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Voters' Partisan Behaviour and Government's Election Strategies for Local Funding Provision: Theory and Empirical Evidence in Australia

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School of Economics

Declaration

Except where appropriately acknowledged this thesis is my own work, has been expressed in my own words and has not previously submitted for assessment.

Muhammad Fadhli Norazman

November 1st 2013

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Abstract

Firstly, this thesis aims to demonstrate theoretically that different proportion of partisan and non-partisan voters entails different election strategies for the government when it provides local funding. Secondly, this thesis aims to find the empirical evidence of the existence of government's election strategies and if they do exist, what are the exact strategies chosen by the government. These election strategies are whether to fund marginal or safe electorates, and whether to fund aligned or unaligned electorates. Four predictions are yielded from the theoretical model discussed in this thesis and two of them are empirically tested in Australia. The empirical results contradict the theoretical predictions.

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1 Introduction

This thesis is interested in exploring the election strategies of government local funding provision and how the strategies vary due to partisan behaviour of voters. Local funding can be a powerful tool for the ruling party to influence voters' voting decision. By using the power of governance, the ruling party is able to channel public resources for its own political benefit. The politically influenced local funding provision, or pork-barrel spending is not a secret to Australian voters. In the election campaigns, it is a common practice for political parties to publicly announce their multi-million dollar promises of funding if they get elected.[1] However, when a particular party becomes the government, it is not easy to observe the party only targets certain group of electorate for local funding. In addition, evidence of political motive in local funding provision always needs in-depth analysis, usually conducted by independent body such as Auditor-General of Australia.[2] Hence, this thesis investigates whether Australian government manipulates local funding for its electoral gains and if yes, what is the actual election strategies it employs.

There are two election strategies in providing local funding centred on by this thesis. The first strategy is to fund electorates based on their electoral marginality. On the one hand, a particular electorate can be a marginal electorate with many voters ready to switch their support (swing voters).[3] On the other hand, an electorate can also be a safe electorate with many voters who always vote for one particular party (core voters). The second strategy is to fund electorates based on their alignment: an electorate can either be controlled by the ruling party (aligned electorate) or the opposition party (non-aligned electorate). This thesis stresses that both strategies are simultaneous and mutual; they exist together and cannot be separated. By using this approach, this thesis departs from common view of swing versus core voters outcome.

The concept of voters' partisan behaviour will be introduced as an exogenous determinant of government election strategy of local funding provision.[4] Voters are said to behave in partisan manner if they vote mainly because of the party and if voters vote mainly because of the individual representative, they are said to be non-partisan voters. When evaluating the provision of local funding, partisan voters credit the ruling party while non-partisan voters credit their own representative. This thesis explores how the proportion of voters of both types can change the choice of election strategies by the government. It is also important

[1] For example, see 'Pork Barrels set to rolling to secure undecided NSW voters' by Jessica Irvine (13th August 2013).
[2] For example, a supporting body of Auditor-General of Australia, Australian National Audit Office (ANAO) provides an analysis of funding difference at electorate-level for Community Grant Funding. (ANAO, 2007)
[3] For the categorisation of voters, see Cox (Chapter 13, 2010).
[4] See Jaensch (1992: p.403 - 408) for a discussion about voters partisan behaviour.

to distinguish partisan behaviour and party biasness. While the former deals with choice between party and individual candidate, the latter deals with inter-party or inter-candidate choice.

This thesis employs two methods in presenting the main argument of government's election strategies. The first method is theoretical analysis, where a static probabilistic voting model is utilised to micro-found the impact of voters' partisan behaviour on government's election strategy. There are four predictions resulted from the outlined theoretical model. First, when most voters are non-partisan voters, the order of electorates who get more funding is as follow: marginal aligned electorates, safe aligned electorates, safe unaligned electorates and marginal unaligned electorates. If the proportions of partisan and non-partisan voters are similar, then the order is similar as above except safe unaligned electorates receive similar amount of funding as marginal unaligned electorates. When there are more partisan than non-partisan voters, but the proportion of non-partisan voters is considerably high, then the order aforesaid becomes: marginal aligned electorates, safe aligned electorates, marginal unaligned electorates and safe unaligned electorates. Lastly, if most of the voters are partisan then alignment will no longer matter in determining the order. Specifically, more marginal electorates will be favoured over safer electorates in local funding provision regardless of the electorates' alignment.

The second method is empirical analysis where this paper empirically tests Australian government election strategies in providing Volunteer Grants. The estimation equation is designed to test whether the Australian government acts accordingly as predicted by the predictions aforementioned above. Due to the high proportion of partisan voters in Australia, this thesis only tests for the last two predictions. However, the results are slightly different with what have been predicted by the theoretical model. Theory predicts whenever the proportion of partisan voters is higher than non-partisan voters, marginal unaligned electorates receive more funding than safe ones. The empirical results however, show the opposite relationship between marginal and safe unaligned electorate.

This thesis will begin with a review of literature in the next chapter (Chapter 2). Then, Chapter 3 provides a brief institutional background of Australian politics which aims to build a base for theoretical and empirical analysis. Theoretical analysis of Australian government local funding decisions will be explained in Chapter 4 while empirical discussion is provided in Chapter 5. The contradiction between theory and empirical evidence will be discussed in Chapter 6 while Chapter 7 concludes this thesis.

2 Literature Review

This thesis pulls together two dimensions of literature regarding political behaviour. The first dimension is voters' behaviour which can be compared in two aspects: retrospective versus prospective and partisan versus non-partisan (Rosema, 2006). The second dimension is party's behaviour where Strom (1990) suggests that there are three approaches in studying this: vote-seeking, office-seeking and policy-seeking. Since this thesis is on election strategies, we focus on the the vote-seeking approach where party seeks to maximise its votes (also see Alesina (1988) for a generalisation of party's behaviour in electoral competition).

Voters' behaviour

The well-known median voter theorem by Downs (1957) deals with prospective behaviour where voters vote for parties' promises. As a result, parties' policies converge to the median of the policy spectrum where the median voter's preferred policy will become the each contending party's choice. As suggested by Besley and Preston (2007), in this model, policy is determined by voters' preferences and not the government or political institutions. Although this model is popular for its tractability and simpleness, the equilibrium in this model fails to hold when there is more than one dimension of policy (Persson and Tabellini, 2000) or when parties are policy-seeking (Wittman, 1983). The vote-seeking approach evolves into a study of retrospective behaviour where voters vote according to past performances of parties or politician. A common way of modelling this is by using the probabilistic voting model introduced by Ledyard (1984) and later extended by Lindbeck and Weibull (1987) (henceforth LW (1987)). Besley and Preston (2007) claim in this model, policy is determined by the government or political institutions rather than voters' preferences.

An early contribution to the literature on voters' partisan behaviour is the seminal work of Campbell et al. (1960) where they find the origin of voters' strong political party attachment is due to psychological factors. The proponents of partisan behaviour theory expand this idea later by suggesting the impact of political party and candidate evaluation (among many, Franklin (1984) and Green and Palmquist (1990)). The opposite of partisan behaviour is non-partisan behaviour where voters have strong attachment to representative. For example, Mayhew (1974) suggests that voters vote for individual politicians as a result of their influence in the Congress. The interpretation of partisan behaviour however, can be different. According to some literature regards strong party attachment implies voters are reluctant to change their choice of party (for further discussion of opposing interpretation of partisan behaviour, see Besley and Preston (2007) and Green et al. (2004)). In this thesis however, the definition of partisan behaviour is confine to the decision of voters voting for the party or the representative.

Election strategy of redistribution policy

When it comes to election strategy of redistribution involving non-partisan voters, LW (1987) claim that parties favour swing voters. Dixit and Londregan (1996) (henceforth DL (1996)) discuss LW's theory further and find two possible outcomes of redistributive policy. With limited information about voters, swing and low-income voters are favoured, and in the presence of more information about voters, parties spend more on their core voters (also known as machine politics). Meanwhile in discussing politicians' election strategy involving non-partisan voters, Cox and McCubbins (1986) (henceforth CM (1986)) state when politicians are risk-averse, they spend more on their core voters, less in swing voters and least or none on opponent's voters.

The treatment of these three theories differs in the empirical literature. On the one hand, some papers treat LW and DL as proponents for the swing voters hypothesis and CM as the supporters of the core voters hypothesis (for example, see Case (2001), Golden and Picci (2008), and Leigh (2008)). On the other hand, some other papers treat LW and DL as opposing ideas while CM is another completely different theory (for example, see Dahlberg and Johansson (2002) and Castells and Solle-Olle (2005)). However, there is a similarity between these strands of literature where they only study one dimension of election strategy and the outcome is always whether government spends on core voters or swing voters. Table 1 shows selected related empirical studies and their results.

Election strategy in federal system

Focusing on election strategy in federal system, Dixit and Londregan (1998) find a different redistribution strategy in federal system as opposed to unitary system. Meanwhile, Arulampalam, Dasgupta, Dhillon and Dhutta (2009) (henceforth ADDD (2009)) extend this further by considering the asymmetric roles of central and state government. Interestingly, ADDD (2009) suggest a new approach of election strategies where apart from swing or core voters, state alignment also can become another election strategy. The framework by ADDD (2009) is a vital base for the theoretical model in this thesis.

Table 1: Selected empirical studies and their results

Author(s)	Country	Political System	Electoral System	Type(s) of Funding	Outcome
Stein and Bickers (1994)	United States	Federal Presidential	FPTP	General grants	Swing Voters
Levitt and Snyder (1995)	United States	Federal Presidential	FPTP	Federal Assistance	Core Voters
Stein and Bickers (1996)	United States	Federal Presidential	FPTP	General grants	Swing Voters
Gaunt (1999)	Australia	Federal Parliamentary	IRV	Sport grants	Swing Voters
Denemark (2000)	Australia	Federal Parliamentary	IRV	Sport grants	Swing Voters
Case (2001)	Albania	Unitary Parliamentary	PR	Social assistance grants	Swing Voters
Dahlberg and Johansson (2002)	Sweden	Unitary Parliamentary	PR	General grants	Swing Voters
Milligan and Smart (2005)	Canada	Federal Parliamentary	FPTP	Regional development grants	Swing Voters
Ansolabehere et al.(2005)	United States	Federal Presidential	FPTP	State transfers	Core Voters
Cadot et al. (2005)	France	Unitary Semi-Presidential	IRV	Infrastructures funding	Swing Voters
Kwon (2005)	South Korea	Unitary Semi-Presidential	FPTP & PR	Government subsidies	Swing Voters
Leigh (2008)	Australia	Federal Parliamentary	IRV	Various local funding	Core Voters
Golden and Picci (2008)	Italy	Unitary Parliamentary	PR	Infrastructures funding	Core Voters

Note: FPTP represents First-Past-the-Post system, IRV represents and PR represents proportional representation system. For details or comparisons of these systems, see Powell, Dalton and Strom (Chapter 5, 2012; p.84-86).

Comparative studies in redistribution policy

There are a number of studies focusing on the different redistribution outcomes due to cross-country systemic differences. Myerson (1993) suggests different redistribution patterns under different electoral systems. Meanwhile, Persson and Tabellini (1999) show the difference in public goods provision and resource redistribution between political and electoral systems. Extending to this, Persson, Roland and Tabellini (2000) suggest government adopting parliamentary system tend to favour majority group in redistribution and having less under-provision of public goods when judged against presidential system. Lizzeri and Persico (2001) propose a model that shows less public good provision in winner-take-all electoral system compared to proportional system due to pork-barrel activity. As far as I am concern, there is no literature yet to compare election strategy or redistribution policy in different countries with different proportion of partisan and non-partisan voters.

