945	12.945
Observations	297 - 319	297 - 319	283 - 313	307 - 350	307 - 350	293 - 344
State FE	No	Yes	Yes	No	Yes	Yes
Time FE	No	Yes	No	No	Yes	No
Time FE x controls	No	No	Yes	No	No	Yes

Notes:

Table displays the results of estimating the local average treatment effect of political alignment on selected outcomes of the MFA using a RD approach. Performed estimations fit a linear polygon for observations within a local neighborhood. Observations are weighted using a triangular kernel and std. errors are adjusted using heteroskedasticity-consistent estimators clustered at the municipality level. Robust bias-corrected confidence intervals were calculated, for which t-stats are shown within parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

6 Robustness checks

6.1 Estimations using a quadratic polynomial

As it was explained before, estimations of the effect of political alignment on the studied outcomes of the MFA program were performed using a linear functional form. However, given how the inclusion of additional controls has modified the estimates, we might be facing a misspecification error. This misspecification could have its origins either in a wrong functional form or in the inclusion of baseline covariates that might be partly correlated with some unexplored structural discontinuity. In order to assess if an incorrect linear functional form is causing the change in the estimations, this subsection presents the results of estimating Equation 4 but using quadratic polynomials as $f_1(\cdot)$ and $f_2(\cdot)$ to describe the relationship between the forcing variable and the correspondent outcome. If the significant change in point estimators persists when introducing additional covariates interacted with time fixed effects, we could discard this possibility. Table 6 summarizes the results of performing these estimations on the allied-restricted sample.¹⁶

Three things might be noticed from this table. First, the estimates using a quadratic polynomial are significantly larger than their equivalents when using a linear functional form, specially when analyzing the number of beneficiaries from the MFA program as the selected outcome. As an example, when analyzing the amount of families that entered through the SISBEN mechanism, the point estimates suggest that political alignment of municipalities where the ruling party *barely* won the run could reduce the number of beneficiaries entering through this channel between 25 and 60 percent in comparison to similar municipalities where the ruling party *barely* lost the election, with more precise values depending on the specification used. These results are almost twice in magnitude to their equivalents when using a linear functional form.¹⁷

Second, this “expansion” in the estimates is of special importance when analyzing the amount of families entering through the displaced channel. Nonetheless, these estimates are even more imprecise and, unlike the ones obtained when using a linear functional form, these are not statistically significant anymore. Although, it is worth noticing that estimates for this specific channel in columns (4) and (5) have a high *t-stat*. But then again, the inclusion of additional covariates drops the magnitude of these estimators by more than half. As it was explained before, this could happen due to a misspecification error or an unexplored advantage for politically aligned municipalities. Given that these results are testing for a different functional form and,

¹⁶Estimates for the general sample are shown in Appendix A.2.

¹⁷Similar conclusions can be drawn when visually comparing the dashed (linear) and dotted (quadratic) lines in Figure 5.

Table 5: Effect of political alignment on selected MFA outcomes: Allied-restricted sample (quadratic specification)

	log(Avg. p.c. transfer)			log(Families)		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Total investment						
Estimate	0.032*	0.032*	0.026	0.124	0.107	-0.157
	(2.253)	(2.287)	(1.570)	(0.631)	(0.579)	(-0.875)
Bandwidth	12.880	12.880	12.880	19.186	19.186	19.186
Observations	310 - 347	310 - 347	293 - 341	381 - 471	381 - 471	362 - 465
Panel B: SISBEN						
Estimate	-0.020	-0.018	-0.013	-0.283	-0.290	-0.666*
	(-0.204)	(-0.160)	(-0.427)	(-0.781)	(-0.742)	(-2.129)
Bandwidth	11.308	11.308	11.308	12.862	12.862	12.862
Observations	285 - 309	285 - 309	271 - 303	304 - 347	304 - 347	290 - 341
Panel C: Displaced						
Estimate	0.021	0.030	0.017	1.243	1.263	0.554
	(1.499)	(1.747)	(1.193)	(1.814)	(1.856)	(0.483)
Bandwidth	14.633	14.633	14.633	13.186	13.186	13.186
Observations	324 - 371	324 - 371	308 - 365	309 - 346	309 - 346	295 - 340
Panel D: UNIDOS						
Estimate	0.021	0.023	0.032	0.099	0.126	-0.257
	(0.924)	(0.982)	(0.807)	(0.172)	(0.253)	(-0.871)
Bandwidth	11.645	11.645	11.645	12.945	12.945	12.945
Observations	297 - 319	297 - 319	283 - 313	307 - 350	307 - 350	293 - 344
State FE	No	Yes	Yes	No	Yes	Yes
Time FE	No	Yes	No	No	Yes	No
Time FE x controls	No	No	Yes	No	No	Yes

