

# The Political Economy of Grant Allocations: Evidence from Colombia

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## Abstract

I investigate the allocation of relief resources delivered by the government to repair the damages caused by a heavy rainy season in Colombia. Making use of data at the municipality level that contains socio-economic information, electoral results and information about the forms of aid provided to the federal entities, I use an IV strategy which shows that funds related with long-lasting goods were disproportionately allocated to loyal constituencies, while items of short duration did not present this pattern. The results provide evidence to support the "loyal voter view" present in the literature of distributive politics, and contribute to the understanding of the motives behind the preferential allocation of resources toward core supporters.

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# 1 Introduction

During 2010 and 2011 Colombia was severely affected by the intense rains caused by the "Niña" phenomenon, this emergency happened a couple of months after the new president and his coalition of government started the administration period. To deal with the damages caused by the disaster, the government set a program to allocate the aid resources to the federal entities, which in Colombia are municipalities (analogous to counties in the United States) that are grouped in departments (similar to the states in the United States), so each of the affected municipalities received relief funds from the government.

The aim of the present study is to find out how the government distributed the aid resources among the constituencies and the motives behind that distribution. According to the literature on distributive politics, electoral motives play an important role in the allocation of resources to federal entities as this distribution is often made by the politicians to "build and maintain a broad national base of support for their party"<sup>1</sup> To do so, According to Cox and McCubbins (1986), incumbents can choose who to favour among three groups of citizens: support, swing and opposition groups. The last group, the one that has always oppose to the incumbents party, as pointed out by Fenno (1978) "cannot be reached with a ten-foot pole"<sup>2</sup>, therefore it has not attracted much of the attention of the researchers, so the literature has instead focused on the first two groups.

Politicians can then favor "swing" voters (swing voter view), which are the individuals that sometimes support the incumbent's party and sometimes not because they have what Lindbeck and Weibull (1987) call weak party preferences, therefore they are willing to "trade-off ideological attachments in exchange for public targeting policies"<sup>3</sup> ; or they can bias the allocation of resources towards their core supporters (loyal voter view), which are the individuals that always vote for the incumbent party. According to Joanis (2010) parties target each group depending on the distance to the election they are aiming to win; if the election is far in the future, they might want to target their core supporters with long-lasting goods like roads or bridges because their durability is "arguably a desirable feature from the point

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<sup>1</sup>Fleck (2001), p. 378.

<sup>2</sup>Fenno (1978), p. 82

<sup>3</sup>Nupia (2011), p. 3

of view of politicians who are interested in cementing long-run loyalty relationships with voters.”<sup>4</sup> On the contrary, if the election is near, politicians try to please swing voters with short-run benefits.

To ascertain if the government targeted loyal constituencies with long-lasting forms of aid I use a cross sectional dataset of the municipalities containing socio-economic information for the year 2011, electoral outcomes for the last three elections for mayor and detailed information about the aid resources received from the government and the use given to them. With this data I carry out an analysis using various specifications with different kinds of aid on the left hand side and the coalition of government’s vote share plus socio-economic controls on the right hand side. I use an instrument for the coalition’s vote share in order to correct for endogeneity problems, obtaining therefore reliable estimates.

The results obtained support the loyal voter view, and also show that the government allocated intensively long-lasting aid items to its core supporters suggesting that the aim of the new coalition of government is to create a durable relationship with their voters in order to win elections in the future.

The document is organized as follows. Section 2 contains a revision of the related literature on pork-barrel politics. Section 3 describes the institutional scenario of the distribution of the relief resources and the political situation of the country. Section 4 contains a description of the data. Section 5 presents the estimation strategy and the results obtained and section 6 concludes.

## 2 Related Literature

There are in the literature of pork-barrel politics, theoretical models and empirical evidence supporting the idea of targeting swing, loyal, or both groups of voters. On the one hand, Lindbeck and Weibull (1987) developed a model explaining why politicians target swing individuals, according to them, when groups of voters have similar consumption preferences, but different preferences over the parties, then the competing parties will tend to favor swing voters (or as they call them, marginal) with the allocation of resources over the loyal ones. Supporting this idea, Wallis

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<sup>4</sup>Joanis (2010), p. 120

(1987) and Wright (1974) found a positive correlation between the volatility of presidential vote and the amount of resources received by the states under Roosevelt's "New Deal" policies. In particular the second one found that swing states where a small difference of votes would be decisive for presidential elections received larger grants from the central government.

On the other hand, Cox and McCubbins (1986) presented a model to explain the preferential allocation of resources toward loyal groups. In their model parties or politicians maximize their expected vote and individuals choose the party that gives them the greater utility level, thus groups can be ordered in terms of responsiveness to the money promised by the parties, with opposition groups being the least responsive, swing groups being more responsive than the opposition and as the most responsive group the one of loyal supporters. According to that, politicians are more certain about the electoral responsiveness of their core supporters and more uncertain about the response of the other groups. Here, the risk profile of the politicians play an important role because the allocation of resources is seen as an investment, therefore, a risk averse politician allocate a greater amount of money to the least risky investment (loyal group), the swing group receive accordingly less resources, and the opposition gets the smallest share of the money. Thus the more risk averse the politician is, the more resources receive the core supporters.

In the literature a number of studies support the idea that politicians skew the allocation of resources towards their core groups of supporters; that is the case of Larcinese et al. (2008), where they analyse the influence of the president in the allocation of budget across states in the US. By using data of federal outlays and presidential elections they try to test if the resources were disproportionately allocated to swing or loyal states, in addition the authors try to test the influence of the party alignment of the state governors with the executive on the allocation of the budget. They use as a measure of swing states how close the past election was to the 50-50 share for each competing parts and also an indicator of the number of times that a state changed its support from one party to another. Both of them were not significant in their specifications, therefore the authors did not find any evidence supporting the swing voter view. In contrast, by using the share of presidential votes to measure the level of support a state gave to the president in the elections,

they found evidence supporting the loyal voter view (which they call ideological bias), furthermore the authors showed that states where the governor belongs to the same party as the president receive disproportionately more money while states with representatives belonging to the opposition in the house of representatives tend to receive less resources.

