

# Partisan and Personal Voting in SNTV: A Mixed Logit Model<sup>\*</sup>

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## Abstract

There are reasons to believe that both partisan and personal factors should be important in the voting decision in SNTV elections, but this has not been rigorously tested in previous literature. This paper presents evidence that both types of factors have significant impacts, but partisan factors are much more powerful than personal factors. In general, partisan factors dominate the candidate vote choice, and personal factors serve primarily as tiebreakers among candidates from the same party. Moreover, the importance that voters place on personal factors varies in different partisan contexts, and there is generally a partisan logic to these varying weights.

Methodologically, this paper proposes mixed logit as an appropriate tool for modeling voting choices in SNTV and examines data from the five legislative elections in Taiwan from 1992 to 2004.

Keywords: Single non-transferable vote (SNTV), mixed logit, vote choice

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A large body of research on the Single non-transferable vote (SNTV) system in the electoral systems literature stresses both the important roles that political parties play and the incentives it creates for candidates to create a personal vote. Surprisingly, there is not a correspondingly rich literature on SNTV in the voting behavior subfield. Although SNTV was used to elect national legislatures for several decades in Japan and Taiwan and numerous surveys were conducted during these election campaigns, there is very little knowledge of how vote decisions are made at the individual level. Even among the few papers that have tackled the subject, there is very little empirical evidence to support proposed theories. The main problems are methodological. On the one hand, it is impractical to collect good data on each respondent's views of each candidate. On the other hand, standard regression models are not appropriate for modeling vote choice in SNTV. As a result, scholars have eschewed attempting to build and test a comprehensive model of vote choice in SNTV, often opting instead to study more tractable vote choices in single seat executive elections.

This paper breaks through the bottleneck by presenting a mixed logit model of vote choice in SNTV. Substantively, this model shows that both partisan and personal factors are, in fact, important correlates of the vote. Of the two, partisan factors are generally dominant. For most voters, the critical question is the party affiliation of the candidates. Personal factors are significant, but they generally serve to break ties among party nominees. This is consistent with Richardson's (1988) partisan umbrella model. However, significant degrees of heterogeneity exist, and there are voters for whom personal factors are more important than partisan factors. Even more interestingly, the line between partisan and personal factors is not always clear. What are normally considered to be personal factors, such as a candidate's local or ethnic appeal, can have different effects in different partisan contexts. This implies that voters do not evaluate all candidates by the same standards; a voter's partisan preferences can affect how she judges different candidates. Methodologically, this paper argues that vote choice in SNTV can be modeled using mixed logit regressions. While this paper can only begin to delve into the complexities of voting behavior in SNTV, it can at least show the way forward.

## I. Vote Choice in SNTV

SNTV is one of the world's major electoral systems. It is currently used for national

legislative elections in Afghanistan, Vanuatu, Japan,<sup>1</sup> and Taiwan,<sup>2</sup> and it has previously been used in Korea, Jordan, and Thailand. In addition, Colombia previously used a system that was de facto SNTV. Moreover, Taiwan and Japan still use SNTV to elect almost all local assembly seats. Understanding how voters make choices in SNTV elections will confer a much richer understanding of how politics operate in a wide range of political settings, both in the past and into the future.

The literature on vote choice in SNTV focuses on two main questions. First, do voters base their choice primarily on party preference or do they evaluate candidates individually? Second, do voters make their choice in stages? If so, what are the stages, and do different groups of voters follow different models of vote choice?

In the electoral systems literature on SNTV, it seems clear that both party and candidate should matter. Relative to other electoral systems, SNTV creates strong incentives for candidates to create a personal vote (Carey and Shugart 1995). Because parties often nominate multiple candidates in the same district, nominees cannot rely solely on their party label to win (Ramseyer and Rosenbluth 1993). To deal with this challenge, they differentiate themselves from other members of their party through their committee assignments (Batto 2005; McCubbins and Rosenbluth 1995; Tsai 2005), raise money through different channels (Cox and Thies 1998), do extensive constituency service (黃秀端 1994), maintain extensive personal organizations (Bouissou 1999; Curtis 1971), and focus on different geographical parts of their electoral district (Liu 1999). At the same time, the literature stresses that political parties play important roles in the elections. They have to be able to estimate the party vote in advance to nominate the appropriate number of candidates (Batto and Kim 2012; Cox and Niou 1994; Cox and Rosenbluth 1994), which implies that parties can count on a certain level of recurring support. Sometimes parties instruct supporters how to vote to ensure an even vote distribution among nominees (Liu 1999; 游清鑫 1996) or voters do this on their own (Batto 2008).

In the voting behavior literature, this question of the relative importance of parties and candidates has been framed in the question of stages. Do voters look at all the candidates at once and make a decision, or do they make this decision in stages? Most authors argue that voters make the decision in stages. In the first stage, voters narrow the field to a few choices, and in the second stage, they choose a specific candidate from among the remaining candidates. However,

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<sup>1</sup> 146 of the 242 seats in Japan's upper house are elected by SNTV.

<sup>2</sup> 6 of the 113 seats in Taiwan's legislature are elected by SNTV.

authors disagree on how the filter in the first stage works. Richardson (1988) suggests that voters choose a party in the first stage and a candidate from that party in the second stage. This partisan umbrella model is perhaps the most well-known model of vote choice in SNTV. Tsai (2008) takes this model one step further. He argues that voters first choose which camp they support, and then they choose a party from within that camp. He only discusses those two stages, but this implies a third stage in which voters choose a candidate.

Miyake (1999) proposes an entirely different first stage. Miyake argues that voters evaluate all candidates in the first stage. Critically, party and personal factors are not considered to be clearly distinct. Rather, a candidate's party affiliation affects how the voter evaluates her. That is, partisan preference is embedded within the candidate evaluations. Miyake's second stage takes place late in the race, when voters adjust their previous evaluations based on the candidates' campaign efforts. In this latter stage, individual candidate qualities are more important, especially when a party nominates more candidates.

Chu (朱雲漢 1996) suggests that four different models operate simultaneously. Voters can (a) choose party, then candidate, (b) choose only party and then ration their vote according to party directives or their own judgment, (c) choose party and candidate simultaneously, or (d) not consider party at all but choose only on the basis of candidate qualities. Which model a particular voter uses depends on her partisan preferences and her level of information.

While these various models all have a degree of plausibility, they are largely untested. No author has directly examined which candidates are actually filtered out in the first stage or even if such a stage exists. Rather, all empirical investigations look only at the final vote choice. Moreover, the dependent variable in many studies is not the actual candidate chosen but merely her party affiliation. Tsai (2008), Tsai and Hsu (2005), and Chu (朱雲漢 1996) all look only at party votes. Needless to say, it will be difficult to find any evidence of personal votes if one does not look at individual candidates. Miyake (1999) does consider individual candidates, but he only uses crude crosstables and can only consider two or three variables at a time in his analysis of the 1983 Japanese election. Richardson's (1988) paper studying the 1976 Japanese election using a path analysis model is the only one I have found published in English or Chinese that includes a multivariate model of individual candidate choice. However, Richardson's model is not ideal. Specifically, his model ignores the fact that voters in different areas faced different choice sets.

There are two methodological difficulties responsible for the absence of multivariate statistical models of vote choice in SNTV. One is data collection. A good model requires

measures of each candidate's personal qualities and issue positions. Even if there are only two or three questions on each candidate, collecting that data quickly becomes prohibitive when there are a dozen or two candidates. Moreover, if the ideas about filtering are correct, respondents may not have strong opinions about most of the candidates, leading to a string of missing responses. Further, it is difficult to study the effect of purely local controversies, since these might be different in different parts of the country. Japanese scholars have collected data on individual candidates, but Taiwanese scholars have not. Perhaps this is because data collection would be much more difficult in Taiwan, which has larger districts and therefore far more candidates per district. The second major difficulty is that voters in different districts face different choice sets. Most statistical models require that all respondents face the same set of choices. This is the main reason that many scholars have chosen to study party choice. If the number of candidates in each district varies, at least voters have (more or less) the same set of parties to choose from.