Notes:

Table displays the results of estimating the local average treatment effect of political alignment on selected outcomes of the MFA using a RD approach. Performed estimations fit a quadratic polygon for observations within a local neighborhood. Observations are weighted using a triangular kernel and std. errors are adjusted using heteroskedasticity-consistent estimators clustered at the municipality level. Robust bias-corrected confidence intervals were calculated, for which t-stats are shown within parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

as shown by (Gelman & Imbens, 2019), using higher order polynomials is not recommended in RDD estimations; the latter reason might have higher importance and requires further exploration. Nonetheless, this analysis escapes the scope of the present study due to data limitations.

Third, the estimation shows a few statistically significant results when analyzing the average per capita transfer for the overall MFA program and the number of beneficiaries entering through the SISBEN mechanism. However, as we have seen with prior results, these results are not robust across specifications, which makes them very difficult to consider as evidence in support of a potential political favoritism in this setting.

6.2 Sensitivity to bandwidth selection and placebo cut-offs

The prior results explore if a misspecification error was driving the abrupt change in the point estimators when including additional controls. Given that significant changes persist even after using quadratic polynomials in our estimation, this could not be the case. More importantly, the discontinuities found in the number of beneficiary families entering through the displaced mechanism disappeared when using this specification. However, this does not invalidate the possibility of experiencing political favoritism in this specific channel due to the possibility that using a quadratic polynomial could be introducing a misspecification bias itself. The objective of this subsection is to evaluate how stable are the estimates presented in [Table 4](#) when using *ad-hoc* bandwidths and placebo cut-offs.

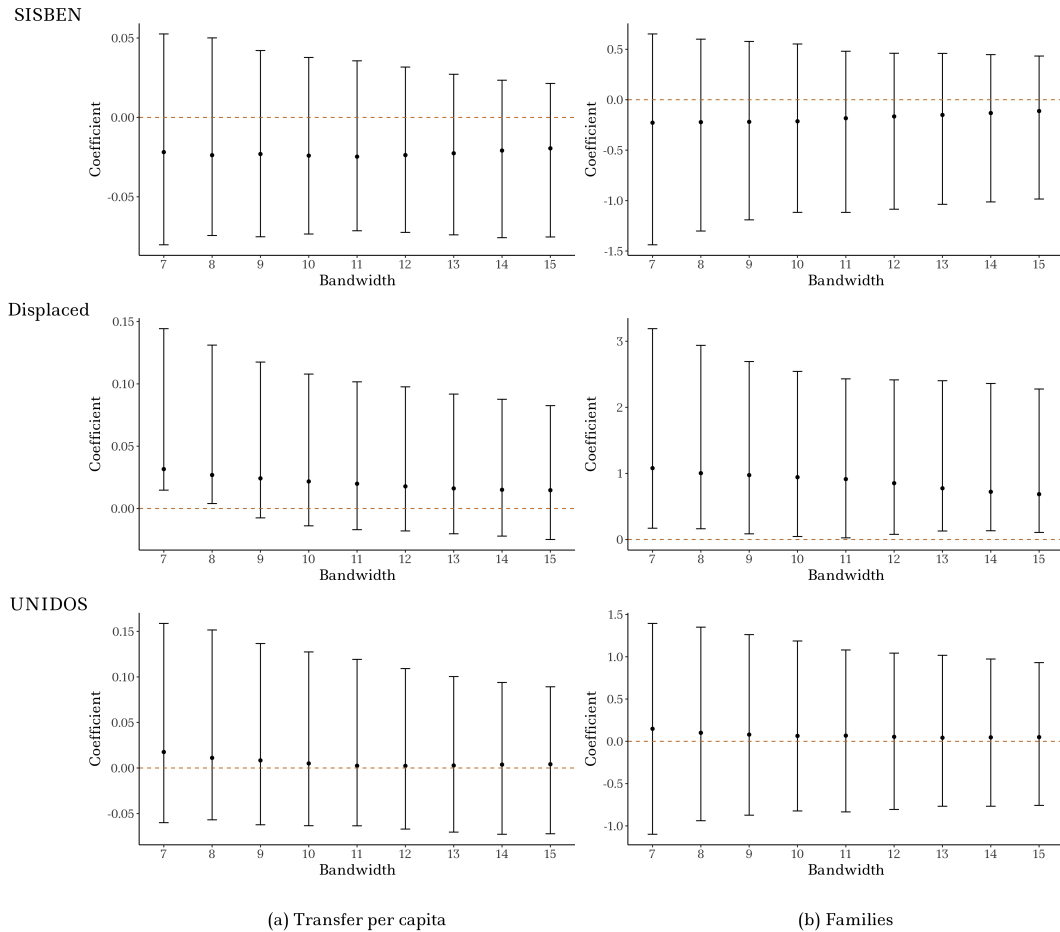
[Figure 6](#) presents the results when testing a set of *ad-hoc* bandwidths that ranges from 7 to 15 percentage points around the cut-off in the margin of victory. Given that our focus is to check the stability of the point estimates obtained when analyzing each targeting mechanism separately, only estimations on disaggregated outcomes are shown. The figure displays two consequences of our empirical method. First, estimated confidence intervals are not centered around our point estimates but rather around a net version of the estimates¹⁸ due to the robust bias-correction procedure applied to them. Second, we can observe the trade-off between bias and variance in the estimates when selecting a local neighborhood in which to carry our RDD. While wider bandwidths reduce the variance of the estimates as portrayed by narrower confidence intervals, they also come along with a higher bias as observed in the midpoint (not the point estimates) of these intervals.

