The Canada economic action plan as electoral tool

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Abstract

This paper models the distribution of pork barrel when the electoral benefit of pork does not accrue to the party in power but to the incumbent of the district where the pork was directed. The model shows that, under certain parametres, more pork goes to core support districts. To verify this claim empirically, I first study the distribution of projects undertaken in the scope of the 2009-2011 Canada Economic Action Plan, and find that districts supporting the party in power received more pork than opposition districts controlling for socio-economic characteristics of electoral districts and those of its representative in Parliament. Second, taking into account the missing variable bias, this paper also shows that the allocation of projects played a positive role in the reelection of the district incumbent party in 2011.

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1 Introduction

Models explaining pork barrel distribution all start with the premiss that the party in power can take credit for pork spent in the constituency and conclude either that core groups (Cox and McCubbins, 1986) or swing groups (Lindbeck & Weibull, 1987) are favoured. Contrary to previous literature, the model developped in this paper explains pork barrel distribution assuming that credit is given only to the incumbent of the district that received the pork. One could argue that district representatives do actively contribute to the distribution of pork, and are therefore given credit by their constituents, but this explanation is hard to believe in a strong party system like Canada. Another argument is that most voters do not really understand the allocation process, and over-estimate the role played by their representative. The fact that politicians are given credit or punished for events outside of their control has been established empirically (Shawn, Healy and Werker, 2008). Following the assumption that the incumbent is given credit, I find parametres under which the party in power favours core districts. To test the assumption and the prediction of this model, I use the distribution of projects undertaken in the scope of the Canada Economic Action Plan 2009-2011: $40 billion invested in 15 000 infrastructure projects across the country.

In the last 20 years, much empirical research has tested whether core or swing districts benefit from the allocation of pork barrel. Levitt & Snyder (1995), for example, find that Democratic control of Congress led to more integovernmental transfers to democratic districts between 1984 and 1990, and Ansolabehere & Snyder (2006) come to the same conclusion. Denemark (2000), however, shows that the allocation of recreational projects in Australia was biased towards swing districts, just like Swedish ecological projects (Dahlberg & Johansson, 2002). This paper studies pork barrel spending where the district incumbent receives credit for the pork and finds support for the core district hypothesis: the most money went towards districts strongly supporting the party in power, less money was invested in swing districts, and the least money was given to opposition districts.

In spite of the fact that the theoretical literature uses reelection as the motivation for pork barrel spending, there is surprisingly very little empirical research connecting pork barrel spending with subsequent election results. Both Alvarez & Saving (1997) and Samuels (2002) attempt this analysis. However, by not taking into account a possible missing variable bias affecting both spending and reelection, their results offer little guidance. Snyder & Levitt (1997) study the impact of pork barrel on the share of votes for

the party in power in the district using valid instruments and find a positive correlation between previous intergovernmental transfers and the share of votes. Instead of studying the impact of the pork barrel allocation on the electoral outcome of the party in power, this paper analyzes the impact on the reelection of the district incumbent. To address the issue of the missing variable bias, I use whether the district was in the urban core of a major city as instrument. The results of this regression indicate that district incumbents receive credit for the projects undertaken in their district. This evidence supports the key assumption of the model.

This paper is the first to build a model explaining pork barrel distribution assuming that the district incumbent receives the credit, and it is also the first to find empirical evidence for this phenomenon. By finding this effect on the incumbent in combination with the general effect on the party in power, this paper leaves the realm of perfect rationality and assumes a more realistic environment in which politicians making their decisions taking into account the cognitive dissonance of the voters.

The rest of the paper is divided into the following sections. First, I build a model. I, then, describe the data and estimation strategy. Third, I present and discuss the results of the regression analysis. Finally, I conclude and present further research avenues.

2 Model

As in previous models of pork barrel allocation, the party in power wants to maximize its electoral sucess. In Lindbeck & Weibull (1987), such a strategy means investing heavily in swing districts. In this paper, however, investments in swing districts are very risky, because the incumbent receives the credit and not the party in power, and the party in power does not know when the project will be completed. If the project is completed before the first election, the candidate of the swing riding held by the party in power will benefit greatly. However, if the project is completed after the first election, the party is not certain whether the incumbent will be from its party. Investing in swing districts could therefore mean helping the opponent beat the candidate from the party in power. This trade-off between risk and return is at the heart of the model.

(Figure 1)

Let's first consider voters. They have a utility function over political platform (pp) and investment in their district (B_i), and they will vote for the district incumbent if their utility is greater than a threshold: $u_{ik}(pp, B_i) > U_{ik}$. B_i is the same for all voters of the same district.

The party in power allocates funds to the electoral districts in T_0 to maximize the probability of its candidate to win the elections. Each district receives one project, and it is completed at a random date. Project completion is random, because unforeseen problems may slow down it down. One could also assume that civil servants decide in which order projects are undertaken. Credit for the project accrues only to the present district incumbent when the project is completed. Following the allocation decision, there are two elections. The first one can take place before (with probability π) or after the completion of the project (with probability $1 - \pi$) in a given district. The second one takes place after the completion of the project. Figure 1 illustrates the timeline.

The party in power maximizes the probability that the district elects its candidate in the first (E_i^1) and second elections (E_i^2) by allocating pork B_i. The more projects a district receives, the greater the utility of its residents, and the greater the probability that it surpasses the threshold and that they vote to reelect the incumbent. The total value of projects must satisfy the exogenous budget condition (B):

$$\max_{B_i} \; E_i^1 + E_i^2 \tag{1}$$

$$\text{subject to:}$$

$$\sum_{i=1}^{i=n} B_i = B \tag{2}$$

The marginal impact of projects on the election of the candidate from the party in power in the first election is specific to the district "i" and is known by the party in power. It will be negative in opposition districts, because the projects will contribute to the popularity of the opposition incumbent, and positive in districts held by the party in power for the opposite reason. Furthermore, the closer the race, the greater the absolute value of the marginal impact, because a few voters will change the outcome. In districts in which the voters have policy preferences very far away from those of the party in power, the projects will not change much the probability of victory. The marginal impact in the second election, however, is unknown, because the party in power does not know the result of the first election, and therefore

cannot evaluate the marginal impact of projects in the second election. The transition probability from "i" to "j" is captured by $P^{i \to j}$

The marginal impact of pork in a given district is:

$$\pi \frac{\partial E_i^1}{\partial B_i}|_i + (1-\pi)\left(\int_0^1 \frac{\partial E_i^2}{\partial B_i}|_j dP^{i \to j}\right) \tag{3}$$

The first expression is the impact of the pork on the probability of winning the first election if the project takes place before the first election. This impact will depend on the status of the district. Pork barrel in a core opposition district, for example, will have a small negative impact on the election of the candidate of the party in power, while it would have a large positive impact on the election of the candidate of the party in power in a swing district that is held by the party in power. The second expression represents the impact of the pork barrel on the second election if the project is completed after the first election. Again, the impact will depend on the status of the district, but this status is unknown at the time when the allocation is determined. A swing district in the hands of the party in power before the election could now be a swing district in the hands of the opposition. To simplify the model, I abstract from the marginal impact of winning the first election on the second election if the project was completed before the first election.