Contribution

This thesis uses the framework by ADDD (2009) to model the impact of partisan behaviour on government's election strategy of local funding decisions. The model outlined in this thesis departs from common view of election strategies; government either prioritises swing or core voters. Instead, the model also considers electorate's alignment as another election strategy. Furthermore, the model compares different outcomes due to different proportion of partisan and non-partisan voters. Then, an empirical test is conducted on the predictions produced by the theoretical model specifically in an Australian context. From the perspective of comparative studies, this thesis explains a new determinant on the difference between policy outcomes among countries, particularly in countries with two-party system. However, no cross-country study is made in this paper due to time limitations.

3 Institutional Background of Australian Politics

This chapter aims to discuss a brief background of Australian political and electoral system. Information explained in this chapter provides relevance to our theoretical and empirical analysis in next chapters.

3.1 The Australian political system

Australia has a hybrid political system where it combines British-style Westminster parliamentary system with federalism a la the United States (US).[5] Australian Parliament is the place where all policy decisions are made by the government based on votes of Members of Parliament (MP) and approvals by Senators. The Parliament employs a bicameral legislative system where there are two tiers of executive chambers, the lower house (which is similar to the House of Representatives) and the upper house (which is equal to the Senate).

For representation in the lower house, MPs are elected from each electorate and the total number of seats varied from year to year. Currently, the lower house has 150 members representing 150 federal divisions. Meanwhile, Senators are elected to represent states and territories, in which there are 76 of them; 12 from each state and 2 from each territory. Both legislative chambers have almost equal power in legislating policies with exception for financial matters.[6] To be exact, Senators are unable to originate financial legislation as they can only request the lower house to amend the financial legislation and decide whether to accept or reject it.

In order to become a government, a party must pass a minimum threshold of seats in the lower house which is 76 seats (half of the total number of seats plus one). Meanwhile, the runner-up party, or the party with most seats among other losing parties, becomes the opposition. In the case where no party achieves the minimum threshold, the crossbenchers which consist of MPs from minor parties and independent MPs have to choose which major party they want to be aligned with. In this situation, a party can form a government with enough support from the minors.

Westminster parliamentary system is always associated with strong party discipline.[7] This occurrence is reinforced in Australia because unlike the Great Britain, electoral candidate is

[5] See Parkin and Summers (3, 2006: p.47).
[6] See Summers (4, 2006: p.70).
[7] See Rose (8, 2012: p.169).

endorsed by the party itself. Thus, it is uncommon to see a representative votes against his or her own party (in the Lower House) at the cost of his or her own endorsement for the next election.[8] Thus, legislative decision in Australian lower house is considered as the party's decision. This leads to a claim of Australian government as "responsible party government" with enormous power to enact their policy.[9] Meanwhile, winning the Senate is not going to provide a party with the governing power as Senators' function is more towards check and balance of financial policies. [10]

3.2 The Australian electoral system

Australian voters choose the their government through federal election which is conducted every three years. Federal election uses instant run-off voting (preferential voting system) with single member district (SMD) representation and usually is dominated by two major political sides, the Australian Labor Party and the Coalition.[11] The two-party system, as suggested by Duverger's law, is a result from the implementation of SMD in Australia.[12] This is evident as since 1910, Australia's parliament has always been ruled by either Labor or the Coalition.[13]

3.3 Intuition of this chapter

There are several key points worth noting from this chapter. First, the government in Australia is basically a political party that that has won federal election. Hence, vote-seeking activity is relevant for the government in pursuance to retain their power for the next election cycle. Secondly, financial policy such as local funding provision is determined by the lower house, thus the government is having large control of local funding decisions without much obstacle from the upper house. Thirdly, a government policy is almost equal to a policy from the ruling party as all of their MPs form a majority to vote for party's decision. Thus, there is a possibility for the government to enact policy parallel to their election goal as well as according to their partisanship. Last but not least, the two-party system in Australia provides convenience for the use of a probabilistic voting model as a representation of Australian economy.

[8] See Summers (4, 2006: p.71 -72) and for Australian context of party domination.
[9] See Stewart and Ward (1996: p. 100 – 102).
[10] See Anderson (5, 2006: p.92 - 110).
[11] Since 1947, the Coalition is a coalition of parties between The Liberal, Liberal National Party, The Nationals and Country Liberal. (Summers, 4, 2006: p.70-75)
[12] See Duverger (1964: p.217) and Jaensch (1992: p.408-409).
[13] See Farrell and McAllister (2003: p.13).

4 Theoretical Model of Government's Election Strategies

In this section, a static probabilistic voting model is used to study the direction of local funding from the ruling party. This model borrows heavily from the framework by ADDD (2009), with two notable differences. First, ADDD (2009) analyse the intergovernmental transfers between central government and state government while the model in this thesis analyses funding from government to electorate. Second, when characterising the election strategies by the government, ADDD (2009) use asymmetric functions of different levels of government while this thesis uses asymmetric proportions of partisan and non-partisan voters. Several discussions in this chapter is also use LW (1987) and DL (1996) as bases.

4.1 The economy

Consider an economy where two major parties contest to become the government. These parties are the ruling party (alternatively party R) and the opposition (alternatively party O). Let us assume that there is a mass continuum of retrospective voters i in representative electorate j where $j \in (1, ..., J)$. Within electorate j, each voter has different inter-party biasness. Let us denote $a_{i,j}$ as party biasness of a voter towards party O. Voters are assumed to be normally distributed according to their party biasness, suggesting the distribution of $a_{i,j}$ is unimodal and symmetrical. In other words, most voters in electorate j are moderates when it comes to party biasness, where only a fraction are very strong supporter of a particular party. For simplicity, we also assume $a_{i,j} \in [-\underline{a}_{i,j}, \bar{a}_{i,j}]$ and $-\underline{a}_{i,j} = \bar{a}_{i,j}$ so that the midpoint is zero. It follows that voters with positive $a_{i,j}$ are biased towards party O while voters with negative $a_{i,j}$ are biased towards party R. It is convenient to denote $F_j(.)$ as the cumulative density function of party biasness $a_{i,j}$. We also denote $f_j(.)$ as the probability density function of party biasness, which represents the probability of voters having a specific value of $a_{i,j}$. Moreover, it is assumed that the distribution of $a_{i,j}$ is different among electorates. The distribution of $a_{i,j}$ is illustrated in Figure 1.

As the government, party R is able to provide local funding through various channels such as grants and financial assistance. In this model, we disregard redistribution (taxing one group to give to another group). Hence, the local funding is assumed to be part of a specific budget that does not necessarily comes from taxing a group of electorates.[14] Any funding channeled towards electorate j is denoted as g_j and it gives utility to voters in the

[14] In order to discuss redistribution, LW (1987) assume a balanced budget which means any form of transfer towards a specific group must be financed by taxing another group which implies the total budget is zero. Meanwhile, DL (1996) replace the balanced budget redistribution with explicit discussion about transferring to a group by taxing another group.

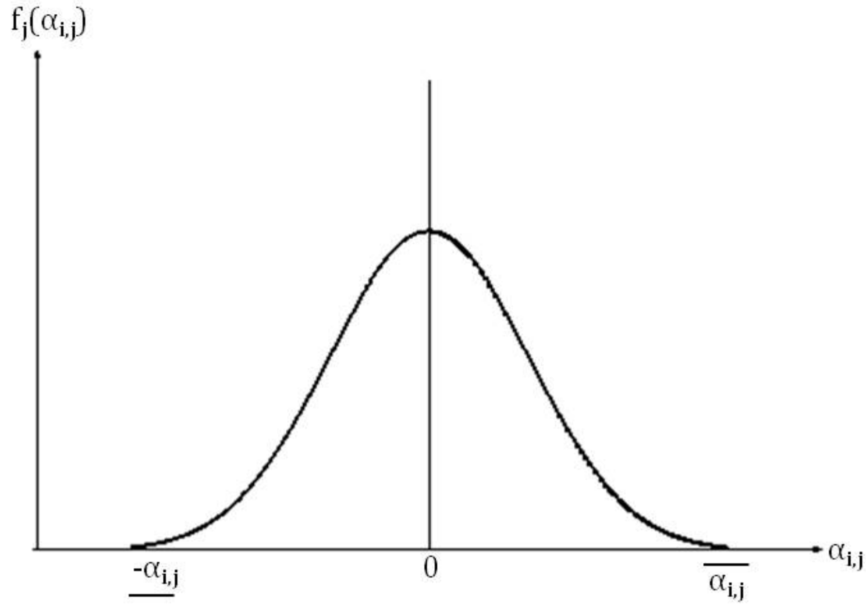


Figure 1: Distribution of party biasness.

electorate. To simplify the discussion, all voters are assumed to have a homogenous utility function for g_j. To be precise, for all $j = (1, ..., J)$, utility function of voters is $U_j(g_j)$. Apart from that, we assume this utility function is concave so $U_j'(g_j) > 0$ and $U_j''(g_j) < 0$ for all j and $g_j > 0$. The concavity of the utility function means voters get additional utility out of extra local funding but with diminishing return. For illustration, a newly introduced highway gives higher utility than a second parallel highway, given there is no increase in traffic.

4.2 Voters' partisan behaviour and credit for local funding

We assume voters have a specific behaviour in which they either credit the ruling party or MP for the local funding. On one hand, voters could perceive this funding as a result of efficient governance by the ruling party. On the other hand, voters could thank their MP, thinking he or she is doing a good job in bringing the funding home. Therefore, voters are assumed to give a credit share of θ to the ruling party and $1 - \theta$ to MP where $\theta \in (0, 1)$. Furthermore, θ is assumed to be exogenous and it is unique for the whole economy.

In order to capture the variation of economy-wide θ, we use voters' partisan behaviour as the explanation. Campbell et al. (1960) assert that voters can behave as partisan voters: they always put their support for party, or non-partisan voters: they always vote for the MP. According to Jaensch (1992), the partisan behaviour of voters can be observed through party identification in which when party identification is high or when voters are strongly attached to a specific party, voters are said to behave more like a partisan voter. Relating to our model, voters in an economy with a high party identification are expected to regard party as more important than MP, thus any policy such as local funding provision is strongly attributed to the party.

In addition, the partisan behaviour is reinforced by our retrospective voting assumption where voters observe past performance of parties. Thus, not only voters observe the performance of party or politician from the past and embed this into their party biasness, they aggregately evaluate which one is more reliable; party or MP (see Franklin (1984) and Green and Palmquist (1990)). After that, voters form their party identification and decide on how they give credit for local funding. Thus, we can think of θ as the proportion of voters who have partisan behavior and thus credit party for local funding and $1-\theta$ is the proportion of voters who have non-partisan behaviour and thus credit MP for the local funding. It follows that economy with high party identification is expected to have high θ thus any local funding in this economy is usually attributed to the ruling party. Since the information regarding the proportion of partisan voters is usually available on national level, it is reasonable to assume that all electorates on average have similar proportion.

At this point, it is important to distinguish partisan affiliation and party biasness. To make it clear, partisan affiliation determines whether voters vote for the party or for the MP while party biasness deals with inter-party choice; whether voters vote for the ruling party (or the MP from that party) or opposition party (or MP from that party). Thus, high party identification or partisan affiliation does not necessarily implies voters are rigid in their party choice.

4.3 Election

In an election in a particular electorate, there exists a cut-off point of party biasness, which determines the vote share for each party. Let us define α_j as the party biasness cut-off point for electorate j. Voters with value of $\alpha_{i,j}$ less than α_j vote for party R and voters with value of $\alpha_{i,j}$ more than α_j vote for party O. In order to win the election, party R must gain at least half of the $F(\alpha_j)$. Thus, election winning motivation implies party R is maximising the probability of winning which is the same as maximising the total number of votes.[15] Hence, the total vote for party R in electorate j, which can be denoted as $V_{R,j}$ is :

[15] For the argument between maximising probability of winning and maximising the total number of vote in an electorate, see LW (1987).