This paper does not seek to comprehensively resolve all these theoretical debates or remedy all these methodological difficulties. Rather, the aim is to take a first step in those directions. Substantively, I set aside questions of stages and which voters use which models for later investigation. Here, I seek to establish a more basic set of findings. First, partisan factors dominate most voting decisions. Second, personal factors are also important in vote choice. Third, the importance of personal factors can vary depending on the electoral context. Supporters of different parties weigh personal factors differently, and these different weights are usually related to or consistent with an identifiable party interest. In other words, what might appear to be personal voting could actually include a heavy dose of partisan voting. While the overall picture does not necessarily contradict Miyake or Chu, it comes closest to Richardson's vision of voting in SNTV. Methodologically, I set aside the problem of collecting appropriate survey data to measure respondents' evaluations of each candidate. However, I resolve the problem of differing choice sets by pointing out that mixed logit is an appropriate model for vote choice in SNTV.

## II. Mixed Logit

Assume an individual ( $q$ ) faces a choice with  $i$  alternatives. The utility of each alternative is defined<sup>3</sup> as

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<sup>3</sup> In this paper, I have tried to follow Hensher and Greene's notation as closely as possible. Equations 1

$$U_{iq} = \beta'_q X_{iq} + e_{iq} \quad (1)$$

where  $\beta'_q X_{iq}$  represents the explanatory variables and  $e_{iq}$  is an error term. In standard logit models,  $e_{iq}$  is assumed to be independent and identically distributed (IID), which in turn implies that the choices are independent of irrelevant alternatives (IIA). In fact, the IIA assumption is a major sticking point for SNTV elections, since it implies that there are no correlations across alternatives. For example, when a party nominates a second candidate in a district, this might affect how a voter evaluates the first party nominee. Indeed, this is a basic premise of strategic voting.<sup>4</sup> Mixed logit relaxes the IIA assumption by splitting the error term  $e_{iq}$  into two parts.

$$U_{iq} = \beta'_q X_{iq} + \eta_{iq} + \varepsilon_{iq} \quad (2)$$

$\varepsilon_{iq}$  is assumed to be IID, while  $\eta_{iq}$  can take on any distributional form. In other words, mixed logit models the non-stochastic portion of the error term as  $\eta_{iq}$ , and it is generally assumed to take on some common distribution, such as normal, lognormal, or triangular.

If we specify the distribution of  $\eta$  as  $g(\eta|\Omega)$ , the probability that individual  $q$  selects alternative  $i$ , conditional on  $\eta$ , is given by

$$P(i|\eta) = \frac{e^{\beta'X_i + \eta_i}}{\sum_{k \in I} e^{\beta'X_k + \eta_k}} \quad (3)$$

If the original error terms  $e_{iq}$  in equation (1) are in fact IID,  $\eta_{iq}$  will be zero and mixed logit will be reduced to a standard multinomial logit model. Since  $\eta$  is not known, the logit probability

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and 2 of this paper are taken from Hensher and Greene (2003, 4). Equations 3 and 4 of this paper are adapted from Glasgow (2001, 122).

<sup>4</sup> To be more specific, suppose there are ten candidates, and the voter chooses candidate C. If her least favored candidate, candidate F, withdraws, it would be a violation of IIA for her to then change her choice to candidate D. However, this is precisely the type of change that happens routinely in SNTV elections. Depending on expectations about how appropriately one's favored party has nominated and will apportion votes to each nominee, a voter may choose to vote sincerely or strategically. Adding or subtracting one more nominee, even one that the voter would not consider supporting, to the mix may change these calculations. Further, voters might even look at whether the other side has nominated and will ration votes appropriately before making such a decision. Thus, the withdrawal of candidate F might lead the voter to decide that all of the other major party's nominees will have sufficient votes to win and some of the nominees from her most favored party will lose, leading her to change her vote from candidate C, who she doesn't particularly like but judges to be on the fringes of victory, to candidate D, a candidate she prefers to candidate C. For evidence that these types of decisions actually do occur in Taiwanese legislative elections, see Batto (2008).

is integrated over all values of  $\eta$  and weighted by the density of  $\eta$ . This yields the mixed logit model:

$$P(i) = \int_{\eta} \left[ \frac{e^{\beta' X_i + \eta_i}}{\sum_{k \in I} e^{\beta' X_k + \eta_k}} \right] g(\eta | \Omega) d\eta \quad (4)$$

This integral cannot be solved directly, so simulation techniques are used to obtain estimates for  $\beta$  and  $\Omega$ . (For more on the derivation of the mixed logit model, see Train (2009), Hole (2007), Hensher and Greene (2003), and Glasgow (2001).)

There are a few features of mixed logit worth special note here. First, the model does not assume that individuals face the same choice set. In fact, Hensher and Greene deliberately vary the choice sets in their example in order to yield more information with fewer cases. Moreover, they do not hold the number of choices constant, sometimes providing three alternatives and sometimes four (Hensher and Greene 2003). This is a critical point for modeling SNTV elections, since the number of alternatives varies dramatically, depending on how many seats are to be elected in each district and since a given party may nominate zero, one, or several candidates in a particular district. Second, mixed logit assumes that respondents are heterogeneous. Standard regression models provide mean coefficient estimate and assume that this coefficient applies to all respondents. Mixed logit further provides a standard deviation, so that we can estimate the degree to which individuals vary in their preferences for a particular attribute (Train 2009). Third, the mixed logit model requires intra-group variation. That is, a variable cannot be constant for any particular choice situation. Individual-specific variables, however, are constant for any given choice situation. For example, a female respondent is female for all alternatives. All respondents, both female and male, will choose exactly one alternative. Merely knowing that the respondent is female does not add any useful information. To include individual-specific variables in the model, the analyst must take one extra step and hypothesize how individual-specific variables will affect choice-specific variables. That is, the analyst must have some theoretical reason to believe that females will prefer some candidates over others and then operationalize the variable accordingly. This makes it more difficult than usual to include control variables in a model. In standard regression models, the analyst might not have any expectations for how a respondent's education, for example, might affect the dependent variable. However, he or she can still include education (and a host of other standard control variables) in the equation as an independent variable. In mixed logit, without any theoretical expectations, the analyst simply cannot define an

appropriate variable. This makes it far more difficult to include a standard set of control variables in each equation. Fourth, parameter stability depends in part on the complexity of the choice situation, the complexity of the model, and the number of random draws conducted. The general rule is that more draws are better, but very large numbers of random draws require prohibitive amounts of computer time. Hensher and Greene (2003) suggest that 100 draws is usually sufficient. However, voters in SNTV elections often face a dozen or two candidates, making it a relatively complex choice. All models presented in this paper were conducted with 1,000 draws.

Mixed logit has a few clear advantages over other discrete choice models. First, some other discrete choice models, such as multinomial logit and conditional logit, assume IIA (Glasgow 2001, 117-118). As noted above, there are good reasons to doubt whether the SNTV vote choice is IIA. Second, mixed logit allows for flexibility in modeling random taste variations. Random taste refers to different individuals placing different weights on particular variables. Some may think that a particular feature is extremely important, while others may not think it is important at all. Mixed logit has two advantages in this area. On the one hand, it estimates heterogeneity by calculating variances. On the other hand, mixed logit allows the researcher to assume a wider range of distributions than multinomial probit. In multinomial probit, the modeled portion of the error term is always assumed to be distributed multivariate normal while in mixed logit it is allowed to take on any distribution. This is especially useful when the theoretical expectations are that the values should all be positive or bounded. Thus mixed logit is a more general model than multinomial probit (Glasgow 2001, 118-122; Train 2009, 137-139). Third, the ability to allow for different choice sets for different respondents is a big advantage. Multinomial logit, for example, assumes that all respondents face the same choice set. As such, even assuming the analysts is not bothered by the IIA assumption, multinomial logit can only be used in very specific situations, such as when all the respondents vote in the same district or when the analyst is only interested in party votes. Conditional logit allows for different choice sets, conditional on a first stage choice. However, applying conditional logit to SNTV election would require the very odd assumption that voters first choose which district they want to vote in and then choose a candidate from that district. In sum, mixed logit offers both theoretical and practical advantages over other discrete choice models.



