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Partisan Bias in Japan's Single Member Districts

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Abstract

The delineation of constituency boundaries and variations in vote distribution across districts often favor certain parties at the expense of others. Applying a hitherto under-utilized formula (Brookes, 1959; Johnston *et al.*, 1999), this study investigates whether the mechanism translating votes into seats in Japan's single-member districts results in systematic partisan advantage that may influence election outcomes. Simulations are conducted for the 2003 and 2005 general elections under two scenarios: where the governing coalition and the main opposition party receive equal vote shares, and where their vote shares are reversed from the actual results. Components of electoral bias are then disaggregated into size and distribution effects, and the impact of malapportionment, electorate size, turnout, and the role of third party/independent candidates on overall electoral bias is examined. Results show that while partisan bias exists, disadvantages toward one party in some components are likely to cancel out benefits derived from others, producing a relatively small net effect. Furthermore, electoral bias in Japan is found to award sectoral rather than partisan seat bonuses.

Introduction

Studies of the relationship between votes and seats have focused mainly on electoral rules and district magnitudes, since these factors exert the greatest impact on the composition of legislatures. At the same time, unless an entire country comprises of one single electoral unit, the translation of votes into seats can be mediated, and sometimes distorted, by the drawing of district boundaries. While some scholars have examined deviations from the norm of 'one person, one vote' and the policy

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implications consequent upon the violation of this principle (Balinski and Young, 1982; Monroe, 1994; Samuels and Snyder, 2001), the present paper limits itself to investigating the practical question of whether and how biases in electoral geography, not only in the form of malapportionment but also variations in vote distribution across districts, may create persistent partisan advantages that potentially affect election outcomes (Tufte, 1973; Grofman, 1983; King and Browning, 1987; Gelman and King, 1994).

Using the case of Japan, a country where the issue malapportionment under its previous single non-transferable vote (SNTV) system has long received considerable attention as an explanation of perpetuating one-party dominance (Hrebenar, 1977; Hata, 1990; see also Christensen and Johnson, 1995), the following pages test the 'fairness' of its new parallel mixed system by examining the partisan effects of how different sources of electoral bias operate in the country's single member districts. In addition to malapportionment, measurement of partisan bias also takes into account differences in vote distribution efficiency, turnout rates, and third party vote shares across districts. These components of bias will be disaggregated through a fairly simple and readily comprehensible procedure under-utilized hitherto (Brookes, 1959; Johnston *et al.*, 1999).

The following section explains each component of electoral bias, namely distributional and size effects, and reviews a selection of literature pertaining to partisan advantage deriving from districting distortions. In the third section attention turns to the specific case of Japan, where scholars and practitioners alike have long referred to electoral bias, particularly in the form of malapportionment favoring rural areas, as a factor prolonging the ruling party's hold on power. The degree to which partisan bias still exists in Japan after the enactment of electoral reform will be examined in the next section by analyzing district-level data in the two most recent elections, which saw the consolidation of a two-party system, at least in the single member districts (SMDs). Simulations will be conducted to compare each party's performance under conditions of equal and reverse vote shares, and the direction and magnitude of each component of partisan bias will be reported. The final section discusses some implications of the findings and concludes.

Components of electoral bias

The translation of a plurality of votes into a majority of legislative seats is hardly controversial under first-past-the-post (FPTP) rules, nor are the mechanical and psychological effects that this electoral system exerts in producing two strong contestants in each district at the expense of minor candidates (Duverger, 1954). Indeed, assuming that leading candidates in each district are linked to the same two parties at the national level (Cox, 1997), proponents of FPTP cite this bonus to the winning party as a key advantage of the system because it facilitates clear legislative majorities and thereby enhances government effectiveness and accountability. At the same time, there are debates over the merits or otherwise of FPTP, involving

questions concerning the swing ratio (or responsiveness), or the degree to which vote changes lead to seat changes, and party advantage, which awards one party with more seats for an equal vote share or an equal number of seats despite a lower vote share. Examining both features, Tufte argues that while 'very different swing rations can be justified', 'electoral systems biased toward a particular party are hardly defensible' in democracies (1973: 544). The present study concentrates solely on the latter aspect.

