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Electoral Systems and Pork Barrel Politics: Evidence from Honduras

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Can electoral systems determine how particularistic spending is distributed in developing countries? The ways in which legislators seek benefits for their constituencies, have been the subject of longstanding debate in political science. While the discussion has broadly focused on the theoretical consequences of electoral systems on legislators' behaviour, little evidence has accounted for these alleged effects, especially in developing country settings. This paper focuses on particularistic spending in Honduras, providing a natural experiment to test different relevant hypotheses found in the literature. Since the early 1980s Honduras used a closed-list ballot with single-member and plurinominal districts electoral system. In 2004 the country moved to an open ballot structure keeping the same range of district magnitude. On the basis of original data from the Honduran Social Investment Fund, a battery of statistical tests is conducted. It is expected that under a closed-list system social spending per capita will increase as district magnitude shrinks, and the opposite will happen when an open-list system is in use. The evidence suggests that the change from a closed-list to an open-list system causes an increase in spending per capita. However, the interaction of type of ballot with district magnitude does not produce the results predicted by influential theories.

Introduction

The specific causes of the manner in which legislators seek particularistic benefits for their constituencies, activities framed as pork barrel politics (Ferejohn 1974, Lancaster 1986), have been the subject of longstanding debate in the political science literature. While the discussion has broadly focused on the theoretical effects of electoral systems on legislators' constituency service behaviour, few empirical analyses that account for these supposed effects have been made, especially in developing country settings. Studies analyzing the effect of electoral systems on the behaviour of legislators frequently suffer from major deficiencies. For instance, large-N studies while being quite useful to identify regularities across countries, are not suited to tracing the causal paths linking dependent and independent variables. On the other hand, very often well regarded case studies that evaluate the impact of open-ballot structures actually hold constant the electoral systems aspect.

Key theoretical contributions on the field of electoral systems and legislators' behaviour make the assumption that legislators base their work in office with the re-election goal in mind. In this regard, it is usually assumed that once in office legislators will adapt their behaviour to strategies that maximize their chance to achieve that goal. Since electoral systems are the frames that determine the formal rules in which candidates compete for votes that secure them seats, determined electoral system types are expected to generate specific strategies to obtain votes (Katz 1980, Carey, Shugart 1995, Cox 1987). The literature distinguishes between two types of electoral systems, systems that generate incentives to look for a personal vote and systems that encourage a party vote (Hicken, Simmons 2008). As defined by Cain, Ferejohn et al. the 'personal vote' is the "portion of a candidate's electoral support which originates in his or her personal qualities, qualifications, activities, and record" (1987, p.9), while the 'party vote' is the type of vote which is motivated by non-candidate attributes such as ethnicity, or reactions to contemporary national economic and social issues and conditions.

Much of the discussion has focused on the incentives for intraparty competition that would be generated by the resulting electoral system of the interaction between type of ballot and district magnitude and its effects on intraparty competition (Carey,

Shugart 1995). Systems where party leaders do not control the candidate selection, such as the proportional representation (PR) with open ballots, will stimulate candidates to differentiate their electoral offer from their co-partisans. On this basis, candidates will have more incentives to attract personal votes instead of party votes. The incentives are higher as the district magnitude increases, since there are more candidates to compete against. Whereas the effect is the opposite when party leaders control the candidate nominations; namely, under a closed-list PR system. In this case, Carey and Shugart (1995) argue that candidates have more chances to be individually identified by voters the smaller the constituency; therefore have more potential to look for a personal vote. Incumbent legislators can use their resources available to compete for votes under different electoral systems frameworks, for example through pork barrel strategies.

Despite of the debate generated in the academic community regarding the alleged effects of 'personal votes' and 'party votes' electoral systems over legislators' behaviour, the evidence found is sometimes contradictory and yet not conclusive. Honduras is an excellent case study to test these theories. This Central American country since the early 1980s used a closed-list ballot structure with single-member and plurinominal districts electoral system. In 2004 it moved to an open ballot structure keeping the same range of district magnitude. As far as I am concerned no one has assessed the empirical effects of this type of change.

In this paper I focus on particularistic spending at the Honduran Social Investment Fund (FHIS) as my dependent variable. This is a public institution, dependent on the Executive, created in 1990 to tackle poverty all over the Honduran territory. I use spending per capita, per municipality, per year, between 1990 and 2009, at FHIS as my unit of analysis. I find that the change from a closed-list to an open-list system causes an increase in spending per capita. However, the interaction of type of ballot with district magnitude does not produce the results predicted by the theory. Other political variables have explanatory potential as it will be analyzed in this paper.

This paper is organized in seven sections. In the first part I examine the relevant literature on pork barrel politics and electoral systems. In section two I set the hypotheses of this analysis. Part three introduces the case study of Honduras, followed by a detailed description of the data used in this study. Sections five and six present

the results of a set of statistical models with a corresponding robustness analysis. I finish this paper with some conclusions.

Electoral systems, intraparty competition and pork barrel politics

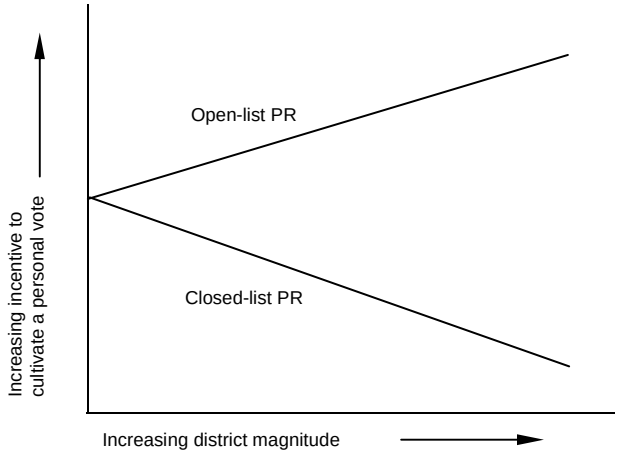
The factors that shape the distribution of particularistic spending; i.e. the provision of goods and services with funds that come from a common pool resource, to benefit an exclusive set of recipients (Carey 1996, p.103), is one of the puzzles mostly studied in the political science literature. An important part of the academic debate has focused on the role that electoral systems have creating incentives on legislators to appeal to pork barrel strategies. This is a type of constituency service in which legislators seek to secure particularistic spending for the constituencies they represent. Based on the assumption that legislators seek re-election, Lancaster (1986) triggered a discussion stating a relationship between district magnitude and legislators' behaviour. Basically, incumbent legislators have more incentives to allocate pork barrel projects in their constituencies under single-member district electoral systems, while in multi-member district systems the incentives tend to diminish. In a single-member constituency, the possibilities that voters bond a project with their legislator are greater. Whereas in a multi-member constituency voters "cannot easily determine who is actually responsible, if anyone, for obtaining a project" (Lancaster 1986, p.70).

Carey and Shugart (1995) agree with Lancaster (1986) in that single-member constituencies (plurality electoral systems) generate incentives in individual legislators to seek pork projects as a credit claiming strategy. However, they argue that in proportional representation (PR) systems, the forms of incentives available are dependent on intra-party competition. This in turn depends on the interaction between district magnitude (M) and the type of ballot. In closed list-PR systems voters vote for party lists and the allocation of candidates in electable positions depends ultimately on the party leadership. Thus, an incumbent legislator will have in theory reasons to be accountable to her party leaders. In an open list-PR electoral system voters vote for candidates and, all else equal, every candidate has the same probability to get a seat. In this case, candidates will have more incentives to try to differentiate themselves from their co-partisans, looking for votes based on personal votes, i.e. votes based on the candidate's individual attributes rather than their parties' characteristics (Cain,

Ferejohn et al. 1987). Consequently, legislators will have a different source of motivation to look for pork barrel projects for their constituencies and claim credit for them.

Carey and Shugart (1995) hypothesize that under closed list-PR systems intraparty competition will increase as M approaches one seat. While when an open-list PR system is being used the larger the district magnitude the larger will be the intraparty competition. Holding other factors constant, one should be able to observe the same pattern in particularistic spending distribution. The interaction effect just described between district magnitude and type of ballot is depicted in Shugart (2005), see Figure 1 bellow.

Figure 1. The differential effect of district magnitude on the intraparty dimension



Source: Shugart (2005, p. 47).

Discussion around the effects of district magnitude and intraparty competition

Since its publication, Carey and Shugart's (1995) argument has been subject of increasing scrutiny. Surprisingly, very few empirical analyses have been conducted to quantitatively asses the influence of district magnitude and type of ballot over particularistic spending. In all, scepticism among scholars surrounds most of the findings and theoretical claims. As Grofman and Fraenkel claim, much of the scepticism comes from the potential explanation of different factors against the electoral systems' explanations and the potential bias introduced in cross-national studies. Positive correlations between a certain type of electoral system sometimes can be interpreted by the sceptical as a form of "selection bias connected to variations in cultural patterns and economic development that cannot be fully addressed with only cross-sectional data" (2008, pp. 75-6).

Furthermore, Carey and Shugart's (1995) proposal has been challenged in theoretical grounds. Crisp et al. (2007) contend in Carey and Shugart's model that M compounds both, the competition between candidates from different parties for a seat and the intraparty competition. Thus, for Crisp et al. (2007) the attention on the incentives to build a personal reputation and look for a personal vote is lost when using M as an indicator of intraparty competition. In this regard, they argue that challengers and incumbent candidates from the same party not necessarily take into consideration the

number of seats available (i.e. M) when making decisions whether they choose to look for a personal vote or a party vote. Instead, they might consider other factors such as the number of seats their party is likely to win based on each party's past electoral experience.

