

Resource Allocation and the Performance of Taiwan's Democratic Progressive Party in Mixed-Member Majoritarian Elections*

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Politics always involves the exchange of resources for votes, but the mechanism differs according to the electoral institution. The principal-agent model identifies two necessary conditions for this exchange to be feasible: (1) the opportunity cost of preferential grants is small, and (2) agents receiving these resources play a vital role in helping the principal to win. These conditions were satisfied in the presidential election of 2004, when swing voters were critical in helping the Democratic Progressive Party (DPP) to retain the presidency and limited costs were attached to the resources demanded by legislators elected under the single non-transferable vote (SNTV) system. After 2004, the president no longer exchanged grants for votes at the national level because swing voters could hardly change the result of presidential elections while the opportunity cost of grants was raised by the plurality-tier of the mixed-member majoritarian (MMM) system. Nevertheless, resource allocation still dominates local politics. After MMM was introduced, DPP legislators elected in DPP-led regions distributed the resources that were helpful to consolidating potential supporters; those campaigning in KMT-administered areas, however,

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attempted to lure swing voters by providing them with extra services—just like what their local heads did.

KEYWORDS: MMM; DPP; KMT; Taiwan elections; resource allocation.

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Elected officials and legislators can seek reelection by associating their name with government-funded projects—sometimes called pork-barrel legislation—delivered to their constituents. We can use the general term “resource allocation” for all legislation where tax money is spent to benefit a particular group of voters. In some electoral systems, such as the multi-member district system,¹ resource allocation is quite common. Personal reputation is thus most salient under the single nontransferable vote (SNTV) system.² Nevertheless, the salience and cost of resource allocation are different issues. An SNTV election is rarely competitive—resources help candidates consolidate their personal connections rather than changing seat distribution among political parties. In this sense, the opportunity cost of resource allocation is small under SNTV because it does not change seat distribution much. By contrast, when two candidates compete for one seat, the opportunity cost of resource allocation can be very high because a difference of only one vote can result in a party having no seat at all. That is why resource allocation can play a decisive role in a first-past-the-post (FPTP) race; the effect is similar in the plurality tier of a mixed-member majoritarian (MMM) system.³

¹For a classic interpretation of pork-barrel legislation, see John A. Ferejohn, *Pork Barrel Politics: Rivers and Harbors Legislation, 1947-1968* (Stanford, Calif.: Stanford University, 1974). For a formal analysis, see Kenneth A. Shepsle and Barry R. Weingast, “Political Preferences for the Pork Barrel: A Generalization,” *American Journal of Political Science* 25, no. 1 (February 1981): 96-111.

²For the personal vote and the single-member district system, see Bruce E. Cain, John Ferejohn, and Morris Fiorina, *The Personal Vote: Constituency Service and Electoral Independence* (Cambridge, Mass.: Harvard University Press, 1987). For a ranking of personal votes by an electoral system, see John M. Carey and Matthew Soberg Shugart, “Incentives to Cultivate a Personal Vote: A Rank Ordering of Electoral Formulas,” *Electoral Studies* 14, no. 4 (December 1995): 431.

³Even the plurality tier of a mixed-member proportional system is sensitive to pork-barrel politics. See Thomas Stratmann and Martin Baur, “Plurality Rule, Proportional Represen-

There are two reasons why we should apply the resource allocation approach to the study of Taiwanese politics. First, Taiwan provides valuable data for comparing SNTV and MMM. The legislative performance of the Democratic Progressive Party (DPP), currently the main opposition party, is particularly useful in showing that resource allocation does not always benefit the incumbent party. Second, Taiwan's electorate is divided into two camps asserting divergent positions on national identity. If resource allocation matters when the electorate is divided, its importance in a more homogeneous society can only be greater.⁴

The next section begins by describing the spread of DPP votes, the major dependent variable. A principal-agent model will then be used to demonstrate how this dependent variable is affected by the dynamic relationship between the givers—who are usually the executive head—and receivers of government resources. The hypotheses will be tested in two empirical sections.

Explaining the DPP's Legislative Performance

In 2005, Taiwan adopted an MMM system in which a high percentage of seats are elected by FPTP (the plurality tier). This electoral system divides the 113 legislative seats into three sections: 73 seats are elected in the plurality tier, 34 allocated by closed-list proportional representation (PR tier) in a nationwide district, and 6 are set aside for aboriginal districts. The seats in each tier are counted separately, and each voter casts one ballot for a candidate and one for a party. The new electoral system for the legislature has made the FPTP race a defining feature of political competition in Taiwan, covering contests for the offices of president,

tation, and the German Bundestag: How Incentives to Pork-Barrel Differ Across Electoral Systems," *American Journal of Political Science* 46, no. 3 (July 2002): 506-14.

⁴For example, a study by Cesar Zucco Jr., suggests that it is the distribution of pork and cabinet positions that explains the voting behavior of Brazilian legislators rather than their ideological differences. See Cesar Zucco Jr., "Ideology or What? Legislative Behavior in Multiparty Presidential Settings," *Journal of Politics* 71, no. 3 (July 2009): 1076-92.

legislator, county magistrate, and city mayor.

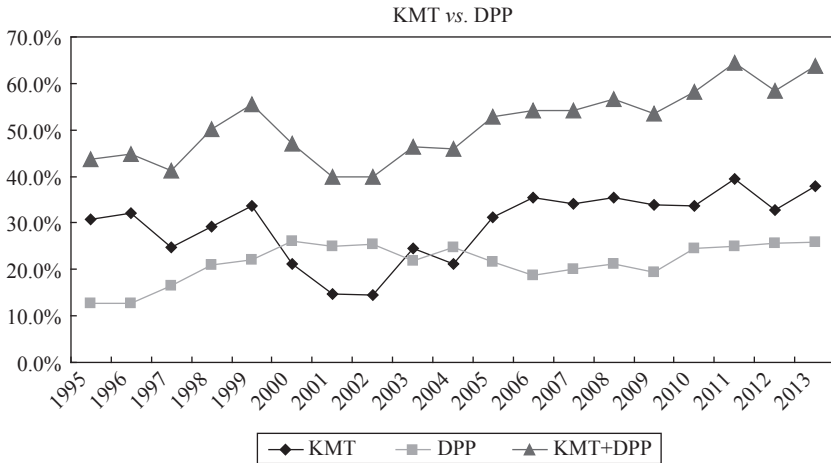
Taiwan's MMM is seen as a majoritarian-leaning electoral system that is advantageous to the top vote-getters. Explaining the seat share of the opposition DPP, a pro-independence party, becomes an interesting question. In the plurality tier of the MMM elections, the DPP's vote share is much higher than the percentage of people who favor Taiwan independence. Strategic voting is not a convincing explanation because the Taiwan Solidarity Union (TSU), another pro-independence party, is very small and did not nominate a candidate in the plurality race of 2012.

Resource allocation appears to be a more plausible explanation. Given that resources are prepared by the government and approved by legislators, we need to link legislative elections to those for the president and local heads. A major argument of this paper is that resource allocation can sometimes benefit swing voters living in opposition-controlled areas because their support is needed to enhance the winning odds of office-holders. To have this effect, the district has to be competitive, local agents need to be nonpartisan, and the incumbent cannot be capable of winning without swing votes.⁵ We can derive a paradox according to this logic: when party discipline is weakened by SNTV, the DPP president will deliver extra grants to agents in non-DPP areas if they are vital for his/her victory; when the DPP can no longer hold on to the presidency, especially after MMM has raised the opportunity cost of resources, the central government will cease to deliver preferential grants to swing voters. Even so, resource allocation may still work at the local level in competitive districts if local heads and legislative contenders both require the support of swing voters.

In order to understand how the existing literature evaluates the DPP's legislative performance, we begin by depicting the party's popularity. As illustrated in figure 1, the Kuomintang (KMT) almost always

⁵A district is competitive if no party is guaranteed a safe seat, giving undecided voters a decisive role to play. "Undecided voters" is a broad term covering nonpartisan voters, neutral voters, independent voters, split-ticket voters, and swing voters. This paper uses swing voters to describe those who make their choice according to the resources they receive.