Another study supporting the preference toward loyal voters is Ansolabehere and Snyder (2006), where the authors argue that one of the problems with the swing voter models is that they take turnout as fixed, so politicians attempt to convert voters to their side instead of mobilize new voters to support them, and as they show, turnout varies from election to election and is very influential in the outcome. The study uses data of intergovernmental transfers at the county level in the US, and electoral outcomes for the presidential elections, the authors use a variable that captures the party in office (republican or democratic) to try to find if counties with the same orientation as the ruling party receive more votes, and two measures of swing counties, the closeness of the vote shares, and the standard deviation of the votes in the county across the elections.

The authors find similar results as in Larcinese et al. (2008), they do not find any evidence supporting the favorability toward swing constituencies, but they find that counties where the state's majority party has larger support receive more funds than those with an opposing majority in conformity with the loyal voters view. They argue that this behavior is due to the fact that spending affects turnout in the elections, this happens for two reasons, one is that spending creates more jobs and contracts, therefore people feel that their votes affect them personally because they seem to have more participation in the actions of the government. The other reason is that firms that depend on those transferences of money to the constituency tend to mobilize their workers to vote. Thus it is more advantageous for the ruling party to allocate disproportionately more resources to its loyal constituencies to get more supportive voters in order to win future elections.

Apart from the evidence from the United States discussed so far, there is also empirical evidence of the loyal voter view in Colombia. Nupia (2011) tries to find if a cash conditional transfer anti-poverty program of the government was disproportionately allocated to swing or loyal constituencies, to do so, the author uses data

of the beneficiaries of the program and the electoral outcome of the elections for president, governors, mayors and house of representatives at the municipality level to build similar measures of the support of the constituencies as described in the previous studies, he uses the vote share of the governing coalition of parties and the standard deviation of that share of votes as a measure of concentration of loyal or swing voters respectively. The study finds that the governing coalition biased the program disproportionately toward loyal municipalities; on the contrary, evidence of the program being used more intensively in swing constituencies is not found.

Finally, there is a set of models that encompass both the loyal voter and the swing voter view, and explain why and when do politicians favor one group over the other; Dixit and Londregan (1996) for example develop a model in which information plays an important role in reducing the costs of redirecting resources. On the one hand if the competing parties have no special advantage to deliver special benefits to a certain group, then they will target swing individuals because they are less attached to any party and therefore are more willing to trade their party affinity for personal transfer receipts, on the other hand, when such advantage exists, parties face less costs by targeting their own core supporters because they have more information about their preferences and thus can aim to more particular benefits to obtain larger political benefits.

Fleck (2001) set a model explaining that politicians decide to favor swing or loyal voters depending on the type of election they are aiming to win. In the model the author assumes that all the counties are equal in all characteristics except for the number of loyal and swing voters, and for the general election loyal voters support the incumbent's party despite how it allocated the resources, while the votes of swing individuals depend on the amount of benefits received, furthermore he assumes that the loyal voters in the general election are the voters in the primary election and that the support for the incumbent in the primary election is proportional to the resources allocated to the county. The outcome of the model is that if the parties are aiming for the state level primary elections, then they would please loyal voters, therefore counties with more loyal voters would receive more resources, while if the aim is the state level general elections, then parties would favor swing voters, thus counties with a higher number of swing voters would receive more funds. The author

also provides empirical evidence that support his theoretical findings using data of the "New Deal" years in the United States. The same period but with a broader dataset was examined in an empirical work by Fishback et al. (2003) to show that some of the programs created under the "New Deal" were targeted more intensively toward loyal voters, while other programs systematically favored swing individuals.

Besley and Preston (2007) present a different approach, in their model the favorability toward loyal voters is not driven by purely electoral motives; parties maximize the welfare of its members, and therefore allocate disproportionately more resources to their loyal groups; on the other hand the targeting of swing groups responds to purely electoral incentives. The authors also provide some empirical evidence using data of local governments in England showing that when a strong bias toward a party exists, then the party tends to deliver more extreme policy outcomes by over-investing in their loyal supporters, but when the bias is reduced, then parties try to moderate their true preferences to favor swing voters.

In a more recent study, Joanis (2010) explore the time dimension in a dynamic model of two periods where an incumbent allocate resources between two districts, a loyal and a swing one. The model shows that when the aim of parties is to win future elections, they provide disproportionately more resources to their loyal supporters; conversely, if the aim is to win immediate elections, then parties bias the allocation of resources toward swing individuals. The author tests his theoretical findings by making use of data of road expenditure and electoral outcomes at the electoral district level within the Canadian province of Québec. The results obtained are in line with the predictions of the model, Joanis found that road expenditure in the Canadian province was biased toward loyal groups, and this is explained according to the author because roads, a long-lasting public good, are used by politicians to build equally long lasting loyalty relationships with the voters.

After this literature revision it is evident that there is a variety of situations and reasons that dictates whether a party should (and do) favor its loyal supporters or swing individuals. In the following sections it will be shown which ones are supported by the results of the study.

### 3 Background

During the second semester of 2010 and the first semester of 2011, as a consequence of the intense rainfalls caused by the climate phenomenon known as "la Niña", Colombia suffered the worst flood in its recent history, according to official reports<sup>5</sup> it affected 29 out of the 32 departments of the country, which accounts for more than 90% of the territory. As a result of the disaster more than 400 people died, about one and a half million hectares of land were flooded, more than 2.400.000 people were affected and 2.000 roads, 2300 institutional buildings and 500 aqueduct systems were damaged.