Moreover, the re-election assumption, in which the explanatory potential of electoral systems over legislators' behaviour is mostly based, is often contended. Despite of the evidence supporting the argument that parliamentarians seek their re-election as a major goal, especially in developed country settings (Mayhew 2007 [1974], Cox, McCubbins 2007), Carey (1996) has found that legislators have other incentives for pork-barrel politics rather than staying in office for another term. In this regard, the possibility to attain a top hierarchical position in the public sector, for example as a minister or ambassador, motivates legislators to seek votes for their parties through constituency service in the constituencies where they have been elected, even when the system does not allow their re-election. In a similar vein, as Samuels (1999) points out, the internal party organization can be determinant in creating different career incentives for legislators, who balance which strategies gives them more revenues taking into consideration their own political and economic resources and those controlled by the party leaders.

As Strøm (1997) points out, besides the re-election goal legislators have more incentives to base their work, which makes the puzzle more difficult to solve. According to this scholar:

> When a parliamentarian chooses to focus his energies on constituent case work, for example, we first seek an explanation of that behaviour in his goals and in the constraints that political institutions place on his behaviour and opportunities.
>
> The political institutions that most powerfully enable and constrain parliamentarians are those that regulate their attainment of ballot access, re-election, party office and legislative office (1997, p.163).

Ballot access is consistent with the electoral system explanation proposed by Carey and Shugart (1995). However, other theoretical contributions note that whether people vote for parties or for candidates, does not necessarily determine if a legislator will focus his work on the constituency or the party. Instead, legislators seeking re-election

must render accounts of their work to different principals that could be their constituents, their party leaders, the president of the country or even the local authorities (Carey 2007, Carey 2009). But party office and legislative office are determined by the organization of the party and the legislative branch as well as their internal procedures; in this regard, as Strøm (1997) points out, the possible combinations of different forms of organization and internal procedures are broad, so are the difficulties to measure them.

Alternative explanations to pork-barrel politics

Apart from the discussion that has revolved around the effects of electoral systems on intraparty competition and its consequences for pork barrel politics, other explanations that account for pork barrel behaviour have been developed. These contributions can be classified in two groups. On the one hand, some scholars concentrate in the type of constituencies governments focus to allocate resources. Basically, whether in electoral terms it is a government stronghold, an opposition stronghold or a constituency where the party in government is dominant in most elections. On the other hand, others discuss the degree of economic and cultural development of a country and its implications in the political system.

Cox and McCubbins (1986) put forward a model of electoral competition aimed to explain the distribution of projects allocation. They consider the existence of three types of groups a legislator who is seeking re-election must address: (1) *supporters* —the reelection constituency in Fenno's (1978) terms—, (2) *opposition* —those who have consistently opposed him— and (3) *swing groups* —those who have not consistently supported him or have been hostile—. In this context, it is not clear to what group politicians will target pork-barrel spending. From Cox and McCubbins' perspective rational politicians will promise "benefits to those groups in their constituencies with the highest rates of return, and promise no or even negative benefits (i.e., costs) to those with the lowest rates of return" (1986, pp. 375-6). They conclude that candidates take into consideration the risk of losing their electoral constituency if they do not provide benefits to their voters. Therefore, their prediction is that risk-averse politicians will tend to over-invest in their closest supporters.

On the contrary, Lindbeck and Weibull (1987) argue that candidates have good reasons to appeal to swing voters. They assume that is reasonable for politicians to aim to obtain as much votes as possible so they can secure a minimum number of votes necessary to gain a seat. It may be possible that electoral constituencies are not enough to secure that minimum threshold. Furthermore, more loyal voters are expected in electoral constituencies that base their vote on ideologies or positions rather than the benefits they can get from politicians.

McGillivray (2004) takes some of the ideas of Cox and McCubbins (1986) and Lindbeck and Weibull (1987) adding institutional variables. She argues that the decision to target re-election constituencies or swing voters depends on the party system and the form of government. She establishes two basic types of party systems: weak party systems and strong party systems. The combination of party strength with electoral rules should give four different empirical combinations (1) strong-party majoritarian systems, (2) strong-party PR systems, (3) weak-party majoritarian systems, and (4) weak-party PR systems. Nonetheless, she focuses on the first three types because for her there is a relative indeterminacy of the predictions of weak-party PR systems (McGillivray 2004, p. 40).

Golden and Picci (2008) take McGillivray's (2004) argument and build a model of pork-barrel politics in contexts of open-list PR (weak party systems in McGillivray's terminology). For Golden and Picci (2008) what determines pork barrel in open list-PR systems is the degree of leadership of a legislator. According to their predictions, pork-barrel spending will tend to be concentrated in those electoral districts with strong leadership of legislators. To support their argument they analyse a panel data set of infrastructure spending in post-war Italy from 1953 to 1994 when it was used an open-list PR rule. To measure the legislators' level of leadership they take different proxies such as level of literacy of the MPs, positions of higher office within their parties, and whether legislators have held previous ministerial positions. Those proxies are aggregated and correlated at the constituency level. They find that the constituencies that show strong leadership of legislators from the governing party are more successful securing infrastructure investments. Whilst the effect is the opposite in constituencies with strong leadership from legislators of opposition parties.

Finally, another group of theories focuses on the levels of economic and cultural development to explain different patterns of political behaviour. This is especially the case of developing country settings where old political traditions contend with newer formal institutions (Norris 2004). Informal institutions might have an even stronger influence than the electoral rules on politicians' decisions and the outcomes of those decisions (Helmke, Levitsky 2006). Taylor Robinson (2006) argues that the high levels of poverty combined with verticalism of the political parties in countries like Honduras, create a clientelistic relationship between parties and voters. In this regard, despite of the incentives electoral institutions have in theory over legislators to appeal to personal reputations or party reputations, candidates and parties work together to gain votes from masses of voters who in exchange expect to get favours from the party in government.

To conclude, it has been observed that the puzzle is complex and the theoretical discussion broad. Important empirical contributions compare systems where people vote for candidates and for parties, such as the mixed electoral systems natural experiments, e.g. Germany (Stratmann, Baur 2002, Sieberer 2010). Others hold constant the electoral rules factor contrasting it with theoretical predictions, for instance the open list-PR system in Brazil (Samuels 1999, Lyne 2008). In general, few empirical analyses have been made testing the hypotheses on electoral systems and pork barrel politics. This is especially the case in developing country settings. Most important, Honduras is a unique case of natural experiment where the electoral system changes from a closed list-PR to an open list-PR while holding the district magnitude constant. This gives a broad range of variation within the country, giving the possibility to control for other explanatory variables of pork barrel.

Hypotheses

Following Carey and Shugart's (1995) model, in this paper I aim to test the following two main hypotheses:

Hypothesis 1. Under an open list-PR electoral system, pork barrel spending will increase proportionally as district magnitude enlarges.

Hypothesis 2. Under a closed list-PR electoral system pork barrel spending will decrease proportionally as district magnitude enlarges.

An alternative hypothesis comes from the fact that spending at the Honduran Social Investment Fund should be, according to its constitutive law, directed to the poorest regions in the Honduran territory.

Hypothesis 3. Pork barrel spending will tend to be allocated in municipalities in proportion to their levels of poverty.

I also test hypotheses related to whether spending will go to supporters, party in government's dominant municipalities[1] or opposition municipalities.

Hypothesis 4. Social spending per capita will be directed to government supporters regardless of the type of electoral system.

Hypothesis 5. Social spending per capita will be directed to the party in government's dominant municipalities regardless of the type of electoral system.

Hypothesis 6. Social spending per capita will be directed to opposition municipalities regardless of the type of electoral system.

The case of Honduras

The formation of a National Constituent Assembly in 1980 is considered the start of a civilian rule in Honduras (Bulmer Thomas 1990, Barahona 2005). This popularly elected Assembly enacted a new constitution which, with some minor changes, has

[1] I define 'party in government's dominant municipalities' as those municipalities where the party in government has won the plurality of votes in most but not all of the presidential elections.

ruled the country since 1982. The same constitutional body discussed and approved an electoral law in 1981 which remained in force until 2004, when it was substituted for a new electoral law. Each of these two electoral regulations represents two different models of political organization, which are directly related with the form deputies are elected. Basically, the electoral system used in the elections between 1981 and 2001 was characterized by having a closed-list system combined with two single and sixteen multi-member electoral districts. This meant a direct control of party leaders over who would run for elections and the positions of candidates on the party list. While the electoral system established in 2004 uses an open ballot structure with open endorsement, keeping the same district magnitude structure. Table 1 summarizes the characteristics of the electoral systems that have been used in Honduras between 1981 and 2009 and the elections where they have been applied.

Table 1. Elections for Congress in Honduras and ruling Electoral System, 1981 to 2009

Year of election	Ballot structure	Electoral formula used in PR districts	Number of seats	District magnitude range[1/]
1981	Closed-list (Fused)	Method Hare with largest remainders	82	1 – 14
1985	Closed-list (Fused)	Method Hare with largest remainders	134	1 – 25
1989	Closed-list (Fused)	Method Hare with largest remainders	128	1 – 23
1993	Closed-list (Fused)	Method Hare with largest remainders	128	1 – 23
1997	Closed-list (Separate)	Method Hare with largest remainders	128	1 – 23
2001	Closed-list (Separate)	Method Hare with largest remainders	128	1 – 23
2005	Open ballot with open endorsement	Method Hare with largest remainders	128	1 – 23
2009	Open ballot with open endorsement	Method Hare with largest remainders	128	1 – 23

[1/] The range of seats per constituency. In Honduras there are 2 single-member constituencies and 16 multi-member constituencies that since 1989 range from 2 to 23 seats.
Sources: Honduran Electoral Law of 1982, Honduran Electoral Law of 2004, Paz-Aguilar 2008.