To maximize the return of pork, the party in power will want to equalize the marginal impact of pork across districts assuming that $\frac{\partial^2 E_i^1}{\partial B_i^2}|_i < 0$. If pork has a greater impact in a district, it will receive more pork until the decreasing marginal contribution of pork equates the marginal benefit in other districts. The literature distinguishes between core and swing districts, I will therefore create four categories of districts: core opposition (co), swing opposition (so), swing party in power (spp) and core party in power (cpp). Equation (3) can therefore be rewritten as:

$$\pi \frac{\partial E_i^1}{\partial B_i}|_i + (1-\pi)\left(P_i^{i \to co} \cdot \frac{\partial E_i^2}{\partial B_i}|_{co} + P^{i \to so}\frac{\partial E_i^2}{\partial B_i}|_{so} + P^{i \to spp}\frac{\partial E_i^2}{\partial B_i}|_{spp} + P^{i \to cpp}\frac{\partial E_i^2}{\partial B_i}|_{cpp}\right) \tag{4}$$

To be able to prove some propositions comparing the amount of pork received by each type of district, more structure is needed. Let's make the following assumptions.

Assumption 1(symmetry): The probabilities are symmetric: $P^{l\to k} = P^{k\to l}$ where "l" and "k" are types of districts. This assumption means that a district has the same probability to go, for example, from an opposition swing district to a party in power swing district as the one to go from a party in power swing district to an opposition swing district. This assumption is unrealistic if a party is gaining in popularity.

Assumption 2: The absolute value of the marginal impact of both core districts and both swing districts are equal: $\frac{\partial E_i}{\partial B_i}|_{co} = -\frac{\partial E_i}{\partial B_i}|_{cpp}$ and $\frac{\partial E_i}{\partial B_i}|_{so} = -\frac{\partial E_i}{\partial B_i}|_{spp}$.

Assumption 3: For a given type of district, the impact of pork is the same in the first and second elections: $\frac{\partial E_i^1}{\partial B_i}|_k = \frac{\partial E_i^2}{\partial B_i}|_k$

Assumption 4 (proximity): It is more probable for a swing opposition district to become a core opposition district for the second election than to become a core party in power district. Similarly, it is more probable for a swing party in power district to become a core party in power district than to become an core opposition district.

Assumption 5: The probability that a core district keeps the same type is greater than the probability that a swing district keeps the same type: $P^{cpp\to cpp} > P^{spp\to spp}$ and $P^{co\to co} > P^{so\to so}$

Assumption 2 allows a simplification comparison of the marginal impact of pork in different types of districts. Pork has a greater marginal impact in district of type "k" than district of type "l" and will therefore receive more pork if:

$$\pi\left(\frac{\partial E_i^1}{\partial B_i}|_k - \frac{\partial E_i^1}{\partial B_i}|_l\right) + (1-\pi)\left(P^{l\to co} + P^{k\to cpp} - (P^{k\to co} + P^{l\to cpp})\right)\frac{\partial E_i^2}{\partial B_i}|_{cpp}$$
$$+(1-\pi)\left(P^{l\to so} + P^{k\to spp} - (P^{k\to so} + P^{l\to spp})\right)\frac{\partial E_i^2}{\partial B_i}|_{spp} > 0 \quad (5)$$

Using the previous assumptions, it is now possible to prove the following propositions that establish the relative amount of pork received by each type of district:

Proposition 1: If π is small enough, pork in core party in power districts (k=cpp) have a greater marginal impact than in swing party in power

districts (l=spp).

Proof: Using the fact that $\frac{\partial E_i^1}{\partial B_i}|_k$ is now $\frac{\partial E_i^1}{\partial B_i}|_{cpp}$ and assumption 3, I can distribute the first term in the second and third terms:

$$\left((1-\pi)\left(P^{spp\to co}+P^{cpp\to cpp}-\left(P^{cpp\to co}+P^{spp\to cpp}\right)\right)+\pi\right)\frac{\partial E_i^2}{\partial B_i}|_{cpp}$$
$$+\left((1-\pi)\left(P^{spp\to so}+P^{cpp\to spp}-\left(P^{cpp\to so}+P^{spp\to spp}\right)\right)-\pi\right)\frac{\partial E_i^2}{\partial B_i}|_{spp}>0 \quad (6)$$
$$\left((1-\pi)\left(P^{spp\to co}+P^{cpp\to cpp}-\left(P^{cpp\to co}+P^{spp\to cpp}\right)\right)+\pi\right)\frac{\partial E_i^2}{\partial B_i}|_{cpp}>$$
$$\left(\pi-(1-\pi)\left(P^{spp\to so}+P^{cpp\to spp}-\left(P^{cpp\to so}+P^{spp\to spp}\right)\right)\right)\frac{\partial E_i^2}{\partial B_i}|_{spp} \quad (7)$$

Without loss of generality (if the term is negative, the ratio of the two partial derivatives is no longer bounded), let's assume that:

$$\left(\pi-(1-\pi)\left(P^{spp\to so}+P^{cpp\to spp}-\left(P^{cpp\to so}+P^{spp\to spp}\right)\right)\right)>0. \quad (8)$$

It is therefore possible to express the ratio of the probabilities as an upper bound for the ratio of the actual marginal impacts:

$$\frac{(1-\pi)\left(P^{spp\to co}+P^{cpp\to cpp}-\left(P^{cpp\to co}+P^{spp\to cpp}\right)\right)+\pi}{\pi-(1-\pi)\left(P^{spp\to so}+P^{cpp\to spp}-\left(P^{cpp\to so}+P^{spp\to spp}\right)\right)}>\frac{\frac{\partial E_i^2}{\partial B_i}|_{spp}}{\frac{\partial E_i^2}{\partial B_i}|_{cpp}} \quad (9)$$

Pork barrel has a greater impact on reelection in swing party in power districts than in core party in power districts, because voters in core party in power districts are already convinced to vote for the party in power, $\frac{\frac{\partial E_i^2}{\partial B_i}|_{spp}}{\frac{\partial E_i^2}{\partial B_i}|_{cpp}}>1$, which means that at least:

$$\frac{(1-\pi)\left(P^{spp\to co}+P^{cpp\to cpp}-\left(P^{cpp\to co}+P^{spp\to cpp}\right)\right)+\pi}{\pi-(1-\pi)\left(P^{spp\to so}+P^{cpp\to spp}-\left(P^{cpp\to so}+P^{spp\to spp}\right)\right)}>1 \quad (10)$$
$$P^{spp\to co}+P^{cpp\to cpp}-\left(P^{cpp\to co}+P^{spp\to cpp}\right)$$
$$+P^{spp\to so}+P^{cpp\to spp}-\left(P^{cpp\to so}+P^{spp\to spp}\right)>\frac{1}{1-\pi} \quad (11)$$

The left hand side can be regrouped as a sum of four terms:

$$(P^{spp\to co} - P^{cpp\to co}) + (P^{spp\to so} - P^{cpp\to so})$$
$$+(P^{cpp\to cpp} - P^{spp\to spp}) + (P^{cpp\to spp} - P^{spp\to cpp}) > 0 \quad (12)$$

Due to assumption 4 (proximity), the first and second assumptions are positive. Assumption 6 makes the third term positive, and assumption 1 makes the last term equal 0. In that sense, the expression is positive, and could therefore be greater than $\frac{1}{1-\pi}$ if π is small enough. QED

The intuition for this result is that the risk that a party inadvertently helps the incumbent in a swing opposition district is greater in swing party in power districts, and this risk increases when π is small.