Figure 1
The Approval Rate of the KMT and the DPP



Source: Election Study Center, National Chengchi University.

receives a higher approval rate than the DPP, and MMM has exacerbated the DPP's disadvantage.⁶ In MMM races, the DPP has obtained 17.81 percent of the plurality seats by grabbing 38.17 percent of the plurality vote in 2008, and taken 36.99 percent of the plurality seats with 43.80 percent of the plurality vote in 2012 (see table 1).⁷ These figures suggest that the extent to which Taiwan's MMM favors the largest party is greater than what the cube law would predict.⁸

⁶Although many young democracies have adopted mixed-member electoral systems, very few of them are as disproportional as Taiwan's system. On the recent change in the electoral system and the peculiarities of the East Asian experience, see Benjamin Reilly, "Democratization and Electoral Reform in the Asia-Pacific Region," *Comparative Political Studies* 40, no. 11 (November 2007): 1350-54. According to Duverger, FPTP usually leads to a two-party system because votes for minor parties will be strategically shifted to the two largest parties. See Maurice Duverger, *Political Parties: Their Organization and Activity in the Modern State* (New York: Wiley, 1963), 217.

⁷For more details of the outcome of Taiwan's recent elections, see the Central Election Commission, <http://www.cec.gov.tw>. The Commission is responsible for officially declaring the results of Taiwan's elections.

⁸Take 2008 as an example. According to the cube law, which states that cubing the ratio of

Table 1
The Outcome of the 2008 and 2012 Legislative Elections

Party	Years	Plurality vote share (%)	Plurality seats	PR vote share (%)	PR seats	Total seats
KMT	2008	53.50	61	51.23	20	81
	2012	48.18	48	44.55	16	64
	Change	-5.32	-13	-6.68	-4	-17
DPP	2008	38.17	13	36.91	14	27
	2012	43.80	27	34.62	13	40
	Change	5.63	14	-2.29	-1	13
TSU	2008	0.95	0	3.53	0	0
	2012	0	0	8.96	3	3
	Change	-0.95	0	5.43	3	3
PFP	2008	0.29	1	0	0	1
	2012	1.33	1	5.49	2	3
	Change	1.04	0	5.49	2	2
NPSU	2008	2.42	3	0.70	0	3
	2012	1.28	2	0	0	2
	Change	-1.14	-1	-0.70	0	-1
Ind.	2008	3.98	1	0	0	1
	2012	4.05	1	0	0	1
	Change	0.07	0	0	0	0

Note: NPSU = Nonpartisan Solidarity Union, Ind. = independent candidate; Change = 2012-2008.

Source: Central Election Commission.

Nevertheless, the DPP's track record explains why it endorsed MMM. When the Legislative Yuan passed the electoral reform proposal in August 2004, the DPP had recently enjoyed a series of electoral victories—it won the presidential election in 2000, became the largest party

votes received by two major parties yields the ratio of seats they win in FPTP races, the ratio of the KMT's seats to the DPP's seats should have been 2.75, much smaller than the actual ratio of 4.69. Another surprising result of this legislative election is that the other small parties received almost no seats at all. For a discussion on the cube law, see Tse-min Lin and Feng-yu Lee, "The Spatial Organization of Elections and the Cube Law," *Issues & Studies* 45, no. 2 (June 2009): 63-70.

in the legislature in 2001, took nine country magistrate/city mayor seats representing more than half of Taiwan's population in 2001, and claimed victory again in the presidential election of 2004. Note that many of these elections used a single-member district system. After such an uninterrupted string of successes the DPP leadership was confident that MMM would make it possible for the party to win the majority of legislative seats. With hindsight, it is clear that the DPP was overoptimistic.⁹ However, it would be hasty to conclude that the DPP will never become the plurality party.

There are two popular theories that explain the DPP's electoral vulnerability. Many studies attribute the DPP's limitations to its pro-independence ideology.¹⁰ To these authors, the DPP is mainly endorsed by voters who assert Taiwan's independent sovereignty, while the majority prefers the status quo.¹¹ De jure independence is becoming more and more unlikely as relations with mainland China are normalized.¹² Another argument finds fault with the way electoral district boundaries are drawn under MMM. Each county/city must have at least one legislative

⁹See John Fuh-sheng Hsieh, "The Origins and Consequences of Electoral Reform in Taiwan," *Issues & Studies* 45, no. 2 (June 2009): 1-22.

¹⁰For issue voting in Taiwan, see John Fuh-sheng Hsieh and Emerson M. S. Niou, "Salient Issues in Taiwan's Electoral Politics," *Electoral Studies* 15, no. 2 (May 1996): 219-35; John Fuh-sheng Hsieh and Emerson M. S. Niou, "Issue Voting in the Republic of China on Taiwan's 1992 Legislative Yuan Election," *International Political Science Review* 17, no. 1 (January 1996): 13-27; and John Fuh-sheng Hsieh and Emerson M. S. Niou, "Measuring Taiwanese Public Opinion on Taiwanese Independence," *China Quarterly*, no. 181 (March 2005): 158-68. For Taiwan independence and the DPP's popularity, see Dongtao Qi, "Divergent Popular Support for the DPP and the Taiwan Independence Movement, 2000-2012," *Journal of Contemporary China* 21, no. 78 (July 2012): 973-91.

¹¹For the role of the median voter, see Ding-ming Wang, "Zhengce yiti dui Taiwan xuanju xingwei zhi yingxiang: hunhexing luoji fenxi zhi yingyong" (The impacts of policy issues on voting behavior in Taiwan: a mixed logit approach), *Xuanju yanjiu* (Journal of Electoral Studies) (Taipei) 8, no. 2 (November 2001): 65-94; and Ding-ming Wang, "Zhengce rentong xia de toupiao xiaoyong yu xuanze: kongjian toupiao lilun zai butong xuanju zhidu jian de bijiao" (Voting utility and choice decision in 2001 election: the application of spatial voting theory in different electoral systems), *Xuanju yanjiu* (Journal of Electoral Studies) (Taipei) 10, no. 1 (May 2003): 171-206.

¹²The DPP's main supporters are characterized as Hoklo Taiwanese living in southern Taiwan. See John Fuh-sheng Hsieh, "Ethnicity, National Identity and Domestic Politics in Taiwan," *Journal of Asian and African Studies* 40, no. 1-2 (April 2005): 13-28.

seat, and the DPP is disadvantaged by its weak connections with overrepresented locations.¹³

These arguments point to constraints on the DPP's growth rather than the spread of its votes across districts, which is what most legislators care about.¹⁴ In this sense, it is wrong to believe that most voters are KMT identifiers. In many electoral districts, neither the KMT nor the DPP is supported by the majority. So-called undecided voters are a divergent bunch, some are independent but others are potential targets of mobilization. One empirical study has found that most undecided voters belong to the second type; they are most likely to be rural dwellers susceptible to the influence of opinion leaders.¹⁵ They feel that they should repay elected officials for the services they provide.¹⁶ To take the argument a step further, we will call voters whose choice depends on the resources they obtain from the candidates "swing voters." In comparison, potential supporters of a party are those who do not yet identify with that party but have a tendency to vote for it.¹⁷ The probability of swing voters defecting to a rival party is much greater than that of potential supporters. Which type of voter office-holders seek to attract depends on their winning odds and the resources they control.

¹³This claim was put forward by Lin Cho-shui, a former DPP legislator. See Hsin-fang Li, "Fanlǜ zhugong xuanqu chonghua" (The pan greens stand for redistribution), *Ziyou shibao* (Liberty Times) (Taipei), August 25, 2004, <http://www.libertytimes.com.tw/2004/new/2004/08/25/today-p5.htm>.

¹⁴That the current boundaries are unfair can be seen in the fact that the DPP would not win a seat in the overrepresented districts even if its vote share was boosted to 40 percent. In figure 1, the percentage of "neutral" voters ranges between 30 and 50 percent, which is what most parties need to win an election.