The closed-list electoral system (elections 1981 – 2001)

During this period Honduras used a closed-list ballot structure, time during which political parties had to present a list of candidates for deputy positions. Primary elections were held at least since 1985, but their results were not binding for political parties. In practice, major parties would held the elections but the final endorsement of candidates was negotiated between the leader of the winning faction and the other

contending party factions (Taylor-Robinson 1996). Until 1997 it was used a fused method of elections; under this system voters casted one single vote for president and deputies.[2] The method of fused votes was used until the 1997 elections, and then ballots for president, party lists of deputies and lists of municipality representatives were separated.[3] To convert votes into seats in proportional systems it was used the Hare method with largest remainders.

The open ballot with open endorsement electoral system (elections 2005 – 2009)

This method was introduced in 2004 and used for the first time in the 2005 elections. The first distinction that has to be made is that under this system every party has to hold primary elections. Internal movements are formed and compete in the primary elections.[4] Compared to the previous model, parties cannot alter the resulting list of candidates to the legislature.[5] Both, primary and general elections, use the open ballot with open endorsement structure. This modification in the ballot implies derivative changes in the electoral formula. In this system voters can cast as many votes as there are seats available in a constituency. For example, Francisco Morazán is the largest constituency with 23 deputy positions. In this case voters can mark up to 23 candidates from the different lists parties present. Every mark counts as a vote for a candidate. After the election, every party list will be sorted from the most voted to the least voted candidate. The total of votes of every party list are added and then divided by the number of seats under competition in that constituency to get a quota of votes. When a party reaches that quota gains a seat. That seat is given to the most voted candidate in the party list. And the same procedure is repeated until no party can reach the quota. When this happens, if there are still seats available these will be assigned following the largest remainders method.

[2] Before 1993 the fused elections included the municipality positions, i.e. voters casted a single vote for president, deputies and members of their municipalities.
[3] One could expect a stronger party leadership effect on legislators' decisions under this system.
[4] Factions present a list of candidates for president and vice-president, legislators' seats, and major and vice-major seats. In case that there is no more than one faction competing for elections, parties can avoid the primary election requisite. Large parties for the period studied have held primary elections. Small parties did not hold them.
[5] This implies that the final list that is going compete in the general elections is formed by candidates from different factions.

The political context

Honduras is a presidential political system. The president is the head of the executive and is directly elected every four years. Re-election of the president is not allowed in this country. The legislative body is composed of one chamber of 128 seats divided in 18 constituencies called departments. Deputies are elected for a period of four years with the possibility to compete for re-election indefinite times. The party system has been dominated by two political parties, the Partido Liberal de Honduras (PL) and the Partido Nacional de Honduras (PN). The first was founded in 1891 and the latter, an excision of the PL, created in 1902. Both parties were linked in their origins to American banana producer companies and to the oligarchic interests of their members.

During the twentieth century Honduras goes through a series of institutional disruptions. Military rule with very brief periods of elected governments characterizes the time frame of 1933 to 1980. Elections to form a constitutional assembly were held in April of 1980. The following year general elections were organized and the new Congress set up in January 1982. Between 1981 and 2009 eight general elections have been held. During general elections five different elective positions are disputed: (1) President of the Republic, (2) three Presidential Delegates, (3) deputies to the Congress and their substitutes,[6] (4) deputies to the Central American Parliament, (5) and municipality mayors. The combination of these five types of elections the same day makes more likely for candidates to the legislature to be more dependent with the presidential candidate during campaign.

Since 1981 the PL has won 5 presidential elections and the PN 3. Since 1997 they have alternated in power. Using the effective number of parties index (ENP index, see Laakso, Taagepera 1979), the party system in Honduras can be classified as a two party system. The two dominant parties share seats in Congress with three small parties, Innovación y Unidad (PINU), of centre-left ideology; Partido Demócrata Cristiano (PDCH), of centre-right ideology, and Partido de la Unificación Democrática (PUD), of leftist ideology (Norsworthy, Barry 1994). As observed in

[6] Each legislator has his or her substitute in Honduras. The role of deputy substitutes is to replace the permanent deputy in her absence.

Table 2 the PL has won five out of eight presidential elections in 28 years of democratic rule. The other three elections were won by the PN.[7]

Table 2. Presidential Election Results and Parliament Composition in Honduras (1981-2005)

Election year	PL	PN	PINU	PDCH	UD [a/]	Total valid votes	Voters turnout (%)	ENP Index
1981	636,392*	491,089	29,419	19,163	-	1,178,044	22.0	2.17
Seats in Congress	44	34	3	1				
1985	786,594*	701,406	23,705	30,173	-	1,543,863	16.0	2.12
Seats in Congress	67	63	2	2				
1989	776,983	917,168*	33,952	25,453	-	1,755,545	23.4	2.03
Seats in Congress	55	71	2	0				
1993	906,793*	735,123	48,471	20,350	-	1,712,730	64.97	2.03
Seats in Congress	71	55	2	0				
1997	1,040,343*	846,220	41,409	24,909	24,288	1,977,169	27.65	2.20
Seats in Congress	67	54	5	1	1			
2001	964,590	1,137,734*	31,666	21,089	24,102	2,179,181	33.73	2.42
Seats in Congress	55	61	4	3	5			
2005	918,669*	850,005	18,764	25,808	27,802	1,841,048	55.08	2.41
Seats in Congress	62	54	3	4	5			
2009	817,524	1,213,695*	39,960	38,413	36,420	817,524	N.A	3.12
Seats in Congress	45	71	5	4	3			

[a/] This party formed in 1992 and participated until 1997.
* Signifies the party that won the presidency.
Sources: Taylor-Robinson (1996, p.329) updated with information from the Electoral Supreme Court of Honduras.

Clientelism

Given the poor living standards of most of the Honduran population, good connections in government seem to be necessary to have access to even the most basic public services. This rule applies mostly to the Liberal Party and the National Party due to the two-party system nature of the Honduran polity. Evidence of clientelism relies most of the time on observation and interviews. Yet, an analysis of survey data concludes that party activism increases inversely to the standard of living conditions (Booth and Aubone 2007, cited in Taylor-Robinson 2010, p.117). Taylor-Robinson

[7] The Electoral Law of 1982 and the one of 2004 allow independent candidacies; however, no independent candidate has won a seat in Congress.

(1996, 2010), supports this conclusion with observational data. She interprets that Honduran politicians tend to reward activists' loyalty once in office; however, the latter need to provide evidence that they have supported the party in government and the candidate during the elections. Even if the party loses the election, loyalty can be rewarded the next time the party holds office. A party militant can express secretly her dissatisfaction with a party or a candidate in the ballot box and still receive returns for her activism during the electoral campaign. Nonetheless, for Taylor-Robinson (2010) the costs of defection can be shared in the community in the form of loss of pork-barrel projects, depending on how large is the total share of party defection:

> A frustrated partisan could protest by privately defecting from their party in the voting booth. If the traditional party still won the election, the defector then would still have access to party-channeled government largesse. But the traditional party would not be punished effectively unless many voters in the community acted in the same faction, and then, if the party still won the national election, it would punish the community by not providing it with state funds. Small precincts of about 350 registered voters help local party leaders to keep an eye on the behavior of purported party supporters (Taylor-Robinson 2010, p.117).

One may argue that the existence of a clientelistic political culture in Honduras can hinder the effects of electoral systems. However, on the one hand, there is little quantifiable evidence that supports the clientelism argument against the electoral systems argument. On the other hand, while there is some level of understanding of legislators' clientelistic practices to benefit individuals, there is a lack of knowledge of what shapes the allocation of particularistic benefits for a community.

Data

For this analysis I use data on social investment projects managed by the Honduran Social Investment Fund (FHIS). This is an institution created in 1990 with the objective of mitigating the effects of the structural adjustment programmes, which had been recently introduced (Heinrich, Lopez 2009, Banegas-Lazo 2009, FHIS 2005). According to its constitutive law, its main objective is to promote the improvement of the living conditions of marginalized social groups in rural and urban areas. To this purpose FHIS provides funding for programmes and projects of social development aiming to increase the productivity, employment levels and income of those groups (Congreso Nacional 1990). Since its creation this institution's main source of finance

has been the international aid provided in the form of donations or loans, with very low interest rates, meant to promote development. Institutions such as the World Bank, the Inter-American Development Bank, KfW Bankengruppe and the European Commission are among its main collaborators, which also include other individual countries. Besides international funding, FHIS also gets national budget transfers and helps to execute projects from other ministries in Honduras.

This institution manages small infrastructure and social projects, such as construction of classrooms for small schools, improvement of drinking water systems, small roads maintenance and gender workshops. Most of the projects are formulated and presented at FHIS by the potential beneficiaries, through their municipalities of through registered boards of neighbours. Usually, when the project is funded with international sources donors and lenders prioritize which municipalities FHIS must intervene in.

The data base of projects used for this analysis was facilitated by FHIS itself. The data have been organized by the source of funding, which facilitates identifying whether the project is funded with national sources, or with international sources or a combination of both. As international funding requires more supervision by international donors, it is expected that nationally funded projects will be more sensitive to pork barrel activities by Honduran deputies.[8]

A total of 22,765 projects have been approved at FHIS between 1990 and 2009, the majority in education, municipal development and energy areas. The present analysis is based on these approved projects. That a project is approved means that it is going to be executed. Projects are approved by an internal commission at FHIS, composed by the General Director, and the directors of the executive units that form the institution. They assign the amounts to be executed in each project. Table 3 presents the descriptive statistics for all of the approved projects between 1990 and 2009 in the different categories projects have been classified by FHIS, in constant prices

[8] Projects that are funded with national and international sources have been classified as international for the purpose of this study.

lempiras.[9] It is observed that the majority of projects are funded with international sources and their management is centralized at FHIS. Moreover, most spending falls in the category of education projects, followed by municipal, health and water projects.