### III. Data and Variables

This paper studies voting in the five legislative elections held in Taiwan from 1992 to 2004. This covers all the elections conducted after democratization and before the electoral system was changed in 2005. For the 1992, 1995, and 1998 elections, I use studies conducted by the Election Study Center (ESC) at National Chengchi University.<sup>5</sup> For the 2001 and 2004 elections, I use Taiwan's Election and Democratization Study (TEDS).<sup>6</sup> Since the methodologies used for the ESC and TEDS surveys were very similar, I simply pool all the data together to obtain one big pool of respondents.

Since this paper is intended to analyze vote choice in SNTV elections, I only used respondents from districts electing more than one legislator. I also defined the respondents voting in the aboriginal districts as outside the scope of this paper. Aboriginal voters are fascinating and understudied, but they may base their votes on different factors than ethnic Han voters, such as tribe. Because aborigines account for less than 2% of the total population, surveys generally do not include enough cases to profitably study them.

The dependent variable in this paper is the respondent's vote. Nearly half of all respondents

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<sup>5</sup> The 1992 data were collected in the project, A Study of Voting Behavior and Political Democratization in Taiwan: The 1992 Election for the Members of the Legislative Yuan (NSC82-0301-H-004-034), directed by Yih-yan Chen. The 1995 data were collected in the project, A Study of Voting Behavior and Political Democratization in Taiwan: The 1995 Election for the Members of the Legislative Yuan (NSC84-2414-H-004-053-B2), directed by Yih-yan Chen. The 1998 data were collected in the project, Constituency Environment and Electoral Behavior: An Inter-Disciplinary Study on the Legislative Election of 1998 (NSC88-2414-H-004-017), directed by I-chou Liu. The Election Study Center at National Chengchi University is responsible for the data distribution, and the data can be accessed at ([esc.nccu.edu.tw](http://esc.nccu.edu.tw)). I am grateful to the ESC, Yih-yan Chen, and I-chou Liu for collecting the data and providing it to me. The views expressed in this paper are my own.

<sup>6</sup> Data analyzed in this article were from Taiwan's Election and Democratization Studies, 2001: Legislative Yuan Election Survey (TEDS2001)(NSC90-2420-H-194-001), and Taiwan's Election and Democratization Studies, 2004: Legislative Yuan Election Survey (TEDS2004L)(NSC93-2420-H-004-005-SSS). The coordinator of multi-year project TEDS is Professor Chi Huang (National Chengchi University). TEDS2001 is a yearly project on the Legislative Yuan election in 2001. The principal investigator is Professor Chi Huang. TEDS2004L is a yearly project on the Legislative Yuan election in 2004. The principal investigator is Professor I-chou Liu. More information is on TEDS website (<http://www.tedsnet.org>). The author appreciate the assistance in providing data by the institute and individuals aforementioned. The author are alone responsible for views expressed herein.

did not tell the interviewers which candidate they voted for, so I was unable to use those cases.<sup>7</sup> Of the 7,497 respondents in the original ESC and TEDS data sets, I was only able to use 3,935. Mixed logit uses an exploded data set format, with each alternative representing one line in the data set. Thus, if there were  $i$  candidates running in respondent  $q$ 's district, respondent  $q$  is represented by  $i$  lines in the final data set. Overall, the 3,935 respondents faced a total of 73,649 alternatives. The dependent variable was binary: one if the respondent voted for the candidate and zero otherwise.

The independent variables can be divided into two partisan and four personal variables. I define the party variable using the respondent's party ID and the candidate's party affiliation. These are used to create a dummy variable coded one if the two are the same and zero otherwise. For example, if a respondent identifies with the People First Party, then this variable is coded one for all PFP candidates and zero for all other candidates in her district. If the respondent does not express a party ID, this variable is coded zero for all candidates.

Politicians in Taiwan are commonly grouped into two broad camps. The blue camp is led by the KMT but also includes the PFP, the New Party, and most independents. The green camp is dominated by the DPP but also includes the TSU and a smaller number of independents. Tsai (2008) argues that voters first choose a camp, and then they make their final choice from candidates within that camp. If camp is indeed a critical component of the voting decision, it should have some impact beyond party. I create a dummy variable for camp that is similar to the one for party. Respondents are grouped by their party ID's. All respondents who identify with the KMT, PFP, or New Party are considered to prefer the blue camp. All who identify with the DPP or TSU are considered to prefer the green camp. Candidates who are affiliated with one of these five parties are classified in a similar manner. However, this leaves a large group of independent candidates, and many independent candidates can clearly be identified with one camp or the other. For example, in 1992 Chao Shao-kang (趙少康) and Wang Chien-hsuan (王建煊) ran as independents, but there was no question that they were part of the broader blue camp. Both were former cabinet members who had left the KMT and would soon co-found the New Party, and both were outspoken opponents of Taiwan independence. I have considered every independent candidate in the five elections and classified them as blue, green, or unclear. There is almost always an obvious classification. The politician may have recently quit or been

<sup>7</sup> The TEDS2004L questionnaire A did not ask which candidate the respondent voted for, so I was only able to use cases from questionnaire B.

expelled from one of the parties<sup>8</sup> or a family member may be affiliated with a particular party. For others, I have made a more subjective decision based on how they campaigned or behaved in the legislature or other political arenas. The classification of independents is further explained in the Appendix.

Note that the dummy variable for respondents and candidates from the same camp overlaps with the dummy variable for respondents and candidates from the same party. If they are from the same party, then, by definition, they are also from the same camp. However, not all respondent-candidate pairings from the same camp are also from the same party.

Theoretically, we believe that a candidate's personal factors should affect the respondent's vote choice. Ideally, personal factors would be operationalized with survey data, such as an evaluation of each candidate's issue positions, image, or personal contact with the respondent. However, collecting this data on each candidate would have been a logistical nightmare, and none of the five surveys I have access to undertook such a daunting task. In fact, to be useful for this paper, the five surveys would have had to collect exactly the same data.

Since I cannot operationalize a candidate's personal appeal through survey data, I instead look to demographics. Theories of descriptive representation suggest that voters prefer to be represented by politicians who are like them. If a politician shares a voter's background and experiences, he should also be more likely to share her values, understand her concerns, and expend more energy looking out for her and other members of their group. Thus, women prefer women, minorities prefer candidates from the same minority group, and people from a certain locality prefer other people from that same locality (Pitkin 1967). In addition to the idea that voters want to vote for candidates who are like them, descriptive characteristics can also be important in another way. When a voter has low levels of information about a candidate's stances on particular issues, she can use easily obtained descriptive characteristics to infer those stances (Popkin 1991). For example, an American voter might guess that a white male evangelical Christian candidate from rural Alabama is very conservative on social issues, and she might infer that a black female candidate from the poor areas of Los Angeles is quite liberal on economic policies. Perhaps the most common example from Taiwan is that Mainlanders are often believed

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<sup>8</sup> If a candidate left a party because he had a change of ideology and now favored the other side, then former party affiliation would not be an appropriate reason for classification in his former party's camp. However, most politicians who leave a party do so for more immediate personal interests. They generally have not switched ideological sides; they simply do not want to be subject to party discipline.

to support closer economic ties with China and eventual unification. Note that the use of descriptive measures of personal appeals rather than ideological or issue measures in this paper is due to expediency, not for theoretical reasons. I assume that voters evaluate a wide array of factors, but I can only obtain measures for a few of them. Further, I do not assume that all voters collect data on all variables for all candidates. Rather, I assume only that some voters will vote based on descriptive appeals. Because I can only operationalize a small portion of a candidate's personal appeal, this paper may be underestimating the effect of personal appeals, a point I will return to in the concluding section.