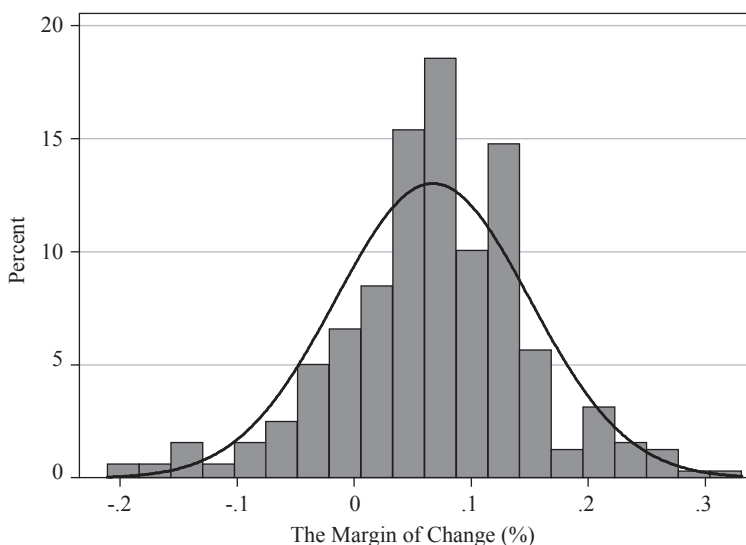
¹⁵Chung-li Wu and Wen-pin Hsu, "Shei shi zhengdang rentongzhe yu duli xuanmin? Yi 2001 nian Taiwan diqu xuanmin zhengdang rentong de jue ding yinsu weili" (Who are partisans and independents? Determinants of party identification of Taiwan's voters in 2001), *Zhengzhi kexue luncong* (Political Science Review) (Taipei), no. 18 (June 2003): 101-40.

¹⁶Service of this type is called "project assistance." See Shioh-duan Hawang, *Xuanqu fuwu: lifa weiyuan xinmu zhong lianren zhi jichu* (Constituency service: the basis of reelection in the minds of the members of the Legislative Yuan) (Taipei: Tangshan, 1994), 37-45.

¹⁷The underlying assumption is that a voter who identifies with a party will vote for this party, or desert it for strategic reasons.

Figure 2

The Change in the DPP's Plurality Vote Shares in MMM Elections



Note: Unit of analysis = township. The margin of change = 2012 vote share – 2008 vote share. The data exclude districts where the DPP did not nominate any candidate.

Source: Central Election Commission.

Given that resource allocation is based on administrative boundaries, swing voters must have a regional base. We will look at the margin of change in the DPP's vote-getting capacity across electoral districts and explain why resource allocation is a relevant variable. One possibility is that the DPP performs better in districts where it receives a large share of the vote because its competitors learn to withdraw from the race. We thus expect the DPP to perform better in its strongholds. Using the township as the unit of analysis, figure 2 illustrates the distribution of $\Delta\text{DPPVOTE}$, the difference between the DPP's plurality vote shares in 2012 and 2008 in the same location.¹⁸ Taking the first election as an independent variable,

¹⁸To be more exact, the units are the subdivisions of a county or a city. Their official titles are town (*xiang* or *zhen*), city (*shi*), and administrative district (*qu*).

we see that this variable has a significant but *negative* effect. The message is clear: the better the DPP's performance in 2008, the smaller its room for growth in 2012. The "stronghold" argument fails to explain the DPP's expansion. Instead, the "resource allocation" theory is justified by the gap between the DPP's performance in the two tiers of MMM. In 2012 the DPP's plurality vote share was 43.80 percent but its share of the PR tier was only 34.62 percent. If a party's vote share in the PR tier is a better indicator of its real strength, the extra votes it received in the plurality tier may well have been cast by swing voters.¹⁹ Therefore, it is interesting to find out where these voters live and why they voted for the DPP.

Table 2 presents two models devised to identify the likely locations of Δ DPPVOTE. Model 1 considers three independent variables: a continuous variable TOTAL, representing the total valid votes in 2012 in each township, and two dummies, CENTER and SOUTH, indicating whether the township is in central or southern Taiwan.²⁰ A linear regression shows a negative relationship between TOTAL and Δ DPPVOTE; the coefficients are high in CENTER and SOUTH when "other areas" are treated as the baseline. Model 2 replaces CENTER and SOUTH by HEAD—that is, counties (cities) governed by a DPP head. The result shows HEAD to be a positive and significant independent variable, while the effect of TOTAL remains similar. Recall the negative effect of the DPP's 2008 legislative vote shares on Δ DPPVOTE. It is thus likely that townships seeing the greatest increase in the DPP's vote share are expansions of the party's original core, indicated either by areas dominated by Hoklo Taiwanese or constituencies under the party's governance. A sensible hypothesis is that

¹⁹Note that the TSU did not nominate a candidate in the plurality race in 2012.

²⁰This paper divides Taiwan into geographical regions as follows: northern = Keelung City, Taipei County (New Taipei City), Taipei City, Taoyuan County, Hsinchu County, Hsinchu City, Miaoli County; central = Taichung County, Taichung City, Changhua County, Nantou County, Yunlin County, Chiayi County, Chiayi City; southern = Tainan County, Tainan City, Kaohsiung County, Kaohsiung City, Pingtung County; eastern = Yilan County, Hualien County, Taitung County; offshore islands = Penghu County, Kinmen County, Lienchiang County (Matsu).

Table 2
Explaining the Difference in the DPP's Legislative Vote Share

Dep. Variable = $\Delta\text{DPPVOTE}_{08-12}$	Model 1				Model 2			
	Coef.	Std. Err.	t	p-value	Coef.	Std. Err.	t	p-value
TOTAL	-2.21E-07	9.25E-08	-2.39	0.017	-2.56E-07	9.58E-08	-2.68	0.008
CENTER	0.0553	0.011	5.11	0.000				
SOUTH	0.0583	0.011	5.43	0.000				
HEAD					0.0356	0.009	3.86	0.000
_cons	0.0379	0.009	4.27	0.000	0.0592	0.078	7.56	0.000
Number of obs	318				318			
Adj R-squared	0.1325				0.0776			

Note: The data exclude districts in which the DPP did not nominate any candidate.

Source: Central Election Commission.

if the DPP's local heads have used the resources allocated by the central government effectively, the major effect should have been to open up new frontiers under their administration.²¹ We will come back to this issue when discussing how local heads use their resources.

To sum up, resource allocation takes place at the national and local levels. At both levels, a rational grant-giver should direct grants to non-partisan agents if the latter can help him/her win office. Therefore, the incentive to deliver resources to nonpartisan agents is maximized when they are essential for the electoral victory of the office-holder; their contribution is small if the office-holder is sure to win or lose the election.²² Now consider the role of the legislators. We now know that resources

²¹For an early study on southern politics, see Pei-shan Lee and Yung-ming Hsu, "Southern Politics? Regional Trajectories of Party Development in Taiwan," *Issues & Studies* 38, no. 2 (June 2002): 61-84.

²²For a general discussion on the relationship between resource allocation and partisan affiliation, see Scott Desposato and Ethan Scheiner, "Governmental Centralization and Party Affiliation: Legislator Strategies in Brazil and Japan," *American Political Science Review* 102, no. 4 (November 2008): 509-24. For a classic work on distributive politics, see Theodore J. Lowi, "American Business, Public Policy, Case-Studies, and Political Theory," *World Politics* 16, no. 4 (July 1964): 677-715.

will be used to attract swing voters only when their votes are decisive. At the local level, the following scenario occurs when swing voters are not decisive. First, for legislative candidates whose district is in an area headed by a magistrate/mayor from the same party, resources can be used to enlarge the party's domain. Second, for DPP legislators campaigning in a location controlled by the KMT, the district is by definition competitive. Seeking to improve their electoral performance, the KMT's local heads will transfer some resources to nonpartisan agents; in a similar way, the DPP's legislators will also claim credit for the resources they strive for in the Legislative Yuan. Most likely, swing voters in these competitive districts will become split-ticket voters. In this sense, resource allocation at the national and local levels may not go hand in hand.

We will soon see how more hypotheses can be derived from a general model of resource allocation. The analysis of Taiwan's resource allocation can contribute to the literature on its relationship with electoral outcomes.²³ There are a number of solid empirical works on this subject. One of them demonstrates that the signals sent by Taiwan's legislators to bureaucracies create a positive correlation between particularistic benefit bills—which are rarely passed—and the grants their constituents receive.²⁴ Concerning party affiliations, some studies have shown that the central government tends to offer extra grants to opposition-held regions so as to enlarge the support base of the ruling party.²⁵ Another work has found a

²³See Wen-sheng Shieh and Jiunn-nan Ou, "Taiwan diqu zhengdang zhengzhi dui difang zhengfu buzhu shouru yingxiang zhi yanjiu" (A study of the influence of party politics on intergovernmental grants in Taiwan), *Wenti yu yanjiu* (Issues and Studies) (Taipei) 42, no. 6 (November 2003): 97-111.