Table 3. Descriptive statistics of approved projects at FHIS by classification of the projects

Category	Obs	Mean	Std. Dev.	Min	Max
Total	22,765	342,520.20	892,515.50	0.00	77,700,000.00
International	17,884	378,272.20	793,938.70	0.00	35,400,000.00
National	4,873	211,177.90	1,177,359.00	0.00	77,700,000.00
Centralized	21,340	346,423.00	915,739.90	0.00	77,700,000.00
Decentralized	1,425	284,072.70	405,192.70	2,257.05	4,470,106.00
Education	11,946	295,313.90	325,504.90	0.00	12,200,000.00
Municipal	2,937	386,401.70	511,032.10	0.00	7,797,247.00
Health	1,870	366,827.30	301,163.10	3,785.09	4,541,216.00
Water	1,653	810,782.90	2,059,146.00	0.00	35,400,000.00
Employment	1,143	55,899.42	124,290.50	211.06	3,056,744.00
Social assistance	804	332,596.30	297,009.50	0.00	3,959,651.00
Procurement of goods and services	310	626,274.10	4,558,062.00	501.15	77,700,000.00
Productive	202	140,882.40	300,179.20	20,410.45	1,805,951.00
Environment	126	659,506.40	863,410.90	1,308.62	7,636,598.00
Energy	99	906,141.90	1,166,380.00	36,764.61	7,878,194.00
Informal	71	2,270,005.00	2,070,795.00	20,591.24	12,000,000.00
Social infrastructure	20	288,555.20	80,270.53	147,686.90	483,990.50
Multi-sector	12	23,208.71	20,532.59	4,415.94	79,384.13
Others	1,572	136,558.40	787,772.60	389.95	18,300,000.00

The unit of analysis of this study is the spending per capita at FHIS, in constant lempiras, per municipality, per year.[10] Considering our interest on the effects of district magnitude (M) on spending, Figure 2 show the variation on the means of the distribution of spending per capita by M during the 20 years considered in this study. The bars to the left include funding from national sources only. The bars to the right represent the general spending, which is the combination of spending per capita funded with international and national sources. When the combined figures are considered (bars to the right), spending per capita tends to be directed to single-member constituencies (over 230 lempiras per capita). Where district magnitude is

[9] Lempiras (Lps) is the Honduran currency. During recent years, exchange rates have kept around US$1 = 18 Lps in average. Real prices are calculated using the formula RS = totaprov / (CPI/100), where RS stands for real spending per capita at FHIS. CPI is the consumer price index, divided by 100, which is used as a deflator (Abel, Bernanke et al. 2008, p.48).

[10] To get the per capita figures I divided each observation's amount by the population size of the municipality as reported in the census of 2001.

low or medium (between 2 and 9 seats), except for Atlántida in the North Coast, the other constituencies have a mean between 50 and 150 lempiras of spending per capita. The observable disparities in spending distribution in high magnitude districts (20 and 23 seats) can be attributed to the fact that the constituency with 20 legislators, Cortés, historically has showed higher levels of economic development than; thus one might expect lower levels of social investment in this department. In terms of nationally funded projects, the most noticeable difference is that in comparison to projects that receive international funding, single-member constituencies receive proportionally less money.

Figure 2. Means of national and aggregate spending per capita at FHIS, by district magnitude

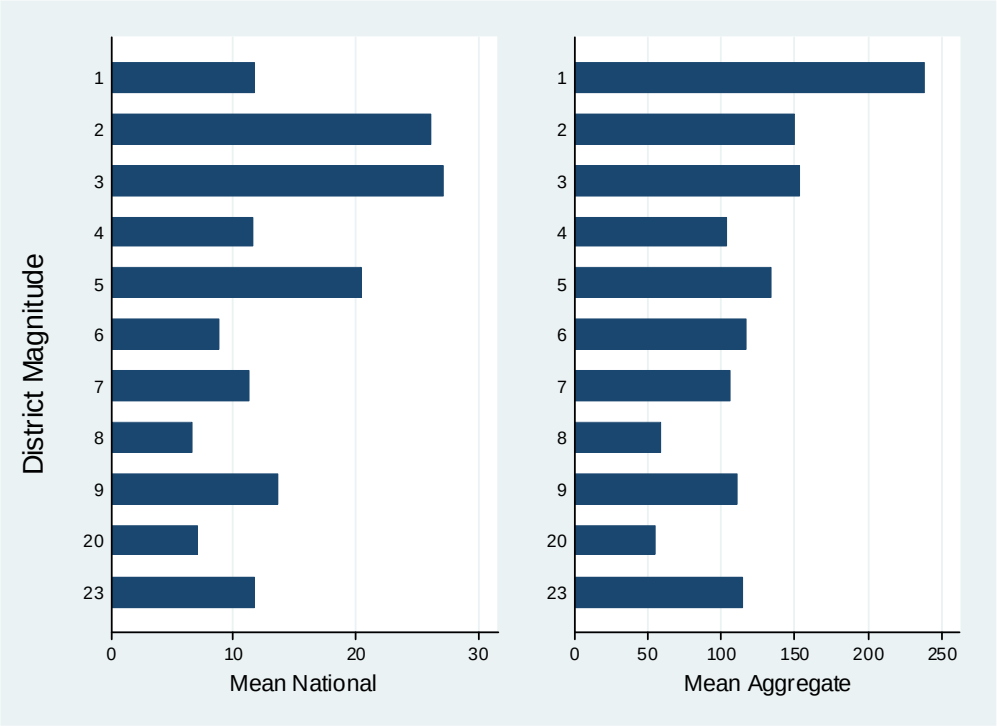


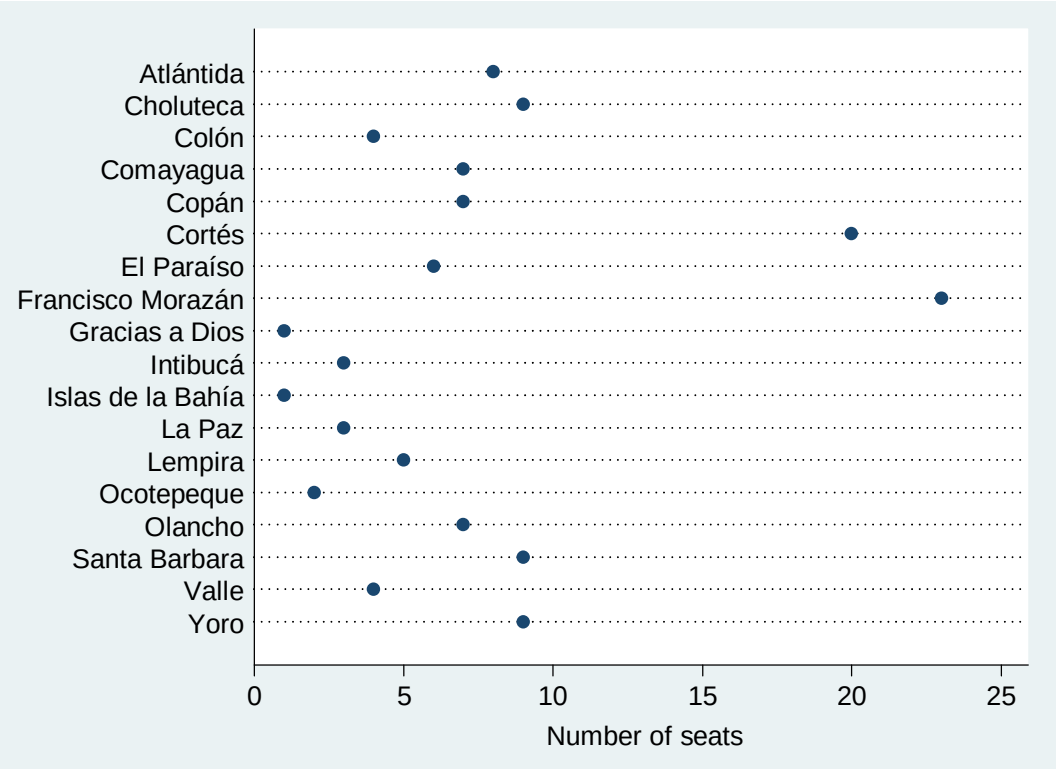
Figure 3 presents the data with interactive effects to observe whether the type of ballot in use affects the funding outcomes. In terms of nationally funded projects, it can be noticed that at the time the open-list electoral system is implemented, the amounts of spending per capita are larger than under the closed-list system period. As a matter of fact it is after the hurricane Mitch hit Honduras, in October 2008, that spending per capita increases exponentially at FHIS. To control for outliers in national spending, I

drop observations before 1999 in the robustness section; before this year the data is more spread out for projects that use this particular type of funding. The influence of hurricane Mitch can also be correlated with increases in spending and its geographic distribution in terms of projects that are financed with international development funds. In all, from simple visual observation it is not possible to identify significant differences that might be correlated with district magnitude and type of ballot.

Figure 3. Means of national and aggregate spending per capita at FHIS, by district magnitude and type of ballot

In general, the data is highly skewed making difficult to obtain good linear estimators. To make the data linear I transformed them to their logarithmic form. The main explanatory factor of the model consists of the interactive effect between 'type of ballot' (TB) and 'district magnitude' (M). TB takes a value of 0 for a closed-list system and 1 for an open-list system. M holds constant during the period of study (Figure 4).

Figure 4. District magnitude variation across constituencies



I control for additional political explanatory factors. I include a dummy for 'electoral year' (1 for electoral years and 0 otherwise) and 'new government' (1 for the first year of government and 0 otherwise) to control for electoral and partisan cycles. The variable 'party in government' takes the value of 0 for the years the National Party holds office and 1 for those years of Liberal Party rule. I also include controls for government's electoral strongholds and opposition's electoral strongholds. To construct these two variables I identified in which municipalities the PL and the PN have won a plurality of votes in the presidential elections, from 1981 to 2005. If a party won in a same municipality all of the seven elections hold during that period, I classified that municipality as a stronghold of that party. Once I identified the PL's electoral strongholds and the PN's electoral strongholds municipalities, I created a set of two dummy variables, 'Stronghold', which equals 1 if the municipality is an electoral stronghold of the party in government and 0 if it is not, and 'Opposition' which takes the value of 1 if the municipality is an electoral stronghold of the main opposition party.