Regarding the specific results, we observe no abrupt changes when testing different widths for all analyzed outcomes. Both, average per capita transfers and number of beneficiaries remain indistinguishable from a zero effect across all tested bandwidths when analyzing the SISBEN and UNIDOS mechanisms. Nevertheless, when studying the effect of political alignment on these same outcomes for the displaced channel, we may notice two particularities. First, the

¹⁸Robust bias-corrected confidence intervals are centered around $\hat{\beta} - \hat{B}$, where \hat{B} is the estimated bias that comes along with the bandwidth of choice in order to minimize the mean square error in the estimations, while the point estimates displayed in the figure are $\hat{\beta}$ without netting out the associated bias.

estimates remain (barely) statistically significant at the 5 percent significance level for all the tested bandwidths when exploring the number of beneficiary families. Second, when the average transfer per capita is the outcome of interest, the estimates are statistically significant at the 5 percent significance level for narrow neighborhoods lower than 9 percentage points around the cut-off.

Figure 6: Effect of political alignment on selected MFA outcomes: Ad-hoc bandwidths



Notes: Figure displays the estimated effect of political alignment with the ruling party on MFA transfers and beneficiaries through a local linear estimation approach on the allied-restricted sample using different pre-defined bandwidths. Estimations include state and time fixed effects with observations weighted using a triangular kernel. Asymptotic 95 percent confidence intervals are adjusted using a robust bias-corrected procedure.

Overall, we could conclude that estimates are stable across different bandwidths. However, even when the significant discontinuities found in the displaced channel could suggest a potential use of the program as a political tool, this result has to be taken carefully due to multiple hypothesis testing. Due to the high number of hypotheses tested in this analysis and the p -values of these estimates being very close to ≈ 0.05 , the probability of having a false positive in these estimations is considerable.

Turning to the placebo cut-offs, [Figure 7](#) present the results of estimating the effect of political alignment on selected MFA outcomes on the allied-restricted sample and moving the cut-off from its true value in windows of 1 percentage point. Given that our focus is to check the stability of the point estimates obtained when analyzing each targeting mechanism separately, only estimations on disaggregated outcomes are shown. As we can observe, for all mechanisms, estimates fluctuate from positive to negative values depending on the tested cut-off. This is a reflection of how much noise is present in the data. However, most of these results remain statistically insignificant at traditionally used significance levels.