²⁴Ching-Jyuhn Luor and Fu-yao Chan, "Lifa weiyuan teshu liyi ti'an yu zhongyang zhengfu jihuaxing buzhuquan de fenpei: cong minguo jiushisi nian zhi jiushibanian zhi ziliao tanxi" (The relationship between particularistic benefit bills initiated by legislators and the geographic distribution of categorical grants in Taiwan, FY2005~FY2009), *Gong-gong xingzheng xuebao* (Journal of Public Administration) (Taipei), no. 42 (March 2012): 1-31.

²⁵This claim can be found in two studies. See Ching-Jyuhn Luor, *Chongxin jianshi Taiwan fenpei zhengce yu zhengzhi* (Reexamining Taiwan distributive policies and politics) (Taipei: Yang-chih, 2009); Chih-liang Wang, Fu-yao Chan, and Chung-li Wu, "Gonggu zhichi huo ziyuan bazhuang? Jiexi zhongyang dui difang buzhuquan fenpei de zhengzhi yinsu" (Consolidating support or targeting the opposition? The impact of political factors on the

positive correlation between the DPP's 2004 presidential vote share and government expenditure (not grants directly) on transportation projects.²⁶ Together, these studies highlight the role of the legislature in resource allocation. They also suggest that the executive heads have an incentive to give extra benefits to opposition-controlled locations if this strategy can improve their electoral fortunes; the seemingly inconsistent findings about votes and expenditure can be treated as a variable rather than a parameter. In the next section, these conditions will form the elements of a principal-agent model from which testable hypotheses will be derived.

A Principal-Agent Model of Resource Allocation

In Taiwan, the government's budget is proposed by the Executive Yuan and approved by the Legislative Yuan. Unless a system of roll-call voting is used—and this does not happen often—we cannot tell how individual legislators have voted. In fact, the majority rule is not always applied, and opposition legislators can exert substantial influence on resource allocation through inter-party negotiations.

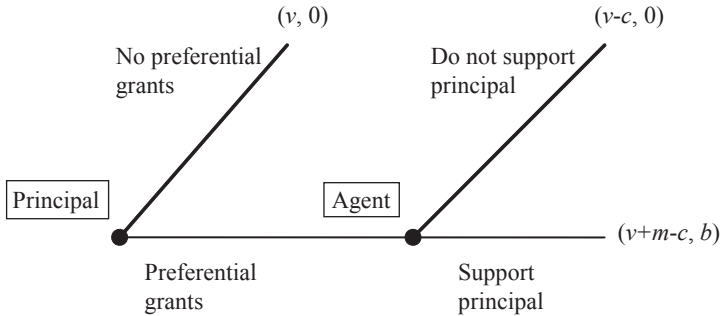
The focus of resource allocation is usually on central government grants to the localities. Taiwan's local governments are heavily dependent on these grants which are delivered according to a formula which takes into consideration the population, size, and economic development of each county or city.²⁷ Intergovernmental grants can be further divided into general grants and program grants. General grants are designed to make up

allocation of intergovernmental grants), *Zhengzhi kexue luncong* (Taiwanese Journal of Political Science) (Taipei), no. 51 (March 2012): 51-90.

²⁶Chia-hung Tsai and Eric Chen-hua Yu, "Difang zhengfu ruhe huiying minyi? Yi 2006-2007 nian weili" (Evaluating the responsiveness of local governments in Taiwan: A case study of policies and public opinion between 2006 and 2007), *Taiwan zhengzhi xuekan* (Taiwanese Political Science Review) (Taipei) 15, no. 1 (June 2011): 100.

²⁷See the Law on Budgetary Revenue and Expenditure (last revised in 1999), <http://law.moj.gov.tw/LawClass/LawAll.aspx?PCode=G0320015>. Since 2000, grants have been allocated according to a given formula, although the central government still has some power to adjust their content.

Figure 3
The Extensive Form of the Principal-Agent Game



the financial deficits of local governments, and program grants seek to help the latter accomplish important policies promoted by the central government. While these nominal objectives are set by the Executive Yuan, legislators play an important role in the process of grant allocation: they can bargain with the bureaucracies to make sure the grants are allocated to their home districts or get the local government to use the grants to finance services to their constituents. The delivery of grants involves the head of the executive and the legislators, and both face reelection pressure. An interesting question is how electoral incentives affect the allocation of grants.

A game-theoretic model captures the essence of grant delivery. The model focuses on the giver (called the principal) and the receiver (the agent) in the grants-allocation game.²⁸ The agent is a local activist who can mobilize some votes to help candidates nominated at various administrative levels, such as those for the presidential, magisterial, and legislative elections. The principal moves first and can choose one of

²⁸The game portrayed in figure 3 can be seen as a subgame of a larger game with perfect information. The solution we are looking for is a subgame perfect equilibrium, which ensures that all subgames are in Nash equilibrium. There are different types of principal-agent games but all assume the agent to have the knowledge to do what the principal wants. For an early presentation of a principal-agent game, see Stephen A. Ross, "The Economic Theory of Agency: The Principal's Problem," *American Economic Review* 63, no. 2 (May 1973): 134-39.

two strategies: to provide the agent with grants higher than those that the formula allows—called preferential grants—or not to do so (see figure 3). If the principal does not give the agent the preferential grants, the payoff for the principal is $v \in [0, 1]$, its vote share without the help of the agent, and the payoff for the agent is 0. If the principal chooses to provide the agent with preferential grants and the agent decides to help the principal, the principal receives $v+m-c \in [0, 1]$, where $m \geq 0$ stands for votes for the principal added by the agent, $c \geq 0$ is the opportunity cost of favored grants, and b is the agent's payoff for helping the principal.²⁹ Suppose b is a concave function of $v+m$ with a maximum at $v+m = 0.5$. If the agent accepts the preferential grant but does not help the principal garner votes, the principal's payoff is $v-c$ and the agent's payoff is 0.

In a subgame perfect equilibrium of this game, the principal exchanges preferential grants for votes if (1) $m-c > 0$ and (2) $b(v+m) > 0$.³⁰ First, for the principal to choose "preferential grants," $v+m-c > v \rightarrow m-c > 0$. Second, $b(v+m) > 0$ refers to situations when the agent's help is just enough to make the principal the winner and $b(v+m) < 0$ indicates that the agent's help is not needed, either because he/she does not control sufficient votes or because the principal's original vote share is too high or too low. It follows that the exchange of preferential grants for votes takes place most often in competitive districts.

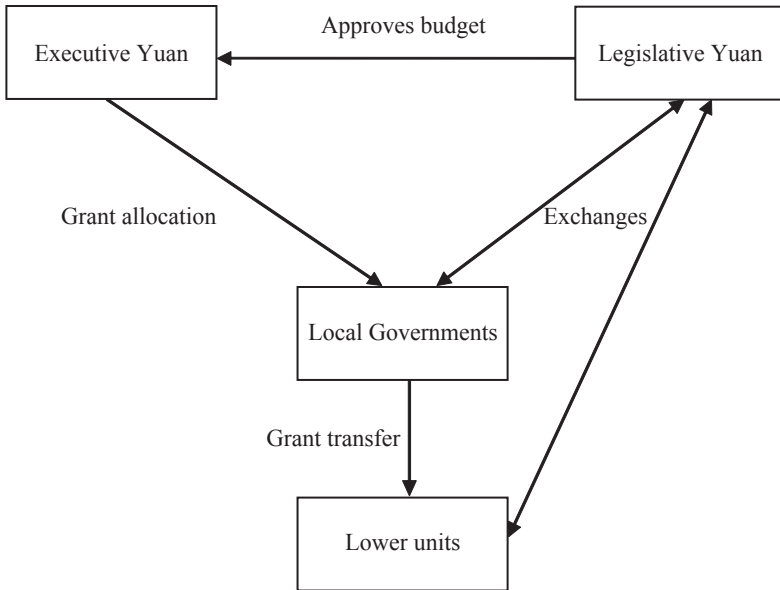
Of the variables, v is exogenously given but m and c are sensitive to electoral reform and the agent's partisan affiliation. To begin with, electoral reform has reduced the number of swing voters. The introduction of MMM not only enlarged the total vote share of the two largest parties (see figure 1) but also gave "neutral" voters less room to expand in number. As a result, electoral reform has reduced m .