Proposition 2: If π is small enough, the marginal benefit of pork in swing opposition district is greater than it is in core opposition district.

Proof:

$$\pi\left(\frac{\partial E_i^1}{\partial B_i}|_{so} - \frac{\partial E_i^1}{\partial B_i}|_{co}\right) + (1-\pi)\left(P^{co\to co} + P^{so\to cpp} - (P^{so\to co} + P^{co\to cpp})\right)\frac{\partial E_i^2}{\partial B_i}|_{cpp}$$
$$+(1-\pi)\left(P^{co\to so} + P^{so\to spp} - (P^{so\to so} + P^{co\to spp})\right)\frac{\partial E_i^2}{\partial B_i}|_{spp} > 0 \quad (13)$$

Using assumptions 2 and 3, we can substitute $\frac{\partial E_i^1}{\partial B_i}|_{so} - \frac{\partial E_i^1}{\partial B_i}|_{co}$ by $\frac{\partial E_i^2}{\partial B_i}|_{cpp} - \frac{\partial E_i^2}{\partial B_i}|_{spp}$ and rearrange to get:

$$((1-\pi)(P^{co\to co} + P^{so\to cpp} - (P^{so\to co} + P^{co\to cpp})) + \pi)\frac{\partial E_i^2}{\partial B_i}|_{cpp} > (-(1-\pi)(P^{co\to so} + P^{so\to spp} - (...$$

which can be rewritten as:

$$\frac{((1-\pi)(P^{co\to co} + P^{so\to cpp} - (P^{so\to co} + P^{co\to cpp})) + \pi)}{(-(1-\pi)(P^{co\to so} + P^{so\to spp} - (P^{so\to so} + P^{co\to spp})) + \pi)} > \frac{\frac{\partial E_i^2}{\partial B_i}|_{spp}}{\frac{\partial E_i^2}{\partial B_i}|_{cpp}} \quad (15)$$

Since $\frac{\frac{\partial E_i^2}{\partial B_i}|_{spp}}{\frac{\partial E_i^2}{\partial B_i}|_{cpp}} > 1$,

$$\frac{((1-\pi)(P^{co\to co}+P^{so\to cpp}-(P^{so\to co}+P^{co\to cpp}))+\pi)}{(-(1-\pi)(P^{co\to so}+P^{so\to spp}-(P^{so\to so}+P^{co\to spp}))+\pi)}>1 \quad (16)$$

$$P^{co\to co}+P^{so\to cpp}-P^{so\to co}-P^{co\to cpp}+P^{co\to so}+P^{so\to spp}-P^{so\to so}-P^{co\to spp}>\frac{1}{1-\pi} \quad (17)$$

$$P^{co\to co}+P^{so\to cpp}-P^{so\to co}-P^{co\to cpp}+P^{co\to so}+P^{so\to spp}-P^{so\to so}-P^{co\to spp}))>1 \quad (18)$$

$$(P^{co\to co}-P^{so\to so})+(P^{so\to cpp}-P^{co\to cpp})+(P^{co\to so}-P^{so\to co})+(P^{so\to cpp}-P^{co\to cpp})>1 \quad (19)$$

From assumption 6, the first term is positive. From assumption 4, the second and fourth term are positive. From assumption 1, the third term is zero. QED

If π is small enough, then the distribution of pork barrel corresponds to the predictions of the core district hypothesis: $B_{co} \leq B_{so}$ and $B_{spp} \leq B_{cpp}$. If π is large, the distribution resembles the predictions of the swing district hypothesis. One has to admit that the distribution looks a bit strange: $B_{co} \geq B_{so}$ and $B_{spp} \geq B_{cpp}$, but one has to know that when π is is large, the marginal contribution of pork to core opposition and swing opposition districts is actually negative, so $B_{co} = B_{so} = 0$. The difference between B_{so} and B_{spp} depends on $(P^{so\to so}+P^{spp\to spp}-(P^{spp\to so}+P^{so\to spp}))$. If swing opposition districts have a high probability to become swing party in power districts and vice-versa, then more money could go to swing opposition districts.

2.1 Numerical Example

The last two propositions establish that it is possible that core party in power districts are favoured when pork is distributed. I now consider a certain transition matrix (table 1) to see how small π has to be for plausible parametres to lead to this conclusion.Taking those transition probabilities and using equation (9), I can build table 2 which shows the upper bound for $\frac{\frac{\partial E}{\partial B}|_{spp}}{\frac{\partial E}{\partial B}|_{cpp}}$ which supports an allocation to core districts. It would be plausible for $\frac{\frac{\partial E}{\partial B}|_{spp}}{\frac{\partial E}{\partial B}|_{cpp}}$ to be at or above 1.5, which would mean that if $\pi < 0.5$, one would expect core districts to receive more projects.

(Table 2 here)

(Table 3 here)

3 Data and Estimation Strategy

To verify this model, I study the distribution of projects undertaken within the Economic Action Plan (EAP), and then determine whether the projects had a positive impact on the incumbent's reelection. It is important to keep in mind that these projects were allocated at a time during which the Conservative Party of Canada (CPC) formed a minority government that could have been defeated at any time. The parametre $1 - \pi$ in the model could therefore be interpreted as a probability of being defeated before the completion of projects. An optimistic government would consider that $1 - \pi$ is high, and would favour swing districts. Conversely, a pessimistic government would favour core districts.

The new data set built to test this hypothesis contains the distribution and value of projects within the EAP. I first collected data from the 15 000 projects undertaken within the EAP. Examples of projects are: road resurfacing, sewage water plant improvements, social housing renovations, improvements to arenas, purchase of new equipment for businesses, and renovations to federal buildings. These projects were partially funded by the federal government and partially by provinces, municipalities and NGOs. On average, the federal government invested 40 percent of funds. The allocation procedure differed across departments or agencies responsible for the projects. In some cases, provinces pre-selected the projects that were then approved by the federal government, while in other cases, municipalities or NGOs applied directly for federal funding. From the list of projects, I then aggregated the information for the 308 Canadian electoral districts. I therefore have information on the number of projects, the federal amount invested and the total value of projects for every Canadian electoral district.