I investigate the effects of three different demographic variables, sex, ethnicity, and locality. Sex is the most straightforward. If the respondent and candidate are both the same sex, the dummy variable is coded one. If they are opposite sexes, the variable is coded zero.

People in Taiwan are generally grouped into four major ethnicities, Min-nan, Hakka, Mainlanders, and Aborigines. As noted above, I do not consider Aborigines in this study. Respondents' ethnicities are fairly straightforward. This question is asked in the surveys,<sup>9</sup> and almost all respondents provide an answer. Candidates' ethnicities are more difficult since there is no central database of politicians' ethnicities. I used newspaper reports to code candidates' ethnicities. I searched for each candidate in the online databases for the United Daily News, China Times, and Liberty Times, Taiwan's three biggest daily newspapers. I was able to find a reference to the candidate's ethnicity for almost all of the major candidates. For the candidates that I could not find, I asked friends and colleagues and sometimes found a consensus. Of the 1,752 relevant candidates, I coded an ethnicity for 1,340, including all the winners and most of the losers with significant numbers of votes. Using these, I constructed dummy variables for cases in which the respondents and candidates shared the same ethnicity.<sup>10</sup>

Localism is operationalized at the township level. Respondents' townships were obtained from the relevant digits in the id codes. Candidates' townships were obtained from the election notice (選舉公報) sent out to each voter in the days before the election. The election notice contains information on each candidate, including a picture, party affiliation, age, sex, address, educational and professional background, and political positions. I coded each candidate's

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<sup>9</sup> To be specific, respondents are classified by their father's ethnicity, as is the usual practice.

<sup>10</sup> There were 412 candidates whose ethnicity I was unable to identify. These candidates were coded as not being the same ethnicity as any respondents (same ethnicity=0 for all respondents).

hometown according to the address listed.<sup>11</sup> From this, I created a dummy variable coded one if the respondent and the candidate came from the same township.

In addition to these three demographic variables, I also considered one other easily obtainable measure of candidate quality, incumbency. Incumbency should be an advantage for two reasons. First, it is a signal of competence. Candidates have to persuade voters that they are capable of competent performance in office. It is usually easier for incumbents to make this argument since they have a record of achievements to point to. Incumbents who are seen as doing a good job can simply ask voters to allow them to keep doing what they are already doing. Second, incumbency is a strong signal for strategic voting. Strategic voters do not wish to waste their votes, so the first struggle for any candidate is to convince potential supporters that he or she has a credible chance of winning. Incumbents have an enormous advantage in this regard because they have actually won in the past. In light of this consideration, I do not consider all current legislators to be incumbents. Legislators who were elected in another district or on the party list may not be credible contenders. I only consider a candidate to be an incumbent if he or she was elected from that same district in the previous general election. Unlike the other variables, I do not have any reason to expect the effect of incumbency to vary according to the specific traits of the respondent. That is, I expected female and male respondents to react differently to female candidates, but I expect incumbency to be a positive influence for all groups of respondents. Thus, the variable for incumbency is simply coded one for incumbents and zero for all other candidates.

#### IV. Do Partisan and Personal Factors Both Matter?

The literature on SNTV suggests very strongly that we should find evidence that both partisan and personal factors matter to voters. We test this with a simple model that includes two partisan independent variables (same party, same camp) and four personal variables (same sex, same ethnicity, same hometown, and incumbency). The expectation is that the coefficients for all six of these independent variables should be positive. In fact, that is exactly what we find in

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<sup>11</sup> One objection might be that candidates' addresses do not always reflect their actual hometowns. This is undoubtedly correct. However, to the extent that localism matters, candidates should try to communicate their local roots to voters. Candidates who might pick one of several different addresses to put on the election notice should choose the most advantageous one.

Table 1. All the variables have positive and significant effects on vote choice.

Table 1 Partisan and Personal Factors in the SNTV Vote Decision					
	B	S.E.	Z	Sig.	% considering trait a positive inducement
<b>Means</b>					
Same Party	4.153	.566	7.34	***	75.5
Same Camp	2.055	.347	5.91	***	80.0
Same Sex	.217	.062	3.51	***	57.5
Same Ethnicity	1.016	.088	11.59	***	74.9
Same Hometown	.850	.079	10.71	***	70.4
Incumbent	.433	.064	6.73	***	58.5
<b>Standard Deviations</b>					
Same Party	6.003	.934	6.43	***	
Same Camp	2.446	.711	3.44	**	
Same Sex	1.144	.162	7.09	***	
Same Ethnicity	1.513	.218	6.96	***	
Same Hometown	1.585	.250	6.35	***	
Incumbent	2.014	.273	7.37	***	
N (respondents)			3,935		
N (alternatives)			73,649		
Log likelihood			-8650.4557		

Sources: Chen (陳義彥 1992 : 1995) , Liu (劉義周 1998) , TEDS2001, TEDS2004L.

Notes:  $^{\$}p<0.10$ ;  $^*p<0.05$ ;  $^{**}p<0.01$ ;  $^{***}p<0.001$ . The percentages in column 6 are calculated by dividing the mean by the standard deviation to obtain a z-value which yields the area under the normal curve greater than zero.

Notably, the relative weight of the party variables is much greater than that of the personal variables. Moreover, the impact of being from the same party is far greater than the impact of merely being from the same camp. To illustrate this, imagine a hypothetical KMT identifier in a district with nine candidates. Two candidates are KMT, one is PFP, two are DPP, and four are independents who are not identified with either camp.<sup>12</sup> We assign various personal traits to the various candidates and calculate the probabilities that the voter will choose each of them using the coefficients in Table 1 and the formula in equation (3). In Table 2, column 3 (mean values),

<sup>12</sup> From the viewpoint of the model, there is no difference for this respondent, a KMT identifier, between the DPP candidates and the independent candidates on the partisan variables since they are neither KMT nor blue camp. Similarly, the model does not distinguish between a PFP candidate and an independent candidate associated with the blue camp.

the importance of party affiliation is apparent. The probability that the voter will choose one of the two KMT candidates is over 90%. The PFP candidate has less than an 8% chance. This voter will very likely vote for one of the KMT candidates even though the PFP candidate has all four of the appealing personal traits and the KMT candidates are largely lacking in personal appeals. The prospects are even bleaker for the other six candidates. Candidates who are neither from the same party nor the same camp as the voter have less than a 2% chance combined. Even Candidate H, who has all four of the desired personal traits, has only a 1% chance of winning this voter's support. Simply put, partisan considerations dominate personal appeals.

Table 2 Predicted Probabilities for a Hypothetical KMT Identifier

Candidate	Appealing personal trait	Heterogeneity of preference for same home		
		Mean	-1 SD	+1 SD
A (KMT)	sex	.501	.540	.371
B (KMT)	none	.403	.434	.299
C (PFP)	sex, ethnicity, home, incumbent	.078	.017	.283
D (DPP)	sex	.001	.001	.001
E (DPP)	ethnicity	.002	.002	.002
F (IND)	home	.002	.0004	.007
G (IND)	incumbent	.001	.001	.001
H (IND)	sex, ethnicity, home, incumbent	.010	.002	.036
I (IND)	none	.001	.001	.001

Sources: Chen (陳義彥 1992 : 1995), Liu (劉義周 1998), TEDS2001, TEDS2004L.