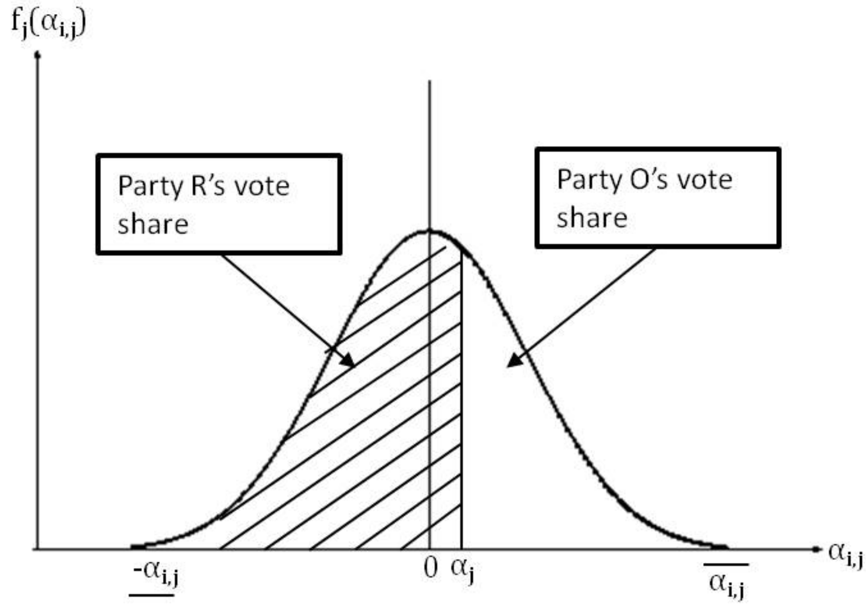


Figure 2: Election cut-off point and vote share.

(4.1)

$$V_{R,j} = N_j F_j(\alpha_j)$$

Note that N_j is the number of voters in electorate j. Figure 2 provides an illustration for the cut-off point and vote share of party R and party O.

In the following discussion, we divide the electorates into two main groups. The first group consists of the aligned electorates, which is represented by MPs from party R. The second group contains the unaligned electorates, which is represented by MPs from party O. Now, consider an election in electorate j which is part of the first group. Suppose party R provides local funding towards voters in this electorate and thus voters get $U_j(g_j)$. In order to have some impact of voters' voting decision, $U_j(g_j)$ must be at least as good as α_j. It is also worth noting that since this electorate is represented by a ruling party's MP, any credit share attributed towards the MP is as good as credit share towards the party. Thus ruling party can claim all the credit to itself. Unlike the election campaigning model, if the opposition party has its alternative allocations for local funding and it publicly announces them, they are assumed to be captured by $\alpha_{i,j}$. This leads to:

(4.2)

$$U_j(g_j) - \alpha_j \geq 0.$$

In this electorate, a voter votes for party R if his party biasness, $\alpha_{i,j}$ is less than $\alpha_j + U_j(g_j)$ and he votes for party O if it is the other way around.

In another case, let us consider an electorate which is part of the unaligned electorates group. The only difference between this electorate and the aligned electorate is that there is a proportion of voters giving credit towards the opposition's MP instead of the ruling party's MP. Consequently, this share of credit, worth $(1-\theta)U_j(g_j)$, is discounted from the total utility attributed towards party R. Without loss of generality, we get:

(4.3)

$$\theta U_j(g_j) - (1-\theta)U_j(g_j) - a_j \geq 0.$$

In order to influence the voters' decision, the discounted $\theta U(g_j)$ must be at least as good as the cut-off point less some credit given towards opposition party. Thus, a voter votes for party R if his $\alpha_{i,j}$ is less then $\alpha_j + \theta U_j(g_j) - (1-\theta)U_j(g_j)$.

From equations (4.2) and (4.3), we can analyse how additional g_j changes the cut-off point for electorate j and whether this is beneficial towards the ruling party. Firstly, it is straightforward to observe that any additional g_j in aligned electorate provides positive prospect of winning for party R. Specifically from equation (4.2):

(4.4)

$$\frac{\partial \alpha_j(g_j)}{\partial g_j} = U_j'(g_j) > 0.$$

The logic behind this is additional g_j shifts the election cut-off point to the right, increasing total votes for party R.

In contrast, there are ambiguous effects for additional g_j in unaligned electorates. From equation (4.3), we have:

(4.5)

$$\frac{\partial \alpha_j(g_j,\theta)}{\partial g_j} = (2\theta - 1)U_j'(g_j).$$

If $\theta > \frac{1}{2}$, in similar to the case of aligned electorate, any additional g_j increases party R's vote. However when $\theta < \frac{1}{2}$, note that additional g_j makes party R worse off as the the election cut-off point shifts to the left. This gives advantage to the opposition party. An observable reason behind this is that since the share of credit received by the opposition's MP is larger than the share of credit received by the ruling party, it is as if the local funding comes from the quality of the opposition's MP. This misunderstanding disadvantages party R. In addition, when $\theta = \frac{1}{2}$, any additional g_j has no impact on the cut-off point, and thus votes. The positive and negative impacts of additional g_j are presented in figure 3. In panel A, the positive impact of extra g_j causes α_j to shift rightward to α_j' . Meanwhile, panel B shows that the negative impact of additional g_j causes leftward shift of α_j to $\alpha"_j$. The discussion, however, does not end here as the equilibrium of local spending has not been determined yet.

4.4 The ruling party's strategy

The ruling party chooses a level of local funding to maximise its vote share. However, it must follow a specific budget allocated for a specific type of funding. By denoting B as the total budget, party R must make sure all funding made available to all electorate do not exceed B. Formally:

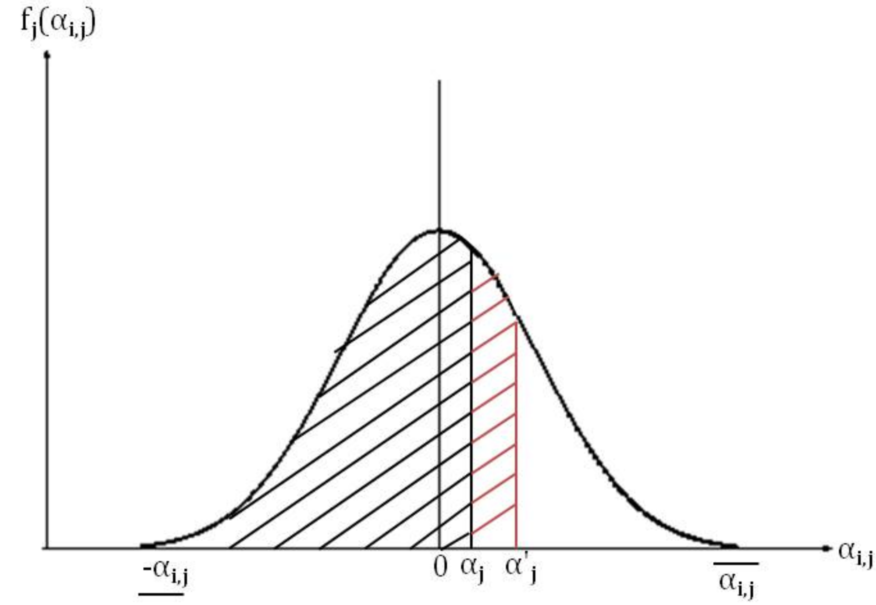
(4.6)

$$\textstyle\sum_j N_j g_j = B.$$

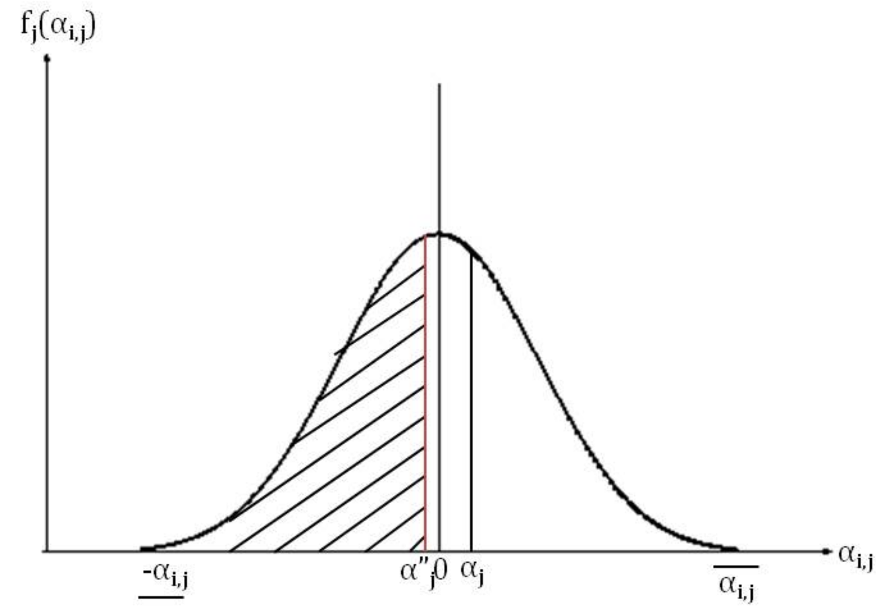
In order to differentiate between aligned and unaligned electorates, let us denote J_R as the set containing all aligned electorates held by party R and J_O as the set containing all unaligned electorates held by party O. Hence, we can rewrite equation (4.6) as:

(4.7)

$$\textstyle\sum_{j\in J_R} N_j g_j + \sum_{j\in J_O} N_j g_j = B.$$



Panel A: Positive impact of additional local funding.



Panel B: Negative impact of additional local funding.

Figure 3: Impact of additional local funding on electoral cut-off point and vote share from ruling party's perspective.

Notice that from equation (4.5), it is not a rational move for party R to spend on the opposition's electorate in the case of $\theta < \frac{1}{2}$. In addition, the concavity of $U_j(g_j)$ no longer holds. The breach of the concavity assumption has two implications. First, we can observe that in the case where $\theta < \frac{1}{2}$, opposition's electorates will technically never receive any funding from the party R's government. Of course, this is not true since party R will be caught red-handed by the public for pork-barrelling. Secondly, it is difficult to characterise equilibrium when we are comparing a concave function with a non-concave function. We will see this in the equilibrium characterisation later on.

In order to avoid the two implications of the breach of concavity assumption, it is assumed that ruling party also aims to maximise public welfare out of g_j. The public welfare gained by voters in electorate j is denoted as $\delta_j(g_j)$. Furthermore for convenience of discussion, $\delta_j(g_j)$ is assume to be similar across voters nationwide, and it is concave so that $\delta_j'(g_j) > 0$ and $\delta_j''(g_j) < 0$ for all j and $g_j > 0$. We can think $\delta_j(g_j)$ as the social benefit - the benefit spillover from the local funding to all people. Last but not least, it is also assumed that $\delta_j(g_j)$ is larger than $U_j(g_j)$. For example, consider a highway which gives private utility to drivers. However, the public benefit such as economic growth caused by the highway can be larger than the private utility itself. From all of information available, we can construct party R's objective function which consists of public welfare and vote maximising. Therefore, party R's objective function is:

(4.8)

$$\max(g_j) \sum_j N_j \delta_j g_j + \sum_{j \in J_R} N_j F_j(\alpha_j) + \sum_{j \in J_O} N_j F_j(\alpha_j)).$$

4.5 Equilibrium of local funding

From this point onwards, we introduce separate notations to distinguish between a single aligned electorate and unaligned electorate. We represent aligned electorate ($j \in J_R$) with a representative electorate m while unaligned electorate ($j \in J_O$) is represented by a representative electorate n. There are two first order conditions derived from the optimisation of the objective function in equation (4.8) with respect to the budget constraint in equation (4.7). For aligned electorate m, the first order condition is:

(4.9)

$$\delta_m'(g_m^*) + f_m(\alpha_m) U_m'(g_m^*) = \lambda.$$

For unaligned electorate n, the first order condition is:

(4.10)

$$\delta_n'(g_n^*) + f_n(\alpha_n)(2\theta - 1)U_n'(g_n^*) = \lambda$$

It can be shown that there is a unique value of g_m^* and g_n^*, which entails that these local funding do not exist in a range of possible solutions (see proof in Appendix A.1).