Second, electoral reform has increased c . As shown in figure 4, legislative contenders are important players in an agent's mobilization

²⁹We can assume m and c in such a way that 0 and 1 are the lower and upper bounds of $v+m-c$.

³⁰There are also mixed-strategy Nash equilibria: when $b = 0$, \Pr (principal provides preferential grants) $\in [0, 1]$ and \Pr (agent offers support) $= c/m$.

Figure 4
The Role of Legislators in Grant Allocation



network. The electoral fortune of a legislative candidate must be a major concern of the agent. Especially noteworthy are legislators in power, whose interests can be seen in the grants they approve. Under SNTV, the rule of seat distribution dictated that resources helped legislative candidates strengthen their personal connections rather than having the effect of redistributing seats across parties. Since the introduction of MMM, a legislative candidate can lose even if he/she is outperformed by his/her rival by only one vote. Under MMM, therefore, resources are devoted to consolidating personal connections *and* maximizing a candidate's seat-winning capability, meaning that the opportunity cost is positively correlated with the competitiveness of a district.

Third, resource allocation is also affected by the partisan affiliation of local heads. Table 3 lists all the possibilities if we assume the principal to be a DPP president. In scenario one, suppose the principal can win the

Table 3
Partisan Affiliation and Resource Allocation

Local head's party	Will agents offer support?	Effect
KMT	Yes	Agents receive preferential grants as extra reward because the local head has no intention of helping the principal.
DPP	Yes	Agents receive no preferential grants because the local heads will offer their help anyway.
KMT	No	Local head receives no preferential grants because agents will not offer their help. In competitive districts, local heads may improve their own winning odds by delivering some resources to swing voters.
DPP	No	DPP head receives preferential grants to win over potential supporters and expand the party's vote base.

Note: The principal is a DPP president.

Source: Author's analysis.

presidential election by delivering preferential grants to swing voters but faces a KMT local head. Then, in this KMT-controlled county/city, the principal can make a direct deal with local agents to engage in the exchanges. The KMT's local head lacks the incentive to help the DPP president, but his/her subsidy will be at stake if he/she attempts to water down the grants. The second scenario is most interesting. Suppose everything remains the same but the location becomes a DPP-headed county/city. The principal has a weaker incentive to hand preferential grants to a DPP head because he/she expects the agents under the latter's governance to garner votes for him/her anyway. In other words, the marginal contribution of preferential grants is limited in a DPP-headed county/city. The third and fourth scenarios are two sides of the same coin. If agents have no incentive to garner votes for a DPP principal, preferential grants should be delivered to locations with a DPP head: it is ineffective to bargain with

agents living in a KMT-held area, but preferential grants can help a DPP leader gradually win over potential supporters; in this scenario, the DPP's vote base will expand in the long term. When a KMT local head faces a DPP legislator in his/her county/city, this district is by definition competitive. The KMT local head and the DPP legislator both have an incentive to transfer more resources to swing voters, even though the county/city as a whole does not receive preferential grants from the central government.

The DPP's performance in the presidential elections suggests that the period from 2000 to 2004 was close to scenarios 1 and 2 because SNTV constrained the opportunity cost of grants and President Chen Shui-bian (陳水扁) had a good chance of getting reelected if he could attract swing voters. Between 2004 and 2008, MMM increased the opportunity cost of grants while the DPP's struggle to retain the presidency lost momentum. Instead, preferential grants were devoted to consolidating potential support.

An interesting question is whether we can switch roles between the DPP and the KMT and reach the same conclusion. In the model, a large party is less dependent on swing voters, and the KMT is indeed larger. Given that the opportunity cost of resource allocation is high under MMM, the KMT is unlikely to deliver preferential grants to DPP-headed regions when it controls the central government. Clearly, the presidential elections of 2008 and 2012 belong to this type. If the KMT's popularity declines in the future to the extent that help from swing voters becomes vital, then a KMT president may have to bear that high opportunity cost of delivering resources to swing voters living in DPP-controlled areas if he/she is to retain the presidency.

The following hypotheses summarize the model and aim to explain what has happened.

Hypothesis 1. The DPP president will deliver preferential grants to non-DPP counties (cities) if (1) the DPP has a chance of winning the presidential election by attracting agents who can mobilize swing votes and (2) the opportunity cost of resource allocation is small. If agents have no incentive to

help the DPP win the presidential election, the DPP president will shift the grants to DPP magistrates (mayors), who will share the resources with the DPP's legislative candidates and enlarge the DPP's support base by gradually winning over potential supporters.

Hypothesis 2. When (1) agents living in non-DPP counties (cities) have no incentive to help the DPP's presidential candidate, (2) the opportunity cost of resource allocation is high, or (3) the DPP no longer holds the presidency, the DPP's strategy varies in two ways. First, in a safe district where the DPP's legislative contender is campaigning in a DPP-controlled area, the legislative and presidential contenders will share resources to win over potential supporters. Second, in a competitive district where the DPP's legislative contender is campaigning in a KMT-controlled area, nominees of both parties will attract swing voters by providing them with preferential grants; accordingly, the DPP's legislative vote shares will tend to be higher than those won by the DPP's presidential candidate.

The next two sections will operationalize these hypotheses and subject them to empirical testing. Although the test of Hypothesis 2 is confirmatory—it is technically infeasible to make a direct observation about the allocation of resources within the same county/city—the validity of this hypothesis is strengthened if the expected consequence of vote distribution takes place.

Probing the DPP's Upper Limit

On the basis of Hypothesis 1, this section will discuss the strategy taken by a president who owes his/her office to swing voters. The major argument is that the arrangement of grants, an observable item in the government budget, is affected by the critical contribution of swing voters

to the president's electoral victory. In Taiwan, the best cases that can be used to validate Hypothesis 1 are the presidential elections of 2004, in which the DPP obtained 50.11 percent of the popular vote, and of 2008, in which it obtained 41.55 percent.³¹ We hope to show that (1) the DPP reserved preferential grants for KMT-controlled areas before 2004 when Chen Shui-bian had a chance of winning another term as president by capturing swing votes, and (2) Chen shifted preferential grants to DPP-held regions after 2004 when the chances of the DPP winning the 2008 presidential election had diminished and the opportunity cost of resources had been raised by MMM.³²

Before we operationalize grant allocation, certain factors should be noted here. First, the unit of analysis should be the county and city rather than any smaller administrative unit because county and city governments are legally defined as the recipients of the grants provided by the central government. It is the county/city government that reassigns the grants to its sub-units. Second, the central government is obliged to provide local governments with grants in order to attain specific goals of development. To control for demographic variability among the counties/cities, we should measure dependence on grants by the change rate rather than the absolute amount of the grants. Third, SNTV was used for the last time in the legislative election held at the end of 2004; MMM was used thereafter. Still, electoral systems cannot be coded as dummy variables because we have separated the data by two presidential elections. What we will do is discuss the substantial impact of electoral systems when we address each period.

The following formula specifies a local government's dependence on grants:

³¹One analysis of the 2004 presidential election points to the importance of local context. See Ko-Hua Yap, "Incorporating Local Contexts into Explaining Voting Behavior in Taiwan," *Issues & Studies* 47, no. 2 (June 2011): 136-43.

³²For those who believe that Chen's victory in 2004 was the result of the shooting incident of March 19 that year, a clue lies in figure 1: the DPP's approval rate was higher than that of the KMT in 2004. The popularity of the political parties should have been well known by local agents, who played a decisive role in this campaign.

$$\text{DEPENDENCE}_t = (\text{EXPENDITURE}_t - \text{GRANT}_t) / (\text{REVENUE}_t),$$

where EXPENDITURE_t , GRANT_t , and REVENUE_t refer to the annual expenditure, annual grants, and annual revenue of a county/city in year t . To measure the weight of grants in a local government's revenue, we use REVENUE_t rather than EXPENDITURE_t as the denominator. This equation shows that the smaller the value of DEPENDENCE_t , the more dependent a local government's revenue is on grants in a particular year. The change rate of DEPENDENCE_t would be:

$$\Delta \text{DEPENDENCE} = (\text{DEPENDENCE}_t - \text{DEPENDENCE}_{t-i}) / \text{DEPENDENCE}_{t-i},$$

where i is to be determined by the research question.