To address the effects of the emergency caused by the flood, the Colombian government created Colombia Humanitaria (CH), which is both a governmental campaign to repair the damages caused by the flood, assist the affected people, and prevent similar emergencies in the future; and a branch of the National fund for the management of risk of disasters (Fondo Nacional de Gestión de Riesgo de Desastres), which is a fund of the government to attend the needs originated by disasters, calamities or similar events. Through CH, the government transferred resources to departments and municipalities according to the requests presented by them to execute the projects to deal with the damages caused by the flood and prevent future emergencies. The deadline for the presentation of the requests was June 30th 2011, time when according to the Institute of hydrology, meteorology and environmental studies IDEAM (for its initials in Spanish), the "Niña" phenomenon had already passed and the rainfalls were at the normal levels. The aid provided by CH (which was around US \$2.9 billion plus international aid), was used mainly in three ways; one was the humanitarian help, which consisted in kits of food and hygiene, the second was temporal accommodation, which included payments of rent fees for the affected families, temporal shelter, and repair works for the affected houses. And the third one was the reparation of roads, aqueducts, dams and other works to rehabilitate the affected zones and prevent future emergencies.

All the transferred resources were closely watched by the control agencies of the country like the Contraloría Nacional and the Procuraduría Nacional, with the former one being in charge of watching the use of the money, and the latter one

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<sup>5</sup><http://www.colombiahumanitaria.gov.co/Paginas/QueesColombiaHumanitaria.aspx>

in charge of watching the behavior of public employees; in addition various private companies specialized in the control of public works were hired to avoid the loss of resources and to ensure that the works were done efficiently.

Afterwards, on October 2011, local elections were held across the country to vote for the governors of the departments and the mayors of the municipalities, those races took place in a somehow new political scenario. By taking a look of the history of political parties in Colombia, the two biggest and most traditional parties of the country, *Conservador* and *Liberal*, which roots can be traced to the very origins of the country as an independent nation, have always struggled for the control of the government, however, in 2002, the political panorama changed when Alvaro Uribe was elected president with the "highest turnout of the electoral history of the country"<sup>6</sup> running as candidate of a newly created party called *Primero Colombia* and supported by *Conservador* party. He managed to change the constitution to allow for a presidential reelection, and for his second term in office he was backed by a coalition of some of the biggest parties in the country including *Partido Social de Unidad nacional*, *Partido Conservador Colombiano*, *Partido Cambio Radical*, *Movimiento Alas Equipo Colombia*, *Colombia Democrática*, *Colombia Viva* and *Convergencia Ciudadana*, so even if the traditional parties were still an important player within the politics of the country, the rivalry between them was not as important as the antagonism between the coalition of government and the opposition for the characterization of incumbent and challenger parts in the present study. For the time of the next presidential races some of those parties had been dissolved while others were absorbed by other parties within the coalition, so the candidate supported by the outgoing president, Juan Manuel Santos, was elected president for the period 2010-2014 with the support of *Partido Social de Unidad nacional*, *Partido Conservador Colombiano*, *Partido Cambio Radical* and *Partido de Integración Nacional* (former *Convergencia Ciudadana*). Those parties compose the coalition to which I refer throughout the present study.

It is worth noting that the emergency caused by the "Niña" phenomenon was the first big test faced by the new government of president Santos, who took possession of the office on August 2010. As described in subsequent sections this could have

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<sup>6</sup>Olivella and Vélez (2006), p. 2

had an impact on the allocation of resources across constituencies.

## 4 Data

In order to find out how the government allocated the relief resources, I use cross sectional data at the municipality level for the year 2011, it contains socio-economic information and electoral results and information about the relief transfers of 1100 municipalities throughout the country. Following the literature of distributive politics I use as the dependent variable measures of the resources transferred for relief works. The information was obtained from Colombia Humanitaria, and it contains detailed information about the amount of money allocated and the items it was spent on; as mentioned in the previous section, the money was mainly used in three ways, humanitarian help, housing and repair works, so in the spirit of Joanis (2010) I use three different dependent variables in my estimations to account for the difference in the nature of the aid and its influence over the receiver (i.e. long-lasting works vs. short lived expenditures), though the main focus of the study is the repair works. The variables used are *LWORKSPC*, which account for the logarithm of the total amount of money per capita received by the municipality for the construction of roads, dams, levees, canals, bridges, retaining walls, aqueducts and other works of water contention, *FOODPC* measures the number of food and hygiene kits per capita received by the municipality and *HOUSINGPC* contains the number of units of housing relief provided including the number of temporary shelters, rent aid payments and repaired houses.

Taking as a reference Larcinese et al. (2008); Joanis (2010); Nupia (2011), on the right hand side of the equation the main variable of interest is the coalition of government's vote share *COALVS*, this variable measures the concentration of loyal voters. It accounts for the sum of the vote share of the candidates for mayor belonging to the parties that supported the election of president Santos as described in the previous section. In addition, to get an idea of the attitudes toward swing municipalities, by using data of the last three elections for mayor (2003, 2007 and 2011) I constructed a variable called *SWINGMUN*, which is a dummy that takes the value of one if the municipality has switched between electing candidates of

the coalition and the other parties in the last three races, and is equal to zero if the municipality has either elected always candidates from the coalition or always candidates from the other parties. The electoral information was taken from the Electoral National Office (Registraduría Nacional del Estado Civil).