Similarly, I also incorporate a dummy to identify the municipalities where the party in government won the plurality of votes in the last presidential election. I use this as a proxy of swing voters municipalities to asses whether spending will go to strongholds, opposition or swing voters. I label this variable as 'Lost'. 'Government mayors' is a variable that identifies the municipalities where the party in government holds the mayoralty according to the last municipal election. Finally, 'Turnout' is the percentage of voter's turnout in a municipality during the last election.

To assess the influence of variation in poverty across constituencies, I include the percentage of population living under extreme poverty in each municipality, according to the Census of 2001.[11] In addition, I control for the percentage of the population of the municipality relative to the total population of the country. The assumption behind this indicator is that spending will be directed to those places with more population density. Considering that increases of social spending at FHIS may be due to improvements in the economy of the country, I incorporate a control for 'gross development product' (GDP) in constant prices. However, this variable only shows variation in time but its effect at the constituency level cannot be examined. For this reason I employ the measure of income per capita per municipality ('Income pc') as calculated by the Office of the United Nations Development Programme in Honduras.[12] I include a dummy to control for the effect of hurricane Mitch. In the following months after this natural dissaster, occurred in October 1998, the amounts of international development aid increased substantially. Finally, I add a lagged dependent variable to observe whether there is serial correlation in the way spending is assigned over time.

Estimation strategy

The data form an unbalanced panel of 298 municipalities and 20 years, between 1990 and 2009. The total number of observations is 4,300. I use pooled regressions and interactive effects between closed-list and open-list electoral systems, using random effects estimating models. Random effects models, as well as fixed effects models, are

[11] The National Statistics Institute of Honduras (INE) uses the unsatisfied basic needs method to determine poverty (Instituto Nacional de Estadística de Honduras (INE) 2002).
[12] These data are obtained from the annual home surveys conducted by INE.

used for statistical inference when the data presents variation in time and across units. This approach provides more information over the same topic, compared as it was treated using an ordinary least squares model or a time series model helping to deal with the omitted variables problem these common methods have (Wooldridge 2002).

I choose random effects as the estimation strategy for the present analysis because one of the key explanatory factors of this study, district magnitude, is constant over time. The fixed effects method does not distinguish the effects of time-invariant observables from time-constant unobservables (Wooldridge 2002, p.266). Random effects, on the other hand, assume that the variation within each cross-sectional unit is not correlated with the regressor, but is part of the error term. However, if there is serial correlation in the systematic component of the independent variable, including that outcome as part of the error term will result in biased estimations. In such circumstances, using fixed effects models is recommended. To control for this potential source of bias I include fixed-effects estimator models in the robustness analysis section. In Table 4 the expected signs of the estimated coefficients are presented.

Table 4. Expected signs of estimated coefficients

Variable	Expected sign in coefficient
Type of ballot (TB)	+
M (Log of district magnitude)	+ for single member districts + for multimember districts if TB = 1 - for multimember districts if TB = 0
New government	+/-
Electoral year	+
Party in government	+/-
Stronghold	+
Lost	+/-
Opposition	-
Party in government's mayoralties	+
Log of Gini coefficient	-
Log of GDP	+
Index of urbanization	-
Percent of extreme poor	+
Percent of population	+/-
Number of schools in the municipality	+

Results

Table 6 presents the results of panel data estimations, using random effects, over the logarithmic forms of spending funded with national sources and spending funded with the aggregate of national and international sources. It most be borne in mind that spending with national sources of funding represents 13 percent of the total aggregate figure during the period of study. The assumption is that projects funded with national sources are prone to be manipulated by politicians. This is because, on the one hand, deputies discuss the budget of FHIS at Congress, which opens opportunities for them to include the municipalities of their interest in the annual prioritization of the institution. On the other hand, this type of funds do not have the restrictions usually imposed by international aid agencies, which makes more likely for politicians to try to influence the project allocation decisions directly at FHIS' offices (Castillo 2010).

I test models of pooled random-effects regressions and compare them with interactive effects models to observe the influence of TB. For interaction effects models, if Hypothesis 1 holds, the sign of the estimated coefficient of M should be negative when the closed-list system was in use. If Hypothesis 2 is confirmed then M should

have a positive sign for the open-list system. All the results being reported in this section are models of robust-standard errors.

For this analysis I use the logarithmic form of district magnitude. Due to the fact that Honduras has two single-member constituencies I added 1 to district magnitude (M + 1), to avoid having logs of value zero that can void the estimations. The results are presented in Table 5.

As it can be observed, both, TB and the log of M, are statistically significant for nationally funded and generally funded projects in pooled models. The change in TB is statistically significant as noted in models 1 and 4. An increase in both types of spending is substantially correlated with a systematic improvement of the Honduran national accounts; nonetheless, after controlling for this factor the effect of TB is still significant.[13] When studying the 'National' models only, the interaction effect of type of ballot produces significant results in coefficients of district magnitude under the closed-list system. Under the open-list system M is not significant. Moreover, its negative sign contradicts the hypothesis that spending tends to increase in proportion to district magnitude. The results are significant in all the 'Aggregate' models, however, it is difficult to establish a political bias in the geographic allocation of projects when international funding is involved.

It is interesting to that none of the variables testing the hypotheses related to which municipalities will be benefited by the government were significant (see 'Strongholds' and 'Opposition'). However, the sign of their coefficients suggest that municipalities where the government is electorally dominant are more likely to receive funding, whilst the opposition's strongholds will probably receive less. Further evidence to support this result comes from the analysis of spending to the municipalities ruled by the party in government, variable 'Government's mayors'. As observed in Model 1, its coefficient is significant at the 10 percent level and in Model 3 at five percent level. 'Lost' is a variable that distinguishes those municipalities where the government lost the immediate last presidential elections. As explained

[13] The negative sign for the Log of GDP in all but Model 3 (projects funded with national sources during the Open-list electoral system), can be explained from the fact that international aid funds have decreased since early 2000; while the Honduran economy has improved during the same period, improving at the same time the Government's revenues (see graphs 6 and 7 in the Appendix).

earlier, I am using this variable as a proxy for swing voters as discussed in the relevant literature (Cox, McCubbins 1986, Lindbeck, Weibull 1987, Dixit, Londregan 1996). The results suggest that the government tend to benefit those constituencies where it lost support in the last election, contrary to the supposition of Taylor-Robinson (2010, p.117) who argues that the Honduran government will punish collectively non-loyal voters with less pork-barrel spending.

Other political controls suggest that allocation of funding is sensitive to political cycles ('electoral year' and 'new government'), especially in the 'Aggregate' figures. In addition, whether the party in government is the Liberal Party or the National Party seems to determine the proportion of spending per capita in each municipality. In other words, when the Liberal Party is in government spending tends to increase. It is interesting to note that under the open-list electoral system when the Liberal Party was in government spending tended to decrease, the results are not only significant but substantial. Some might think that this could be a specific feature of the Liberal government of President Manuel Zelaya (2006-2009). However, a more detailed exploration (not reported in this paper) shows that during the period of government of President Ricardo Maduro (2002-2005), of the National Party, during the months in which it operated under the open-list system (years 2004 and 2005) the direction of the geographic allocation of funding changed contrary to the previous years. This might be interpreted as a sign that the electoral system affected in different ways the dynamics of spending allocation under two different parties in government.

Voters' turnout is significant in all except for Model 3. The effects of this parameter are even stronger in models where international aid is involved. Its negative sign suggests that spending tends to be allocated in municipalities where voters tend to attend in higher proportions to the ballot booth. The interpretation of this result needs a bit of discussion. As explained above, interestingly, in Honduras the level of electoral abstentionism is lower amongst poor voters. Some interpret this behaviour as a sign of clientelism in Honduras; in other words, politicians tend to benefit through pork-barrel and other clientelistic practices poorer regions in order to gain votes in the next election (Taylor-Robinson 2010, Coleman, Argueta et al. 2009, Cruz, Argueta et

al. 2007).[14] Thus, voters' turnout and poverty might be endogenous. That would explain that in most models, including the aggregate figures, this variable is statistically significant.

[14] Moreover, it must be borne in mind that the execution of projects of this nature also generates employment in the communities where the project is being implemented. In other words, the project itself requires a temporary labour force to be executed. Therefore, there is an additional incentive apart from that which has been planned as part of the project.