When calculating $\Delta \text{DEPENDENCE}$, the major explanatory variable, we have to decide on t . Since 1999, Taiwan has been using the calendar year as the fiscal year, so the Executive Yuan must submit the budget to the Legislative Yuan four months before the start of the calendar year.³³ Since the president is inaugurated on May 20 and appoints the premier thereafter, the government can only submit the budget for the subsequent year. For example, after Chen Shui-bian was reelected president in 2004, the budget submitted in September 2004 by the DPP premier was for the 2005 fiscal year. This time lag suggests that the budget for the election year will have been proposed to the Legislative Yuan a year earlier, that is, in 2003 and 2007 in the DPP examples.

We are interested in the change rate of the DPP's vote share in the presidential elections of 2004 and 2008:

$$\Delta \text{PRESIDENTVOTE} = (\text{PRESIDENTVOTE}_t - \text{PRESIDENTVOTE}_{t-4}) / (\text{PRESIDENTVOTE}_{t-4}),$$

³³The 1999-2000 fiscal year started on July 1, 1999, and ended on December 31, 2000.

Table 4-1
Change Rate of DPP's Presidential Vote Share by County/City, 2001-2003 - I

Dep. Variable = $\Delta \text{PRESIDENTVOTE}_{00-04}$	Coef.	Std. Err.	<i>t</i>	<i>p</i> -value
$\Delta \text{DEPENDENCE}_{01-03}$	-0.1051	0.0685	-1.53	0.141
HEAD	-0.0853	0.0343	-2.49	0.022
_cons	0.3276	0.0310	10.57	0.000
Number of obs	23			
F(2, 20)	5.91			
Prob > F	0.0096			
Adj R-squared	0.3087			

Note: Kinmen and Matsu are excluded.

Source: Author's calculation.

where PRESIDENTVOTE_t and $\text{PRESIDENTVOTE}_{t-4}$ are variables describing the DPP's presidential vote shares in year *t* and *t*-4 in each township. Additionally, HEAD indicates whether the county/city government is headed by the DPP or not (1 = yes; 0 = no).

Tables 4-1 to 4-3 show the results. The tables present three ways of counting the fiscal years. The change rates of grant dependence from 2001 to 2003 and from 2005 to 2007 are pre-electoral promises because they cover the election-year effect of the grants proposed by the DPP premier to the Legislative Yuan before the presidential election. The change rate from 2001 to 2004 is interesting, as it signals the post-election reward pledged by Chen Shui-bian in the election year. This promise can be logically deduced from the principal-agent game: local agents betting on Chen to win hoped that he would deliver the extra grants *after* they helped him win, and Chen should have made this promise to get their votes.

These results validate Hypothesis 1.³⁴ According to table 4-1, the

³⁴Ming-hung Yao, "Woguo yibanxing yu jihuaxing buzhuquan fenpei zhi zhengzhi jingji fenxi" (The political-economic analysis of the allocation of general and specific grants in Taiwan), *Taiwan minzhu jikan* (Taiwan Democracy Quarterly) (Taipei) 9, no. 4 (December 2012): 191-225. This source also discusses the effect of government grants on election results, but does not consider the choices of local agents regarding candidates with different winning odds.

Table 4-2

Change Rate of DPP's Presidential Vote Share by County/City, 2001-2004 - II

Dep. Variable = $\Delta\text{PRESIDENTVOTE}_{00-04}$	Coef.	Std. Err.	<i>t</i>	<i>p</i> -value
$\Delta\text{DEPENDENCE}_{01-04}$	-1.7301	0.2979	-5.81	0.000
HEAD	-0.0092	0.0264	-0.35	0.732
_cons	0.0024	0.0633	0.04	0.970
Number of obs	23			
F(2, 20)	28.25			
Prob > F	0.0000			
Adj R-squared	0.7124			

Note: Kinmen and Matsu are excluded.

Source: Author's calculation.

Table 4-3

Change Rate of DPP's Presidential Vote Share by County/City, 2005-2007 - III

Dep. Variable = $\Delta\text{PRESIDENTVOTE}_{04-08}$	Coef.	Std. Err.	<i>t</i>	<i>p</i> -value
$\Delta\text{DEPENDENCE}_{05-07}$	-0.0645	0.0066	-9.82	0.000
HEAD	0.0254	0.0077	3.30	0.004
_cons	-0.1902	0.0038	-50.40	0.000
Number of obs	23			
F(2, 20)	98.62			
Prob > F	0.0000			
Adj R-squared	0.8987			

Note: Kinmen and Matsu are excluded.

Source: Author's calculation.

coefficient of $\Delta\text{DEPENDENCE}$ displays the expected sign, although the level of significance is not very strong. In table 4-2, $\Delta\text{DEPENDENCE}$ becomes a very significant explanatory variable, revealing the strategy taken by the central government to improve Chen's winning odds by increasing dependence on grants in some areas. Before Chen was reelected in 2004, the signs of the coefficient of HEAD are negative. Evidently, Chen gave the non-DPP magistrates (mayors) additional grants to draw in

swing voters living in their domains. The coefficient of HEAD becoming positive in 2008 reveals Chen's new plan after the probability of the DPP winning the presidential election in 2008 had diminished: local agents in non-DPP regions were no longer reliable, so a shift of grants to DPP-controlled counties (cities) gave these local heads the resources to promote policies conducive to the formation of a pro-DPP identification (see table 4-3).³⁵ Indeed, southern Taiwan—where most of the local governments were administered by the DPP—became the DPP's stronghold after 2004 even though the party faltered in the 2008 presidential election. In the 2008 MMM election, the DPP obtained 60.84 percent of the plurality-tier vote in southern Taiwan, in sharp contrast to its 38.17 percent share of the nationwide plurality-tier vote. In comparison, the DPP won only 37.69 percent of the legislative votes cast in southern Taiwan in 2004.³⁶

This transition took place in tandem with Taiwan's electoral reform. The assumption that the opportunity cost of resources varies with electoral system is corroborated by an empirical study showing that the demand for grants and the expectations of legislators are both negatively correlated with district magnitude.³⁷ This pattern implies two results. First,

³⁵Some notable events may have sent signals to the local agents before they made their decisions. Many people who were not traditional DPP supporters participated in the defensive referendum initiated by Chen Shui-bian in 2004. Chen was soon discredited by allegations of corruption after he was reelected and the DPP's chances of winning the subsequent presidential election soon diminished. For how the referendum affected Chen's approval rating, see Chia-hung Tsai, Yung-ming Hsu, and Hsiu-tin Huang, "Liangji hua zhengzhi: jieshi Taiwan 2004 zongtong daxuan" (Bipolarizing politics: explaining the 2004 presidential election in Taiwan), *Xuanju yanjiu* (Journal of Electoral Studies) (Taipei) 14, no. 1 (May 2007): 1-31.

³⁶Since SNTV was used in 2004, one may want to add the vote share of the TSU. Given that the TSU's nationwide vote share was 8.28 percent in 2004, the total vote share of the pro-independence parties in southern Taiwan was still far less than the DPP's share in 2008.

³⁷Ching-Jyuhn Luor, "Xiaoguimo lifaweyuan xuanqu de fenpei zhengzhi: xuanmin duiyu buzhu liyi de qidai" (Distributive politics in small districts under the SNTV system in Taiwan: the expectation of constituencies on pork barrel), *Taiwan minzhu jikan* (Taiwan Democracy Quarterly) (Taipei) 5, no. 4 (December 2008): 47-85; and Ching-Jyuhn Luor and Ying-shih Hsieh, "Xuanqu guimo yu lifaweyuan fenpei zhengce ti'an de guanlian xing yanjiu: di san, si jie lifayuan de fenxi" (The association of district size and pork barrel related bills initiated by legislators: an analysis of the 3rd and 4th Legislative Yuan in Taiwan), *Xingzheng ji zhengce xuebao* (The Journal of Public Administration and Policy) (Taipei), no. 46 (June 2008): 1-48.

under SNTV, a multimember district system, the opportunity cost for the central government to satisfy local demand goes down with the winning threshold. Second, the opportunity cost of grants is maximized under the plurality tier of MMM.³⁸ It happens that, when MMM was first used in 2008, the DPP was unlikely to win the presidential election again. As an alternative, reserving preferential grants for the DPP-dominated regions facilitated the cultivation of the party's potential supporters. This explains why HEAD has a positive and significant sign between 2005 and 2007.