4.6 The characterisation of equilibrium

The equilibrium local spending helps us address one important question: which electorate receives more local funding? In order to answer this, we can characterise equations (4.9) and (4.10) respectively to:

(4.11)

$$\frac{\lambda - \delta_m'(g_m^*)}{U_m'(g_m^*)} = f_m(\alpha_m)$$

(4.12)

$$\frac{\lambda - \delta_n'(g_n^*)}{U_n'(g_n^*)(2\theta - 1)} = f_n(\alpha_n)$$

From equation (4.11), it is straightforward to see that the left hand side (LHS) of the equation is increasing in g_m^*. Specifically, the highest level of g_m^* is spent towards the highest value of $f_m(\alpha_m)$, which implies $\alpha_m = 0$ (refer to figure 1). Hence, we can see that party R chases after marginal aligned electorates. This argument can also be applied to the unaligned electorates in the case of $\theta > \frac{1}{2}$. From the characterisation of equation (4.12), we observe party R gears g_n^* towards marginal unaligned electorates, which have a passible large swing in the party's favour. The basis behind this is marginal electorate provides pivotal vote that can determine whether party R will win or lose that electorate. Figure 5 shows how spending on marginal voters can be crucial for losing and winning outcome (represented by blue area). Meanwhile, spending on safe electorate (represented by red area) only adds more voters,

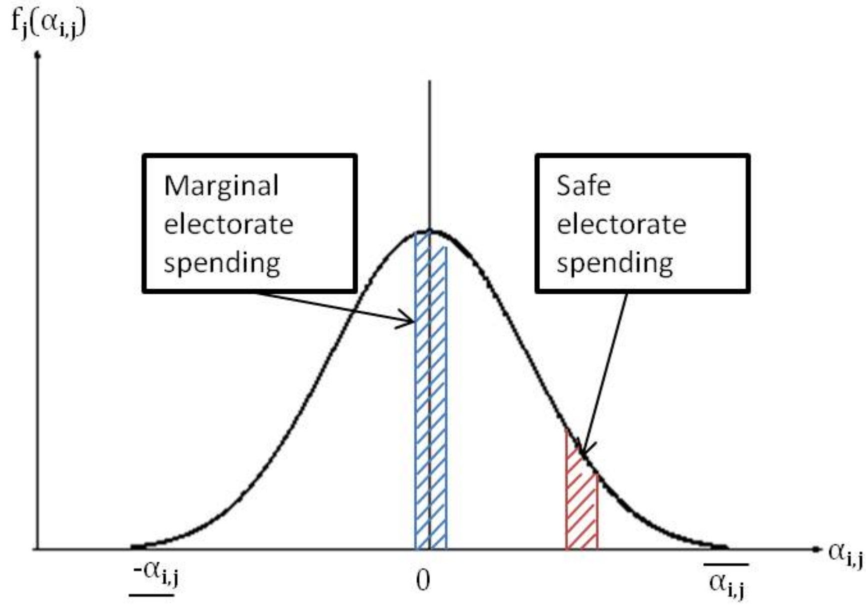


Figure 4: Comparison between local funding on marginal and safe electorate.

without changing the position or chance of winning or losing the election. Furthermore, spending in marginal electorate provides higher electoral return as more voters change their voting decision due to the local funding.

Note that when $\theta < \frac{1}{2}$, the LHS of equation (4.12) is an ambiguous function of g_n^* due to breach of concavity of $U_n(g_n)$. Recall that we assume $\delta_j(g_j) > U_j(g_j)$ which implies $\delta_j'(g_j) < U_j'(g_j)$ for $j = (m, n)$. This gives us sufficient concavity to have an increasing function of g_n^* on the L.H.S of (4.12) which yields the same outcome as in the previous paragraph; party R is still spending more on marginal electorates. That being said, this characterisation keeps three things unsolved. First, equation (4.12) cannot be characterised further in the case of $\theta = \frac{1}{2}$ due to mathematical error. Second, this characterisation fails to compare between electorates with different densities of party biasness. Lastly, there is no indication on how are we going to compare between aligned and non-aligned electorates.

In order to solve these problems, we can characterise equations (4.9) and (4.10) further by comparing two first order conditions side by side. Several propositions can be made regarding the relationship between local funding, alignment and the density of swing voters (which also determine the marginality of an electorate). Note that from the previous characterisation, we assume that the density of swing voters can be represented by $f_j(0)$ for $j = (m, n)$.

Proposition 1: Between two aligned electorates, the electorate with a higher density of swing voters receives more funding compared to the electorate with a lower density of swing voters.

Proof: See appendix A.2.

The intuition behind proposition 1 can be tracked back from equation (4.1) where providing local funding in a more marginal aligned electorate results in a higher boost on party R's vote share thus producing higher electoral return for g_j^*. This consequence can be illustrated by figure 6, where it is possible to observe that the number of voters who switch their vote for party R is more in the case of higher density of $f_m(0)$ (panel A) when compared to the opposite case (panel B). The effect of higher density of voters is called the swing effect.[16]

The next step is to compare and contrast the local funding between two unaligned electorates which have different densities of swing voters.

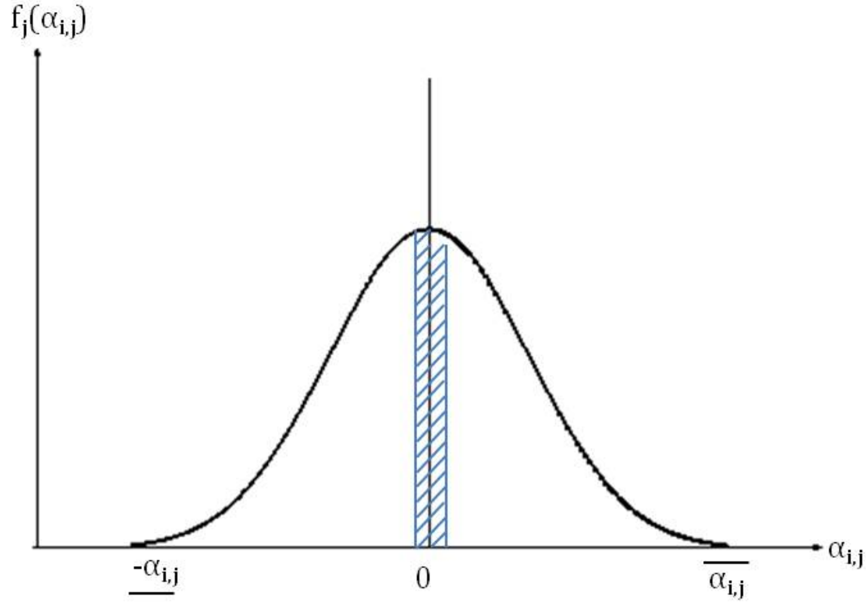
Proposition 2: Among two unaligned electorates, for $\theta > \frac{1}{2}$, the electorate with a higher density of swing voters receives more funding compared to the electorate with a lower density of swing voters. For $\theta < \frac{1}{2}$, the electorate with a higher density of swing voters receives less funding compared to the electorate with a lower density of swing voters. If $\theta = \frac{1}{2}$, both electorates receive the same level of local funding.

Proof: See appendix A.3.

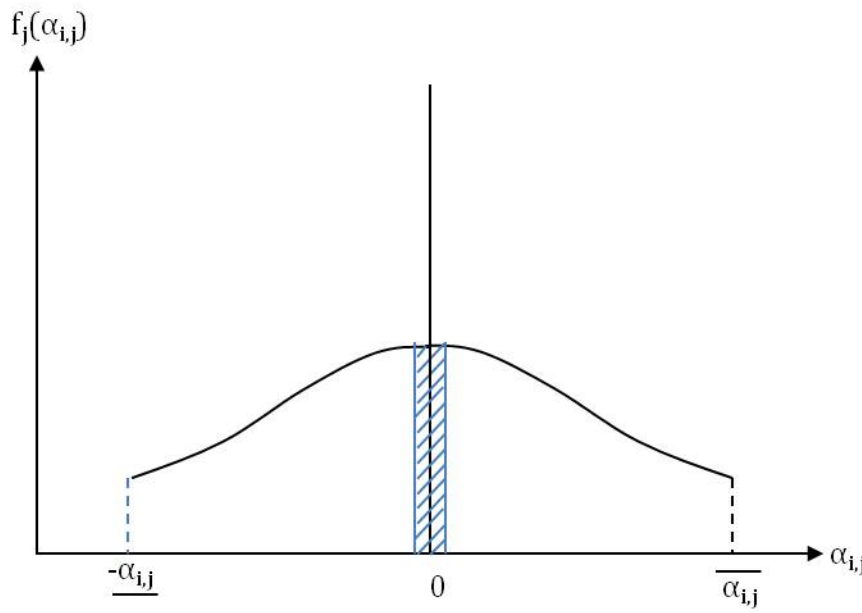
There are three things worth noting from proposition 2. Firstly, when $\theta > \frac{1}{2}$, or when more voters credit the ruling party for the provision of local funding, party R advocates more funding towards unaligned electorate with denser swing voters or the most marginal unaligned electorate. The high value of θ causes party R as almost as indifferent between aligned and unaligned electorate. This is because opposition party is no longer able to depend on the spillover of credit to its MPs. The swing effect in this case can also be illustrated by figure 5.

Secondly, in the case where $\theta < \frac{1}{2}$, or where more voters credit the MPs, then the opposite effect takes place. This effect can be termed as unaligned swing effect. Too much of credit leaks will give more advantage to the opposition party. Hence in this case, party R chooses to fund more on safe opposition's electorates where it is not pivotal for the opposition party as to win the election as well as minimising the possible gain by the opposition party. Thirdly, when $\theta = \frac{1}{2}$, local funding has no effect on voters' voting decisions and this leads to similar

[16] The term swing effect is first introduced in ADDD (2009), together with unaligned swing effect and alignment effect which will be frequently used in this thesis.



Panel A: High density of swing voters.



Panel B: Low density of swing voters.

Figure 5: Comparison between the change in vote share in two electorates with different densities of swing voters.

funding level between unaligned electorates.

Lastly, we can put side by side aligned and unaligned electorates and find out which receive more funding.

Proposition 3: Among an aligned and an unaligned electorate, for $\theta \leq \frac{1}{2}$*, the aligned electorate is always favoured over the unaligned one, regardless of the density of swing voters. Meanwhile for* $\theta > \frac{1}{2}$*, ruling party favours the unaligned electorate only if its density of swing voters is at least* $1/(2\theta - 1)$ *larger than the aligned electorate.*

Proof: See appendix A.4.

From proposition 3, there exists an alignment effect where the alignment of an electorate will ensure more local funding. This effect takes place when $\theta \leq \frac{1}{2}$. As more voters perceive that the MPs bear responsibility in bringing the local spending towards their electorates, any spending in opposition's electorates will have no effect or worse, reduce party R's winning prospects. This reminds us of the discussion from equation (4.5).

In the case of $\theta > \frac{1}{2}$, the alignment and swing effects depend on the continuous value of θ. Note that it is possible for the alignment effect to disappear when unaligned electorates reach the minimum electoral marginality difference threshold of $1/(2\theta - 1)$. When there is higher proportion of voters behave in a partisan way ($\theta > \frac{1}{2}$) but the proportion of voters with non-partisan behaviour is also significant (θ is leaning towards a half), then the threshold becomes higher, making it almost impossible for unaligned electorates to beat aligned electorates in competition for local funding. Thus we can see that the alignment effect holds for this case.