I also include different variables to control for socio-economic factors that can influence the size of the relief money, like GDP per capita<sup>7</sup>, measured by *GDPPC*, total population based on inter-census projections and population density measured by the number of inhabitants per square meter living in the municipality are captured by *TOTPOP* and *DENS* respectively; the variable *POVNBI* measures the share of the population under poverty within the municipality using the unsatisfied basic needs methodology NBI (for its initials in Spanish), which is the direct method to measure poverty most used in Latin America, it was "introduced by CEPAL at the beginning of the eighties to take advantage of the information of the demographic and residential censuses in the characterization of poverty"<sup>8</sup> so it uses the information of the censuses to construct indicators of basic needs that a household must cover, like "access to a residence that ensures minimum standards of habitability for the household, access to basic services that ensure an adequate sanitary level, access to basic education and economic capacity to achieve minimum consumption levels."<sup>9</sup> According to this methodology, a person is considered poor if the household where he or she lives presents a lack of at least one of the aforementioned basic needs.

The information for the construction of those variables was obtained from the National Planning Department (Departamento Nacional de Planeación). Additionally, with information from the Department for the Social Prosperity (Departamento administrativo para la Prosperidad Social) I generate *DISP*, which is a dummy that takes the value of 1 if there was displacement in the municipality, that is, if people left the municipality due to acts of violence related to the internal conflict of the country between the guerrilla groups, the paramilitary groups and the government, and zero otherwise. Finally, to control for the damages caused by the flood I use *AFFECT*, which measures the share of the population that suffered any kind of injury, had missing or diseased relatives or sustained total or partial losses of immovable

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<sup>7</sup>This variable was only available at the department level.

<sup>8</sup>Feres and Mancero (2001), p. 8

<sup>9</sup>Ibid.

property or agricultural activities due to the emergency. The information for this variable was taken from the National Statistics office (Departamento Administrativo Nacional de Estadística).

The summary statistics of the variables are presented in table 1, as we can see, the variables measuring the housing aid per capita and the number of food and hygiene kits per person unlike the works per capita are in levels, this is because given that some of the municipalities did not receive food aid or housing relief, some of the observations take the value of zero, therefore by taking logarithms more than a third of the observations are lost, and this affect the results substantially. The table shows that the population differs substantially across municipalities, with the smallest one having close to 1000 inhabitants, while approximately 7.5 million of people live in the biggest one. The same happens to the density, which varies between areas scarcely populated with less than one individual per square kilometer to municipalities containing more than 15 thousand people per square meter. Poverty appears to be high across constituencies with the average municipality having 40% of its population under poverty.

The floods affected on average 15% of the population of the municipalities, in some of them the whole population appear to have suffered damages, while in some others no individual appear to be affected. The table shows that some municipalities present a number of people affected that is higher than the total population, in fact the number of municipalities showing this pattern are five in total. This could have happened because the values of population are calculated based on inter-censuses estimates, so in those municipalities the projected values of the number of individuals could have been underestimated, and the actual population of the municipality is higher, so if the disaster affected all the population in these constituencies, then the share of the affected people is bigger than one.

## 5 Estimation and Results

Taking as a reference the literature on pork-barrel politics, I expect to obtain robust results supporting the loyal voter view, that is, I pretend to find a causal relationship between the the coalition vote share and the money allocated to the municipalities,

however, in accordance to Joanis (2010) it is foreseen to happen when the variable on the left hand side accounts for long-lasting works, in contrast it is expected to be not significant or insignificant with a negative sign when the dependent variable of the model measures short-lived aid items. According to the same line of study, the variable that shows whether the municipality is swing or not, should be statistically irrelevant or significant with a negative sign when accounting for durable works on the left hand side, and significant and positive when accounting for short term aid.

In order to try to find whether the government allocated the relief resources disproportionately towards its loyal voters, I estimate an OLS model with the aid resources on the left hand side and the concentration of loyal voters plus control variables on the right hand side:

$$LWORKSPC = \alpha + \beta COALVS + \gamma X + \nu \quad (1)$$

Where X is a set of controls containing *GDPPC*, *TOTPOP*, *DENS*, *POVNBI*, *SWINGMUN* and *AFFECT*. The results are displayed in Table 2. According to this specification the variable of interest, *COALV*, is positive and highly significant, its coefficient indicates that with an increase of one percentage point in the concentration of loyal voters, a municipality receives an increase of 0.8 percentage points of relief money per person for works independent of the level of damage sustained by the flood. The results also show that municipalities located in a wealthier department received relatively more resources. Something that could help to explain this finding is that wealthier departments have more economic activity, and therefore have more infrastructure e.g. more roads, more bridges, etc. thus the damages in those items within those departments are possibly larger, in addition, since the economic activity is higher in those lands, a bridge or a road, or similar works, have higher returns than the same kind of construction in a poor area with low economic activity. In contrast, poverty, density of the population and being a swing constituency appear to have no impact in the distribution of resources, furthermore the level of affectation is highly significant and has a positive sign, showing that the aid was distributed not only according to political motives, but also served the aims of the program by giving more resources to the areas that sustained more damages. The negative sign of the population is due to purely technical reasons, given that

the variable on the left hand side of the model is in per capita terms, an increase in the population on the right hand side increases the denominator of the dependent variable causing it as a whole to be smaller.

The results appear to be in line with the literature; however, the coefficient of the variable of interest, the coalition's vote share, is likely to be biased. One of the reasons is that the variable of interest could also be correlated with observable and unobservable variables captured in the error term. Another plausible source of endogeneity is the presence of simultaneity. As has been described by Joanis (2010) "partisan loyalty is the product of repeated interaction between parties and voters. Hence, while loyalty can be expected to be a causal factor in the allocation of spending, it is also likely that causality works in the opposite direction if governments actually spend with the intention of nurturing local partisan loyalties."<sup>10</sup> In fact, there is a study carried out in the same context showing that the causality can work in both ways. In the same setting of the disaster caused by the "Niña" phenomenon in Colombia during 2010-2011 Gallego (2012) uses a panel of the municipalities in containing data of the resources provided to deal with the damages, electoral data of elections for mayor and climatic and geographic information. The author found that the allocation of resources was used to buy votes to increase the probability of reelection by the incumbents. The results showed that the level of affectation sustained by the municipalities increased the probability of the incumbent party of being reelected and that the amount of money allocated increased the probability of reelection.