Electoral bias can derive from *distribution effects* (Gudgin and Taylor, 1979; Johnston, 1979), among which the most frequently analyzed in the academic literature is gerrymandering, which refers to drawing district boundaries to give one party a more efficient distribution of its votes (Cain, 1985; Owen and Grofman, 1988; Craner *et al.*, 1989; Campagna and Grofman, 1990). With an equal share of votes, a party that wins small pluralities spread over a large number of districts enjoys an advantage over one that collects large pluralities concentrated in a small number of districts. While gerrymandering is most widely practiced where parties are responsible for delineating district boundaries, as is the case in the US (Cox and Katz, 2002), even where this task lies in the hands of independent commissions, as in the UK, political parties may find means to influence the outcome to their own partisan advantage (Rossiter *et al.*, 1997). One should note that gerrymandering can result from not only single-party control of districting, but also bipartisan collusion aimed at ensuring each party secures seats. This leads to an outcome of non-competitive districts and low swing ratios (Tufte, 1973; Niemi and Fett, 1986), suppressing the likelihood that a shift in votes would produce a corresponding shift in seats.

Since victory in single member districts only requires a plurality of one, 'efficiency' of vote distribution can be calculated by counting votes that contribute toward achieving this objective. Votes accumulated above this number are considered surplus, because a legislator does not need them to gain election. Similarly, votes cast for a losing candidate are considered wasted, since they do not help elect a legislator. One can therefore tabulate a party's effective vote by subtracting its surplus and wasted votes from its total vote. For instance, in a two-party SMD contest where party A wins by 6,000 votes to party B's 4,000, all of the latter's votes are wasted, while 1,999 of the former's votes are surplus, with only the 4,001 votes party A needs for victory constituting the effective vote.

In view of this, consider the following example of gerrymandering: in Districts 1, 2, and 3, Party A receives 5,500, 6,000, and 2,000 votes, respectively, while party B garners 4,500, 4,000, and 8,000 votes. Party A gains two seats, while party B only takes one, despite the latter winning more votes overall. Whether intentionally or otherwise, these districts are drawn in a way that renders party A's vote distribution much more efficient. Whereas the results show party A with only 2,998 surplus and 2,000 wasted votes, party B has 5,999 surplus and 8,500 wasted votes. Thus, while 8,502 out of 13,500 of party A's votes are effective (63% of its total), the equivalent figure for party B is only 2,001 out of 16,500 (12%).

Electoral bias also stems from *size effects*, with malapportionment being the most often analyzed feature (e.g. McKay, 1965; Monroe, 1994; Ansolabehere *et al.*, 2003). This refers to inequality in the size of electorates among districts, so that votes in overrepresented districts enjoy a proportionately greater voice in influencing electoral and policy outcomes. A common scenario is the overrepresentation of rural areas (Dye, 1965; May, 1975; Hata, 1990; Jackman, 1994). Aside from violating the principle of 'one man, one vote' (Balinski and Young, 1982), malapportionment can lead to policy ramifications in decisions over public spending (Horiuchi and Saito, 2003; Pitlik and Schneider, 2005), as legislators favor overrepresented districts when allocating selective benefits in the knowledge that each vote in these seats carries greater electoral weight. In the most thorough comparative study on this issue to date, Samuels and Snyder emphasize that 'malapportionment tends to favour politically conservative rural districts at the expense of politically progressive urban districts', thus introducing a conservative bias (2001: 668). While those in charge of districting decisions may deliberately seek overrepresentation of rural or other minority interests, often not without consideration of partisan advantage, it is also common that malapportionment results from outdated electoral registrars that fail to account for population flows.

Two other aspects of size effects have received less scholarly attention. An important component, though one not amenable to direct manipulation, involves different turnout rates (Campbell, 1996). Assuming equal electorate sizes, more votes are needed to win districts with higher turnout, whereas constituencies with higher abstention rates are 'cheaper' to obtain. Finally, the presence of minor parties may also exert a significant influence on the number of votes necessary to win a given SMD: the higher the vote share of minor parties and/or independent candidates, the smaller the share needed by one of the two major parties for victory, provided that minor parties or independents do not obtain sufficient votes to win.