Where Are the DPP's Legislative Strongholds?

Hypothesis 2 posits a relationship between resource allocation and MMM elections. According to the empirical study cited above, the plurality tier of MMM, as an FPTP system, imposes a high opportunity cost on grants because each constituency is represented by only one legislator. The president is thus financially constrained when he/she faces legislators elected under MMM. Meanwhile, there is such an obvious gap in the vote-getting capacity of the KMT and the DPP in the presidential election that neither has a strong incentive to attract swing voters, who can hardly change the distribution of votes for presidential candidates. Both of these factors compel the two parties to win over their potential supporters rather than to attract swing voters.

In addition to grants, legislators can serve their constituents by mediating actions taken by the local government or claiming credit for the particularistic policies they bring home; in both cases, magistrates/mayors play an important role. MMM strengthens this incentive—as the sole

³⁸The negative correlation between district magnitude and demand for pork barrel legislation is amply confirmed. See Valerie Heitshusen, Garry Young, and David M. Wood, "Electoral Context and MP Constituency Focus in Australia, Canada, Ireland, New Zealand, and the United Kingdom," *American Journal of Political Science* 49, no. 1 (January 2005): 32-45; Ying-chieh Lai and Hongwung Wang, "Liwei xuanzhi gaibian dui zhiding yongtu buzhukuan fenpei zhi yingxiang: diwujie yu diliujie de bijiao" (The impact of the legislative electoral system changes on earmarked distribution: comparison between the fifth and the sixth Legislative Yuan in Taiwan), *Dongwu zhengzhi xuebao* (Soochow Journal of Political Science) (Taipei) 31, no. 1 (2013): 53-104.

representative of an electoral district, a legislator is mandated to bring investments and jobs to his/her constituency. Nevertheless, the principal-agent model exposes the politics behind the distribution of grants as well as resources in general.

Local agents may still play critical roles in the elections for local heads and legislators even if their impact on the presidential race is limited. The winning odds of the competitors and the competitiveness of the elections determine how the resources are to be allocated, and to whom. By focusing on the MMM elections, Hypothesis 2 uses the DPP's legislative performance as the baseline to test how much the DPP's vote shares shift by the partisan background of the local head. We expect that if the legislative contenders and local head belong to the same party, the district is relatively safe and material resources can help win over potential supporters and expand the party's absolute base; if they are from different parties, the district is competitive and both sides will rely on resources to grab swing voters. Although it is difficult to make a direct observation concerning resource allocation in the sub-county/city units, the consequences for them can be inferred from the spatial distribution of the legislative vote. By this logic, we expect to see a significant growth in the DPP's legislative vote in DPP-headed areas, and in KMT-headed areas, the DPP's legislative vote share should be higher than that of its presidential candidate.

The first test is how the DPP's overall legislative performance is affected by the partisan background of the local head after the adoption of MMM. Evidence indicating how areas under the DPP's governance are positively correlated with growth in its legislative vote share was presented in table 2. This result can be attributed to infrastructure-building aimed at promoting pro-DPP policies, the foundation of which was laid during Chen Shui-bian's second term. For potential supporters living in a DPP county/city, the magistrate/mayor can build physical structures conducive to the formation of their partisan consciousness, especially when the recipients are Hoklos.³⁹ This is an understandable outcome, for

³⁹For a study on the relationship between the DPP's vote share and ethnicity, see Yung-ming

a Hoklo is more likely to have a long family history in Taiwan and have some traumatic memories of the authoritarian past.

The flip side of Hypothesis 2 is that the DPP's legislative performance may differ if the legislative district is in a KMT-controlled county/city. A recent study shows that the lower the administrative level of the election, the less its outcome depends on party identification.⁴⁰ The average population of Taiwan's twenty-five counties is about 2.92 times that of the seventy-three legislative districts. It is thus likely that the legislative elections, although electing national delegates, are quite local. In particular, a region electing a DPP legislator and a KMT magistrate (mayor) is by nature competitive, allowing swing voters to play a decisive role. Thus, we expect swing voters in these districts to be split-ticket voters.

This conjecture is supported by the correlation between the DPP's vote shares in legislative and presidential elections. As shown in table 5, the correlation coefficients for presidential elections are all very high, but those for legislative elections are at least 20 percent lower. The party's legislative vote must include a considerable number of non-DPP voters who change their choices between elections. Most likely, they are split-ticket voters whose decisions are influenced by the benefits offered by the candidates. This kind of incentive should be stronger in KMT-controlled counties/cities because they include non-DPP voters who are immune to the ideological indoctrination of the DPP head. For this reason, the DPP's vote share in legislative elections should be higher than it is in presidential elections in KMT-controlled areas.

The partisan affiliation of local heads is an important independent variable because it affects how resources are to be distributed. Before

Hsu and Chang-ping Lin, "'Nanfang zhengzhi' de zai jianyan: zongtong xuanpiao de fenliang huigui fenxi" (Reexamining "southern politics" in Taiwan), *Xuanju yanjiu* (Journal of Electoral Studies) (Taipei) 16, no. 1 (May 2009): 1-35.

⁴⁰See Yi-ching Hsiao and Chi Huang, "Shizheng biao xian zai butong cengji difang xuanju zhong de yingxiang: 2009 nian Yunlin xian xianzhang ji xiangzhenshizhang xuanju de fenxi" (Government performance and voter choice in local elections: The case of the 2009 Yunlin county and township magistrate elections), *Xuanju yanjiu* (Journal of Electoral Studies) (Taipei) 18, no. 2 (November 2011): 59-86.

Table 5
Correlation of the DPP's Vote Share in Presidential and Legislative Elections

	Leg_01	Leg_04	Leg_08	Leg_12	Pre_00	Pre_04	Pre_08	Pre_12
Leg_01	1	0.63	0.65	0.63	0.67	0.65	0.65	0.64
Leg_04		1	0.69	0.58	0.64	0.63	0.63	0.62
Leg_08			1	0.77	0.79	0.78	0.79	0.78
Leg_12				1	0.83	0.84	0.84	0.84
Pre_00					1	0.97	0.98	0.96
Pre_04						1	0.99	0.98
Pre_08							1	0.99
Pre_12								1

Notes: Unit of analysis: vote share in each township. Figures are Spearman's rho coefficients. Pre = Presidential; Leg = Legislative Yuan.

Source: Calculated from Central Election Commission.

examining how the partisan factor explains the different vote shares of the DPP in legislative and presidential elections, we define the gap as:

$$\text{SURPLUS}_t = \text{LEGISLATORVOTE}_t - \text{PRESIDENTVOTE}_t,$$

where the two independent variables indicate the DPP's legislative vote share and presidential vote share in a particular township in year t . One should be cautious about correlating LEGISLATORVOTE_t and PRESIDENTVOTE_t with SURPLUS_t because these two variables can be endogenous to SURPLUS_t . To obtain a more unbiased estimate of LEGISLATORVOTE_t , we can run a two-stage least squares regression. In the first stage, we use SOUTH (southern townships) as an instrumental variable and regress LEGISLATORVOTE_t on SOUTH, HEAD_t , and TOTAL_t . Then we obtain PREDICTVOTE_t , the predicted value of LEGISLATORVOTE_t , and estimate the following equation:

$$\text{SURPLUS}_t = \beta_0 + \beta_1 \text{HEAD}_t + \beta_2 \text{TOTAL}_t + \beta_3 \text{PREDICTVOTE}_t,$$

where β_i is the coefficient of explanatory variable i . In a two-stage regression, we expect β_3 to have a positive sign; the other independent variables,

β_1 and β_2 , should both have negative effects on $SURPLUS_t$.