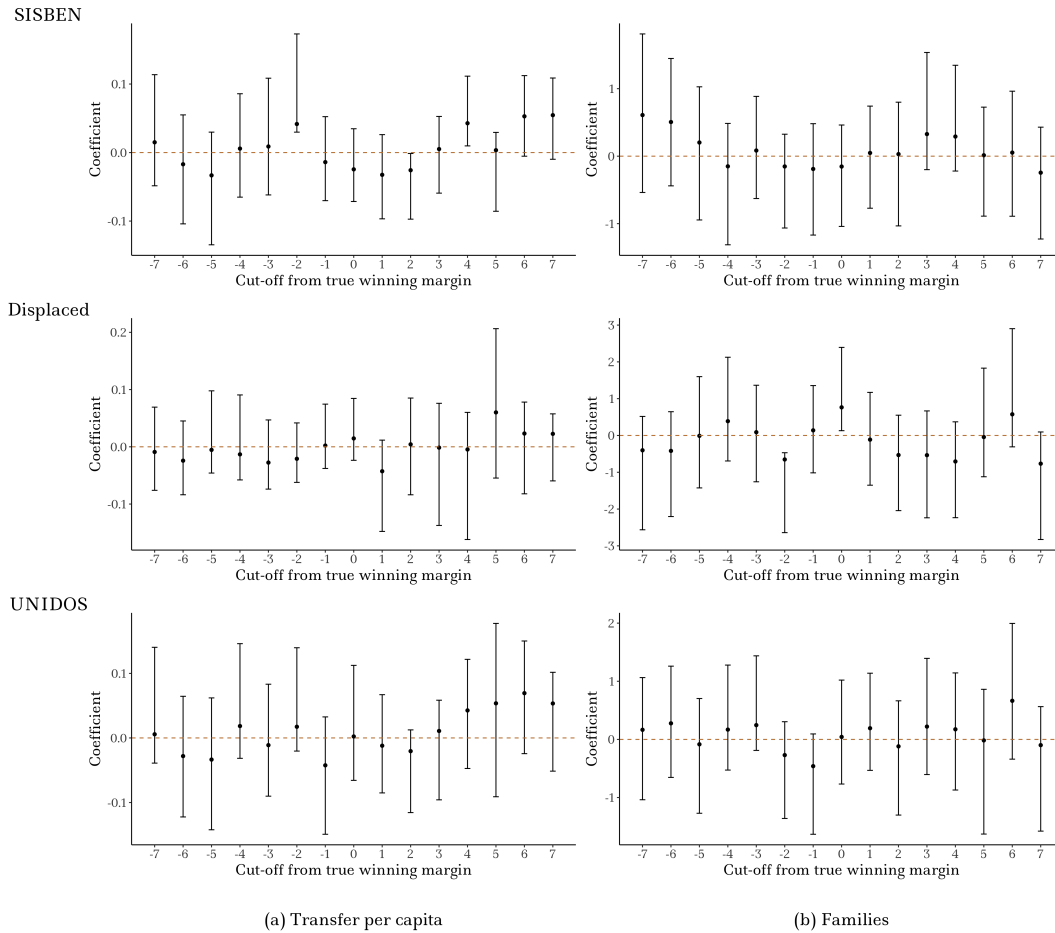
It is worth noticing that, when testing different cut-offs for the number of beneficiary families that entered through the displaced channel, the estimate is significant almost only at the true threshold. This could have two different interpretations. First, the exact phasing of this result could be taken as evidence in support of a potential favoritism towards politically aligned municipalities and, given its small statistical significance when using this data, it is to expect that the *p-values* surpass the 0.05 threshold when introducing small changes to the cut-off. However, as a second interpretation, due to the high number of hypotheses tested and the spread of the data, this could be a reflection of a false positive result. This interpretation is also plausible given that we observe other similar unexpected results. For example, we obtain statistically significant point estimates when testing a -2 cut-off in the average transfer per capita from the SISBEN mechanism and also when analyzing the number of beneficiary families that entered through the displaced channel. Given that there is no reasonable explanation for these two results, these can only be false positives.