It is important to note that the various components of electoral bias enumerated above do not necessarily advantage one party over another. Grofman *et al.* point out that 'it is only when population or turnout differences across districts are linked to the distribution of party voting strength that we get partisan bias' (1997: 458), and the same holds true for differences in minor party vote shares. It is also possible that one party's advantage in terms of more efficient vote distribution may be balanced by its opponent's winning districts that are overrepresented or have higher abstention rates and third party votes. Thus, a low *net* partisan advantage may conceal considerable *gross* biases in each component with different beneficiaries. The few authors who have systematically measured and disaggregated the effects of each component include Grofman *et al.* (1997) and Johnston *et al.* (1999, 2005). This study follows the latter's method, adopted from Brookes (1959), in examining partisan bias in recent Japanese elections. Before turning to these analyses, a few words about the case of Japan are in order.

Electoral bias in Japan

Discussions of electoral bias in Japan have focused on malapportionment, namely the overrepresentation of rural districts, which both academic and journalistic accounts have often mentioned as a source of seat bonuses for the Liberal Democratic Party (LDP).[1] Some scholars even cite this as a key contributor to the LDP's monopoly of power under the previous SNTV system (e.g. Hickman and Kim, 1992). Since the LDP enjoys higher levels of support in over-represented rural districts, the ruling party was understandably reluctant to undertake redistricting measures (Hata, 1990). Inequality in electorate sizes across districts due to massive population movements led to a 'maximin ratio' (the ratio of the maximum over the minimum number of seats per capita) of nearly 5:1 (Horiuchi and Saito, 2003), and prompted the Supreme Court to declare the allocation of seats unconstitutional for denying equal rights to urban voters (Hrebenar, 1977). Yet what re-apportionment took place was limited to abolishing several rural seats and creating a few urban ones without altering district boundaries (Christensen, 2004), and failed to fundamentally redress the representational imbalance.

Electoral reform legislation aimed at facilitating programmatic (rather than particularistic) competition and reducing corruption passed in 1994, replacing SNTV with a parallel mixed system, comprised of 300 single member districts and 200 (later reduced to 180) seats allocated by proportional representation. Details on mechanisms translating votes into seats under the new system and their likely consequences (see Christensen, 1994; Gallagher, 1998; Reed and Thies, 2001) lie beyond the scope of this study, which focuses only on an aspect that did not feature as an objective of electoral reform, namely partisan bias. Using the Loosemore–Hanby index of disproportionality, Horiuchi and Saito conclude that 'reapportionment associated with the electoral reform in 1994 led to a major reduction in inequality in representation' (2003: 672).[2] Furthermore, comparing breakeven points where a party begins to win at least as many seats as its vote percentage, Christensen demonstrates that 'in many instances the [main opposition party] actually would win more seats than the LDP at identical vote share levels' (2004: 269–70).

Christensen and Johnson's (1995) analysis of seat bonuses for the LDP under SNTV is worth discussing in some detail here. While the period and, more crucially, the electoral system examined differ from this study, the approach of disaggregating different elements and quantifying the precise contribution of each component

[1] This discussion only covers the House of Representatives, the lower chamber of parliament that determines the composition of government.

[2] Calculating from data reported in Horiuchi and Saito (2003), the average Loosemore-Hanby (LH) index in the 13 elections the LDP contested under SNTV is 0.127, compared with 0.078 and 0.081 in the first two elections under the new system (SMD seats only). Using district data from the Japanese Ministry of Internal Affairs and Communications (*Soumushou*) for 2003 and 2005, I find the LH index for the two most recent elections to be 0.078 and 0.080. This confirms that malapportionment has been reduced considerably under the new system.

to seat bonuses is similar. The authors calculate the separate effects of strategic nomination errors, malapportionment, turnout rates, and district magnitude (see also Cox and Niou, 1994), and conclude that while the commonly touted problem of malapportionment did help the LDP, this had a limited impact;[3] in fact, seat bonuses the LDP gained through this form of partisan bias was counterbalanced by losses through differential turnout and, most importantly, nomination errors (Christensen and Johnson, 1995: 594).[4] Furthermore, Cox and Niou report that 'if there is a difference in the strategic efficiency of the parties, the advantage lies with the opposition' (Cox and Niou, 1994: 586). While the present study focuses only on competition in single member districts under the new parallel mixed system, where key concerns under SNTV such as nomination errors and district magnitude are no longer relevant, malapportionment and turnout are still very relevant issues, along with vote distribution and minor party strength, which will be analyzed below.