In contrast, as more voters behave in a partisan manner (θ is approaching 1), the threshold aforementioned starts to shrink. In this case, it is easier for unaligned electorates to outperform aligned electorates in getting funding from the government. Thus, we can see that the alignment effect disappears and the swing effect becomes more prominent in the competition between aligned and unaligned electorates.

4.7 Predictions of government election strategies

Following propositions 1 to 3, we are able to rank electorates and see what is the priority for ruling party in determining local funding. For convenience, we can categorise electorates into four groups:

1. 'Aligned Swing' group which contains marginal aligned electorates.
2. 'Aligned Non-swing' group which consists of safe aligned electorates.
3. 'Non-aligned Swing' which includes marginal unaligned electorates.
4. 'Non-aligned Non-swing' which comprises safe unaligned electorates.

Let us have a look at the case where most voters behave in a non-partisan manner thus $\theta < \frac{1}{2}$. Firstly, in the competition between aligned electorates, a marginal electorate receives more funding than its safer counterpart, explaining the swing effect. Secondly, between aligned and unaligned electorates, the former will get more funding than the latter, thus stressing the alignment effect. Thirdly, among unaligned electorates, ones with less swing voters (opposition's strongholds) are funded more than ones with more swing voters (marginal ones). Recall that this is known as the unaligned swing effect. Thus the ranking for electorates is:

Prediction 1: Aligned Swing > Aligned Non-swing > Non-Aligned Non-swing > Non-aligned Swing.

In the case of where the number of partisan and non-partisan voters are almost similar hence $\theta = \frac{1}{2}$, the effects are similar to the case of $\theta < \frac{1}{2}$ with the exception of the unaligned effect. To be exact, all aligned electorates receive similar funding. Therefore, the ranking of electorates is:

Prediction 2: Aligned Swing > Aligned Non-swing > Non-Aligned Swing = Non-Aligned Non-swing.

When there is strong party identification, characterised by more voters with partisan behaviour, thus $\theta > \frac{1}{2}$, the rank will depend on the continuous value of θ. The closer the θ to a half, the larger the minimum electoral marginality threshold that unaligned electorates must exceed in order to get more funding than aligned electorates. Thus in this case, the alignment effect is more prominent suggesting that any aligned electorates are more favoured than unaligned ones. Meanwhile, marginal aligned electorates are more favoured over safe aligned electorates and marginal unaligned electorates get more funding than opposition's strongholds. Hence:

Prediction 3: Aligned Swing > Aligned Non-swing > Non-Aligned Swing > Non-aligned Non-swing.

Alternatively, with θ converging to 1, the minimum electoral marginality threshold shrinks which causes aligned electorates to compete with unaligned electorates with lesser alignment advantage. Thus, the alignment effect starts to disappear, producing ambiguous ranking between aligned and non-aligned electorate.

Prediction 4: Aligned Swing $\sim$ Non-aligned Swing > Aligned Non-swing $\sim$ Non-aligned Non-swing

or alternaltively,

Prediction 4: Swing > Non-swing where *Aligned Swing > Aligned Non-swing* and *Non-aligned Swing > Non-aligned Non-swing*

5 Empirical Evidence in Australia

This chapter aims to provide an empirical test in order to see whether the predictions really hold in practice. Here, we discuss a comprehensive empirical analysis of the predictions in an Australian context.

5.1 Testable predictions

Testing the predictions requires us to determine the proportions of partisan and non-partisan voters in Australia. This can be achieved by looking at the party identification in Australia; the proportion of voters that strongly support for party. It is useful to reiterate that high level of party identification leads to higher appreciation for party thus there will be more voters give the credit of local funding towards ruling party.

Historically, party identification level in Australia has always been at a high level compared to other countries (Jaensch, 1982: p.403 - 408). A recent study by McAllister and Clark (2008) shows that strong partisanship among voters is still evident. Figure 6 shows until recently, voters partisanship remains at high level with on average 70 percent of voters have strong attachment to party while figure 7 shows that when choosing between voting for party or candidate, more people vote for party.[17] These findings imply the proportion of voters crediting ruling party for funding (θ) is high in Australia. Moreover, the value of θ is more than a half. This narrows down our testable predictions to predictions 3 and 4.

In order to test one prediction at a time, we need to categorise Australian electorates further. One way to do this is to segregate electorates according to their MPs' influence, which can be proxied with members of cabinet or independent MPs. Anderson (5, 2006: p.99-101) argues that cabinet and shadow cabinet members are regarded as influential in the lower house thus they have a considerable influence on voters voting decision. In addition, Stock (14, 2006: p. 274 - 276) claims that independent MPs have strong influence on their voters. Hence, it is more likely that there is a considerable amount of voters in this electorate behave in a non-partisanship manner due to the MP's influence. Following this, we assume that electorates under their control have a lower value of θ compared to other electorates represented by non-cabinet member MPs.

From the statement above, we have two groups of electorates that can be used for our

[17] In order to measure party identity, a survey was constructed by Centre for the Study of Australian Politics asking respondents on how strong they think they are attached to a particular party and what are the factors that affect their voting decision. See McAllister and Clark (2008) for more details.

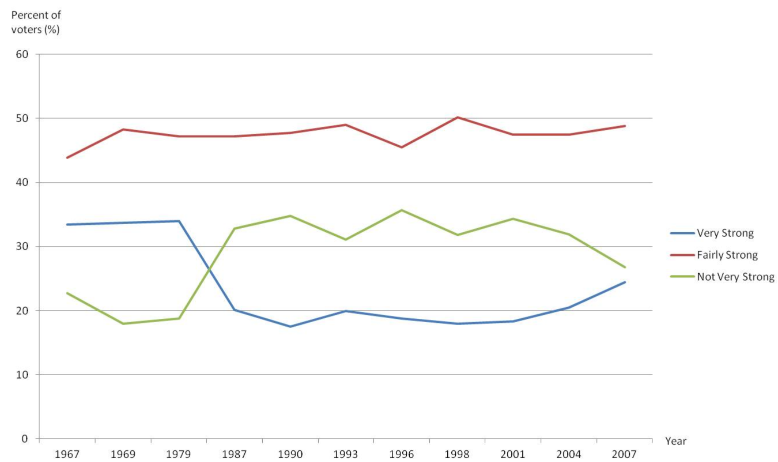


Figure 6: Party identification in Australia from 1967 to 2007
(Source : McAllister and Clark, 2008: p.49)

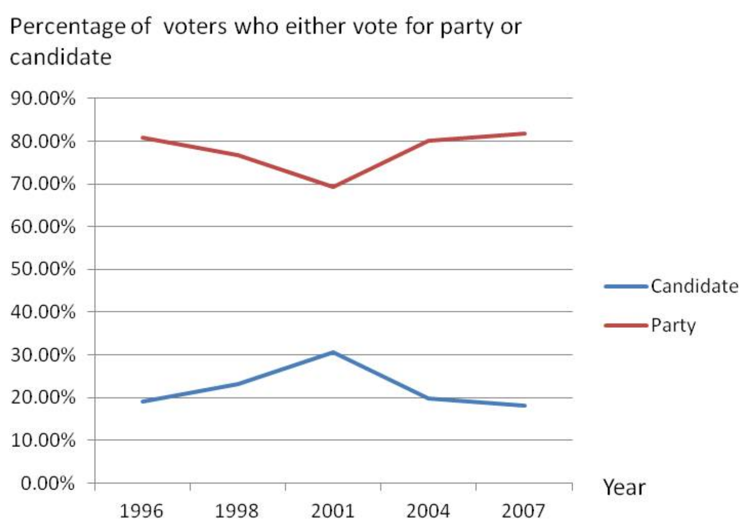


Figure 7: Comparison between voters who vote because of party and candidate
(Source : McAllister and Clark, 2008: p.48)

empirical analysis. On one hand there is a group of electorates represented by cabinet member and independent MPs. These electorates have a θ of more than a half and it is leaning towards a half due to influential MPs. We are able to test prediction 3 by looking at these electorates and from this point onward, we refer to this test as model 1. On the other hand, there is another group of electorates represented by non-cabinet member MPs. These electorates have a θ of more than a half and closer to one due to less influential MPs. We are able to test prediction 4 by observing these electorates and from this point onward, we refer to this test as model 2.

5.2 The characteristics of local funding

It is sensible to provide a discussion about the types of funding that can be manipulated by the government for electoral and partisan goals. There are several separations of government funding. Firstly, we must distinguish between a public good and a local public good. The former, as coined by Samuelson (1958) is non-rivalrous and non-excludable. It is very unlikely that government discriminates electorates for public goods such as defence which is usually given a nationwide priority.[18] Thus, in order for a funding to be politically manipulated, it must be targetable.

Secondly, we have to distinguish between mandatory and discretionary funding. Mandatory funding or entitlement program is a transfer of money towards any public recipient entitled to the fund according to specific eligibility criteria (Stiglitz, 2000: p.778). Mandatory funding provision in Australia is stated by the Constitution where the Section 51 xxiiiA puts the responsibility of welfare benefits provision such as pension and unemployment benefits onto the Commonwealth Government (Fenna, 23, 2006: p.477 – 480). On the other hand, discretionary funding is a provision of fund chosen by government from year to year (Stiglitz, 2000: p.778). For case in point, the Section 96 of the Constitution enables the Commonwealth Government to provide specific purpose grants (Summers, 7, 2006b: p.141). Thus, in pursuance of granting local funding for election-winning purposes, discretionary should be a feature of the local funding.

Thirdly, it is also crucial to distinguish between persistent and one-shot local funding. Even though a particular local funding is targetable and discretionary, its persistency will become a major trouble for the government if it decides to pork-barrel. This is because the funding has to be standardised with previous provision. An example of persistent funding

[18] Note that the defence spending here refers to the provision of adequate defence during emergency and not the payment paid to particular defence contractors. See Goulka (2013) for an example where government can actually pork barrel in defence spending.

is Local Government Area Grants which are made available under the *Local Government (Financial Assistance) Act 1995 (Cwth)* (DORALGAS, 2010). The grants, even though subject to ministerial approval, have to be heavily factored with population and inflation growth. Thus, any local funding intended to be rolled out for objective of winning the election necessarily needs to be non-persistent funding.

5.3 Choice of dataset

We have discussed the three important features of politicised local funding: targetable, discretionary and non-persistent. Hence in testing the predictions, the data must satisfy all three characteristics. Following this, we look at the Volunteer Grants program from 2011 to 2013 which is provided via Department of Families, Housing, Community Services and Indigenous Affairs (also known as FaHCSIA) (FaHCSIA, 2013a). The Volunteers Grants program aims to help volunteers by funding their volunteering activity and the purchase of goods related to the volunteering activity. This program satisfies the three characteristics aforesaid.

Firstly, AUD 16 million allocated for Volunteer Grants is targeted towards any non-profit organisation and the approval would be selective (FaHCSIA, 2013b: p.1) thus it is rivalrous, excludable and, most importantly, targetable. Secondly, this program is a discretionary policy as clearly stated in FaHCSIA's application guideline (2013b: p.12):

> "Applications will be automatically assessed based on the information provided in the application form and further considered by the staff of department."

Thirdly, it is also a non-persistent funding as FaHCSIA (2013b: p.8) claims:

> "Preference will be given to organisations that did not receive Volunteer Grants funding in 2012."