In a second step, I gathered information on the October 2008 election. Parties presented candidates in each electoral district, and the candidate who received the most votes in the district was chosen as Member of Parliament (MP) for that district. These elections preceded the EAP and brought the Conservative Party of Canada (CPC) to Parliament as a minority government with 142 MPs. For every district, I gathered information on the share of the votes for each of the four main parties and on the party of the winning candidate. The 2011 election followed the distribution and completion of projects. To determine the impact of pork barrel spending on reelection, I collected information on the reelection of incumbent parties by district. In a third step, I found information on the MP representating the district between 2008 and 2011 (39th legislature). The experience and the previous positions

MP could play a role in the distribution of projects, and would certainly play a role in the reelection of the MP.

Finally, I used per district data from the 2006 census to control for socio-economic differences between districts. This data includes the population of the district [2], the share of the population aged 19 and below, the share of the population aged 65 and above, the median income of a family, the share of the immigrant population, the share of the aboriginal population, the unemployment rate, whether the district was downtown, whether the district was in the North, and whether the district was in the National Capital Region. These explanatory variables should capture some of the needs of districts for infrastructure.

Table 3 presents some descriptive statistics for different kinds of districts. These univariate results indicate that districts that elected CPC candidates had significantly more projects than districts represented by other parties. When considering the value of projects, however, there is no significant univariate difference between CPC and opposition districts. Since close races did not receive more projects, these preliminary results would speak for the core district hypothesis. It could however be the case that certain socio-economic groups tended to vote CPC and that these groups needed infrastructure investments. Table 4 explores this possibility. Not surprisingly, the socio-economic chracteristics of a district are correlated with the party representing it. For example, constituents of CPC districts have higher income, a lower unemployment rate and a higher participation rate. Since CPC districts seem to be richer on average, the positive bias towards CPC district will probably be accentuated when I include the socio-economic variables in the multivariate regressions.

(Table 3 here)

(Table 4 here)

3.1 Estimation of the Distribution of Projects

The first regression models the amount of money spent by the federal government. I use this amount and not the total amount, because the federal

[2] All districts have a population of approximately 100 000, except districts in Prince-Edward-Island and in the three territories: Yukon, Northwest Territories and Nunavut that have a population of 30 000 each

government did not control the total value of the project, but only the amount it invested. One problem with the value of projects is its lack of robustness. Every project is indicated at a single location, but certain large projects (highways, for example) could be taking place across many districts. Furthermore, there could be a mistake in the location of projects on the map used to create the dataset. If all projects were of the same magnitude, these two problems would probably even themselves out. The EAP, however, contains a large spectrum of projects of different sizes. It is therefore also useful to model the number of projects in a district as well, because the number of projects is not affected by the size of projects, and can therefore serve as a robustness check. I explain these two dependent variables with the socio-economic characteristics of the district, the characteristics of the MP representing the district, and the results of the 2008 election:

$$\text{federal amount} = \beta_1 \text{ socioeconomic} + \beta_2 \text{ MP} + \beta_3 2008 \text{ Election} + \epsilon \quad (20)$$

The coefficients of interest are those related to 2008 elections. If the core district hypothesis is true, one would expect a positive coefficient for districts that elected a CPC candidate in 2008. Furthermore, if the model elaborated previously and the one from Cox & McCubbins (1986) are correct, one would predict a positive coefficient for the difference between the CPC candidate and the best opposition candidate as illustrated by figure 2. This difference is small and postive when a CPC candidate is elected by a small margin and is large and negative when an opposition candidate is elected with a large margin. Conversely, if the swing district hypothesis is correct, I expect 1) a negative coefficient for the difference between a winning opposition candidate and the CPC candidate and 2) a negative coefficient for the difference between a winning CPC candidate and the best opposition candidate. When these differences are small, the district is considered a swing district (see figure 2). Since Canada operates according to the Westminster system and has strong parties, I follow Snyder & Primo (2010) and predict that funds will be directed towards swing districts to help the CPC gain a majority government.

(Figure 2)

Alvarez & Saving (1987b) and Smart & Milligan (2005) show that MP characteristics play a major role in the distribution of pork barrel. More experienced and better connected MPs should be able to bring more money to their district. More specifically, members of the Privy Council and more experienced MPs should bring more money to their district. The Privy Council

is not particularly well known among Canadians, but all its members are actual or former members of the cabinet. These politicians are or have been important figures of government, and therefore know its inner-workings. It is therefore realistic to assume that they have an advantage when seeking pork barrel for their constituents. As for experience, I include two dummies: less than 5 years of experience as MP and more than 10 years of experience as MP.

The purpose of the EAP is to support families and communities in need. The socio-economic characteristics of districts should remove this effect and show to which extent spending was directed towards these communities. The unemployment rate should, for example, be positively correlated with the value of projects, while the median income of the district should negatively impact the resources going towards that district. Independently of these characteristics, some districts simply require more money. For example, districts comprising the downtown area of a city have more and older infrastructure, and districts located in the North are in dire need for infrastructure.

3.2 Estimation of the Impact of Projects

While the first model explains the distribution of funding, the second model analyses the impact of these projects on the reelection of the district incumbent party using the total amount spent in the district, the 2008 election results, and MP characteristics. The variable of interest is the total amount of spending in a district. This variable is used instead of the amount spent by the federal government, because it is easier for voters to assess the total value of a project than to determine how much the federal government invested. Actually, in light of the publicity done by the federal government, it would not be surprising that voters give full credit to the federal government for projects only partially funded by it. As in the previous model, I also use the number of projects in a district, but the motivation is slightly different. When voters travel through the district, the probability of them seeing the poster of a project and being reminded of the EAP would depend on the number of projects, not on the value of projects. By using both the total value and the number of projects, I can compare the two coefficients. A significant difference would indicate whether there is an electoral benefit to undertake many low-scale projects or a few expensive projects.

As noted by Snyder & Levitt (1997), it would be inappropriate to simply use the total amount (or the number of projects) in the regression, because of a missing variable bias. Just like the total value of projects in a district, the

probability of reelection is correlated with the perceived tightness of the race and with the political skills of the MP. In the latter case, MPs with superior political skills will have the connections to direct money towards their districts, and these skills will also serve them to secure reelection. Since neither the perceived tightness of the race nor the political skills can be observed and included in a regression, I need instrumental variables to remove the correlation between explanatory variables and the error term. Such variables should be correlated with the total value of projects, but uncorrelated with the probability of reelection. The instrument chosen is whether the district is in the urban core of a major city. Downtown districts have more and older infrastructure. They therefore need more money. However, there is no reason to believe that constituents in downtown districts have a greater or lower tendency to reelect the incumbent party.

To verify this claim, I compare downtown districts with non-downtown districts in table 5. Two differences stand out: there are fewer children and more immigrants in downtown districts. Since immigrants probably have not had time to choose a favourite party, their vote could be more volatile. Similarly, downtowns probably have a greater fluctuation of people thus leading to a greater fluctuation in party allegiance. Both factors would speak for a negative relationship between the reelection of the district incumbent party and downtown districts. If this were the case, it would mean that the number of projects in a district would have a negative impact on incumbency since there were more projects in downtown districts. Since the opposite is found (see table 8), the number of immigrants and the transient nature of downtowns do not jeopardize the validity of the instruments. Furthermore, to specifically see if downtown incumbents have a higher likelihood of reelection, I analyze the probability of reelection of district incumbent parties in the 2004, 2006 and 2008 elections. The probability of an incumbent party to be reelected across these three elections was 86.7 percent in downtown districts and was 83.6 percent in non-downtown districts. This difference is not significant. If I include regional dummies (East, Quebec, Ontario and West) and time dummies in a probit regression, the variable downtown is still not significant.