Notes: These probabilities are calculated using the values in Table 1 and the formula from equation (3) in the text.

Cell entries are the predicted probabilities of voting for a certain candidate, assuming the voter is at the mean, one standard deviation below the mean, or one standard deviation above the mean in her preference for candidates from her hometown. All other coefficients are calculated at their means.

However, personal appeals do matter. Logit models assume that independent variables have nonlinear effects. The weakest of the personal variables, same sex, has almost no benefit for Candidate D, compared to Candidate I. However, the two hypothetical KMT candidates are identical except for sex, and this single difference makes Candidate A roughly 10% more likely to win the vote than Candidate B. If we had given Candidate A an even more desirable trait, such as same ethnicity, the advantage would have been much greater. For Candidates A and B, winning at least their fair share of party identifiers is the key to winning. From their point of

view, personal factors are critical to their continued career in office. At the very least, personal factors can serve as a tiebreaker among multiple party nominees.

However, it is too simple to conclude that partisan factors dominate choices for everyone. Mixed logit explicitly models heterogeneity of preferences, allowing for the possibility that different people weight these factors differently. That is, at the mean, voters may prefer candidates from their ethnicity, but there may be significant heterogeneity among different voters. In Table 1, the standard deviations of all the variables are significantly different from zero, indicating that there are substantial degrees of heterogeneity. Since I assumed that the non-stochastic portion of the error term was normally distributed, it is a simple matter to calculate the percentage of respondents who see a particular factor as a positive inducement. In the sixth column of Table 1, I calculate these percentages for each independent variable. For example, while most people place a high positive value on a candidate from the party they identify with, not all do. Being from the same party is a positive inducement for 75.5% of identifiers, but nearly a quarter would rather vote for a candidate from a different party. Many times that means voting for someone from another party in the same camp, but there is enough heterogeneity in the preference for candidates from the same camp that a fifth of camp identifiers prefer to look outside their camp. To illustrate the effect of preference heterogeneity on predicted vote probabilities, I return to the hypothetical voter from Table 2. In the fourth and fifth columns, I assume that her preference for candidates from the same hometown is one standard deviation below and above the mean, respectively. In this example, three candidates are from the voter's hometown, Candidate C (PFP), Candidate F (IND), and Candidate H. No matter how we vary our assumptions, our voter remains highly unlikely to select Candidate F, whose only appeal is his hometown, or Candidate H, who has all the appealing personal traits. Without some sort of partisan appeal, personal qualities simply are not enough. However, the story is quite different for Candidate C. When the voter places a very low importance on hometown, Candidate C has almost no chance of receiving her vote. When the voter has a strong preference for candidates from her hometown, Candidate C's chances soar. In column 5, Candidate C has roughly the same chance of winning the vote as Candidate B. Candidate A remains the favorite, but this is clearly a difficult decision among the three. In this scenario, desirable candidate qualities were roughly important enough to make up for an undesirable partisan affiliation.<sup>13</sup> If we were to further

<sup>13</sup> This discussion is intended to be an illustration of the results of Table 1 rather than a definitive discussion of the effects of locality on vote choice. If we were to take the results of Table 4 and repeat



assume that the voter placed less importance than average on party and camp, we could easily construct a scenario in which one of the independent candidates would be favored to win this voter's support.

For the majority of voters who are near the means, party dominates all, and personal factors can only serve as tiebreakers. However, considering heterogeneity of preferences reminds us that there also exist a minority of voters for whom personal factors can sometimes be decisive.

## V. Inter-Party Differences

Are there differences among identifiers of different parties? In Table 3, I reran the model from Table 1 on the subsets of identifiers of each major party.<sup>14</sup> The first point to note is that all the coefficients in each model are positive. Not all are significant, but none are negative, much less negative and significant. That is, all six independent variables seem to have a positive effect on the vote choice for all groups of identifiers. This is consistent with our expectations.

There are some interesting differences between parties. For example, consider the effect of party for the KMT and DPP. The KMT's coefficient is much larger, suggesting that party affiliation dominates the vote choice for the average KMT identifier to a much greater extent than it does for the average DPP identifier.<sup>15</sup> However, the standard deviations suggest that there is much greater heterogeneity among KMT identifiers. The party label is a positive inducement for 87% of DPP identifiers but only 75% of KMT identifiers. In fact, the standard deviation for the DPP is only marginally significant, so we cannot conclusively rule out the possibility that the standard deviation is actually zero. A standard deviation of zero implies that there is no heterogeneity; that 100% of DPP identifiers consider a DPP party label to be a positive attribute.

New Party identifiers have the strongest party loyalties. The standard deviations for same party and same camp are both close to zero, suggesting that those attributes are uniformly

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this exercise, the results would be slightly different since the submodel for KMT identifiers suggests that KMT identifiers weight locality more heavily for KMT candidates than for non-KMT candidates.

<sup>14</sup> Only 31 respondents expressed identification with the TSU, and the model did not converge to a solution.

<sup>15</sup> Note that the coefficient for same camp is very large for the DPP. Since almost all candidates from the green camp are DPP nominees and an even larger percentage of green camp identifiers are DPP identifiers, some of the party effect may have spilled over into the camp effect. This would explain the relatively large standard errors for these variables.

Table 3 Partisan and Personal Factors in the SNTV Vote Decision (By Respondent's Party ID)

Party ID	KMT identifiers			DPP identifiers			New Party identifiers			FPF identifiers			Independents		
	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.
<b>Means</b>															
Same Party	6.106	1.570	***	2.661	1.054	*	3.625	.638	***	4.913	3.156				
Same Camp	4.066	1.402	**	8.957	6.835		.564	.338	\$	2.036	.888	*			
Same Sex	.185	.133		.339	.120	**	.569	.492		.293	.266		.156	.106	
Same Ethnicity	1.206	.226	***	1.205	.266	***	1.100	.367	**	.433	.286		.963	.122	***
Same Hometown	1.303	.190	***	.800	.163	***	1.221	.418	**	.823	.346	*	.567	.161	***
Incumbent	.433	.140	**	.161	.114		.693	.501		.273	.489		.703	.097	***
<b>Standard Deviations</b>															
Same Party	9.218	2.315	***	2.365	1.225	\$	.388	2.411		9.532	9.798				
Same Camp	4.792	2.087	*	11.941	8.445		.013	.769		1.891	1.609				
Same Sex	1.217	.430	**	1.064	.327	**	3.267	1.011	**	1.072	1.020		1.162	.232	***
Same Ethnicity	3.008	.613	***	1.428	.564	*	1.317	.922		1.227	1.125		.868	.355	*
Same Hometown	2.313	.622	***	1.840	.581	**	2.063	.927	*	1.256	1.184		1.589	.405	***
Incumbent	2.873	.809	***	1.667	.490	**	1.929	1.102	\$	4.245	2.865		1.334	.467	**
N (respondents)		1,381			1,134			139			234			1,016	
N (alternatives)		25,756			20,874			2,951			4,654			18,842	
Log likelihood		-2893.8190			-2305.5951			-247.5461			-481.8790			-2610.5659	

Sources: Chen (陳義彥 1992 : 1995) , Liu (劉義周 1998) , TEDS2001, TEDS2004L.

Notes: \$ p<0.10; \* p<0.05; \*\* p<0.01; \*\*\* p<0.001.

positive for all New Party identifiers. Moreover, the coefficient for same camp is also fairly small and only marginally significant, suggesting camp is not a strong attraction. The coefficient for same party, in contrast, is very large and significant. This variable dominates all others, and there is very little heterogeneity among New Party identifiers.

What of the respondents who did not express a party identification? By definition, party labels cannot dominate their vote choice. However, the personal variables are all positive and three are statistically significant. Like party identifiers, independent voters value personal appeals.