To solve the endogeneity problem I use an IV approach, therefore it is necessary to find a variable that is highly correlated with the variable of interest and is not correlated with the variable on the left hand side of the equation. A variable that fulfill those characteristics is DISP. This Instrument is expected to be highly correlated with the coalition vote share since, as pointed out by Nupia (2011) "those municipalities that have suffered an increase in guerilla attacks have more intensively supported the incumbent's coalition. This result reflects the success of the main political platform of the governing coalition— i.e., the fight against guerrillas. Since guerrillas have been forced to redirect their attacks due to the government's

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<sup>10</sup>Joanis (2010)

military strategy, those municipalities that have seen an increase in guerrilla attacks have been more likely to support the incumbent's coalition based on its success in other municipalities.”<sup>11</sup>

In addition, the displacement of people from the municipality is a good measure of the occurrence of guerrilla attacks because according to the NGO CINEP/PPP Popular Center of Teaching and Research / Peace Program (Centro de Investigacion y Enseñanza Popular / Programa por la Paz) the violent actions started by the guerrillas accounted for approximately 65% of the total violent acts of the year, while the violent events started by the paramilitary groups accounted only for 5%, the rest were actions started by the military forces to fight mostly the guerrilla groups and the paramilitary groups to a lesser extent (see Figure 1). Furthermore it is very unlikely that the violent guerrilla attacks have had an impact on the relief resources allocated to the municipalities.

Following this identification strategy I run the same specification as before but using two stage least squares 2SLS, information about the first stage and the outcome of the second stage are reported in column 1 of table 3. Regarding the validity of the instrument, it is highly significant (1%), furthermore, as shown at the bottom of table 3 the F-value of excluded instruments is 29.55, way higher than the broadly accepted "rule of 10". And since there is no apparent reason why the violent attacks occurred throughout the year would affect the allocation of aid resources. One possible problem with the exclusion restriction would be that the displacement of people reduces the population in the municipality affecting the variable on the left hand side which is in per capita terms, however, as mentioned before the population is a projection using inter-census data, therefore the number of displaced people during the year does not affect directly the data of the population of the municipality. Hence it can be concluded that *DISP* is a good instrument and that the coefficient of the variable of interest is unbiased, thus showing reliable estimates. With respect to the direction of the bias, as table 3 shows, the coefficient of the vote share of the coalition is larger than the one obtained using OLS (6.8 vs. 0.8) suggesting that the coefficient was downward biased in the first specification.

The results obtained with the IV approach show that independent of the magni-

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<sup>11</sup>Nupia (2011), p. 21

tude of the damages sustained, with a one percentage point increase in the concentration of loyal voters, a municipality would receive 6.8 percent more relief resources per person. The impact of the wealth of the department in the allocation of aid resources appear again to be positive, however its coefficient is close to zero. Regarding the total population, it is negative and significant for the reasons previously described. The density of the population was not a significant factor in the distribution of relief resources, on the contrary, poverty was; its coefficient is significant and shows that poorer municipalities received more money, more concretely, a one percentage point increase in the poverty level measured by unsatisfied basic needs, led to an increase of 0.6 percent of the resources per capita received. This can be due to the fact that poorer areas are more vulnerable to natural disasters because of the lack of public investment in the prevention of such events; therefore those municipalities need a larger amount of money in order to prevent future similar events. The model also shows that swing municipalities received a smaller amount of resources for repair works. The coefficient of *SWING* is negative and significant, and it indicates that swing constituencies received on average 0.3 percent less aid resources per person than the other ones. The level of affectation is significant and has a positive sign as expected.

The results provide robust evidence showing that the government allocated the resources of repair works by targeting intensively municipalities with a higher concentration of loyal voters, conversely, it is found that swing municipalities were not specially favored with the allocation of resources, furthermore, the results present suggestive evidence indicating that swing constituencies received in fact less money than the others. Those results are in line with the loyal voter view defined in the literature. As mentioned in section 2, Larcinese et al. (2008) by using the same measure of concentration of loyal voters, the incumbent's vote share, found that loyal counties in the United States received more federal outlays in relation with the other ones; in contrast they found no evidence supporting the swing voter view. Ansolabehere and Snyder (2006) also had results in accordance with the loyal voter view by showing that counties with more supporters of the ruling party in the state within the United States received more intergovernmental transfers than those with fewer supporters, and once again, no evidence of preference toward swing munic-

palties was found. In a context closer to the present study in geographical terms, Nupia (2011) also using the incumbent's vote share to account for the concentration of loyal voters, found that in Colombia a cash conditional transfer anti-poverty program was expanded giving preference to loyal municipalities over the others. The author also did not find supporting evidence in favor of the swing voter view.

For a better understanding of the mechanics of pork-barrel politics in the present study, it is also important to know the reasons behind the favorability toward the loyal groups displayed by the results. One reason could be, according to Ansolabehere and Snyder (2006) that the results could be explained by the interest of the coalition of government in mobilize voters to support it in the polls based on the idea that more resources given to a constituency has a positive effect in the voter turnout, as a result, by giving more votes to a loyal municipality the ruling coalition of parties would attract more loyal voters. However, the transmission channel through which this occurs is not very likely to be present here. The authors argue that the way turnout is positively affected by the transferred money is because the resources create new jobs, making people feel more personally involved in politics, and benefit firms, causing them to encourage their workers to vote, nonetheless, given that the aid money was just a temporary inflow of resources, the jobs it could have generated were just temporary as were the benefits received by the involved firms, therefore the mobilization of voters is not a valid reason for the results in the present study.