Estimations for the general sample are shown in [Appendix A.3](#) with similar results.

7 Discussion

The previous section shows a consistent lack of evidence in support of the use of the MFA program as a political tool to earn electoral support from the central government. However, before taking these results as granted, there are a few points that needs further discussion. In the first place, the used identification strategy is based on a close elections RDD, which implies that these results are only valid for municipalities that could be considered as “swing” constituencies. As argued by [Cox and McCubbins \(1986\)](#), politicians could seek to maximize the allocation of resources towards core support localities over opposition-controlled and swing municipalities. Due to the nature of the RDD applied in this paper, it is very difficult to extrapolate these local findings on swing localities to the whole universe of municipalities. It might be possible that the MFA could still be used as a political tool outside this local sample. [Baskaran and Hessami](#)

Figure 7: Effect of political alignment on selected MFA outcomes: Placebo cut-offs



Notes: Figure displays the estimated effect of political alignment with the ruling party on MFA transfers and beneficiaries through a local linear estimation approach on the allied-restricted sample using different placebo cut-offs. Estimations include state and time fixed effects with observations weighted using a triangular kernel. Asymptotic 95 percent confidence intervals are adjusted using a robust bias-corrected procedure.

(2017) provide suggestive evidence that politically aligned municipalities do not always receive higher resources per se. According to their results, the effects of political alignment on transfers from the central government are heterogenous depending on the local support for the central government, supporting the theoretical view from Cox and McCubbins (1986). Nevertheless, this can potentially prove to be quite difficult in the current Colombian setting. After the political reforms that took place in 1990, the Colombian party system has gone through a significant transformation where traditional and firmly settled political parties were weakened and small and newly formed ones are increasingly taking over the traditional spheres of influence from other political parties (Dargent & Muñoz, 2011; Pizarro Leongómez, 2006). Under this scenario of a weak party system, it is very difficult for politicians to distinguish between core supporters and swing localities on a national scale. In a similar way, politicians could trade higher transfers to some opposition-controlled municipalities in exchange of lifting political obstacles and delays against some intended policies from the central government. Under an

asymmetric model of political redistribution where voters are unable to distinguish the original source of the funds, the Central Government would try to provide resources in localities that are not foreseen to be a tight race (Arulampalam et al., 2009). However, this scenario escapes from the scope of the local estimates provided by our identification strategy.

Even if we are willing to consider only the results of the local estimation presented above, there are other issues that need to be taken into account. The estimations obtained when using the allied-restricted sample reflected the fact that taking into account the complex relationships in the current political environment in Colombia would provide a cleaner view of the results. This sample relies on the categorization of any party that joined the presidential coalition in the previous national elections as allies. Nevertheless, this could be a weak definition of political alliances. As an example, the Green Alliance party was part of the main opposition coalition of the ruling party in the national elections of 2010 but then, joined the presidential coalition of 2014 due to significant differences with the second most voted candidate. Additionally, the Alternative Democratic Pole party was part of the presidential coalition in 2014 but represented a significant opponent of the ruling party during the campaign to banish presidential re-election in 2015. These two examples show the high complexity, dynamics and even temporality of political relationships in Colombia. Therefore, other (more computing intensive) definitions of political alliances could reduced potential spillovers due to a wrong classification of municipalities into treatment or control group and improve the estimations here presented.

8 Conclusion

Distortions in the allocations of public funds due to political favoritism is widespread across developing countries. The present paper examines if politically aligned municipalities in Colombia receive a different treatment than similar opposition-controlled municipalities in the distribution of benefits from a conditional cash transfer program. Overall, the estimations presented in this study display no evidence that this social assistance program as a whole has been used as a political tool to favor or to punish localities depending on their political alignment after the major redesign that the program suffered in 2012. These results persist even upon studying each of the different targeting mechanisms that the program contemplates.