## VI. Interactions between Partisan and Personal Factors

One of Miyake's (1999) main points is that partisan factors are embedded within candidate evaluations. A candidate's party affiliation has a strong influence on how the voter sees a candidate. If Miyake is correct, then voters should give different weights to candidates' personal factors, depending on which party a certain candidate represents. In fact, if parties encourage voters to pay attention to some factors and not others, what appear to be decisions based on personal factors may in fact be based on partisan considerations.

For example, consider incumbency. If a party nominates two candidates, the party should want them both to get the same number of votes (Cox and Niou 1994). If one is an incumbent and the other a newcomer, the incumbent might be expected to win more votes since, as we have seen, incumbency tends to be an advantage. However, the party might counteract this by sending signals to its supporters to treat the two equally or even to give the newcomer a slight bonus. In short, while voters might generally prefer incumbents, identifiers might actually have a slight bias against incumbents (and toward newcomers) from their favorite party.

Localism may also play out differently among identifiers of different parties. The KMT has a long tradition of trying to even out votes among its nominees by cutting the electoral district into smaller parts called responsibility zones. Each nominee is apportioned one responsibility zone, and all party supporters in that area are supposed to vote for the designated candidate. Of course, the KMT assigns these areas according to existing social networks, so a candidate's hometown is almost always part of his or her responsibility zone (Liu 1999). In effect, the KMT tells supporters to give extra weight to localism, so we should expect to see a very strong effect for localism among KMT supporters when evaluating KMT candidates. The DPP, in contrast,

has traditionally not tried to apportion votes with the responsibility zone system. Since the DPP has never stressed localism, DPP identifiers should not give DPP candidates any special consideration based on their hometowns.

To test these ideas, I interact the same party variable with the four personal variables and run this model on all respondents, KMT identifiers, and DPP identifiers. Based on the preceding discussion, we expect a negative effect for the interaction of same party and incumbency and a positive coefficient for KMT identifiers but not for DPP identifiers for the interaction of same party and same hometown. We have no predictions for the other two interactions. Brambor, Clark, and Golder (2006) argue that it is insufficient to look simply at the coefficient of the interaction term. Instead, we should look at the aggregate effect of the main effect and the interaction term.<sup>16</sup> In this paper, we are concerned with the effects of personal variables when the respondent and candidate are from the same party. I have calculated the full effect of each of these interactions and added those variables to the regular output in Table 4.

The interaction for same party and incumbency has a clear negative effect. In the full model, incumbency has a clear positive effect (.698) when the respondent and candidate are from different parties but the effect is not significantly different from zero (.160) when they are from the same party. The same pattern can be observed for KMT and DPP identifiers. This is evidence that voters generally see incumbency as a positive for candidates from other parties, but they are less inclined to give a bonus to incumbents from their own party.

KMT and DPP identifiers have a much larger difference on localism. For KMT identifiers, the main effect is close to zero but the interaction term is positive and significant. In fact, it is not merely positive; substantively, it is quite large, though still smaller than the same party and same camp coefficients. KMT identifiers do not seem to care much about localism for non-KMT candidates, but they place a very heavy weight on it for KMT candidates. DPP identifiers have a quite different pattern. The main effect is positive and significant, though substantively not overly large. The interaction term is not significantly different from zero. That is, DPP identifiers have a moderate bias toward local candidates, but they do not treat DPP candidates any differently from other candidates. These findings are certainly consistent with the idea that

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<sup>16</sup> A simple interaction is written as  $Y=b_0+b_1X+b_2Z+b_3XZ$ , where  $Z$  is a condition that either does or does not hold, so the analyst is interested in the effect of  $X$  when  $Z=0$  and when  $Z=1$ . When  $Z=0$ , the effect of a unit increase in  $X$  is simply  $b_1$ . When  $Z=1$ , the effect is  $b_1+b_3$ , with standard error of  $\sqrt{\text{var}(b_1)+\text{var}(b_3)+2\text{Cov}(b_1,b_3)}$ . See Brambor, Clark, and Golder (2006).

the KMT has actively encouraged geographical vote rationing while the DPP has not.

Table 4 Interaction of Partisan and Personal Factors

Party ID	All respondents			KMT identifiers			DPP identifiers		
	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.
<b>Means</b>									
Same Party	3.790	.466	***	4.370	.998	***	4.070	1.498	**
Same Camp	1.767	.240	***	3.139	.911	**	5.329	5.163	
Same Sex	.200	.077	**	.269	.212		.320	.194	\$
Same Ethnicity	1.113	.105	***	1.530	.316	***	1.260	.312	***
Same Hometown	.466	.118	***	-.348	.384		.811	.295	**
Incumbent	.698	.075	***	.775	.245	**	.428	.195	*
Party * Sex	-.023	.123		-.224	.264		-.012	.244	
Party * Ethnicity	-.433	.146	**	-.501	.292	\$	-.098	.565	
Party * Hometown	.785	.170	***	2.401	.560	***	.047	.320	
Party * Incumbent	-.538	.107	***	-.487	.280	\$	-.360	.226	
<b>Full Effect of Interaction if Same Party=1</b>									
Same Sex	.177	.136		.045	.333		.308	.160	\$
Same Ethnicity	.679	.029	***	1.030	.239	***	1.163	.537	*
Same Hometown	1.250	.243	***	2.053	.321	***	.857	.186	***
Incumbent	.160	.137		.288	.169	\$	.068	.170	
<b>Standard Deviations</b>									
Same Party	4.935	.809	***	6.577	1.550	***	3.242	1.751	\$
Same Camp	1.732	.553	**	3.052	1.361	*	8.947	7.294	
Same Sex	.862	.204	***	.563	.887		.080	.775	
Same Ethnicity	1.291	.246	***	2.893	.636	***	.981	.790	
Same Hometown	1.808	.257	***	2.793	.720	***	1.745	.650	**
Incumbent	1.512	.278	***	3.086	.888	**	1.331	.517	*
Party * Sex	1.432	.360	***	1.748	.644	**	1.718	.465	***
Party * Ethnicity	1.521	.571	**	.570	1.666		2.599	1.217	*
Party * Hometown	.203	1.143		.454	1.359		.235	1.175	
Party * Incumbent	.055	.720		.107	1.228		.362	1.194	
N (respondents)	3,935			1,381			1,134		
N (alternatives)	73,649			25,756			20,874		
Log likelihood	-8613.8331			-2867.5409			-2297.8056		

Sources: Chen (陳義彥 1992 : 1995), Liu (劉義周 1998), TEDS2001, TEDS2004L.

Notes: \$ $p < 0.10$ ; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . The coefficients and standard errors for full effects of interactions are calculated post hoc; see text for details.