Note that the average $SURPLUS$ across townships is quite small: it was -2.39 percent in 2008 and 0.81 percent in 2012. It is thus interesting to see which townships have the highest $SURPLUS_t$ and how much it is related to $HEAD_t$. The results are reported in tables 6-1 and 6-2. For the elections of 2008 and 2012, the coefficients of all independent variables display the expected signs. First, $TOTAL_t$ has negative and significant effects on $SURPLUS_t$, suggesting that the DPP's legislative nominees performed better in the less populated areas. Second, for both elections, $SURPLUS_t$ increases with $PREDICTVOTE_t$, the DPP's predicted legislative vote shares. One implication of this is that the legislative election is intrinsically local, making it likely that a DPP nominee with solid local connections will garner votes for him/herself but not necessarily for the party's presidential candidate. If local connections have to be cultivated by delivering resources, we have evidence corroborating the principal-agent model. Third, and most important, partisan affiliations play the expected role: the coefficient of $HEAD_t$ is negative in both elections, suggesting that the average performance of the DPP's legislative candidate is better than the party's presidential candidate if the district is in a KMT-administered area. If we rank $SURPLUS_t$ in descending order, at least half of the top thirty townships are outside southern or central Taiwan, where the DPP's absolute vote shares are high. Especially noteworthy are the eastern Taiwan townships that are heavily dominated by the KMT—in 2008, six of the top thirty were in Hualian County; in 2012, nine were in Taitung County.

The fundamental question concerns why, in a KMT-controlled region, some voters support the DPP's legislative candidates but endorse the KMT's nominees in elections at other administrative levels. The answer can be found in the principal-agent game: the local agent should have calculated the winning odds of the candidates for magistrate (mayor) elections and made a rational decision. We cannot read the minds of agents before the campaign starts, but we can infer the calculation from the outcome of the election: despite the limited number of party identifiers, almost all the winners received majority support in the elections for mag-

Table 6-1**Two-stage Least Squares Regression of the DPP's Surplus Legislative Vote, 2008**

Dep. Variable = SURPLUS ₀₈	Coef.	Std. Err.	<i>t</i>	<i>p</i> -value
TOTAL ₀₈	-9.82e-07	3.03e-07	-3.24	0.001
HEAD ₀₈	-0.2746	0.0686	-4.01	0.000
PREDICTVOTE ₀₈	2.0523	0.5614	3.66	0.000
_cons	-0.6923	0.1859	-3.72	0.000
Number of obs	332			
F(3, 328)	7.25			
Prob > F	0.0001			
Adj R-squared	0.0536			

Source: Author's calculations.**Table 6-2****Two-stage Least Squares Regression of the DPP's Surplus Legislative Vote, 2012**

Dep. Variable = SURPLUS ₁₂	Coef.	Std. Err.	<i>t</i>	<i>p</i> -value
TOTAL ₁₂	-4.08e-07	1.02e-07	-3.99	0.000
HEAD ₁₂	-0.2377	0.0787	-3.02	0.003
PREDICTVOTE ₁₂	1.4990	0.5004	3.00	0.003
_cons	-0.5696	0.197	-2.89	0.004
Number of obs	354			
F(2, 350)	6.51			
Prob > F	0.0003			
Adj R-squared	0.0447			

Source: Author's calculations.

istrate (mayor). In this sense, swing voters should have been vital for the office-holders, and the winners should have made a credible commitment to deliver resources to these agents, who would have returned the favor with votes. The fact that some of the agents cast their legislative ballots for the DPP shows that they are grant-seekers rather than party identifiers. In brief, these areas are competitive, and swing voters maximize their gains by supporting contenders nominated by different parties.

In sum, lawmaking is national but legislative elections are quite local. MMM has made the individual legislator the sole representative of his/her electoral district and has increased the importance for legislative contenders to serve the majority of their constituents. By utilizing their legislative powers, legislators can bargain with executive heads at different administrative levels in order to acquire public resources for their districts. Swing voters are especially sensitive to what they can get from legislative contenders, and voters' evaluation of legislators tends to rise as they deliver more grants. MMM has thus reinforced the importance of resource allocation in Taiwan's local politics. The exchange of interests between principal and agent works well in the competitive districts, even if we cannot easily observe this relationship at the national level.

Conclusion

Political behaviors are shaped by party identification and issue position, but the result of an election can be determined by nonpartisan factors, especially when the proportionality of an electoral system is low. We have opted to study the impact of resource allocation on the DPP's legislative performance exactly because Taiwan is ideologically polarized. We want to demonstrate that resources delivered to swing voters play a critical role even in a society torn apart by disputes over national identity. We focus on the DPP, the major opposition party, to show that resource allocation is more complicated than partisan factors can explain. The major proposition is that agents exchange votes for resources only when office-seekers cannot win the election without receiving their help. This logic explains why the pattern of vote mobilization differs between SNTV and MMM: when SNTV is used, the affordable opportunity cost of grants and the likelihood of retaining the presidency allow the president to exchange preferential resources for votes from swing voters; when MMM raises the opportunity cost of resource allocation and the probability of retaining the presidency diminishes, the president ceases to deliver these grants. When the DPP no longer controls the presidency, the logic of resource allocation

tion still works at the local level. The party's legislative contenders campaigning in DPP-controlled areas choose to pool resources with the DPP's local head to expand their support base. When the DPP wins a legislative seat in a KMT-held location, both parties pay attention to swing voters; as a result, the DPP's legislative vote is generally higher than that of the party's presidential candidate.

These hypotheses are verified by empirical data. The DPP's example demonstrates two contradictory effects of resource allocation: on the one hand, it can help the incumbent stay in office; on the other hand, local agents always have the incentive to defect. What we see from 2004 to 2008 is the second type of equilibrium: the DPP government would not provide preferential grants to agents who were ready to jump on the KMT presidential candidate's bandwagon. Nevertheless, swing voters still play an important role in local elections because some local heads require their support to prolong their political lives. Given this trend, a follow-up question concerns the DPP's prospects in future elections. Some variables that are relatively robust can be treated as parameters for forecasting the DPP's performance.

First, safe districts will be made safer. When explaining the change in the DPP's vote share, the coefficients for central and southern Taiwan are 0.0553 and 0.0583, respectively—in other words, almost indistinguishable. This implies that legislative candidates campaigning in central and southern Taiwan have better vote-getting ability than their counterparts in other areas. In another model, the positive coefficient of HEAD suggests that, when compared with areas under the KMT's control, counties/cities governed by the DPP contribute to the growth of the party's legislative vote share by 3.56 percent. This outcome can be attributed to resource-induced socialization. One can make a similar argument for the KMT in KMT-controlled areas. The two parties are thus reinforcing their respective strengths in their strongholds.

Second, when examining where DPP legislative contenders perform better than their party's presidential candidate, the data in tables 6-1 and 6-2 reveal an immense difference between areas controlled by the DPP and those controlled by the KMT, implying that swing voters who stand

between the two parties play a crucial role. If the KMT adopts a similar strategy, more resources will be prepared to attract the swing voters in the DPP-controlled areas. Competitive districts will thus become more competitive.

Third, the results of elections for magistrates (mayors) are becoming more important for the outcome of legislative races. We have seen how MMM makes safe districts safer and competitive districts more competitive, thereby enhancing the mediating role of local executive heads. We have also found that a party's legislative candidates tend to outperform its presidential candidate in areas controlled by another party. It is likely that the DPP and the KMT will devote a significant amount of resources to preventing the other side from monopolizing split-ticket votes. This tendency is strengthened by MMM because the legislator, now the only representative of his/her district, can hardly secure a seat without paying attention to swing voters.

If the two parties try equally hard to prevent split-ticket voters from being won over to the other side, the final result of the election will still hinge on the stronghold of each party. While the DPP's safe districts will still be in southern Taiwan and the KMT's stronghold will remain the north, central Taiwan will become the most competitive area. The demographic profiles of central and southern Taiwan are similar but local factions are more active in the center; the chances of the DPP winning an election for magistrate (mayor) in central Taiwan is not particularly high, but the data in table 2 show that there has been a significant growth in the party's legislative vote in this area. Most likely, local factions in central Taiwan will become vital players in the upcoming legislative elections.

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