The model and its application to Japan

If one characterizes partisan bias as deviation from fair electoral outcomes, then one must specify the standard by which fairness is measured. Following Niemi and Deegan (1978) and King and Browning (1987), a fair electoral system is defined as 'one in which, if one party received y% of the seats for x% of the votes, then the other party would be allocated the same y% of the seats if it were to receive x% of the votes' (King, 1990: 164). This is labeled the *reverse vote share* scenario. It is also possible to simulate an *equal vote share* scenario, under which two parties would win an equal number of seats for the same vote share. Thus, one can treat partisan bias as the difference between the seats won by the two parties with the same vote share (under the equal vote scenario), and the difference between the number of seats won by party A with a certain percentage of votes and the number won by party B with that same percentage (under the reverse vote scenario) (Johnston *et al.*, 1999; Johnston, 2002). One should note that these definitions do not stipulate a proportionate translation of votes into seats.

In order to simulate these scenarios, a key assumption is that of a *uniform swing*, namely that the percentage of votes transferred from one party to another is the same across all districts. While actual election results would never correspond with this exacting condition, it is plausible to speak of national trends in favor of one party or another. An additional assumption that some may question involves treating competition in Japan's single member districts as a predominantly two-party contest. Reed offers three observations to assert that Japan is a two-party system: (1) most SMD contests feature two and only two viable candidates; (2) normally one candidate represents the government, and the other the opposition; (3) there is no alternative government to the LDP other than the Democratic Party of Japan (DPJ) (2007: 104).

[3] Lijphart *et al.* (1986) and Curtis (1988) arrive at similar conclusions.

[4] The authors also find that district magnitudes made consistently large contributions to the LDP's seat bonuses.

The two-party system argument can also be justified on the empirical ground that, in the two most recent general elections, the combined seat shares of the LDP-led government coalition and the main opposition DPJ constitute 95% and 93% of all legislators elected from single member districts, with many remaining MPs, elected as independents, (re-)joining the LDP after the 2005 election.[5]

Unfortunately, some districts have to be excluded from the analysis due to the absence of DPJ nominees, because one cannot measure swings favoring the main opposition candidate when such a candidate was not present. In the three elections when the DPJ contested as the main opposition party, districts without a nominee from the party numbered 58 in 2000, 33 in 2003, and 11 in 2005.[6] While tacit agreements existed between the DPJ and smaller opposition parties in some districts, in others candidates from these parties were in direct competition, so one cannot use the leading opposition candidate's vote share in districts without a DPJ standard bearer as a proxy for DPJ vote. Thus, the 2000 election is not included in the analysis since one-fifth of all districts would have to be excluded. On the government side, the LDP gave its coalition partners (*Komeito* and the New Conservative Party in 2003; *Komeito* only in 2005) a free run in some districts, and these allies did not nominate candidates against the LDP. Instead of examining the LDP by itself, all simulations below will treat the governing coalition as a whole. Circumstantial evidence also justifies the classification of a few nominal independents as government candidates.[7]

These two elections offer stark contrasts in the fortunes of both the government and main opposition parties. The DPJ scored its best performance in 2003 but lost heavily in 2005, and the reverse is true for the LDP-led ruling coalition. Schaap (2005) notes the DPJ's success in 2003 in securing anti-LDP votes while smaller opposition parties declined, consequently reducing LDP's seat bonus in SMDs, and also cites a significant increase in the combined share of votes for the largest two parties as proof of a consolidating two-party system. Yet the prospect of *alternance* was postponed, if not reversed, by the 2005 election, in which the LDP gained the highest proportion of seats won by any party since 1960.[8] Comparing these two elections is therefore particularly opportune for investigating partisan bias, since one can examine distributional effects at markedly different vote shares.

[5] Many of these so-called independents were former LDP MPs who were expelled from the party after voting against the government's postal privatization bill. While the LDP headquarters nominated candidates to run against them in the 2005 elections, 11 of the 12 'rebels' (*zouhan giin*) who won in their districts were re-admitted to the party in December 2006.

[6] The reduction in the number of districts where the DPJ was unable to put up candidates indicates both the party's increasing viability and, by implication, a movement toward a two-party system.

[7] These include Kato Koichi in Yamagata 3 District and Eto Taku in Miyazaki 2 District in 2003, and Horie Takafumi in Hiroshima 6 District in 2005.

[8] Despite suffering a crushing defeat, Maeda (2006) claims that the DPJ's loss was not as devastating as its greatly reduced seat share suggests, since many districts were lost as a result of only a small swing, so that DPJ still has a chance to win the next election as long as it remains the main opposition.