The best way to empirically test the predictions is to study Volunteer Grants at the electorate level. However, such a dataset is not publicly made available by FaHCSIA. Under the Commonwealth Grants Guideline, any public reporting does not have to disclose electorate information of a specific grant (DFD, 2013: p.27-28). Electorate funding information only has to be reported by ministers towards Finance Minister in the case of minister-approved grants (DFD, 2013: p.23-24). Fortunately, FaHCSIA (2013a) provides a list of its grants recipients (the list contains Volunteer Grants among other funding) together with their location. Thus, a total of 13,669 Volunteer Grants recipients for year 2011, 2012 and 2013 receiving grants ranging from AUD 1000 to AUD 5000 are individually located and grouped into 150 Commonwealth Electoral Divisions based on the publicly available electorates information from Australian Electoral Commission (AEC, 2013a). The timing of these grants awards is exactly parallel to election cycle of 2010 - 2013.[19]

Datasets from AEC (2013a, 2013c), APH (2013) and ABS (2013a, 2013b, 2013c, 2013d) provide complementary political, geographical and demographical features for the electorates. A challenge occurs when studying electorates as redistribution of boundaries will cause some change in marginality and width of electorates. Fortunately, there is only one redistribution occurred during election cycle 2010-2013 where Commonwealth Electorate divisions of South Australia undergone a slight alteration of boundaries on 16th of December 2011. This caused some minor changes towards winning margin and width of electorate (Green, 2011).[20] Thus, any updated political information is referred from AEC (2013b) and Green (2011). Table 2 and 3 provide summary statistics for model 1 and model 2 respectively.

[19] The FaHCSIA dataset also provide dates for each grant. Volunteer Grants program were approved on 16th of September 2011, 19th of October 2012 and 8th of March 2013 (FaHSCIA, 2013a) which is nicely fit into election cycle 0f 2010-2013 (21st of August 2010 – 7th of September 2013) (AEC, 2013b).

[20] Antony Green is a well known Australian psephologist. He writes a lot of reports for Commonwealth and states' Parliament. His blog, which run under Australian Broadcasting Channel site, contains a lot of reliable electoral information.

Table 2: Summary statistics : Model 1

Variables	Observations	Mean	Standard deviation	Minimum	Maximum
Grants (AUD'000)	183	94.83	85.53	0	396.79
Number of grant	183	27.91	25.37	0	112
Electoral margin (negative /%)	183	-10.71	6.06	-24.91	-0.3
Alignment	99	-	-	-	-
Median household income (AUD per week)	183	1320.9	325.03	809	2256.63
Population density (person per kilometre square)	183	154.94	1317.13	0.09	5795.53

Table 3: Summary statistics : Model 2

Variables	Observations	Mean	Standard deviation	Minimum	Maximum
Grants (AUD'000)	267	109.89	102.84	0	557.15
Number of grant	267	32.13	30.14	0	167
Electoral margin (negative/ %)	267	-8.86	6.33	-24.41	-0.41
Alignment	129	-	-	-	-
Median household income (AUD per week)	267	1322.86	323.4	801	2289.7
Population density (person per kilometre square)	267	810.09	1042.46	0.12	3965.13

5.4 The estimation strategy

In testing model 1 and 2, we use the following estimation equation:

(5.1)

$$G_{jt} = \beta_0 + \beta_1 SW_{jt} + \beta_2 AL_{jt} + \beta_3 AL_{jt} * SW_{jt} + \gamma Controls_{jt} + u_{jt}.$$

In the estimation equation above, index j represents electorate while index t represents years. G_{jt} is the dependent variable, corresponding to the total of Volunteer Grants received by all recipients residing in electorate j. As discussed before, the application for new grants by any past recipient is least preferred. Suitably, we can assume that any past grant approval is not correlated with current approval, or $Corr(G_{jt}, G_{jt-1}) = 0$. Subsequently, we omit G_{jt-1} from our estimation equation.

There are three main independent variables capturing the effects we are interested in. AL_{jt} represents the alignment of an electorate with the ruling party, SW_{jt} represents the marginality of an unaligned electorate, and $AL_{jt} * SW_{jt}$ is the marginality of an aligned electorate.

Swing variable (SW_{jt})

There are several ways of measuring the density of swing voters. One method is to look at the electoral margin or the difference between the winning vote share and the absolute majority of 50 per cent vote share requirement for winning an electorate.[21] Another method is to use the margin of winner's vote share and runner-up party.[22] Vote share has also been used in determining the swing.[23] The first method is only suitable for country whose 50 per cent minimum winning vote share is a mandatory requirement. The second method, is suitable in the absence of the requirement and the third one, is more universal where it can be used in almost all electoral system.

Empirical estimation in this thesis will employ the first method as the main strategy to find SW_{jt} . Although Australian elections are always contested by more than two parties, election analysis always compare the overall preference gained by the two major political sides, ALP and the Coalition. The comparison is made using the concept of the concept of two-party preferred (TPP) and two-candidate preferred (TCP) introduced by Mackerras (1972) can be utilised.[24] Consequently, our estimation considers the difference between TPP vote share and 50 per cent absolute majority. It follows that an electorate with a higher value of electoral margin is a safer electorate (or an electorate with many core voters) and an electorate with a lower value of electoral margin is a marginal one (or an electorate with many swing voters) (AEC,2013c). It is important for us to reverse this direction by putting negative sign to the electoral margin. This enables us to have a relationship where higher electoral margin reflecting higher marginality, which is useful for our prediction.

Alignment variable (AL_{jt}).

The alignment variable in the estimation equation is a dummy variable representing any electorate which is held by an MP aligned with Labor Government. This, of course, includes

[21] This method is commonly used in the literature. Among many, Case (2001), Khemani (2007) and ADDD (2009) use this as a measure of swing voters' density.

[22] The multiparty environment such as in proportion voting ruled Spain, according to Solle-Olle and Sorribas-Navarro (2008) will see winning party win a seat even without having more than 50 per cent of vote. Thus, the use of winning electoral margin is not relevant.

[23] For example, see Leigh (2008) and Litschig (2012).

[24] TPP and TCP compares vote share between two major parties which survive preference elimination. For detail, see AEC (2013c).

members of the ruling party itself, and minor parties' MP as well as independents who choose to side with ruling party. In the 2010 election, there was a deadlock between ALP and the Coalition where both party won 72 seats each, four seats short to form a government. As a result, they needed the support or alignments from six other MPs from minor parties and independents. Eventually, ALP succeeded in forming a government with support from the Greens MP Adam Bandt and independent MPs Andrew Wilkie, Rob Oakshott and Tony Windsor (Grattan, 2010 and Rodgers, 2010a). Electorates represented by these MPs are considered as aligned electorates. On the other hand, independents MP Bob Katter and National Party of Western Australia MP Tony Crook sided with the Coalition (Rodgers 2010b, and ABC News, 2010) thus their electorates are considered as unaligned electorates.

5.5 Threats to identification and solutions

The fact that the voting decision is not random implies that our estimation equation is exposed to an endogeneity problem. Specifically, there is some possible correlation of SW_{jt} and AL_{jt} with error term u_{jt}. This problem can produce bias in the estimates of β_1, β_2 and β_3. There are three main concerns with the identification of these estimates. The first concern is the omitted variable bias. Suppose there is omission of some variables correlated with SW_{jt} and AL_{jt}. The unobserved variables that can be correlated with SW_{jt} and AL_{jt}, such as unobserved MP's quality and voters' social background will be captured in the error term thus causing downward bias.[25]

A possible solution for omitted variable bias is to use a fixed-effect panel data model. By using this empirical technique, we are able to remove all of the time invariant individual specific factors that can cause variation to the voting decision. However, we are not able to use fixed-effect panel data for one specific reason: our figures for SW_{jt} are based on the 2010 election results and almost all of them are kept fixed for all three years of observation. As a consequence, fixed effect panel data model will remove SW_{jt} for all electorates as they are mistakenly treated as fixed effects.

There are two possible solutions for this problem: 1. We can observe the change of vote margin from year to year and 2. We can study multiple rounds of election. The first option is hardly possible as we need a poll that replicates the general election for each electorate each year. Even though a political poll is conducted by Newspoll (2013) every year, it does not conducted on individual electorates. This leaves us with the second alternative which is

[25] Consider an example where higher quality of MP will increase the vote share for that MP thus producing negative relationship between unobserved MP quality with and swing.

more feasible but requires more available data. However, option number two can cause the second endogeneity problem, the reverse causality.

Reverse causality can occur in the estimation equation when G_{jt} can have a causality power on SW_{jt} and AL_{jt}. The problem can exist in this specific estimation model if we study multiple elections. For illustration, G_{jt} in the election cycle 2007-2010 can influence how voters vote in election 2010 and then causes some change in SW_{jt} and AL_{jt}, thus creating bias. For example, Levitt and Snyder (1997) find the impact of government spending on election results in the US while Leigh (2008) shows the evidence of this in Australia. Another possible source of reverse causality is the presence of political promise. Specifically, it is possible that some funding is promised and determined prior the election, influencing voters' voting decisions. However, since the Volunteer Grants is provided based on an application process, it is unlikely for voters to know the amount they would get before the election. Thus, we will not concern about reverse causality.

Before discussing the possible solution for our omitted variable bias, let us discuss another threat to identification: measurement error. The main cause of measurement error is dishonest misreporting by observations (Cameron and Trivedi, 2005: p.899-911), which is not a problem in our case. However, as far as the dataset are kept away from error, the room for mistakes can possibly exist. A possible source of measurement error in this estimation is the boundary redistribution. This can cause measurement error in the independent variables which in effect, leading to bias.

In order to address factors that can threaten our estimation, and since panel data is not applicable in this model, we use two instrumental variables (IV) for SW_{jt} and AL_{jt}. In order to have an unbiased IV estimation, it is important to have an unbiased first stage equation or random IV (see Angrist and Picshke, 2008: p.111-141). Thus firstly, the instrumental variable used for SW_{jt} is state or territory where being in a different state or territory will influence the marginality of an electorate. Second, AL_{jt} is instrumented with geographical location of an electorate; whether it is situated in a metropolitan or non-metropolitan area.[26] Hence the reduced-form equation for SW_{jt} is:

(5.2)

$$SW_{jt} = \alpha_0 + \alpha_1 State/Territory_{jt} + \tau Controls_{jt} + v_{jt}$$

Meanwhile, the reduced form for AL_{jt} is:

[26] The geographical location of an electorate is referring to its geographical classification which is provided by AEC (2013a).

(5.3)

$$AL_{jt} = \delta_0 + \delta_1 Metropolitan_{jt} + \kappa Controls_{jt} + w_{jt}.$$

We also add three controls that are potentially correlated with SW_{jt} and AL_{jt} as well as influencing government's funding decision. The first control is population density: sparser electorates are expected to receive more Volunteer Grant. For example, there will be more applications from different organisations in larger electorates with more towns distant between each other as the organisations are not able to share the benefit. The second control is each electorate's median household income in which poorer electorates are expected to receive more grants than their richer counterparts. In addition, the year the grants are approved is also treated as a control variable in order to treat the panel data. These controls are able to be used as they are not a bad control (see Angrist & Pischke, 2008: p.47 - 50); marginality of electorate does not have causality impact on population density, income and years.