(Table 5 here)

The 2004 election is particularly interesting, because it followed a recession (2001-2002) as did the 2011 election. During the 2004 election, 80 percent of downtown incumbents were reelected and 83 percent of non-downtown

incumbents were reelected. It would be a problem if downtown districts had not been more prone to reelect the incumbent in spite of an increase in government spending preceding the election as in 2011. There was however no large increase of spending in the 2003 or 2004 budgets [3] which could have favoured downtown locations. Budget 2003 increased spending for municipal infrastructure by $ 3 billion over ten years, and budget 2004 alloted $1 billion for the municipal rural infrastructure fund (Canadian Department of Finance, 2011). In comparison to the $ 42 billion plan over two years, these two initiatives are very small, and the biggest from the two, the municipal rural infrastructure clearly fund went to rural districts. There was therefore no increase in spending in downtown districts preceding the 2004 election. All in all, downtown districts have not been more prone to reelect incumbents, especially not in elections following economic downturns. Since the downtown variable is able to withhold these tests, it is a valid instrument.

Since a CPC government allocated the resources, theory would suggest that I also test whether spending had an impact on the election of CPC candidates instead of testing whether it had an impact on the reelection of district incumbent. Unfortunately, the missing variable bias makes it difficult to test the former model. It would be indeed very difficult to find valid instruments for a regression with the election of the CPC as dependent variable. Indeed, any district characteristic related with the spending pattern would be correlated with the party elected. Districts in the north, for example, could have been brought towards the CPC in the 2011 elections due to their opposition to the long gun registry. District characteristics not related with the election of a CPC candidate would probably be only remotely related to the spending. This situation would therefore lead to a weak instrument problem, and the relatively small sample of 308 observations would make identification nearly impossible.

The second block of explanatory variables stems from the 2006 and 2008 elections. The first variable is the difference between the winning and runner-up candidate independently of parties in the 2008 elections. When this difference is small, I expect the probability of defeat of the incumbent to be high. The second variable consists of a dummy whether the district reelected the same party in 2006 and 2008. A district that changed hands between 2006 and 2008 is volatile and will probably change hands again in 2011. The last variable is whether the district elected a candidate from the CPC in 2008 and captures the gain of popularity of the CPC from 2008 to 2011.

[3] There was no budget in 2002 as the 2001 budget was in December.

The third block consists of MP characteristics. Certain MPs are better known, which should help their reelection bid. I therefore include whether the MP is a member of the Privy Council, and two dummies for experience.

4 Results and Discussion

4.1 Distribution of Projects

Table 4 presents the results of the regression explaining the federal amounts spent by district. The first surprising result is the general lack of significance of socio-economic variables. One of the pillars of the plan was to provide support to communities and families, but there is no indication that money was directed towards poorer districts in need of support. One possible explanation is that census data from 2006 no longer reflected the relative poverty of districts in 2009, possibly because the financial crisis hurt specific districts independently of their initial situation. The plan could therefore still have supported poorer communities and families, but our data cannot capture the specific impact of the financial crisis.

Contrary to findings from Smart & Milligan (2005), MP characteristics played no role in the allocation of funds. This result supports the idea that MPs play little role in policy development, and therefore should not be granted any credit for the distribution of projects.

The results of the political variables support the core district hypothesis, and corroborate those of Smart & Milligan (2005). Furthermore, the results correspond exactly to the predictions from Cox & McCubbins (1986). In Table 6, model (1) shows the increase in the difference between a winning CPC candidate and the runner-up has a positive impact on the amount of money received by the district from the federal government. Furthermore, the increase in the difference between a winning opposition candidate and a losing CPC candidate has a negative impact. In neither of these cases is the coefficient significant, but in model (3) the variable subtracting the share of the vote for the CPC from the share of the vote for the best opposition candidate1, the coefficient is positive and significant as in figure 1. In other words, districts where the CPC won by a great margin (support group) received a lot of money, districts where it was a close race reaped less (swing districts), and, finally, districts where the opposition party won by a great

margin got the least. Unsurprisingly, the CPC dummy is positive and gains significance when going from the over-specified model (2) to the more parsimonious model (4) thus supporting the core district hypothesiss.

(Table 6 here)

Table 7 contains the coefficients when the number of projects per district is the dependent variable. This robustness check confirms previous findings concerning political variables. CPC districts did receive more projects, but this coefficient loses its significance when I include the difference between the CPC candidate and the best opposition candidate meaning that the latter variable explains better the variations in the number of projects. For every 1% increase in this difference, the district received 0.3 projects more. This number might seem small but knowing that the average project represents almost $3 million, a small increase in the voting difference would have a substantial impact on the community.

Interestingly, when considering the number of projects, more socio-economic variables become significant. The unemployment rate and the share of senior citizens, for example, become significant and positive. One reason for this sudden change is that poverty reduction projects were smaller in scope but greater in number. Indeed, the average project for the renovation and retrofit of social housing was $107 924, while the average project from the infrastructure stimulus fund was close to one million dollars.

(Table 7 here)

4.2 Impact of Projects on Reelection

Before considering the results of the probit regression explaining the reelection of incumbent parties, it is important to consider the significance of the variable: downtown in explaining both the value of federal funding and the number of projects. In both cases, the variable is highly significant, because there is a need for investment in downtown cores. Without a constant, downtown explains 27 percent of the variation in federal investment (F-value: 112.2) and 7 percent in the variation in the number of projects (F-value: 23.3). In that sense, it captures enough of the variation to avoid the problem of weak instruments, but it also does not capture too much of the endogenous part of the variable.

Table 8 presents the results of the probit regressions explaining the re-election of the incumbent party of the district. These results must be taken with caution, because instrumental variables are still biased in finite sample in the presence of endogeneity, and it is dubious whether 308 observations are sufficient to assume asymptotic properties. Even though the coefficients of the IV regression are about double the size of the probit coefficients, the Wald test of exogeneity fails to reject exogeneity at the 5% mark in both cases (it rejects at the 10% mark). The endogeneity problem discussed in Levitt & Snyder (1997) might not be as much of a problem as initially assumed, because the federal government does not fully control the total amount of pork barrel going to a given district. The fact that other organisations contribute to the projects could reduce the missing variable bias, because the decisions of these organisations do not depend on the missing variable.

The most important result of table 8 is the significant and positive coefficient for both the number of projects and the total amount spent in a district. This finding contradicts the ones from Samuels (2002), and clearly shows that the incumbent party received credit for the value and the number of projects undertaken in the district as assumed in the model. Since it would be interesting to see whether CPC MPs get more credit, I also ran the regression explaining the number of projects with the interaction between CPC and the number of projects. Since OLS estimates seem unbiased, this regression was done with the setting of model 1. The coefficient of the interaction term was positive but not significant (result not reported), meaning that CPC MPs did not benefit more than opposition MPs from the number of projects spent in their district.