We have no prediction for the other two interaction terms. The term for same party and same sex is not significantly different from zero. However, the term for same party and same ethnicity is negative in the main model, and while the full effects of same ethnicity when same party=1 are still positive, they are considerably smaller in magnitude. This difference seems to be driven by KMT identifiers. We can see what is happening more clearly by looking at each individual ethnicity. Table 5 looks at KMT identifiers and separates the variable for same ethnicity into three separate variables, indicating that the respondent and candidate are both Hakka, both Min-nan, or both Mainlanders.<sup>17</sup> We can see very strong propensities for Min-nan and Mainlander voters to vote for candidates from their respective ethnicities for non-KMT candidates. Interestingly, there is a significant interaction effect for party and Min-nan but not for party and Mainlanders. Among KMT candidates, KMT Min-nan identifiers are not more likely to vote for Min-nan candidates, but KMT Mainlander identifiers are much more likely to vote for Mainlander candidates. That is, the interaction effect we saw in Table 4 for party and ethnicity among KMT identifiers is specifically an effect for Min-nan voters. Moreover, we can trace this even more precisely to a few specific areas. I divide the sample into cities and counties, with the former including the two direct municipalities and the five county-level cities and the latter including all the other areas. The interaction effect for same party and Min-nan is insignificant in the counties, but very strong in the cities. Why might Min-nan KMT identifiers living in cities tend to vote against KMT Min-nan candidates? A clue comes from Table 6. For whatever reason, the KMT has historically nominated a disproportionately high number of Mainlander candidates in the cities. For these candidates to be successful, they had to win large numbers of non-Mainlander votes. Specifically, since Min-nan voters are the overwhelming majority, they had to win Min-nan votes. This evidence is consistent with two stories, depending on how one prefers to interpret causality. It could be that Min-nan KMT identifiers in cities have a strong preference for non-Min-nan candidates, and the KMT simply nominated according to its supporters' wishes. The second story seems more plausible. It could be that, for other reasons, the KMT nominated large numbers of Mainlander candidates and asked its supporters to vote for them without regard to ethnicity. In this story, Min-nan KMT identifiers living in cities tended to vote against Min-nan nominees and for Mainlander nominees because the KMT asked them to.

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<sup>17</sup> If an interactive term for same party and both Hakka was included, the model did not converge to a solution. I could find no model specification indicating that this interaction term was significantly different from zero.

In each of these interactive effects of party and personal factors, we see identifiers modifying their behavior in a way that is consistent with party directives and interests. When it is in the party's interests for identifiers to weight a particular variable more heavily, they tend to do just that. Behavior that, on the surface, looks like personal voting, may, in fact, be motivated primarily by partisan preferences.

Table 5 KMT Identifiers and Ethnicity

Party ID	All KMT identifiers			KMT in counties			KMT in cities		
	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.
<b>Means</b>									
Same Party	3.959	.916	***	3.801	1.123	**	13.469	11.353	
Same Camp	2.618	.737	***	2.768	1.480	\$	2.289	.609	***
Same Sex	.238	.193		.146	.254		.498	.306	
Ethnicity: Hakka	-.012	.391		.110	.362		-21.939	23.904	
Ethnicity: Min-nan	.767	.261	**	.892	.555		1.246	.367	**
Ethnicity: Mainlanders	2.742	.701	***	3.451	.986	***	1.082	.509	*
Same Hometown	-.227	.335		-.023	.457		-.205	.521	
Incumbent	.818	.209	***	1.260	.254	***	-.196	.681	
Party * Sex	-.153	.237		-.199	.311		-.117	.515	
Party * both Min-nan	-.549	.274	*	-.160	.422		-1.971	.896	*
Party * both Mainlanders	.236	.606		-.423	.787		4.745	4.894	
Party * Hometown	2.037	.471	***	2.050	.638	**	2.608	1.540	\$
Party * Incumbent	-.558	.241	*	-.969	.302	**	.034	.631	
<b>Full Effect of Interaction if Same Party=1</b>									
Same Sex	.085	.152		-.053	.200		.381	.431	
Ethnicity: Min-nan	.218	.190		.732	.433	\$	-.724	.801	
Ethnicity: Mainlanders	2.978	.653	***	3.028	.815	***	5.827	4.900	
Same Hometown	1.810	.274	***	2.027	.407	***	2.403	1.295	\$
Incumbent	.260	.143	\$	.291	.196		-.163	.452	
<b>Standard Deviations</b>									
Same Party	5.925	1.444	***	5.379	1.778	**	28.167	23.953	
Same Camp	2.530	1.215	*	2.870	2.312		1.694	1.446	
Same Sex	.274	.839		.064	1.134		.096	1.284	
Ethnicity: Hakka	1.371	.595	*	1.445	1.555		23.301	21.709	
Ethnicity: Min-nan	1.371	.595	*	2.158	1.058	*	.160	1.175	
Ethnicity: Mainlanders	3.158	1.352	*	3.713	1.896	*	.144	1.180	
Same Hometown	2.418	.598	***	3.137	.926	**	.624	1.637	

Table 5 KMT Identifiers and Ethnicity (Continued)

Party ID	All KMT identifiers			KMT in counties			KMT in cities		
	B	S.E.	Sig.	B	S.E.	Sig.	B	S.E.	Sig.
Incumbent	2.398	.760	**	1.960	1.080	<sup>s</sup>	3.232	1.753	
Party * Sex	1.326	.560	*	1.269	.665	<sup>s</sup>	2.869	1.604	<sup>s</sup>
Party * both Min-nan	.007	1.105		.896	2.053		2.662	2.934	
Party * both Mainlanders	1.852	3.252		1.996	2.448		6.868	6.389	
Party * Hometown	.088	3.008		1.050	1.880		3.179	3.502	
Party * Incumbent	.032	1.307		1.816	1.503		.603	1.885	
N (respondents)		1,381			941			440	
N (alternatives)		25,756			16,901			8,855	
Log likelihood		-2843.2902			-1928.2554			-893.8263	

Sources: Chen (陳義彥 1992 ; 1995) , Liu (劉義周 1998) , TEDS2001, TEDS2004L.

Notes: <sup>s</sup> $p < 0.10$ ; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . The coefficients and standard errors for full effects of interactions are calculated post hoc; see text for details.

Table 6 Ethnicity of KMT Candidates in Counties and Cities

	Counties			cities		
	n	%	population	n	%	population
Hakka	37	11.5	18.5	5	3.6	7.1
Min-nan	248	77.0	69.2	69	50.0	73.8
Mainlander	32	9.9	10.0	60	43.5	16.4
Unclassified/other	5	1.6	2.4	4	2.9	2.8
Sum	322	100.0	100.0	138	100.0	100.0

Source: Compiled by author. See text for details.

Notes: For coding of candidate ethnicities, see text. For reference, the ethnic distribution of the general population is also listed. Population ethnicity estimates are taken from the five surveys studied in this paper. They are unweighted and include all 7,497 respondents.

## VII. Conclusion

This paper has provided compelling evidence that partisan factors have dominated voting decisions in SNTV elections in Taiwan. The single most important factor in the vote decision is whether a candidate represents the party that the voter identifies with, and this factor is strong enough to outweigh all the other variables considered in this paper combined. The second most important factor is also based in partisan considerations. Whether or not a candidate is from the voter's preferred camp also plays an important role in the vote decision. Personal factors



also matter, though they are considerably weaker than partisan factors. In general, personal factors serve to help voters decide which of their preferred party's nominees to vote for. These findings do not directly contradict Miyake's candidate evaluation model or the argument by Chu that there are four different types of voters, but they most closely echo Richardson's partisan umbrella model, in which voters choose a party in the first stage and a candidate from that party in the second stage.

The mixed logit model reveals substantial degrees heterogeneity among voters for various attributes. If most voters make their decisions based on partisan considerations, there exist a minority for whom personal factors are crucial. By definition, this minority includes voters with no clear partisan preferences, but it also includes some party identifiers. Then again, the distinction between personal and partisan is not always clear. Examining interaction effects between partisan and personal factors reveals that identifiers put different weights on personal factors in different contexts. Specifically, identifiers tend to increase or decrease the importance of specific personal attributes in their voting decision when that action benefits their preferred party. What appears to be personal voting may often actually be driven by partisan motivations. In sum, this paper finds evidence that voting decisions in Taiwan's SNTV elections have been driven primarily by partisan factors.

This paper cannot be considered a definitive test of the partisan umbrella model. The key idea of the partisan umbrella model is that, in the first stage, voters select a party and filter out all other candidates. A direct test would entail collecting data on whether voters do, in fact, filter out most candidates and actively consider only a small minority. Furthermore, it would have to confirm that the filter eliminates all candidates from other parties but does not eliminate any nominees from the respondent's preferred party. The results presented here are consistent with the partisan umbrella model, but that theoretical model awaits a more compelling empirical test.