Another argument described in the literature (Dixit and Londregan, 1996) that could fit the empirical findings mentioned above is that the government intensively targeted loyal constituencies because it knows better its own partisans than it knows the other individuals, therefore by spending more money in its supporters the government faces less costs because it can use that privileged information to target more particular benefits for the voters thus obtaining larger political benefits. However, as explained in section 3 the incumbent in this case is a coalition of different parties, which have different ideologies and goals; they have different preferences as also their partisans do, therefore the information advantage of the coalition as a whole vanishes because by trying to target a particular benefit for partisans of one of the parties could be at the same time harming the interests of the supporters of

another party within the coalition.

It is also hard to believe that the incumbent allocated the resources based purely on the maximization of the welfare without taking into account the political advantage of its actions as suggested by Besley and Preston (2007), according to the authors, when a strong bias exists toward the ruling party, then it would tend to overinvest in its loyal constituencies, however, the coalition encompasses a variety of parties with different views, which were even opposing each other before entering the coalition, and as mentioned before, what is beneficial for one party's partisans may not necessarily be beneficial for the followers of other party. In fact, according to Dixit and Londregan (1996) "voters are attached to parties for reasons other than their own receipts from tactical economic redistribution. For some, the reason is a strong attachment to a party's issue positions, including such matters as international diplomacy and defense, or the balance between citizen's rights and the needs of law and order; for others there are personal loyalties to the parties themselves."<sup>12</sup> In addition, according to Green et al. (2002) partisanship is very stable over time, and its changes occur only in the long run, so for individuals to have a strong bias toward the coalition, which was relatively new, it would be necessary that they change their partisan affiliations, which as just mentioned, would take some time. Therefore the arguments presented by Besley and Preston (2007) and also those of Dixit and Londregan (1996) appear not to explain the empirical results obtained in the present study.

So far the arguments have left aside a very important factor that could help to explain the disproportionate allocation of resources directed toward loyal municipalities, the time. As mentioned earlier, Joanis (2010) argues that the time frame is an important factor when deciding the distribution of resources across constituencies; he argues that when the aim of the incumbent is to win elections in the long run, then he will give more resources to the loyal voters because "the existence of long-term relationships between parties and the constituencies forming their electoral base provides an incentive for forward-looking incumbents to favor them"<sup>13</sup> , so since the aim is to build a durable relationship with core supporters, the expenditure items given to them must be long-lasting as well, therefore works like roads,

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<sup>12</sup>Dixit and Londregan (1996), p. 1135

<sup>13</sup>Joanis (2010), p. 118

bridges and others alike are awarded disproportionately to loyal constituencies. In contrast, if the aim of the interested party is an immediate election, it will tend to favor swing constituencies because there "the marginal dollar spent is most likely to make a difference in terms of immediate electoral outcomes"<sup>14</sup> ; accordingly, the expenditure items directed toward those constituencies have mostly a short duration, or could be "in the limit, pure cash"<sup>15</sup>

In order to find out if these arguments drive the results found earlier in this section, I ran the model in (1) using 2SLS with different variables on the left hand side that account for aid items that differ in their durability. First I use *FOODPC* as a dependent variable. As explained in the previous section, this variable contains the number of food and hygiene kits received by the municipality, which are items with a short duration, therefore, unlike *LWORKSPC* it is expected that this kind of aid is not intensively targeted toward loyal municipalities. The results of the estimation are reported in column 2 of table 3. As expected, the coefficient of the coalition's vote share is not significant, in addition, the coefficient indicating if the municipality is swing or not, even though it is not significant, is now positive, which compared with the significant and negative coefficient of the results in column 1 of table 3 suggests that at least swing constituencies did not receive less food and hygiene kits than the others. It is important to note that the results drawn from the variable *SWINGMUN* in all the specifications are treated as suggestive, not conclusive, because of the uncorrected possible presence of endogeneity on the estimators of the variable. Regarding the other control variables present in the specification, the results show that municipalities located in wealthier departments received more kits, although this effect is close to zero. Also, the level of affectation of the municipality is highly significant and positive, showing that the food and hygiene aid was delivered according to the number of affected people in line with the aim of the relief program.

Using now *HOUSINGPC* on the left hand side of the equation, I obtained different results. Recalling section 4, the variable accounts for the number of housing relief including temporal shelters, rent fee subsidies and restoration of affected residences, thus it contains short-term aid like temporal shelters and rent subsidies, and

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<sup>14</sup>Ibid.

<sup>15</sup>Ibid p.141

long-lasting works in the form of reconstruction of houses, therefore the allocation of this form of relief could be expected to be intensively directed toward loyal voters, swing constituencies or both, depending on what effect dominated within the variable. Nevertheless, the facts related to these items can help to clarify this point. Regarding the temporal shelters, according to Jorge Londoño, one of the members of the board of the National Fund for the Management of Risk of Disasters, "most of the families will have to remain there for at least two more years."<sup>16</sup> This statement was made on 2013, so the temporal shelters will be in use for at least five years in total (from 2010 to 2015), and given that the presidential elections in the country take place every four years, this could be regarded as a long-term aid<sup>17</sup>. With respect to the rent subsidies, according to official sources<sup>18</sup> they are still being provided in 2013, and since, according to Londoño, there are still many residences that are not ready yet for the families to move back in<sup>19</sup>, their provision is likely to continue, so again it can be regarded as a relatively long-duration item. Therefore, *HOUSINGPC* encompasses long-lasting works, thus it is expected that the housing aid is distributed to favor loyal constituencies.