At first glance, it seems surprising that the incumbent party of a district would get any credit for decisions taken by the party in power. However, since voters are generally known to be poorly informed about policies and politicians (Bartels, 1996), it is realistic to think that voters probably know very little about the process leading to the allocation of projects. Voters could therefore give credit to their MP for projects in their district. If voters punish the incumbent for natural disasters (Cole, Healy and Werker, 2008), they could equally well give credit to the incumbents for positive outcomes outside of his control. If this idea is known by the CPC and the party would fear an election due to its status as minority government, the model predicts the CPC would want to favour core CPC districts.

The difference in magnitude between number of projects and total amount is small. As previously mentioned, the value of the average project is about

$3 million. It would therefore seem that adding an extra project in a district would benefit more the incumbent than an increase of $3 million in an already established project. Again, since the IV variables are biased in finite sample, this difference only suggests that there could be an advantage to spread out money in many projects instead of concentrating it in a few expensive projects, but more research needs to be done.

As for the other variables, conservative candidates benefited from a net advantage for reelection. This finding is not surprising considering the gain of popularity of the party across Canada. Members of the Privy council and MPs running again tend to be reelected with a greater probability. In both cases, these candidates are better known and therefore have an advantage against challengers. The margin between the runner-up and the elected candidate has a positive but small impact on reelection.

(Table 8 here)

5 Conclusion

This paper develops a model of pork barrel allocation where the incumbent and not the party in power receives electoral credit and finds empirical support for it. First, it finds evidence for the core district hypothesis using data from the projects of the 2009-2011 Canada Economic Action Plan. Second, it shows that the number and value of projects undertaken within the economic action plan had a significant impact on the reelection of the incumbent in the 2011 election. The latter empirical finding suggests that pork barrel may not affect only benefit the party in power, but also the district incumbent. This new channel increases the complexity of pork barrel distribution.

Throughout this paper, I consider projects as homogeneous, but this assumption is hardly realistic. Repairs to an aqueduct could be as expensive as repairs to arenas, but the latter is much more visible. Different kinds of projects could serve different purposes. Future research will focus on the differences between the kinds of projects, their distribution and their differential impact on voting. These differences in visibility could explain the variety of empirical results found in the literature. If certain kinds of projects have a great impact on the electorate, third parties should allocate these resources and not politicians to reduce pork barrel spending. The approval process also differs across kinds of project. There is no one person who approved

all projects. Different agencies/departments were responsible for different kinds of projects, and all their own procedures. In some cases, there was cooperation with provincial authorities to choose projects; in other cases, NGOs competed to receive financing. If procedures matter, the distribution of these projects will depend on the allocation process. Future research will investigate the numerous processes for different strands of projects and the outcomes they produced. This future research could lead to an improvement in the efficiency of project allocation by finding procedures that minimize the impact of pork barrel spending.

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A Definitions

Diff MP Opp - Cons cand/ Difference between opposition MP and conservative candidate: share of the vote for the opposition canadidate who won the election in the district share of the vote for the conservative candidate. Always positive. If this number is negative, the variable equals 0.

Diff MP Cons - Opp cand / Difference between conservative MP and best opposition candidate: share of the vote for the conservative candidate who won the election in the district share of the vote for the opposition candidate who received the most vote. Always positive. If this number is negative, the variable equals 0.

Difference Cons - Best Opp cand / Difference between conservative candidate and best opposition candidate: share of the vote for the conservative candidate who won the election in the district share of the vote for the opposition candidate who received the most vote.

Northern districts: Labrador, Manicouagan, Abitibi Baie-James Nunavik Eeyou, Kenora, Timmins James Bay, Churchill, Desnethe Missinippi Churchill River, Fort McMurray Athabasca, Peace River, Prince George Peace River, Skeena Bulkley Valley, Yukon, Western Arctic, and Nunavut.

Downtown districts: Quebec, Westmount Ville-Marie, Hamilton Centre, Ottawa Centre, Toronto Centre, Trinity Spadina, Winnipeg Centre, Calgary Centre, Edmonton Centre, and Vancouver Centre.

Privy Council: Humber St. Barbe Baie Verte, Cardigan, Charlottetown, Malpeque, Central Nova, Halifax West, Kings Hants, Sydney Victoria, Beausejour, Fredericton, New Brunswick Southwest, Beauce, Bourassa, Jonquiere Alma, Laurier Sainte-Marie, Louis-St-Laurent, Megantic L'Erable, Mount Royal, NDG Lachine, Pontiac, Roberval Lac-St-Jean, Saint-Laurent Cartierville, Beaches East York, Bramalea Gore Malton, Cambridge, Carleton Mississipi Mills, Durham, Eglington Lawrence, Etobicoke Lakeshore, Haldimand Norfolk, Halton, Kingston and the Islands, Markham Unionville, MississaugaBrampton South, Mississauga East Cooksville, Niagara Falls, Ottawa Vanier, Ottawa West Nepean, Parry Sound Muskoka, Pickering Scaborough East, Richmond Hill, St. Paul's, Scaborough Agincourt, Scaborough Guildwood, Simcoe-Grey, Thornhill, Toronto Centre, Toronto Danforth, Vaughan, Wellington Halton Hills, Whitby Oshawa, York Centre, York Simcoe, York West, Charleswood St.James Assiniboia, Provencher, Winnipeg South Cen-

tre, Battlefords Lloydminster, Blackstrap, Wascana, Calgary Centre-North, Calgary Nose-Hill, Calgary Southeast, Calgary Southwest, Edmonton Spruce Grove, Yellowhead, Chilliwack Fraser Canyon, Esquimalt Juan de Fuca, Okanagan Coquihalla, Port Moody Westwood Port Coquitlam, Prince George Peace River, Saanich Gulf Islands, Vancouver Centre, Vancouver South, Yukon, and Nunavut.

Cabinet: Egmont, Central Nova, Fredericton, Fundy Royal, New Brunswick Southwest, Jonquiere Alma, Louis-Saint-Laurent, Megantic-L'Erable, Pontiac, Roberval Lac St-Jean, Cambridge, Carleton, Mississipi Mills, Durham, Haldimand Norfolk, Halton, Niagara Falls, Ottawa West Nepean, Parry Sound Muskoka, Simcoe Grey, Whitby Oshawa, York Simcoe, Charleswood St. James Assiniboia, Provencher, Battlefords Lloydminster, Blackstrap, Calgary Centre North, Calgary Nose Hill, Calgary Southeast, Calgary Southwest, Edmonton Spruce Grove, Yellowhead, Chilliwack Fraser Canyon, Okanagan Coquihalla, Port Moody Westwood Port Coquitlam, Prince George Peace River, Saanich Gulf Islands, Nunavut.

Ottawa districts: Hull Aylmer, Gatineau, Ottawa Centre, Ottawa Orleans, Ottawa South, Ottawa Vanier, and Ottawa West Nepean.