It must also be conceded that the operationalization of personal factors in this paper is not ideal. Without survey data on voters' evaluations of each candidate, I was forced to rely on demographic data. Presumably, if I had been able to operationalize personal factors more directly, the impact of those variables would have been greater. It is certainly possible that the partisan variables only look dominant because the personal variables used in this paper are so indirect.

If this paper has left many questions unresolved, at least it has provided a method for investigating those questions. Mixed logit allows us to model the vote choice in SNTV, and thus

gives scholars a path forward.

\* \* \*

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## Appendix: Coding of Independent Candidates into the Two Camps

Independent candidates and candidates from smaller parties are coded into the two big camps based on the types of appeals they made to voters, records of cooperating with one side or the other in the legislature or other political arenas, family connections, or other political connections.

Candidates from the Taiwan Independence Party and Nation Building Alliance, which were most active in the mid- and late-1990s, are all classified as belonging to the green camp.

Of the total 687 independent and small party candidates in the relevant districts, 130 were coded as blue, 61 were coded as green, and 496 were coded as belonging to neither camp. Most of the stronger candidates were coded into one of the two camps. The average number of votes for blue camp independents was 25,378, while the average green camp independent won 12,597 votes, and the average independent belonging to neither camp won only 3,022 votes. Only six candidates in the third group won a seat, and only twelve got at least 20,000 votes.

This coding reflects the author's subjective judgment. See Table A1.

Technically, it is anachronistic to speak of the blue and green camps prior to 2000, as the terms did not enter the popular discourse until after Chen Shui-bian was elected president and the PFP and TSU were founded. However, even in the 1990s, there was a sense that there was a political divide and that most politicians could be identified as fitting on one side or the other. We can test whether there was a marked difference in the relevance of this variable by running the basic model from Table 1 but splitting the same camp variable into two separate dummies, one for the 1992, 1995, and 1998 elections and one for the 2001 and 2004 elections. Table A2 shows the results of this model. In fact, the coefficient of same camp is slightly larger in the 1990s than in the 2000s, and the standard error is also larger in the earlier period. However, a post-hoc test shows that there is no statistically significant difference between the two coefficients. This result provides some assurance that the camp variable is relevant for the 1990s, even if people had not yet begun calling it by its later name.

Table A1 Coding of Independent and Small Party Candidates into Camps

Year	Coded as blue	Coded as green
1992	趙少康、游任和、吳梓、葉憲修、吳耀寬、賴英芳、何嘉榮、蘇火燈、林源山、林志隆、謝啓大、王滔夫、王建煊、周荃、楊實秋、馮定國、陳學聖、翁大銘、林宏宗 (19)	陳定南、陳文輝 (2)
1995	盧嘉辰、孫安迪、羅福助、葉憲修、洪英花、張世良、謝政穎、余武龍、蘇玉龍、張偉、何聖隆、王滔夫、李勝峰、江碩平、林宏宗 (15)	田永彥、張金策、翁仁彥、蘇洪月嬌、侯海熊、戴進吉、許添財、葉耀鵬、蘇盈貴 (9)
1998	葉憲修、廖裕德、羅福助、林志嘉、周荃、宋艾克、金介壽、邱創良、陳鄭權、羅世洞、陳超明、徐成焜、林克謨、何郁青、李正舜、劉八郎、劉銓忠、陳進丁、黃明和、黃偉峰、陳振盛、陳啓吉、高孟定、林志隆、伍澤元、林淵熙、蔡豪、張偉、陳演廷、廖文章、黃義交、杜振榮、蘇裕夫、馮定亞、朱高正、劉義鈞、陳漢強、林正杰、魏鏞、陳適庸、姚立明、林宏宗 (42)	陳婉真、張國慶、高金郎、張正修、周朝陽、曾心儀、黃玉嬌、葉國全、陳文輝、陳欽隆、田再庭、陳明秋、楊靜華、黃玉炎、蘇治洋、王俊傑、黃永聰、羅逢春、謝錦川、陳三思、郭倍宏、劉煜基、陳永興、鄭邦鎮、張文英、許添財、錢林慧君、許主峰、蕭裕珍、蔡明華、郭來富、高成炎、李慶雄、陳光復 (34)
2001	劉朝金、葉憲修、王美月、林志嘉、周荃、陳治男、田昭容、王培珠、陳超明、邱紹俊、顏清標、郭榮振、陳進丁、高孟定、林國龍、伍澤元、郭廷才、蔡豪、何聖隆、蕭登獅、施治明、林瑞圖、陳文茜、王天競、蔡媽福、林崑海、朱高正 (27)	簡慈慧、張淳美、張花冠、黃玉炎、陳達成、劉明松、葉耀鵬 (7)
2004	蘇盈貴、梅再興、林壽山、鄭麗文、朱廷介、施明德、林晉章、許信良、李敖、邱創良、羅煥鑪、楊天生、顏清標、陳煥林、陳進丁、楊宗哲、陳振盛、曾蔡美佐、張麗善、林明義、謝堯政、李和順、蔡豪、王廷升、鐘逸文、施治明、蘇南成 (27)	許登崑、彭百志、高金郎、何金松、郭秀珠、王金雄、張溫鷹、陳建銘、李林耀 (9)

Source: Compiled by author. See text for details.

Table A2 Same Camp before and after 2000

	<b>B</b>	<b>S.E.</b>	<b>Z</b>	<b>Sig.</b>
<b>Means</b>				
Same Party	4.090	.548	7.47	***
Same Camp 1990s	2.722	.918	2.96	***
Same Camp 2000s	1.813	.353	5.14	***
Same Sex	.217	.062	3.51	***
Same Ethnicity	1.015	.088	11.56	***
Same Hometown	.849	.079	10.69	***
Incumbent	.431	.064	6.76	***
<b>Standard Deviations</b>				
Same Party	5.834	.897	6.50	***
Same Camp 1990s	3.856	1.468	2.63	**
Same Camp 2000s	1.766	.828	2.13	*
Same Sex	1.138	.162	7.01	***
Same Ethnicity	1.535	.216	7.12	***
Same Hometown	1.598	.246	6.50	***
Incumbent	1.980	.270	7.33	***
N (respondents)		3,935		
N (alternatives)		73,649		
Log likelihood		-8649.7241		

Sources: Chen (陳義彥 1992 : 1995), Liu (劉義周 1998), TEDS2001, TEDS2004L.

Notes: <sup>§</sup> $p < 0.10$ ; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . A post-hoc test for Same Camp 1990s=Same Camp 2000s yielded  $X^2=0.090, p=0.341$ .

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# 單記非讓渡投票選舉制度下的個人與政黨取向： 一個混合洛基模型

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## 《本文摘要》

過去選舉制度的研究相信，在複數選區單記非讓渡投票選制 (SNTV) 的選舉，政黨與個人因素對選民的投票抉擇「應該」相當重要。然而，現有選舉行為的文獻並未就此一信念予以嚴格檢驗。本文證據顯示，雖然這兩類因素都有顯著影響，「政黨」因素遠比「個人」因素更強而有力。概括來看，在選民的投票抉擇當中，政黨因素最為關鍵；在同黨候選人之間，個人因素可用以決勝負。再者，政黨因素與個人因素也有交互作用。不同的政黨脈絡下，選民對個人因素重要與否的判斷有所不同，表面上看似屬於候選人的個人投票，其實政黨因素的考量可能影響很大。

研究方法上，本文提出混合洛基模型 (mixed logit)，作為 SNTV 投票抉擇模型的適當統計工具，所檢驗的民調資料係針對 1992 年至 2004 年台灣五次立委選舉的調查。

關鍵詞：單記非讓渡投票選制、混合洛基模型、投票抉擇

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