The results also highlight the importance of taking into account the complexity of the relationships between political agents when studying political favoritism. In this study, a straightforward but rather restrictive definition of political alliances was used. However, using such a restrictive definition in a very dynamic setting such as the Colombian case, could be subject to spillovers in the control group. While the robustness checks show some sort of robustness in the lack of

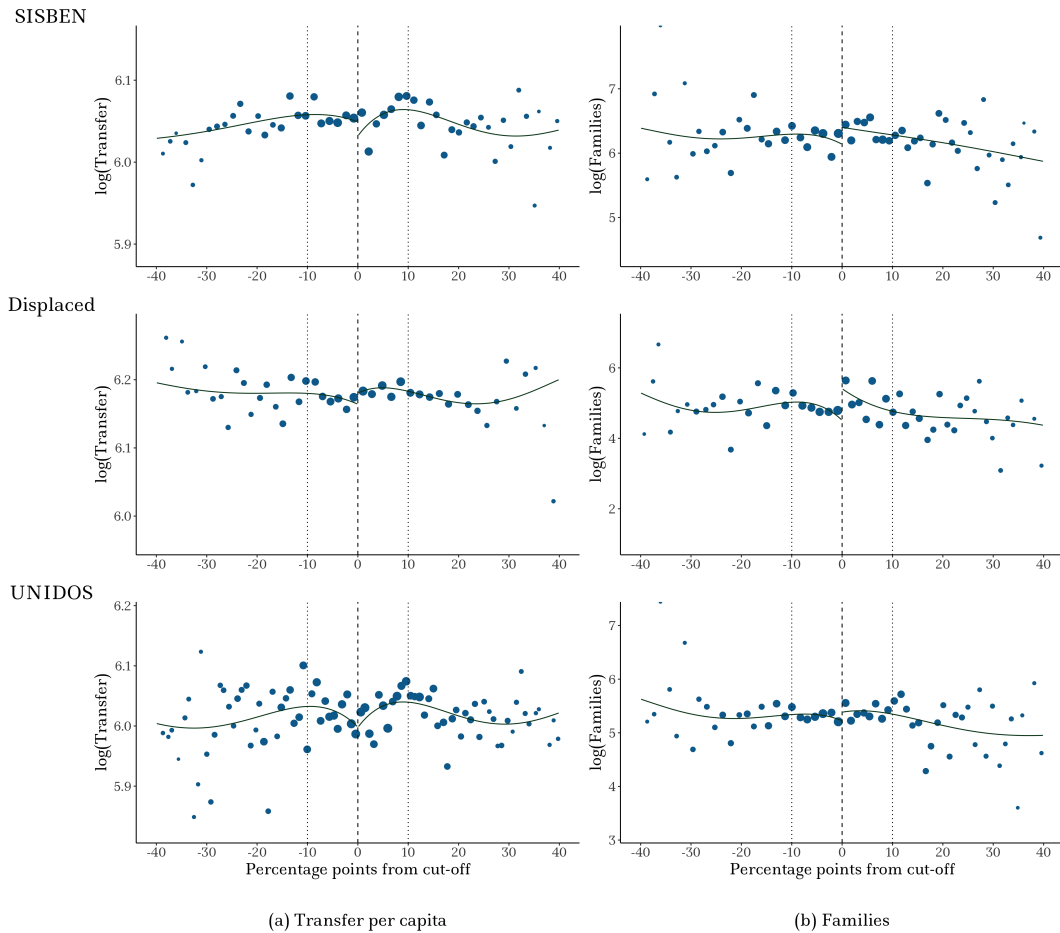
evidence in support of political favoritism, these results must be taken carefully, specially those related to the displaced mechanism. Future research in this matter is still needed.

Finally, this study presents evidence in support of the good performance of the MFA program in avoiding a specific type of corruption. Nonetheless, these results do not necessarily imply that other types of corruptions are not present, either in a systematic manner or in spread individual cases, as some newspapers and independent journalist have signaled over the past decade. Similarly, due to data restrictions it was not possible to check if the good performance of the program is a direct result of the major reforms applied in 2012; however, relying on the evidence of past studies, the possibility of these reforms might have contributed to the results presented here.

A Appendix

A.1 RDD validity: Global fit

Figure 8: Regression Discontinuity: Global fit



Notes: Figure displays the results of fitting a fourth degree polynomial in the whole sample of municipalities where the ruling party ended either winning or as the closest contender in the local elections. Points represent binned observations, which size represents the number of observations within each bin. Size and location of bins was estimated using an evenly-spaced variance mimicking regression method.