B Figures

Figure 1: Timeline of Events

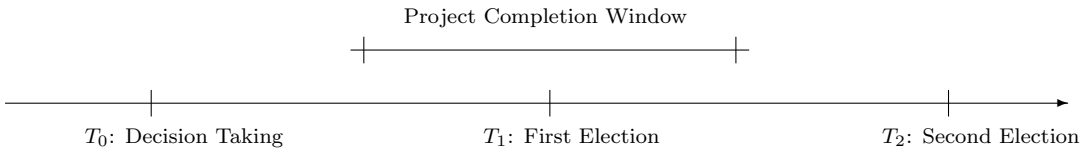
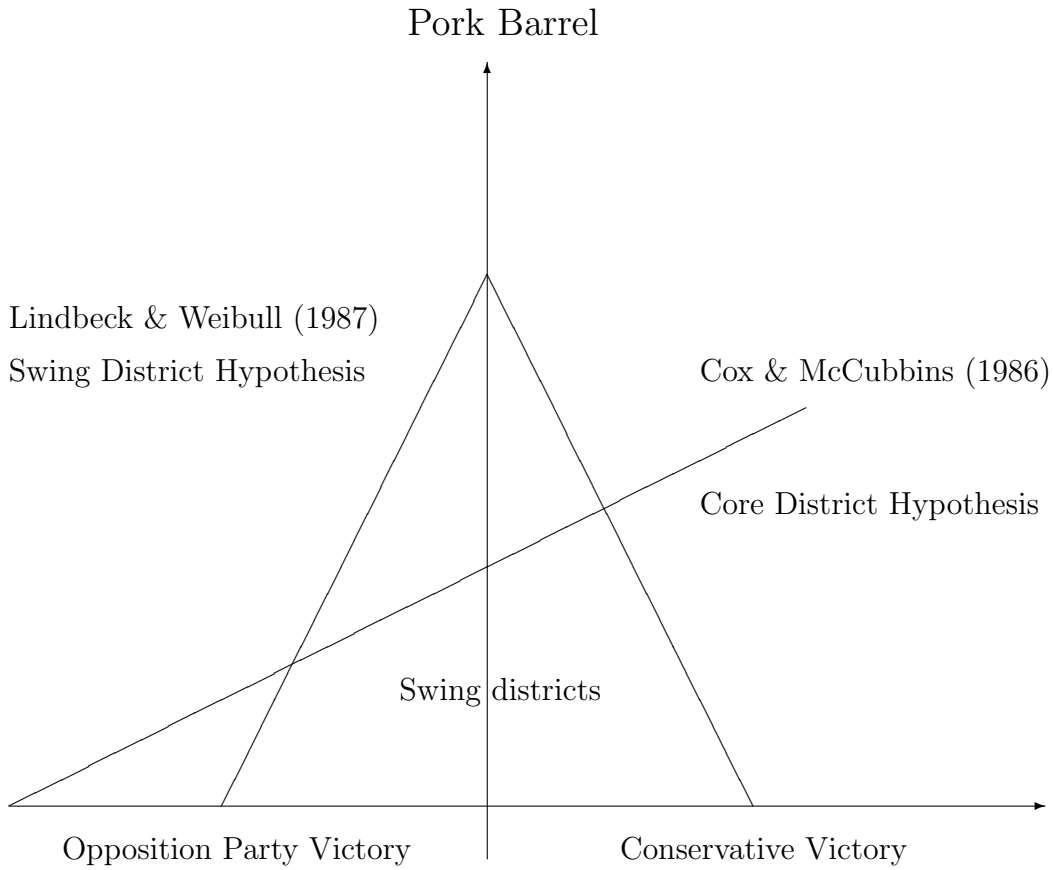


Figure 2:
Empirical Predictions for the Amount of Pork Barrel



Difference between the share of votes to the conservative candidate and the share of votes to the best opposition candidate

C Tables

Table 1: Transition Probability of Status

		District Status (First Election)			
		CO	SO	SPP	CPP
District Status (Second Election)	CO	60	30	10	0
	SO	20	35	35	10
	SPP	10	35	35	20
	CPP	0	10	30	60

Note: All numbers are probabilities.
Definitions: CO: Core Opposition, SO: Swing Opposition, SPP: Swing Party in Power, and CPP: Core Party in Power.

Table 2: Relationship between π and the upper bound of $\frac{\frac{\partial E}{\partial B}|_{spp}}{\frac{\partial E}{\partial B}|_{cpp}}$

π	Upper Bound
0.1	41.5
0.2	4
0.3	2.3
0.4	1.7
0.5	1.5
0.6	1.3
0.7	1.2
0.8	1.1
0.9	1
1.0	1

Table 3: Distribution of Projects per District according to the Results of the 2008 Elections

	Average Number of Projects	Total Federal Investment (million $)	Total Value (million $)	Number of Districts
Conservative districts	53.5	54.8	139	142
Non-conservative districts	44.2	55.2	135	166
Significant Difference at 5%	Yes	No	No	
Close Races	39.9	53	134	61
Landslide	50.6	55.5	138	246
Significant Difference at 5%	Yes	No	No	

Note: Close races are districts where CPC won or lost by less than 10% of votes. Landslide are districts where the CPC won or lost by more than 10%. There are 308 electoral districts in Canada, but the CPC party did not present a candidate in the district of Port-Neuf-Jacques-Cartier in the 2008 election. For this reason, the sum of districts for close races and landslide is 307.

Table 4: Socio-Economic Description of Districts

	Conservative	Opposition	Significant Difference in Means (5%)
Population	105,060	100,568	No
Share under 19 (%)	25.8	23.2	Yes
Share over 65 (%)	13.8	13.9	No
Median Income ($)	67,670	60,900	Yes
Immigrant (%)	14.0	21.2	Yes
Aboriginal (%)	5.8	3.6	Yes
Unemployment Rate (%)	5.8	8.1	Yes
Downtown (%)	1.4	4.8	No
North (%)	4.2	4.8	No
National Capital Region (%)	1.4	3	No
Number of Districts	142	166	

Note: The variables are described in more details in the appendix.

Table 5: Socio-Economic Description of Downtown Districts

	Non-Downtown	Downtown	Significant Difference in Means (5%)
Population	102,363	110,869	No
Share under 19 (%)	24.7	16.0	Yes
Share over 65 (%)	13.8	13.6	No
Median Income ($)	64,070	62,565	No
Immigrant (%)	17.6	28.0	Yes
Aboriginal (%)	4.7	3.6	No
Unemployment Rate (%)	7.0	6.7	No
Number of Districts	298	10	

Note: The variables are described in more details in the appendix.