The regression output reported in column 3 of table 3 displays the results obtained by using the same specification as before but with *HOUSINGPC* as the dependent variable. It shows that the coefficient of the concentration of loyal voters is positive and significant as expected, and the magnitude indicates that independent of the level of damages, for a one percentage point increase in the concentration of supporters of the coalition, a municipality receives 70 additional housing units for every thousand individuals. In contrast with the other specifications, in this case municipalities belonging to wealthier departments receive less housing relief, this could have happened because in wealthier areas houses are built with better materials, hence are more resistant to the force of the water, so these constituencies needed less housing aid. Nevertheless, this effect is close to zero. The level of affectation is

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<sup>16</sup>[http://www.elcolombiano.com/BancoConocimiento/A/albergues\\_otra\\_calamidad\\_oficial/albergues\\_otra\\_calamidad\\_oficial.asp](http://www.elcolombiano.com/BancoConocimiento/A/albergues_otra_calamidad_oficial/albergues_otra_calamidad_oficial.asp)

<sup>17</sup>It is not defined in the related literature the length of time corresponding to long or short duration of the resources provided to a constituency, therefore here I take as a reference for long span of time the period between presidential elections, i.e. four years, because it is the longest inter election period in the country.

<sup>18</sup>[http://www.barranquilla.gov.co/index.php?option=com\\_content&view=article&id=3073](http://www.barranquilla.gov.co/index.php?option=com_content&view=article&id=3073)

<sup>19</sup>[http://www.elcolombiano.com/BancoConocimiento/A/albergues\\_otra\\_calamidad\\_oficial/albergues\\_otra\\_calamidad\\_oficial.asp](http://www.elcolombiano.com/BancoConocimiento/A/albergues_otra_calamidad_oficial/albergues_otra_calamidad_oficial.asp)

positive and significant as in the other regressions. In this case the coefficient of the dummy of swing municipalities is negative as in the case of the works; however it is not significant as in the previous specification. Regarding the other variables, none of them is found to have an impact in the allocation of housing aid.

So far the desire of the politicians to build a long-lasting relationship with their loyal voters in order to win future elections appear to be driving the results, consistent with this view, the outcomes show that long duration aid items like bridges, roads, dams, houses, long term rent subsidies, long term shelters and others, have been directed intensively toward loyal constituencies, while this pattern is not present when the items have a short duration like food and hygiene kits. In contrast there is no evidence showing preference toward swing municipalities with the allocation of resources. The results are in accordance with the circumstances of the country, as mentioned in section 3 the government of president Santos was new in office and was governing with a relatively new coalition of parties, therefore he needed to create a solid base of supporters of his government, and according with Larcinese et al. (2008) "If one investigates the reasons behind voters' loyalty, then it is hard to justify why loyal voters should support political actors that systematically allocate funds to the advantage of swing voters. Hence, in a context of repeated interactions between the electorate and the politicians, loyalty in itself can be sustained only if political actors build a reputation of rewarding their supporters."<sup>20</sup> And as described by Joanis (2010), the way politicians build a long-lasting relationship with their loyal voters consists on giving them accordingly long-lasting goods as I have shown the Colombian government did.

## 6 Concluding Remarks

The present work analyzed the distribution of aid resources from the government to repair the damages caused by the floods related to the "Niña" Phenomenon between 2010 and 2011 in the Colombian municipalities. According to the literature of pork-barrel politics, the incumbent can target either its core supporters (Cox and McCubbins, 1986; Ansolabehere and Snyder, 2006; Larcinese et al., 2008; Joa-

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<sup>20</sup>Larcinese et al. (2008), p. 454

nis, 2010; Nupia, 2011) or swing individuals (Wright, 1974; Lindbeck and Weibull, 1987; Wallis, 1987), the advocates of the former view, formalized first by Cox and McCubbins (1986), claim that politicians should please their loyal constituencies because there they can mobilize more individuals to vote for them them, the risk of "investing" in those constituencies is lower, they have an information advantage about the preferences of the voters, some argue that the decision is based purely on the welfare of the partisans or that it is made to gain support in future elections. In contrast, arguments in favor of the latter position, formalized first by Lindbeck and Weibull (1987), include that incumbents should target pivotal individuals in order to get more support for immediate elections or in order to convince those voters that are willing to exchange their party alignments for personal favors to support them. There is also some empirical evidence supporting each of those two ideas, and models explaining that they are not exclusive views and the mechanisms that drive politicians to target one group or the other.

The present work uses a cross sectional dataset containing socio-economic information for 1100 municipalities in Colombia for the year 2011. It also contains electoral results for the last three mayoral elections and detailed information about the different forms of aid used by the government including the amount of money allocated to the different areas to carry on works of reconstruction of infrastructure and the way that money was spent, housing relief and humanitarian help. I used this information to test the aforementioned views of favoring loyal or swing constituencies, and the results obtained are in line with the loyal voter view, the government allocated the resources of the works of reconstruction disproportionately toward its core supporters, these estimates were obtained by using an IV identification strategy, accounting therefore for possible endogeneity; hence the evidence found is robust. In contrast, no evidence supporting the swing voter view was found.

To find out the motives behind the preferential allocation of resources toward loyal voters I conducted two more regressions using other variables on the left hand side to account for different kinds of aid, long-lasting and short-lived aid. The outcomes indicated that long-lasting aid like roads, bridges, dams, long term housing and shelter, and others, were allocated giving preference to loyal municipalities, while temporary relief in the form of food and hygiene kits did not present this pattern.

The results show that the newly installed government allocated long-lasting forms of aid to its core supporters in order to build equally long-lasting loyalty relationships with the voters with the aim to win future elections, which is in line with the findings of Joanis (2010). Evidence of favoring swing regions was not found. It can also be explained by the same reasoning; since the aim of the government was not immediate elections, therefore there were no incentives for them to provide more resources to swing municipalities.