5.6 Expected results

In model 1, we expect significantly positive β_1, β_2 and β_3. A significantly positive β_2 implies that aligned electorates are receiving more funding that their unaligned counterpart, as asserted by prediction 3. Moreover, significantly positive β_1 and β_3 means that being more marginal helps an aligned electorate to be favoured over another aligned electorate and similarly helps an unaligned electorate get more funding than another unaligned electorate, parallel to prediction 3. To illustrate, consider:

Expected Result for model 1 (prediction 3):

Aligned Swing $(+\beta_3)$ *Aligned Non-swing* $(+\beta_2)$ *Non-Aligned Swing* $(+\beta_1)$ *Non-aligned Non-swing.*

In model 2, it is expected that only β_1 and β_3 are significantly positive while β_2 is expected to be insignificant. As claimed by prediction 4, being aligned will not help give advantage for an electorate in chasing after local funding. Meanwhile, significantly positive β_1 and β_3 means the swing effect is still relevant, and in fact, dominates the alignment effect. To illustrate, consider:

Expected Result for model 2 (prediction 4):

1. *Aligned Swing* $(+\beta_3)$ *Aligned Non-swing.*
2. *Non-aligned Swing* $(+\beta_1)$ *Non-aligned Non-swing.*
3. *Aligned* (non-significant β_2) *Non-aligned .*

5.7 Actual results

Let us first discuss model 1 where we test prediction 3 by looking at group of electorates represented by MPs who hold cabinet positions and independents. From column 2 in table 4, there are four observations can be made.[27] Firstly, we found evidence of political manipulation of Volunteer Grants among these electorates where we can see that there are significant differences in funding among electorates. Secondly, we can witness a significantly positive impact of AL_{jt} ; on average, aligned electorates receive approximately an extra AUD117,564 of Volunteer Grants compared to unaligned electorates, just like the prediction. The third observation is that among aligned electorates, additional marginality will ensure an electorate to get more grants, also as predicted. However, the fourth observation is contradicting with prediction 3 where the results show that among unaligned electorates, less swing electorate will receive more grants.

Next, let us look at the results for model 2 which test for prediction 4 by looking at the group of electorates represented by MPs who do not hold any positions in cabinet and are not independent either. We can observe four things from column 4 in table 4.[28] Firstly, it is evident that political manipulation of the Volunteer Grants exists among these electorates. Second, as predicted, there is no impact of alignment of Volunteer Grants provision towards these electorates and third, among aligned electorates, the marginal ones receives more Volunteer Grants. The fourth observation here is almost similar to fourth observation in model 1: safe unaligned electorates receives more than marginal unaligned electorates, which contradicts prediction 4.

As a robustness check, we regress the number of grants instead of the total amount of grants received by each electorate. As Leigh (2008) argues, there might be some benefit of announcing more small grants than fewer large grants. The results showed by column 2 and 4 in table 5 show similar patterns to the main estimation. To be specific, while swing effect between unaligned electorate in prediction 3 and prediction 4 should be positive, the results say the opposite to this. Other than that, all the results conform to the predictions.

[27] For preliminary regression of model 1 without instruments, see columns 1,2 and 3 in table 6 (appendix B.1). This regression shows how instrumental variables and controls help the estimation process.

[28] For preliminary regression of model 2 without instruments, see columns 4.5 and 6 in table 6 (appendix B1). In preliminary regression we can see that even though it is possible to get an estimation without instruments, it is definitely exposed to bias.

Table 4: Instrumental variable regressions for model 1 and 2

	Model 1		Model 2	
	Grants (AUD' 000)			
	1	2	3	4
Swing	-31.02689*** (8.087121)	-21.55148*** (4.33448)	-28.41325*** (4.87572)	-11.84336*** (2.92631)
Alignment	43.71631 (72.72839)	117.564*** (44.41781)	86.87319 (89.24765)	29.29984 (49.83814)
Alignment*Swing	18.31412*** (6.97922)	17.97253*** (4.26184)	19.4582*** (6.39969)	9.11641** (3.84828)
Population Density	-	-0.0028 (0.00472)	-	-0.0119** (0.004891
Median Household Income	-	-0.19744*** (0.0254)	-	-0.15208*** (0.018677)
2011	11.82722 (26.23522)	28.5122* (15.59993)	4.63047 (19.54416)	17.37339 (11.09383)
2012	5.060 (24.76049)	14.32961 (14.18026)	9.37678 (19.15537)	16.3855* (9.74706)
Observations	183	183	267	267

Note: Robust standard errors in parentheses, *p < 0.1 ,**p< 0.05, ***p< 0.01. 'Swing' represents the electoral margin (negative) for unaligned electorates thus its coefficient is the estimates for β_1. Meanwhile, 'Alignment*Swing' represents the electoral margin (negative) for aligned electorates thus its coefficient is the estimates for β_3.

Table 5: Robustness analysis: Instrumental variable regressions for model 1 and 2

	Model 1		Model 2	
	Number of Grants			
	1	2	3	4
Swing	-9.17286*** (2.41406)	-6.36269*** (1.26541)	-8.98659*** (1.51915)	-4.17076*** (0 .90504)
Alignment	8.7381 (21.68414)	31.05405** (12.91032)	32.37867 (27.62716)	16.20328 (15.18436)
Alignment*Swing	5.28691** (2.08665)	5.20655*** (1.2476)	6.46679*** (2.00232)	3.47369*** (1.18036)
Population Density	-	-0.001056 (0.001367)	-	-0.00382** (0.00151)
Household Income	-	-0.05968*** (0.007414)	-	-0.043302*** (0.00597)
2011	3.32889 (7.84224)	8.36593* (4.53117)	1.78844 (5.98282)	5.40329* (3.26484)
2012	2.91803 (7.45718)	5.71658 (4.16834)	4.1236 (5.91594)	6.11279** (2.97963)
Observation	183	183	267	267

Note: Robust standard errors in parentheses, *p < 0.1 ,**p< 0.05, ***p< 0.01.'Swing' represents the electoral margin (negative) for unaligned electorates thus its coefficient is the estimates for β_1. Meanwhile, 'Alignment*Swing' represents the electoral margin (negative) for aligned electorates thus its coefficient is the estimates for β_3.

6 Discussion

In this chapter, we discuss several factors that can explain for the slight contradiction between the theoretical predictions and the empirical results. There are two perspectives we can look from in explaining the contradiction: empirical and theoretical perspectives. If we think that the contradiction comes from the empirical side, then we should consider using different dataset in testing the predictions. Apart from that, we can improve the measurement of electoral marginality variable which enable us to utilise other empirical techniques such as fixed-effect panel data.[29]

It is also reasonable to think that the source of contradiction might be the theoretical framework. Specifically, the contradicting result might implies that one of the assumption might not working in Australia. Firstly, the contradicting result may come from the breach of the assumption of similar utility function across voters. It is possible to have another prediction given the heterogeneous utility of the aligned group and the unaligned group. In the presence of strong voters partisanship, theory by DL (1996) suggests that there is a possibility of leak from the transfers. In other word, the transfers might yield less return than its true value, or worse, negative return. Since Volunteers Grants is a brainchild of the ALP (FaHSCIA, 2013b), supporters of the Coalition have the incentive to consider this a waste and put less value on it as opposed to ALP voters. Thus, there is a possibility of smaller or even negative utility for unaligned electorates.

Suppose we let the utility from local funding of all unaligned electorates to be negative, the relationship between unaligned electorates can change in prediction 3 and 4; opposition's strongholds receive more funding than swing unaligned electorates (see proof in appendix A.5). It is tempting to think that in this case, it is better for the government to care less about the opposition's safe electorates. However, by spending in marginal opposition seats, with negative utility, any funding in swing electorates implies larger vote shares lost than funding in opposition stronghold.

Apart from the assumption of utility function, it is possible to have the assumption of normal distribution of party biasness breached. To be exact, the distribution of party biasness of a specific electorate does not have to be normally distributed and it can be skewed heavily to the left or right. To illustrate further the contradiction that involves unaligned electorates, let us consider opposition electorates with majority of the voters are biased towards opposition party's ideology so the distribution of party biasness in this electorate is skewed to the right. For example, rural division of Mallee in Victoria has been a very safe seat for the rural based

[29] See Larcinese, Snyder and Testa (2012) for further discussion of alternative measures for electoral margin as the independent variable.

National Party (one of the component parties in the Coalition) since the electorate's creation in 1949.[30] It is straightforward to see that swing voters is no longer being a priority because spending more on core opposition voters, ceteris paribus, gives higher electoral return to the government.

[30] See 'Australian election: Ten things' by BBC News (2013). Otherwise, see AEC website for more information.

7 Conclusion

This thesis has demonstrated a relationship between voters' partisan behaviour with government's choice of election strategy when it comes to providing local funding. Apart from that, this thesis has shown the dimensions of election strategy departs from classical outcomes of swing versus core voters where we also consider alignment of electorates as another strategy. Our theoretical framework suggests four predictions depending on the proportion of partisan and non-partisan voters. In the case where there exist more non-partisan than partisan voters, government prioritises marginal aligned electorates, followed by safe aligned, safe unaligned and marginal unaligned electorates. Meanwhile when the proportions are similar, the same order as above is produced - except safe and marginal unaligned electorates receives similar levels of funding. In the case where there are more partisan than non-partisan voters but at the number of non-partisan voters is considerable, a similar order aforementioned is produced - except this time marginal aligned electorates receive more funding than safe unaligned electorates. Lastly, when most of the voters are partisan, alignment will no longer matter as the more marginal electorates receive more funding regardless of their alignment.

The last two predictions are brought into empirical test in Australian context as Australia has a relatively large proportion of partisan voters. By using state or territory and metropolitan status as instruments for regression, we come to empirical results which are not really compelling. The sign of relationship between safe and marginal unaligned electorates as demonstrated in the empirical test contradicts the predictions. While empirical results are in contradiction to our predictions, they are not implying that our model is completely wrong. Further work must be done in order to justify the theoretical model. For example, one can enrich the empirical analysis with a better empirical technique or relax the simplifying assumptions in the theoretical model. If time permits then it is possible for this thesis to be expanded and it could contribute more towards the literature of political economics, especially in political comparative studies.

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9 Appendix

A. Mathematical Proofs

These proofs are referred from ADDD (2009), LW (1987) and DL (1996). However, any error in this section is under my responsibility.

A.1 Unique value of g_m^* and g_n^*

Consider rearranging (4.9) and (4.10) respectively to:

(A.1.1)

$$g_m^* = H_m(\frac{\lambda - \delta'_m(g_m^*)}{f_m(\alpha_m(g_m^*))})$$

(A.1.2)

$$g_n^* = H_n(\frac{\lambda - \delta'_n(g_n^*)}{f_n(\alpha_n(g_n^*))(2\theta - 1)})$$

We denote $H_m(.)$ and $H_n(.)$ as inverse functions of marginal utility function $U'_m(.)$ and $U'_n(.)$ respectively.If we multiply both sides of (A.1.1) and (A.1.2) by N_m and N_n respectively, substituting this into budget constraint (4.7) yields:

(A.1.3)

$$\sum_m N_m H_m(\frac{\lambda - \delta'_m(g_m^*)}{f_m(\alpha_m(g_m^*))}) + \sum_n N_n H_n(\frac{\lambda - \delta'_n(g_n^*)}{f_n(\alpha_n(g_n^*))(2\theta - 1)}) = B.$$

Since $U'_m(.)$and $U'_n(.)$ are decreasing functions, so are $H_m(.)$ and $H_n(.)$. In addition, since it is assumed that the utility functions are similar within this economy, $H_m(.) = H_n(.)$. As a result from these conditions, in the case where $\theta \geq \frac{1}{2}$, the left hand side (L.H.S) of (A.1.3) is a decreasing function of λ while right hand side (R.H.S) is a constant. This implies there is a unique value of λ. When$\theta < \frac{1}{2}$, the L.H.S can be either a decreasing function or a decreasing function of λ. Since the R.H.S is a constant, any direction of function of λ still yield a unique value of λ. By substituting this unique value of λ into (4.8) and (4.9) and taking θ as given, we are able to pin down a unique value of g_m^* and g_n^*. Q.E.D

A.2 Proof of proposition 1

Suppose an aligned electorate m has higher density of swing voters compared to another aligned electorate $\tilde{m}$. Simply, $f_m(0) > f_{\tilde{m}}(0)$. Taking first order condition (4.9) for both electorates, substitute out unique λ and taking the difference of those two yields:

(A.2.1)

$$\delta'_m(g^*_m) - \delta'_{\tilde{m}}(g^*_{\tilde{m}}) = f_{\tilde{m}}(0)U'_{\tilde{m}}(g^*_{\tilde{m}}) - f_m(0)U'_m(g^*_m)$$