Table 6: Allocation of Federal Money to Canadian Electoral Districts

	(1)	(2)	(3)	(4)	(5)
Total population	270.4	267.0	263.8		
	(1.90)	(1.86)	(1.85)		
Share below 19	-422086089.0*	-393948528.8*	-420169438.9*	-311250665.7**	-333904765.5**
	(-2.30)	(-2.20)	(-2.30)	(-3.15)	(-3.17)
Share above 65	-104346933.2	-76191796.8	-89784836.2		
	(-0.75)	(-0.55)	(-0.66)		
Median income	-51.28	26.71	-11.91		
	(-0.17)	(0.09)	(-0.04)		
Share immigrant	-12732885.2	-12913268.1	-10080145.4		
	(-0.44)	(-0.44)	(-0.34)		
Share aboriginal	29976526.6	37365345.3	33788890.7		
	(0.69)	(0.81)	(0.76)		
Unemployment rate	136446715.8	76287842.2	132435259.7		
	(1.76)	(1.05)	(1.74)		
Downtown	167353242.9***	168399545.6***	167068846.8***	178592420.0***	177367505.2***
	(3.49)	(3.47)	(3.48)	(3.54)	(3.56)
North	98879857.9***	97395377.1***	98133575.9***	104444834.2***	106373469.6***
	(5.78)	(5.43)	(5.71)	(6.92)	(7.08)
Ottawa	14503623.9	13066180.8	15166095.3		
	(0.92)	(0.81)	(0.97)		
Privy Council	-13993642.3	-12665829.7	-13533706.8		
	(-1.85)	(-1.72)	(-1.84)		
MP less than 5 years	1552446.8	2261979.2	2775101.1		
	(0.19)	(0.33)	(0.40)		
MP more than 10 years	4527982.6	3344735.8	3820685.1		
	(0.51)	(0.37)	(0.42)		
Diff MP Opp - Cons cand	-530786.0				
	(-1.46)				
Diff MP Cons - Opp cand	260696.8				
	(1.40)				
Conservative 2008		15379764.9		14311302.5*	
		(1.95)		(2.05)	
Diff Cons - Best Opp cand			364120.6*		298561.6*
			(2.42)		(2.25)
Constant	133599904.8	112116957.6	125179029.7	113935317.6***	125487882.4***
	(1.87)	(1.73)	(1.89)	(4.85)	(4.84)
R^2	0.395	0.388	0.395	0.373	0.378
N	307	308	307	308	307

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Note: all standard errors are robust. The variables are defined in the appendix.

Table 7: Allocation of Projects to Canadian Electoral Districts

	(1)	(2)	(3)	(4)	(5)
Total population	0.00000970	-0.0000142	-0.0000124	-0.0000156	
	(0.09)	(-0.13)	(-0.11)	(-0.14)	
Share below 19	12.22	14.62	16.47	-7.195	
	(0.21)	(0.25)	(0.27)	(-0.12)	
Share above 65	189.9**	232.0***	211.2***	198.8***	176.0***
	(3.20)	(4.17)	(3.48)	(3.42)	(4.30)
Median income	0.000107	0.000226	0.000183	0.000149	
	(0.63)	(1.35)	(1.04)	(0.88)	
Share immigrant	-58.12***	-49.43***	-52.85***	-49.99***	-50.87***
	(-6.89)	(-5.60)	(-5.98)	(-5.84)	(-7.49)
Share aboriginal	49.09	60.08	55.06	52.06	
	(1.24)	(1.60)	(1.38)	(1.39)	
Unemployment rate	259.4***	249.1***	228.5***	276.8***	280.5***
	(4.77)	(4.64)	(4.12)	(5.24)	(5.51)
Downtown	48.91***	47.81***	48.38***	47.20***	50.82***
	(4.47)	(4.62)	(4.47)	(4.45)	(4.92)
North	27.59*	25.48*	26.74*	27.48*	42.16***
	(2.32)	(2.17)	(2.18)	(2.41)	(4.22)
Ottawa	14.16	16.38	14.79	16.66	
	(1.30)	(1.55)	(1.30)	(1.55)	
Privy Council	1.805	3.138	2.701	1.920	
	(0.47)	(0.83)	(0.68)	(0.50)	
MP less than 5 years	-4.884	-0.995	-3.110	-2.839	
	(-1.61)	(-0.35)	(-1.02)	(-0.95)	
MP more than 10 years	6.875	4.656	5.243	5.610	
	(1.74)	(1.14)	(1.30)	(1.40)	
Diff MP Opp - Cons cand	-0.516***				
	(-3.86)				
Diff MP Cons - Opp cand		0.339***			
		(3.70)			
Conservative 2008			10.89**	-1.124	-0.747
			(2.88)	(-0.23)	(-0.16)
Diff Cons - Best Opp cand				0.297***	0.308***
				(3.59)	(3.84)
Constant	3.819	-20.82	-13.22	-2.076	9.532
	(0.13)	(-0.78)	(-0.45)	(-0.07)	(1.40)
R^2	0.459	0.453	0.444	0.467	0.439
N	308	307	308	307	307

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note:All standard errors are robust. The variables are defined in the appendix.

Table 8: Reelection of District Incumbent Party in the 2011 Elections

	(1) Probit	(2) IV Probit	(3) IV Probit	(4) Probit	(5) IV Probit	(6) IV Probit
Conservative 2008	1.746***	1.279**	1.310**	1.782***	1.620***	1.635***
	(7.66)	(3.08)	(3.12)	(8.05)	(6.00)	(6.21)
Change Party 06-08	0.609*	0.304	0.303	0.768**	0.760**	0.787**
	(2.09)	(0.93)	(1.04)	(2.65)	(2.71)	(2.94)
Victory Margin 08	0.0173*	0.0111	0.00791	0.0218**	0.0200**	0.0192**
	(2.31)	(1.41)	(1.07)	(2.91)	(2.73)	(2.81)
MP Ran	0.532	0.573		0.662*	0.697*	0.704*
	(1.64)	(1.96)		(1.97)	(2.17)	(2.26)
MP less 5 years	0.138	0.195		0.102	0.0741	
	(0.58)	(0.90)		(0.43)	(0.33)	
MP more than 10 years	0.0744	0.0409		0.0879	0.0152	
	(0.29)	(0.17)		(0.34)	(0.06)	
Privy Council	0.373	0.322		0.484*	0.557*	0.542*
	(1.57)	(1.46)		(2.04)	(2.44)	(2.57)
Number Project	0.0122***	0.0281***	0.0287***			
	(3.86)	(4.26)	(4.73)			
Value Projects (10mio)				0.0190**	0.0364***	0.0364***
				(3.10)	(3.33)	(3.37)
Constant	-1.823***	-2.356***	-1.655***	-1.783***	-1.973***	-1.935***
	(-4.54)	(-6.40)	(-8.05)	(-4.23)	(-4.88)	(-5.14)
R^2	0.38			0.37		
N	308	308	308	308	308	308

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: In column 1, the number of project is used to explain the re-election of the district incumbent party. In columns 2 and 3, whether the district was downtown or not was used as instrument for the number of projects. Even though, the coefficient from the IV regression is twice the one from the probit regression, the Wald test cannot reject exogeneity at the 5% level. In column 4, the value of projects (10 mio) is used in an OLS regression to explain the dependent variable. In columns 5-6, the fact that the riding was downtown is used as instrument for the value of projects. Even though, the coefficient from the IV regression is twice the one from the probit regression, the Wald test cannot reject exogeneity at the 5% level.