A.2 Robustness checks: Quadratic polynomial on the general sample

Table 6: Effect of political alignment on selected MFA outcomes: General sample (quadratic specification)

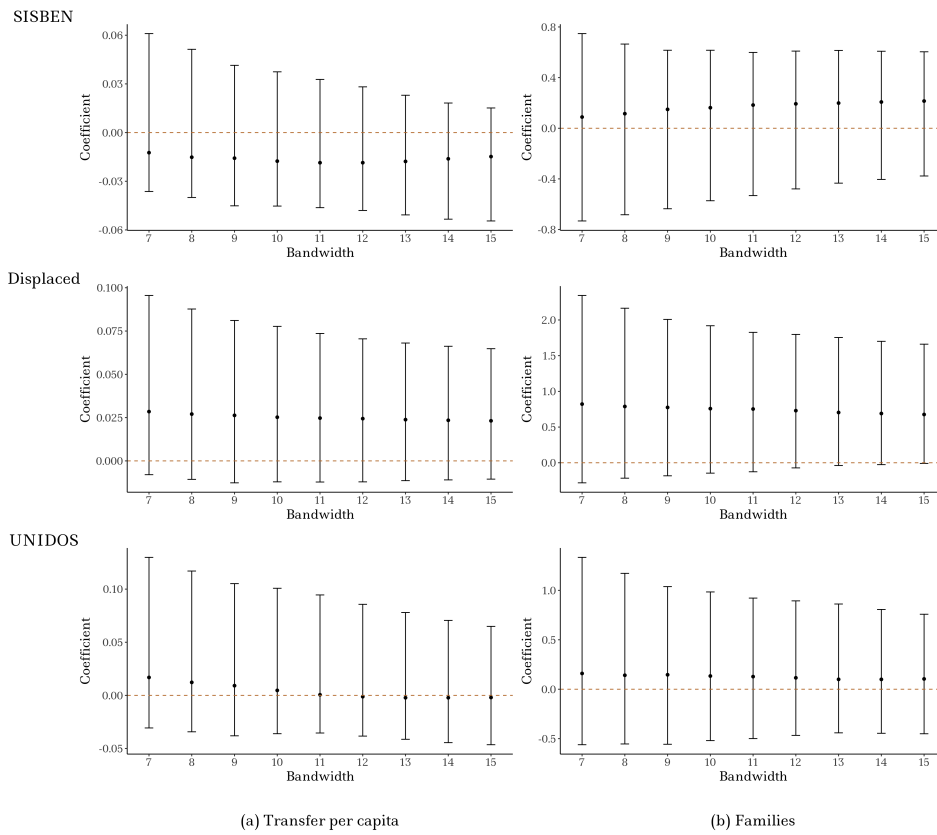
	log(Avg. p.c. transfer)			log(Families)		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Total investment						
Estimate	0.032*	0.032*	0.026	0.124	0.107	-0.157
	(2.253)	(2.287)	(1.570)	(0.631)	(0.579)	(-0.875)
Bandwidth	12.880	12.880	12.880	19.186	19.186	19.186
Observations	310 - 347	310 - 347	293 - 341	381 - 471	381 - 471	362 - 465
Panel B: SISBEN						
Estimate	-0.020	-0.018	-0.013	-0.283	-0.290	-0.666*
	(-0.204)	(-0.160)	(-0.427)	(-0.781)	(-0.742)	(-2.129)
Bandwidth	11.308	11.308	11.308	12.862	12.862	12.862
Observations	285 - 309	285 - 309	271 - 303	304 - 347	304 - 347	290 - 341
Panel C: Displaced						
Estimate	0.021	0.030	0.017	1.243	1.263	0.554
	(1.499)	(1.747)	(1.193)	(1.814)	(1.856)	(0.483)
Bandwidth	14.633	14.633	14.633	13.186	13.186	13.186
Observations	324 - 371	324 - 371	308 - 365	309 - 346	309 - 346	295 - 340
Panel D: UNIDOS						
Estimate	0.021	0.023	0.032	0.099	0.126	-0.257
	(0.924)	(0.982)	(0.807)	(0.172)	(0.253)	(-0.871)
Bandwidth	11.645	11.645	11.645	12.945	12.945	12.945
Observations	297 - 319	297 - 319	283 - 313	307 - 350	307 - 350	293 - 344
State FE	No	Yes	Yes	No	Yes	Yes
Time FE	No	Yes	No	No	Yes	No
Time FE x controls	No	No	Yes	No	No	Yes