As $f_m(0) > f_{\tilde{m}}(0)$, the R.H.S of (A.2.1) is strictly negative. By concavity of $\delta'_m(.)$, $g^*_m > g^*_{\tilde{m}}$. Q.E.D

A.3 Proof of proposition 2

Suppose an unaligned electorate n has higher density of swing voters compared to another unaligned electorate $\tilde{n}$. Simply, $f_n(0) > f_{\tilde{n}}(0)$. Taking first order condition (4.10) for both electorates, substitute out unique λ and taking the difference of those two yields:

(A.3.1)

$$\delta'_n(g^*_n) - \delta'_{\tilde{n}}(g^*_{\tilde{n}}) = (2\theta - 1)f_{\tilde{n}}(0)U'_{\tilde{n}}(g^*_{\tilde{n}}) - (2\theta - 1)f_n(0)U'_n(g^*_n)$$

For $\theta > \frac{1}{2}$, since $f_n(0) > f_{\tilde{n}}(0)$, the R.H.S of (A.3.1) is strictly negative. Following the concavity of $\delta'(.)$, $g^*_n > g^*_{\tilde{n}}$. On the other hand, for $\theta < \frac{1}{2}$, since $f_n(0) > f_{\tilde{n}}(0)$, the R.H.S of (A.3.1) is strictly positive. This implies $g^*_n < g^*_{\tilde{n}}$due to concavity of $\delta'(.)$. By using similar argument, note that when $\theta = \frac{1}{2}$ the R.H.S of (A.3.1) is zero which yield $g^*_n = g^*_{\tilde{n}}$. Q.E.D

A.4 Proof of proposition 3

Let us look at the case where $\theta \leq \frac{1}{2}$. Consider an aligned electorate m and a unaligned electorate n. Taking first order conditions (4.9) and (4.10), substitute out unique λ and taking the difference of those two yields:

(A.4.1)

$$\delta'_m(g^*_m) - \delta'_n(g^*_n) = (2\theta - 1)f_n(0)U'_n(g^*_n) - f_m(0)U'_m(g^*_m)$$

When $\theta \leq \frac{1}{2}$, the R.H.S of the equation is strictly negative regardless the density of swing voters for both electorates. Following the concavity of$\delta'(.)$, and assuming $\delta'_m(.) = \delta'_n(.)$, negative R.H.S lead to $g^*_m > g^*_n$.When $\theta > \frac{1}{2}$, the R.H.S of the equation become negative only if $f_n(0)/f_m(0) > 1/(2\theta - 1)$. This means if $f_n(0)$ is sufficiently larger than $f_m(0)$, by concavity of $\delta'(.)$, and assuming$\delta'_m(.) = \delta'_n(.)$, unaligned electorate receives more local funding. Otherwise, aligned electorate is still favoured. Q.E.D

A.5 The case of negative utility

Suppose an unaligned electorate n has higher density of swing voters compared to another unaligned electorate $\tilde{n}$. Simply, $f_n(0) > f_{\tilde{n}}(0)$. Taking first order condition (4.10) for both electorates, substitute out unique λ and taking the difference of those two yields:

(A.5.1)

$$\delta'_n(g^*_n) - \delta'_{\tilde{n}}(g^*_{\tilde{n}}) = (2\theta - 1)f_{\tilde{n}}(0)U'_{\tilde{n}}(g^*_{\tilde{n}}) - (2\theta - 1)f_n(0)U'_n(g^*_n)$$

For $\theta > \frac{1}{2}$, given the utility function is negative and since $f_n(0) > f_{\tilde{n}}(0)$, the R.H.S of (A.5.1) is strictly positive. Following the concavity of $\delta'(.)$, $g^*_n < g^*_{\tilde{n}}$. Q.E.D

B. Regressions Tables

B.1 Preliminary regressions without instruments for model 1 and 2

Table 6: Preliminary regressions without instruments for model 1 and 2

	Model 1			Model 2		
	Grants (AUD'000)					
	1	2	3	4	5	6
Swing (Electoral Margin)	-3.64727** (1.79774)	0.24893 (1.4637)	-1.62562 (1.41935)	-10.529*** (1.8712)	-8.559*** (1.5619)	-8.8078*** (1.19027)
Alignment	- 9.07649 (17.51415)	-36.848** (18.19369)	- 42.86*** (15.5210)	- 46.59*** (16.032)	41.325*** (14349.4)	26.6633** (12116.69)
Alignment*Swing	1.34495 (1.9995)	-4.03149** (1.83796)	-2.27177 (1.73962)	8.94371*** (2.03766)	7.44963** (1.65857)	8.50236*** (1.43941
Australian Capital Territory	-	-	-	-	-26.72596 (16.95487)	15.57057 (15.22002)
New South Wales	-	-15.06742 (18.40033)	27.58464 (19.75887)	-	-35.993** (14008.71)	-58.05*** (13.992)
Queensland	-	-102.56*** (22.901)	15.9816 (25.06413)	-	-30.27*** (11.45656)	-64.489*** (13.6275)
Northern Territory	-	10.90987 (21.5043)	45.63862** (21.6233)	-	-	-
South Australia	-	-28.44046 (22.84403)	-17.58365 (21.20694)	-	-44.95*** (16.14598)	-121.1*** (19.69174)
Tasmania	-	-	-	-	-78.65*** (21.12652)	-132.7*** (21.11322)
Victoria	-	-40.3** (18.43988)	-1.04655 (18.65926)	-	33.6635** (14.84393)	4.65410 (16.62944)
Western Australia	-	-12.46054 (18.10803)	20.01659 (18.77308)	-	-56.376*** (16.1156)	-85.367*** (14.6312)
Metropolitan	-	-132.12*** (11.817)	-71.491*** (11.1465)	-	-10.304*** (9.3148)	-10.31416 (12.26711)
Population Density	-	-	0.00024 (0.00308)	-	-	-0.018*** (0.00495)
Median Household Income	-	-	-0.1258*** (0.01771)	-	-	-0.1696*** (0.01867)
2012	-6.44465 (16.23935)	-6.45604 (11.60003)	-11.36979 (10.48727)	4.74063 (13.70652)	4.74136 (10.81951)	18.69409* (9.61791)
2013	-11.50465 (16.61428)	-11.51604 (11.84651)	22.3713** (10.78647)	-4.6362 (13.87092)	-4.63543 (10.8448)	17.12027* (8.19444)
Observations	183	183	183	267	267	267
R-squared	0.0508	0.5354	0.6449	0.2729	0.5657	0.6943
Prob > F	0.0456	0.0000	0.0000	0.0000	0.000	0.000

Note: Robust standard errors in parentheses, *p < 0.1 ,**p< 0.05, ***p< 0.01. Australian Capital Territory and Tasmania is omitted due to colineairty in model 1 while Northern Territory is omitted due to collinearity in model 2.

B.2 First-stage regressions for model 1 and model 2 (also for robustness analysis)

Table 7: First-stage regressions for model 1 and model 2

	Model 1	Model 2
	Swing (Electoral Margin)	
Australian Capital Territory	-	-10.12885*** (1.08442)
New South Wales	2.9967** (1.2388)	-6.04198*** (1.63222)
Queensland	9.58246*** (1.24316)	-3.55221*** (1.221)
Northern Territory	4.4535*** (1.611973)	-
South Australia	5.80577*** (2.18855)	-5.02541** (2.02547)
Tasmania	-	-7.90697*** (1.88631)
Victoria	0.64476 (1.393149)	-8.15422*** (1.79048)
Western Australia	7.2739*** (1.5952020	-6.8872*** (1.29397)
Population Density	-0.0005278 (0.0004036)	0.000322 (0.00054)
Median Household Income	-0.0001317 (0.0014734)	0.00203 (0.002015)
2011	0.016395 (1.048927)	-0.16796 (0.93943)
2012	-0.002627 (1.048408)	-0.09131 (0.92738)
	Alignment	
Metropolitan	0.29091*** (0.10823)	0.31586*** (0.08672)
Population Density	0.0000591** (0.0000298)	0.0000989*** (0.0000339)
Median Household Income	0.000569*** (0.0001298)	-0.000675*** (0.000102)
2011	0.05111 (0.08751)	0.061317 (0.06944)
2012	0.02785 (0.0869)	0.03337 (0.069)
Observations	183	267

Note: Robust standard errors in parentheses, *p $<$ 0.1 ,**p$<$ 0.05, ***p$<$ 0.01. Australian Capital Territory and Tasmania is omitted due to colinearity in model 1 while Northern Territory is omitted due to collinearity in model 2.

B.3 Robustness analysis: Preliminary regression without instruments for model 1 and 2

Table 8: Robustness analysis: Preliminary regression without instruments for model 1 and 2

	Model 1			Model 2		
	Grants (AUD'000)					
	1	2	3	4	5	6
Swing (Electoral Margin)	-1.08217* (0.53708)	0.02775 (0.42695)	-0.5237 (0.41366)	-3.1437*** (0.53493)	-2.4995*** (0.43868)	-2.5738*** (0.32837)
Alignment	-2.78394 (5.23712)	-9.74678* (5.13844)	-11.543*** (4.3837)	15.1563*** (4.62998)	12.9979*** (4.03462)	8.92414*** (3.38754)
Alignment*Swing	0.47994 (0.59384)	-0.99746* (0.53022	-0.48753 (0.49878)	2.7879*** (0.58192)	2.3445*** (0.46477)	2.64696*** (0.40167)
Australian Capital Territory	-	-	-	-	-4.76641 (4.8805)	7.14617*** (4.38738)
New South Wales	-	-6.67451 (5.33007)	6.32511 (5.74538)	-	-9.51129** (3.97399)	-15.30092 (3.87125)
Queensland	-	-36.194*** (6.50242)	-1.15464 (7.18429)	-	-9.9923*** (3.32111)	-19.376*** (3.84046)
Northern Territory	-	-0.53566 (6.13783)	9.9619 (6.19652)	-	-	-
South Australia	-	-8.83308 (6.474196)	-5.28397 (6.06768)	-	-10.169** (4.71213)	-31.554*** (5.5936)
Tasmania	-	-	-	-	-22.072*** (6.09477)	-37.151*** (6.00053)
Victoria	-	-13.625** (5.33092)	-1.79142 (5.35149)	-	11.7216*** (4.27607)	4.07547 (4.6581)
Western Australia	-	-6.35162 (5.34345)	3.42444 (5.51352)	-	-14.926*** (4.56349)	-22.906*** (4.07123)
Metropolitan	-	-40.357*** (3.46849)	-22.216*** (3.20516)	-	-31.412*** (2.66383)	-4.30139 (3.42332)
Population Density	-	-	-0.000201 (0.00085)	-	-	-0.0056*** (0.001405)
Median Household Income	-	-	-0.0367*** (0.00502)	-	-	-0.0484*** (0.005349)
2012	-6.44465 (16.23935)	-0.313717 (3.37036)	-1.74019 (2.98731)	2.33428 (4.02046)	2.33434 (3.10635)	5.79053* (2.70404)
2013	-11.50465 (16.61428)	-3.23175 (3.32419)	-6.38445** (2.98377)	-1.78932 (3.9873)	-1.78926 (3.05047)	6.32861*** (2.34671)
Observations	183	183	183	267	267	267
R-squared	0.0517	0.5607	0.6689	0.2817	0.5890	0.7145
Prob > F	0.0456	0.0000	0.0000	0.0000	0.000	0.000

Note: Robust standard errors in parentheses, *p $<$ 0.1 ,**p$<$ 0.05, ***p$<$ 0.01. Australian Capital Territory and Tasmania is omitted due to colinearity in model 1 while Northern Territory is omitted due to collinearity in model 2.