Table 5. Panel data estimations (Random effects) of spending allocation at FHIS

	National			Aggregate		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
	Pooled b/se	Closed-list b/se	Open-list b/se	Pooled b/se	Open-list b/se	Closed-list b/se
Log of M	-0.205**	-0.250**	-0.174	-0.175**	-0.175**	-0.147*
	(0.08)	(0.12)	(0.11)	(0.06)	(0.08)	(0.08)
TB	0.346***			0.451***		
	(0.07)			(0.07)		
New government	0.070	-0.105	2.703*	-0.141**	-0.190	-1.004***
	(0.09)	(0.30)	(1.41)	(0.04)	(0.13)	(0.26)
Electoral year	-0.046	0.191	-1.836**	0.056	0.181**	0.843***
	(0.05)	(0.22)	(0.89)	(0.04)	(0.09)	(0.19)
Party in government	0.259***	-0.549	-11.348**	0.378***	-0.579***	3.974***
	(0.05)	(0.62)	(5.69)	(0.04)	(0.17)	(1.10)
Stronghold	0.070	0.056	0.042	0.021	0.031	0.009
	(0.05)	(0.07)	(0.07)	(0.04)	(0.05)	(0.05)
Lost	0.134**	0.172*	0.079	0.008	0.017	-0.013
	(0.06)	(0.09)	(0.08)	(0.04)	(0.06)	(0.05)
Opposition	-0.047	-0.053	-0.017	-0.005	0.004	0.013
	(0.06)	(0.09)	(0.09)	(0.04)	(0.06)	(0.06)
Government mayors	0.083*	0.085	0.130**	0.009	0.028	0.029
	(0.05)	(0.06)	(0.06)	(0.03)	(0.04)	(0.04)
Turnout	-0.006**	-0.013**	-0.003	-0.004**	-0.010***	-0.004**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Mitch	-0.075	-0.100	0.000	0.487***	0.613***	0.000
	(0.31)	(0.40)	(0.00)	(0.06)	(0.14)	(0.00)
Lagged dep. variable	0.112**	0.046	0.069	0.169***	0.115**	0.105**
	(0.05)	(0.05)	(0.05)	(0.03)	(0.04)	(0.03)
Log of Gini coeff.	-1.649**	-0.156	-3.156***	-0.334	0.554	-1.391**
	(0.65)	(0.88)	(0.80)	(0.39)	(0.51)	(0.49)
Log of GDP	-1.978***	-27.872	75.242**	-1.558***	-28.772***	-25.085***
	(0.49)	(18.81)	(37.88)	(0.39)	(4.15)	(7.43)
Income pc	-0.000	-0.000*	-0.000	-0.000**	-0.000**	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Urban index	-0.005	0.003	0.002	-0.019	0.005	-0.042**
	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)
% population	0.218**	0.303**	0.134	0.309***	0.233***	0.368***
	(0.08)	(0.10)	(0.10)	(0.05)	(0.07)	(0.06)
% extreme poverty	0.209	0.209	0.093	0.498***	0.078	0.990***
	(0.24)	(0.30)	(0.35)	(0.14)	(0.21)	(0.19)
Schools	-0.003***	-0.004***	-0.002**	-0.004***	-0.003***	-0.004***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	10.746***	139.955	-373.675**	8.999***	144.386***	125.852***
	(2.29)	(93.16)	(188.37)	(1.87)	(20.57)	(36.94)
N	859	390	469	1947	889	1058
R2	0.24	0.41	0.16	0.28	0.45	0.20

Note: robust standard errors in parentheses. R-squared from OLS estimates. * significant at 0.1 **significant at 0.05; ***significant at 0.01.

Robustness analysis

I first conduct an analysis of political variables only. The results of this test of robustness are shown in Table 6. As it can be observed, both, TB and the log of M are statistically significant for projects funded with national sources and the aggregate figures. The negative sign of the parameters of M in all models suggests that an increase in the number of seats per constituency decreases spending, even under the open-list PR electoral system. It is interesting to note that both, in terms of the aggregate figures, i.e. funding that comes from international and national sources, spending tends to be sensitive to political cycles, as the variables of 'party in government', 'new government' and 'electoral year' show, contrary to the expectations. Whether spending goes to the government's strongholds, the opposition or to swing voters is not very significant in the aggregate figures. Whilst in the national ones the results suggest that the party that is holding office tends to benefit those constituencies that were lost in the last election. The negative sign in 'Strongholds' and 'Opposition' in models 7 to 9 might be an indication that municipalities of the opposition tend to receive less spending whereas government's strongholds are more likely to receive more spending. Interestingly, 'government's mayors' is only significant under the closed-list electoral system, contrary to the results shown in Table 5 above.

Table 6. Panel data estimations (Random effects) of allocation of spending at FHIS, political variables only

	National			Aggregate		
	(7)	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
	Pooled b/se	Closed-list b/se	Open-list b/se	Pooled b/se	Closed-list b/se	Open-list b/se
Log of M	-0.330***	-0.360**	-0.313**	-0.357***	-0.300***	-0.369***
	(0.10)	(0.13)	(0.11)	(0.07)	(0.09)	(0.08)
TB	0.105**			0.101**		
	(0.05)			(0.03)		
New government	-0.094	-0.015	0.046	0.210***	0.364***	-0.108**
	(0.06)	(0.09)	(0.10)	(0.03)	(0.04)	(0.05)
Electoral year	0.004	-0.174**	-0.043	0.153***	-0.415***	0.276***
	(0.04)	(0.07)	(0.06)	(0.04)	(0.07)	(0.05)
Party in government	0.108**	0.325***	-0.121**	0.301***	0.648***	0.269***
	(0.03)	(0.06)	(0.06)	(0.03)	(0.05)	(0.05)
Stronghold	0.077	0.113	0.049	0.068	0.085	0.068
	(0.06)	(0.07)	(0.07)	(0.04)	(0.05)	(0.06)
Lost	0.197***	0.261**	0.159**	0.073*	0.068	0.083*
	(0.06)	(0.08)	(0.07)	(0.04)	(0.06)	(0.05)
Opposition	-0.072	-0.059	-0.064	0.024	0.033	0.002
	(0.06)	(0.08)	(0.09)	(0.04)	(0.06)	(0.06)
Government mayor	0.068	0.153**	0.039	0.031	0.046	0.053
	(0.05)	(0.06)	(0.06)	(0.03)	(0.05)	(0.04)
Turnout	-0.016***	-0.026***	-0.008**	-0.010***	-0.017***	-0.008***
	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	1.930***	2.001***	1.893***	1.950***	1.733***	1.982***
	(0.13)	(0.21)	(0.15)	(0.08)	(0.13)	(0.11)
N	1143	452	691	2147	916	1231
R2	0.12	0.31	0.07	0.12	0.36	0.07

Note: robust standard errors in parentheses. R-squared from OLS estimates. * significant at 0.1 **significant at 0.05; ***significant at 0.01.

Due to the fact that random effects models assume that the variation within variables is part of the error term, I run fixed-effects models to check whether there is time correlation within regressors. As I previously mentioned, fixed-effects models cannot estimate the effect of time-constant regressors. Thus, variables that do not change over time, such as district magnitude have not been included in the model. Due to potential autocorrelation between variables 'Stronghold' and 'Opposition' I report two different sets of results in Table 7 and Table 8, one using only Stronghold and the other using Opposition. As observed, a change in the type of ballot is still significant in pooled models. Similar to Model 3 presented in Table 5, Model 15 is statistically significant at the 5% level and substantially significant. The similarity with model 3 indicates that this variable is auto-correlated under the open-list system but not in the closed-list system. Again, this might be an indication that the change of type of ballot

affects the dynamics in which spending is allocated under two different parties in government.

It also can be noticed that when only funding that comes from national sources is considered the electoral strongholds of the opposition are more likely to get less spending. This result is statistically significant in the pooled model (column 13), and it does not seem to have a similar effect when international sources of funding are involved. The opposite happens when the electoral strongholds are those of the party in government. As it is presented in Table 8, column 19, the government's strongholds are more likely to receive more spending. This might be interpreted as a confirmation of Cox and McCubbins' (1986) model. However, at the time writing more statistical analysis with data disaggregated by months and during electoral years is being conducted. It is expected that the results differ during ordinary years. In general, it is observed that those municipalities lost by the party in government during the immediate last election have greater chances to receive funding from national sources.

Table 7. Panel data estimations (Fixed effects) of allocation of spending at FHIS

	National			Aggregate		
	(13)	**(14)**	**(15)**	**(16)**	**(17)**	**(18)**
	Pooled b/se	Closed-list b/se	Open-list b/se	Pooled b/se	Closed-list b/se	Open-list b/se
TB	0.389***			0.493***		
	(0.08)			(0.07)		
New government	-0.001	0.226	3.518**	-0.120**	-0.247*	-1.030***
	(0.10)	(0.34)	(1.38)	(0.05)	(0.14)	(0.26)
Electoral year	-0.105*	-0.155	-2.400**	0.025	0.106	0.880***
	(0.05)	(0.24)	(0.87)	(0.04)	(0.10)	(0.19)
Party in government	0.287***	0.116	-14.750**	0.373***	-0.613***	4.244***
	(0.05)	(0.67)	(5.58)	(0.04)	(0.18)	(1.12)
Lost	0.223**	0.262*	0.220*	0.021	0.262**	-0.010
	(0.07)	(0.15)	(0.12)	(0.05)	(0.11)	(0.07)
Opposition	-0.204**	-0.206	-0.116	0.004	-0.084	0.059
	(0.09)	(0.17)	(0.15)	(0.06)	(0.13)	(0.09)
Government mayor	0.079	0.119	0.188*	0.018	0.117	0.067
	(0.06)	(0.09)	(0.10)	(0.04)	(0.07)	(0.06)
Turnout	-0.007	-0.018*	-0.012	-0.001	-0.015	0.001
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
Mitch	-0.038	-0.848*	.	0.463***	0.679***	.
	(0.40)	(0.48)	.	(0.06)	(0.15)	.
Lagged dep. variable	0.117**	-0.056	0.015	0.174***	0.102**	0.117**
	(0.05)	(0.06)	(0.07)	(0.03)	(0.04)	(0.04)
Log of GDP	-3.081***	-10.630	97.509**	-1.801***	-28.032***	-27.595***
	(0.59)	(20.31)	(37.11)	(0.43)	(4.39)	(7.53)
Income pc	0.000**	-0.000	0.000	-0.000***	-0.000***	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	15.485***	54.161	-483.876**	10.159***	140.645***	138.312***
	(2.76)	(100.56)	(184.71)	(2.06)	(21.79)	(37.53)
N	859	390	469	1947	889	1058
R2	0.12	0.34	0.12	0.20	0.47	0.08

Note: robust standard errors in parentheses. * significant at 0.1 **significant at 0.05; ***significant at 0.01.