Notes:

Table displays the results of estimating the local average treatment effect of political alignment on selected outcomes of the MFA using a RD approach. Performed estimations fit a quadratic polygon for observations within a local neighborhood. Observations are weighted using a triangular kernel and std. errors are adjusted using heteroskedasticity-consistent estimators clustered at the municipality level. Robust bias-corrected confidence intervals were calculated, for which t-stats are shown within parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

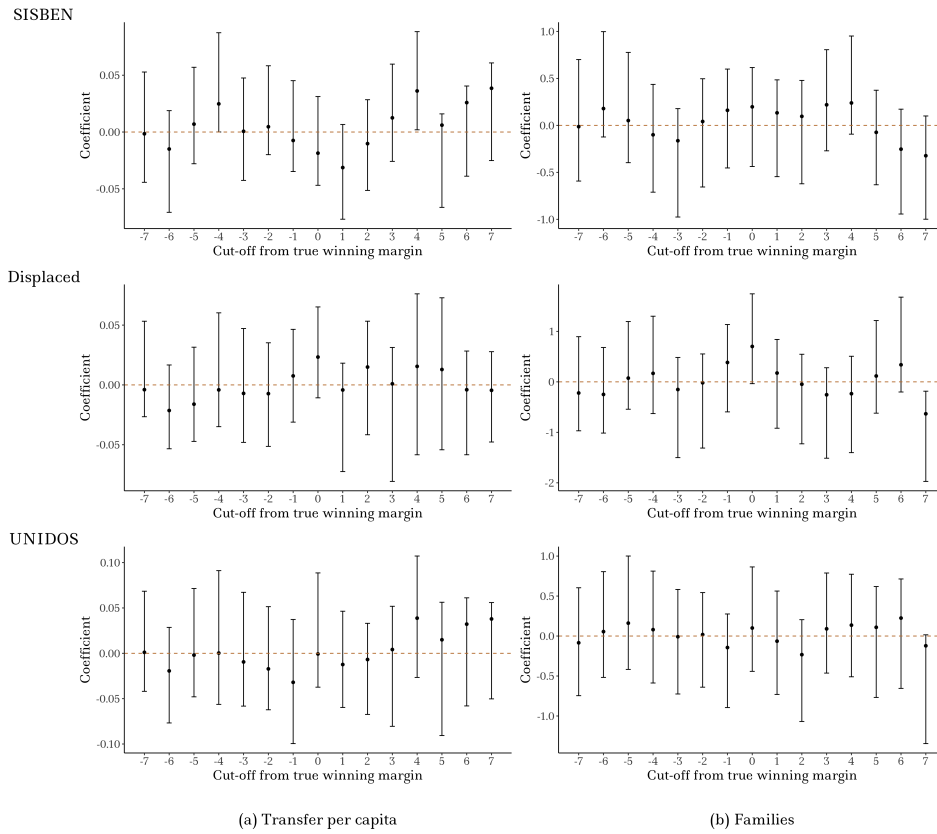
A.3 Sensitivity to bandwidth selection and placebo cut-offs on the general sample

Figure 9: Effect of political alignment on selected MFA outcomes: Ad-hoc bandwidths



Notes: Figure displays the estimated effect of political alignment with the ruling party on MFA transfers and beneficiaries through a local linear estimation approach on the general sample using different pre-defined bandwidths. Estimations include state and time fixed effects with observations weighted using a triangular kernel. Asymptotic 95 percent confidence intervals are adjusted using a robust bias-corrected procedure.

Figure 10: Effect of political alignment on selected MFA outcomes: Placebo cut-offs



Notes: Figure displays the estimated effect of political alignment with the ruling party on MFA transfers and beneficiaries through a local linear estimation approach on the general sample using different placebo cut-offs. Estimations include state and time fixed effects with observations weighted using a triangular kernel. Asymptotic 95 percent confidence intervals are adjusted using a robust bias-corrected procedure.

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