This work contributes to the literature of pork-barrel politics, by providing support to the loyal voter view in a novel context, aid resources in a developing country. It is a very important contribution, since studies of this kind are mostly carried out with data from the United States or developed countries, and the results can be very diverse for different types of economies due to specific characteristics as pointed out with an example by Ansolabehere and Snyder (2006) where they explain that the reason behind the results obtained by Dahlberg and Johansson (2002) showing that in Sweden the swing voter view prevails, is the high turnout in the elections of that country, which is different across the nations (according to the International Institute for Democracy and Electoral Assistance IDEA in 2010 the voter turnout in Sweden was 84.63%, and in Colombia was 43.75%<sup>21</sup>) so the present work contributes to the study of the allocation of resources in developing countries. In addition it adds evidence that shed light on the motives of the government to allocate the resources towards one group or another; it provides evidence supporting the idea that when aiming to win future elections, incumbents favor their core supporters with long-lasting goods.

One topic for further research is the line between long and short term in this context, it is important to know what politicians consider long and short run in order to identify the type of goods they could use to target swing or loyal constituencies to set the appropriate policy controls. More research is required in order to fully understand the motives behind the allocation of government funds among federal entities to tackle this issue and prevent that funds which could be used in a more beneficial way for the society to be used by politicians in an inefficient way for their own benefit.

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<sup>21</sup><http://www.idea.int/>

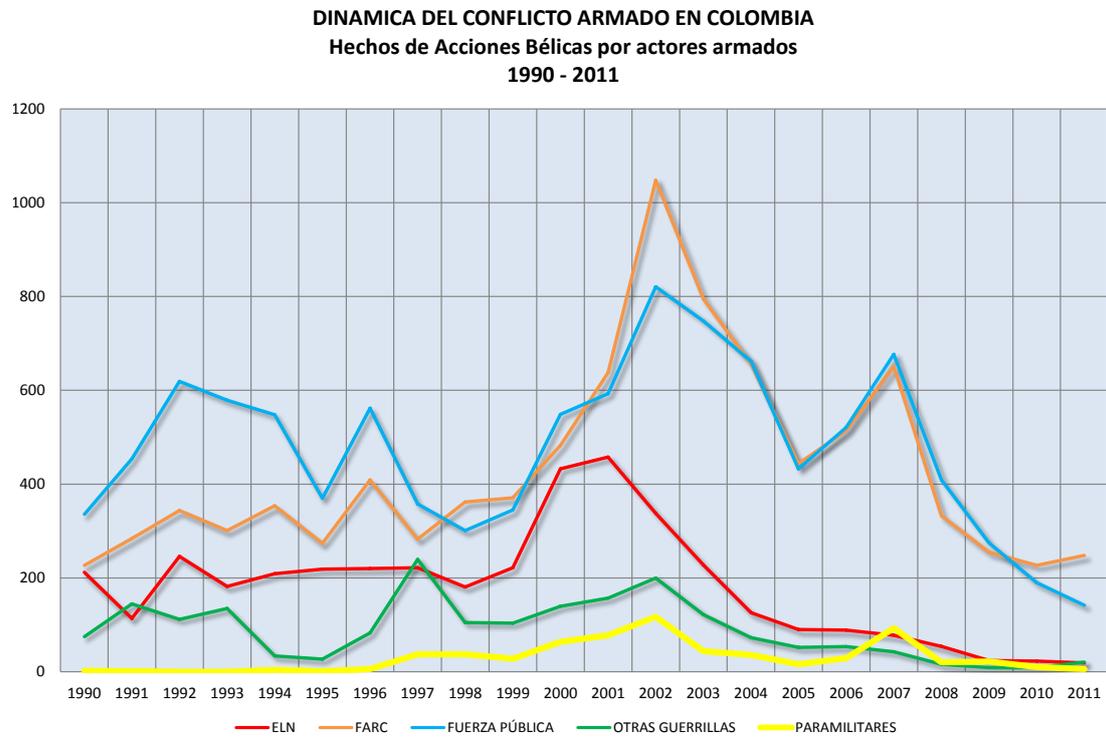
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## 8 Figures

Figure 1



Source: Informe Especial CINEP/PPP, 2012

## 9 Tables

Table 1: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
LWORKSPC	11.169	1.219	4.659	15.687	1032
FOODPC	0.058	0.117	0	0.987	1100
HOUSINGPC	0.011	0.048	0	1.083	1100
COALVS	0.58	0.289	0	1	1100
GDPPC	12795915.282	7367915.109	3836530.5	41409684	1100
TOTPOP	41743.963	255743.494	1007	7467804	1100
DENS	149.142	675.702	0.152	15020.294	1100
POVNBI	0.446	0.203	0.054	1	1100
SWINGMUN	0.682	0.466	0	1	1100
AFFECT	0.153	0.203	0	1.302	1100
DISP	0.381	0.486	0	1	1100

Table 2: OLS Estimation

(1)	
VARIABLES	LWORKSPC
COALVS	0.853*** (0.115)
GDPPC	0.000*** (0.000)
TOTPOP	-0.000*** (0.000)
DENS	-0.000 (0.000)
POVNBI	0.065 (0.184)
SWINGMUN	-0.085 (0.069)
AFFECT	1.113*** (0.164)
Constant	10.362*** (0.166)
Observations	1,032
R-squared	0.277

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 3: 2SLS Estimations

VARIABLES	(1)	(2)	(3)
	LWORKSPC	FOODPC	HOUSINGPC
COALVS	6.884*** (1.347)	0.067 (0.046)	0.075*** (0.026)
GDPPC	0.000*** (0.000)	0.000** (0.000)	-0.000** (0.000)
TOTPOP	-0.000** (0.000)	0.000 (0.000)	0.000 (0.000)
DENS	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
POVNBI	0.640* (0.384)	-0.007 (0.012)	-0.009 (0.006)
SWINGMUN	-0.373** (0.156)	0.002 (0.005)	-0.004 (0.004)
AFFECT	0.967*** (0.364)	0.465*** (0.027)	0.078*** (0.013)
Constant	6.713*** (0.860)	-0.059** (0.028)	-0.034** (0.014)
Observations	1,032	1,100	1,100
F-statistic first stage	29.55	30.54	30.54

Robust standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1