Table 8. Panel data estimations (Fixed effects) of allocation of spending at FHIS

	National			Aggregate		
	(19)	**(20)**	**(21)**	**(22)**	**(23)**	**(24)**
	Pooled b/se	Closed-list b/se	Open-list b/se	Pooled b/se	Closed-list b/se	Open-list b/se
TB	0.389***			0.493***		
	(0.08)			(0.07)		
New government	-0.001	0.226	3.518**	-0.120**	-0.247*	-1.030***
	(0.10)	(0.34)	(1.38)	(0.05)	(0.14)	(0.26)
Electoral year	-0.105*	-0.155	-2.400**	0.025	0.106	0.880***
	(0.05)	(0.24)	(0.87)	(0.04)	(0.10)	(0.19)
Party in government	0.287***	0.116	-14.750**	0.373***	-0.613***	4.244***
	(0.05)	(0.67)	(5.58)	(0.04)	(0.18)	(1.12)
Lost	0.223**	0.262*	0.220*	0.021	0.262**	-0.010
	(0.07)	(0.15)	(0.12)	(0.05)	(0.11)	(0.07)
Stronghold	0.204**	0.206	0.116	-0.004	0.084	-0.059
	(0.09)	(0.17)	(0.15)	(0.06)	(0.13)	(0.09)
Government mayor	0.079	0.119	0.188*	0.018	0.117	0.067
	(0.06)	(0.09)	(0.10)	(0.04)	(0.07)	(0.06)
Turnout	-0.007	-0.018*	-0.012	-0.001	-0.015	0.001
	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
Mitch	-0.038	-0.848*	.	0.463***	0.679***	.
	(0.40)	(0.48)	.	(0.06)	(0.15)	.
Lagged dep. variable	0.117**	-0.056	0.015	0.174***	0.102**	0.117**
	(0.05)	(0.06)	(0.07)	(0.03)	(0.04)	(0.04)
Log of GDP	-3.081***	-10.630	97.509**	-1.801***	-28.032***	-27.595***
	(0.59)	(20.31)	(37.11)	(0.43)	(4.39)	(7.53)
Income pc	0.000**	-0.000	0.000	-0.000***	-0.000***	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	15.406***	54.079	-483.919**	10.161***	140.612***	138.334***
	(2.76)	(100.56)	(184.71)	(2.06)	(21.78)	(37.53)
N	859	390	469	1947	889	1058
R2	0.12	0.34	0.12	0.20	0.47	0.08

Note: robust standard errors in parentheses. * significant at 0.1 **significant at 0.05; ***significant at 0.01.

To control for the influence of outliers I run statistical tests for observations between 1999 and 2009. As previously mentioned, spending with national sources tends to follow a more stable pattern after 1998. For this analysis I present results for random effects models; these are presented in Table 9. It can be observed that in comparison to the main models introduced in Table 5, there are not important changes. Overall, the tendencies are quite similar, which suggest the robustness of the models.

Table 9. Panel data estimations (Random effects) of allocation of spending at FHIS, political variables only, for years between 1999 and 2009

	National			Aggregate		
	(25)	**(26)**	**(27)**	**(28)**	**(29)**	**(30)**
	Pooled b/se	Closed-list b/se	Open-list b/se	Pooled b/se	Closed-list b/se	Open-list b/se
Log of M	-0.203**	-0.246**	-0.174	-0.187**	-0.202**	-0.147*
	(0.08)	(0.12)	(0.11)	(0.06)	(0.09)	(0.08)
TB	0.345***			0.446***		
	(0.07)			(0.07)		
New government	0.069	-0.108	2.703*	-0.141**	-0.162	-1.004***
	(0.09)	(0.30)	(1.41)	(0.04)	(0.13)	(0.26)
Electoral year	-0.046	0.197	-1.836**	0.056	0.177*	0.843***
	(0.05)	(0.22)	(0.89)	(0.04)	(0.09)	(0.19)
Party in government	0.257***	-0.566	-11.348**	0.375***	-0.578***	3.974***
	(0.05)	(0.62)	(5.69)	(0.04)	(0.17)	(1.10)
Stronghold	0.066	0.044	0.042	0.027	0.051	0.009
	(0.05)	(0.07)	(0.07)	(0.04)	(0.06)	(0.05)
Lost	0.132**	0.167*	0.079	0.027	0.077	-0.013
	(0.06)	(0.09)	(0.08)	(0.04)	(0.08)	(0.05)
Opposition	-0.046	-0.052	-0.017	-0.013	-0.015	0.013
	(0.06)	(0.09)	(0.09)	(0.05)	(0.07)	(0.06)
Government mayor	0.083*	0.084	0.130**	0.007	0.029	0.029
	(0.05)	(0.06)	(0.06)	(0.03)	(0.05)	(0.04)
Turnout	-0.007**	-0.013**	-0.003	-0.005**	-0.013***	-0.004**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Lagged dep. variable	0.114**	0.049	0.069	0.173***	0.104**	0.105**
	(0.05)	(0.05)	(0.05)	(0.03)	(0.05)	(0.03)
Log of Gini coeff.	-1.651**	-0.153	-3.156***	-0.417	0.744	-1.391**
	(0.65)	(0.90)	(0.80)	(0.43)	(0.61)	(0.49)
Log of GDP	-1.963***	-28.245	75.242**	-1.582***	-28.771***	-25.085***
	(0.49)	(18.78)	(37.88)	(0.39)	(4.24)	(7.43)
Income pc	-0.000	-0.000**	-0.000	-0.000	-0.000	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Urban index	-0.003	0.008	0.002	-0.023	0.007	-0.042**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)
% of population	0.214**	0.295**	0.134	0.325***	0.246**	0.368***
	(0.08)	(0.09)	(0.10)	(0.06)	(0.08)	(0.06)
% extreme poverty	0.221	0.216	0.093	0.682***	0.390*	0.990***
	(0.24)	(0.30)	(0.35)	(0.16)	(0.23)	(0.19)
Schools	-0.003***	-0.004***	-0.002**	-0.004***	-0.003***	-0.004***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	10.669***	141.812	-373.675**	9.029***	144.390***	125.852***
	(2.29)	(93.01)	(188.37)	(1.89)	(21.01)	(36.94)
N	855	386	469	1686	628	1058
R2						

Note: robust standard errors in parentheses. * significant at 0.1 **significant at 0.05; ***significant at 0.01.

Conclusions

Most of the results that have been presented in this working paper are not statistically substantive. However, the study presents evidence that suggests that the electoral reform that took place in 2004, changing the type of ballot from a closed-list system to an open-list system has lead to an increase in social spending per capita. Yet, the findings indicate that the interaction between type of ballot and district magnitude does not cause the effect that the theory predicts in the open-list electoral system. District magnitude is significant in most of the statistical tests conducted; nevertheless, changes in type of ballot do not modify the direction in which spending is allocated. In other words, a municipality will be more likely to receive social spending from FHIS the smaller the district magnitude of the constituency it belongs, regardless of the type of ballot. However, an analysis of the interaction effect of party in office and type of ballot reveals statistical and substantive changes that require further exploration at a different level of aggregation of the data.

Furthermore, the evidence suggests that spending tends to be allocated to government strongholds, while electoral strongholds of the opposition receive less funding from the government as proposed by Cox and McCubbins (1986). The results are statistically significant only in fixed-effects models though. This evidence is supported by the finding that if a municipality mayor comes from the same party in government, its local government is more likely to receive funding. In addition, those municipalities where the government lost the last presidential election are also prone to receive funding; the results are significant for 'National' models. I interpret this result as an indication that the party in government tends to benefit swing voters, which are the bulk during the period studied, and they might decide the final electoral outcome.

Voters' turnout is statistically significant at the one percent level in most of the models, although its effects on the log of spending are not substantial. As I mentioned previously, the negative sign of its coefficients in all models is an indication that poverty and abstentionism are inversely correlated, which means that the poor tend to vote more in Honduras and they also receive more spending. Since by nature FHIS is

an institution that should work for the poor, this evidence cannot be used to support the theory that spending at FHIS is used with clientelistic purposes. The effects of this parameter are even stronger in models where international aid is involved. Its negative sign suggests that spending tends to be allocated in municipalities where voters tend to attend in higher proportions to the ballot boxes. The interpretation of this result needs a bit of discussion. As explained above, interestingly, in Honduras the level of electoral abstentionism is lower amongst poor voters. Some interpret this behaviour as a sign of clientelism in Honduras; in other words, politicians tend to benefit through pork-barrel and other clientelistic practices poorer regions in order to gain votes in the next election (Taylor-Robinson 2010, Coleman, Argueta et al. 2009, Cruz, Argueta et al. 2007).[15] Thus, voters' turnout and poverty might be inversely correlated. That would explain that in most models, including the aggregate figures, this variable is statistically significant.

[15] Moreover, it must be borne in mind that the execution of projects of this nature also generates employment in the communities where the project is being implemented. In other words, the project itself requires a temporary labour force to be executed. Therefore, there is an additional incentive apart from that which has been planned as part of the project.

References

ABEL, A.B., BERNANKE, B.S. and CROUSHORE, D., 2008. *Macroeconomics.* 6th edn. Boston; London: Pearson/Addison Wesley.

BANEGAS-LAZO, C., 2009. *Ejecución FHIS.* Tegucigalpa, M.D.C.: Fondo Hondureño de Inversión Social.

BARAHONA, M., 2005. *Honduras en el siglo XX: Una síntesis histórica.* Tegucigalpa, M.D.C.: Editorial Guaymuras.

BULMER THOMAS, V., 1990. Honduras. In: L. BETHELL, ed, *The Cambridge history of Latin America. Latin America since 1930: Mexico, Central America and the Caribbean.* Cambridge England; New York: Cambridge University Press, pp. 283-316.

CAIN, B.E., FEREJOHN, J.A. and FIORINA, M.P., 1987. *The Personal Vote: Constituency Service and Electoral Independence.* Cambridge, Mass.: Harvard University Press.

CAREY, J.M., 2009. *Legislative Voting and Accountability.* Cambridge: Cambridge University Press.

CAREY, J.M. and SHUGART, M.S., 1995. Incentives to Cultivate a Personal Vote: A Rank Ordering of Electoral Formulas. *Electoral Studies,* 14(4), pp. 417-439.

CAREY, J., 1996. *Term Limits and Legislative Representation.* New York: Cambridge University Press.

CAREY, J.M., 2007. Competing Principals, Political Institutions, and Party Unity in Legislative Voting. *American Journal of Political Science,* 51(1), pp. 92-107.

CASTILLO, H., 2010. *Plannification Division of the Honduran Social Investment Fund.*

COLEMAN, K., ARGUETA, J.R. and SELIGSON, M.A., 2009. *Cultura política de la democracia en Honduras, 2008: El impacto de la gobernabilidad.* Latin American Public Opinion Project, University of Vanderbilt.

CONGRESO NACIONAL,, 1990. *Ley del Fondo Hondureño de Inversión Social.* Tegucigalpa, M.D.C.:.

COX, G.W., 1987. *The efficient secret: the cabinet and the development of political parties in Victorian England.* Cambridge; New York: Cambridge University Press.

COX, G.W. and MCCUBBINS, M.D., 2007. *Legislative Leviathan: Party Government in the House.* 2 edn. Cambridge: Cambridge University Press.

COX, G.W. and MCCUBBINS, M.D., 1986. Electoral Politics as a Redistributive Game. *The Journal of Politics*, 48(2), pp. pp. 370-389.

CRISP, B.F., JENSEN, K.M. and SHOMER, Y., 2007. Magnitude and Vote Seeking. *Electoral Studies*, 26(4), pp. 727-734.

CRUZ, J.M., ARGUETA, J.R. and SELIGSON, M.A., 2007. *Cultura política de la democracia en Honduras: 2006.* San Salvador, El Salvador: Latin American Public Opinion Project.

DIXIT, A. and LONDREGAN, J., 1996. The Determinants of Success of Special Interests in Redistributive Politics. *The Journal of Politics*, 58(4), pp. pp. 1132-1155.

FENNO, R.F., 1978. *Home style: House members in their districts.* Boston: Harper Collins Publishing.

FEREJOHN, J.A., 1974. *Pork Barrel Politics; Rivers and Harbors Legislation, 1947-1968.* Stanford, Calif.: Stanford University Press.

FHIS, 2005. *Manual de operaciones.* Tegucigalpa, M.D.C.: Fondo Hondureño de Inversión Social.

GOLDEN, M.A. and PICCI, L., 2008. Pork-Barrel Politics in Postwar Italy, 1953-94. *American Journal of Political Science*, 52(2), pp. pp. 268-289.

GROFMAN, B. and FRAENKEL, J., 2008. Electoral Engineering, Social Cleavages and Democracy. In: P. NARDULLI, ed, *Democracy in The Twenty-First Century II: Domestic Perspectives.* Urbana-Champaign, IL: University of Illinois Press, pp. 71-101.

HEINRICH, C.J. and LOPEZ, Y., 2009. Does Community Participation Produce Dividends in Social Investment Fund Projects? *World Development*, 37(9), pp. 1554-1568.

HELMKE, G. and LEVITSKY, S., 2006. Introduction. In: G. HELMKE and S. LEVITSKY, eds, *Informal Institutions and Democracy: Lessons from Latin America.* Baltimore: The John Hopkins University Press, pp. 1-30.

HICKEN, A. and SIMMONS, J.W., 2008. The Personal Vote and the Efficacy of Education Spending. *American Journal of Political Science*, 52(1), pp. 109-124.

INSTITUTO NACIONAL DE ESTADÍSTICA DE HONDURAS (INE), 2002-last update, Censo Nacional de Población y Vivienda de 2001. Available: http://www.ine.gob.hn/public_html/censo2001/indexcenso2001.html [11/18, 2010].

KATZ, R.S., 1980. *A Theory of Parties and Electoral Systems.* Baltimore: John Hopkins University Press.

LAAKSO, M. and TAAGEPERA, R., 1979. The "Effective" Number of Parties: A Measure with Application to West Europe. *Comparative Political Studies,* 12(1), pp. 3-27.

LANCASTER, T.D., 1986. Electoral Structures and Pork Barrel Politics. *International Political Science Review / Revue internationale de science politique,* 7(1, Public Policy and Government Structures), pp. 67-81.

LINDBECK, A. and WEIBULL, J.W., 1987. Balanced-Budget Redistribution as the Outcome of Political Competition. *Public Choice,* 52(3), pp. pp. 273-297.

LYNE, M.M., 2008. Proffering Pork: How Party Leaders Build Party Reputations in Brazil. *American Journal of Political Science,* 52(2), pp. 290-303.

MAYHEW, D.R., 2007 [1974]. *Congress: the electoral connection.* 2 edn. New Haven: Yale University Press.

MCGILLIVRAY, F., 2004. *Privileging industry: the comparative politics of trade and industrial policy.* Princeton, N.J.: Princeton University Press.

NORRIS, P., 2004. *Electoral engineering: voting rules and political behavior*. Cambridge, UK; New York: Cambridge University Press.

NORSWORTHY, K. and BARRY, T., 1994. *Inside Honduras.* 2 edn. Albuquerque, N.M: Inter-Hemispheric Education Resource Center.

SAMUELS, D.J., 1999. Incentives to Cultivate a Party Vote in Candidate-centric Electoral Systems: Evidence from Brazil. *Comparative Political Studies,* 32(4), pp. 487-518.

SHUGART, M.S., 2005. Comparative Electoral Systems Research: The Maturation of a Field and New Challenges Ahead. In: M. GALLAGHER and P. MITCHELL, eds, *The Politics of Electoral Systems.* Oxford: Oxford University Press, pp. 25-55.

SIEBERER, U., 2010. Behavioral Consequences of Mixed Electoral Systems: Deviating Voting Behavior of District and List MPs in the German Bundestag. *Electoral Studies*, 29(3), pp. 484-496.

STRATMANN, T. and BAUR, M., 2002. Plurality Rule, Proportional Representation, and the German Bundestag: How Incentives to Pork-Barrel Differ across Electoral Systems. *American Journal of Political Science,* 46(3), pp. 506-514.

STRØM, K., 1997. Rules, Reasons and Routines: Legislative Roles in Parliamentary Democracies. *The Journal of Legislative Studies,* 3(1), pp. 155-174.

TAYLOR-ROBINSON, M., 2006. The Difficult Road from Caudillismo to Democracy: The Impact of Clientelism in Honduras. In: G. HELMKE and S. LEVITSKY, eds, *Informal Institutions and Democracy: Lessons from Latin America.* Baltimore: The John Hopkins University Press, pp. 106-124.

TAYLOR-ROBINSON, M., 1996. When Electoral and Party Institutions Interact to Produce Caudillo Politics: The Case Of Honduras. *Electoral Studies*, 15(3), pp. 327-337.

TAYLOR-ROBINSON, M.M., 2010. *Do the Poor Count?: Democratic Institutions and Accountability in a Context of Poverty*. Pennsylvania: Pennsylvania State University Press.

WOOLDRIDGE, J.M., 2002. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, Mass.: MIT Press.

Appendix

Figure 5. Spending per capita at FHIS, per year, funded with national and international sources

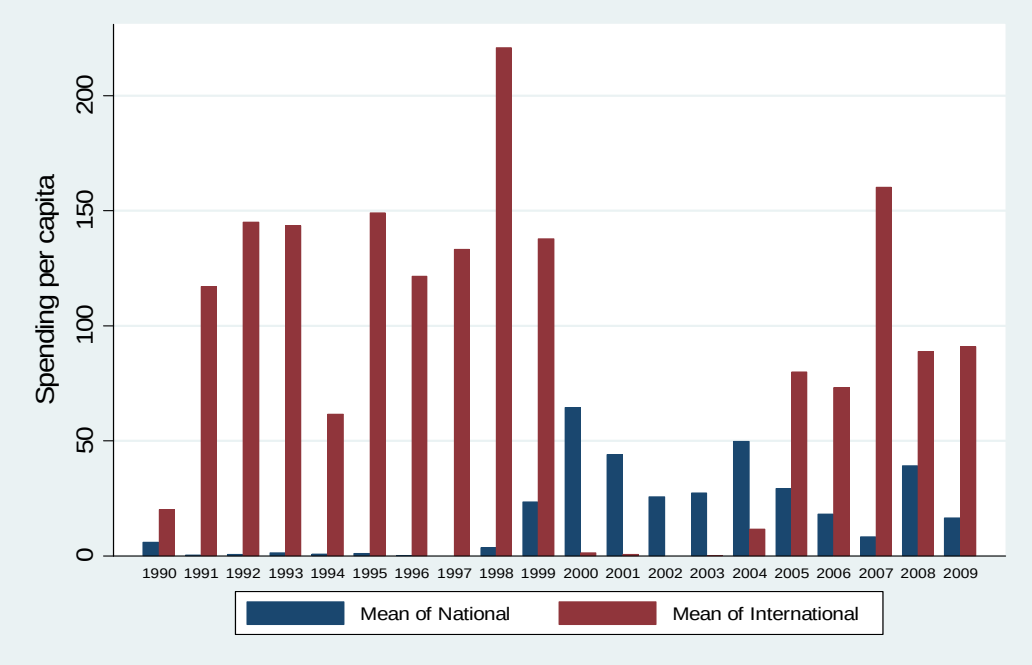


Figure 6. GDP and Government revenues at constant prices lempiras (year base = 1999)