Table 1. *Vote distribution – actual results*

	2003		2005	
	government	*DPJ*	*government*	*DPJ*
electorate size (in thousands)	328.3	351.0	342.6	334.9
turnout	60.20%	58.90%	67.29%	68.05%
surplus votes per seat won	30,002	20,388	36,555	17,151
wasted votes per seat lost	78,318	69,320	86,269	80,492
effective vote	46.35%	38.05%	57.38%	19.50%
vote share	46.11%	40.56%	50.49%	38.42%
seats*	158	103	222	52

Note: Based on districts with both government and DPJ candidates (265 in 2003; 289 in 2005). *independent victories: 2003–4; 2005–13; 2 seats won by People's New Party (Kokumin Shinto) in 2005.

Results: the direction and magnitude of partisan bias in Japan

Based on results from 265 districts in the 2003 election,[9] and 289 districts in the 2005 election,[10] that were contested by both government and DPJ candidates, Table 1 reports measures of vote distribution efficiency for each party. One should note that a party that enjoys an efficiency advantage would not necessarily win the election, since even if it won many seats by small margins (few surplus votes) and lost hopeless districts by landslides (few wasted votes), it could still finish behind its opponent simply due to having garnered far fewer votes overall. A comparison of government and DPJ effective vote percentages shows the former having a considerable advantage, especially in 2005. However, when one separates each component that contributes to this partisan bonus, one finds that the DPJ actually accumulated fewer surplus votes for each seat it won, and fewer wasted votes for each seat it lost, than the governing coalition. What explains this seemingly paradoxical situation is that the DPJ simply lost in too many districts, so that wasted votes comprised 52% of its total vote in 2003, and an enormous 77% in 2005 (the corresponding figures for the government parties were 34% and 18%, respectively).

A comparison of size effects (malapportionment and turnout) reveals some interesting differences between the two elections. The governing coalition clearly benefited from malapportionment in 2003, since the average electorate in districts it won was some 20,000 smaller than districts won by the DPJ. This corresponds with what academics and journalists have frequently observed, namely that the LDP profits

[9] Districts excluded from analysis are: Hokkaido 11, Aomori 2, Akita 3, Fukushima 4, Ibaraki 4, Tochigi 3, Gunma 5, Yamanashi 2, Niigata 3, Niigata 5, Toyama 3, Aichi 1, Osaka 11, Hyogo 7, Hyogo 12, Wakayama 1, Wakayama 3, Hiroshima 3, Yamaguchi 4, Fukuoka 7, Fukuoka 11, Saga 2, Nagasaki 2, Nagasaki 4, Kumamoto 4, Oita 1, Oita 2, Oita 3, Miyazaki 3, Kagoshima 2, Kagoshima 4, Kagoshima 5, Okinawa 2, Okinawa 3.

[10] Districts excluded from analysis are: Miyagi 6, Yamagata 3, Niigata 3, Niigata 5, Kagawa 3, Saga 3, Oita 2, Kagoshima 2, Kagoshima 5, Okinawa 1, Okinawa 2.

from winning overrepresented districts in its rural stronghold (its coalition partner *Komeito* is an urban-based party, and in fact suffers from malapportionment). This partisan bias was reversed in 2005, however: as the LDP took a large number of underrepresented urban seats while losing some overrepresented rural seats to independent candidates (see footnote 5), it was the DPJ that now had a slight advantage in terms of the average electorate size. One also observes a similar reversal in turnout advantage. In 2003, the average turnout rate in seats won by the governing parties was higher than districts won by the DPJ, meaning that the latter required fewer votes to score victories (i.e. seats were 'cheaper'). The opposite was true in 2005, as the average turnout rate in DPJ seats now marginally exceeded that in government seats. The same explanation applies: abstention tends to be higher in urban areas, so as the government won more seats in these districts, its disadvantage in terms of turnout declined.

Referring back to the discussion in the previous section on the definition of electoral fairness, Table 2 displays the same measures as Table 1 under conditions of *equal vote share* and *reverse vote share*.[11] Perhaps the most notable revelation is that, given equal vote shares in the districts examined (43.3% in 2003, 44.5% in 2005), the DPJ surpasses the government parties in terms of both the number of seats and the effective vote percentage in 2003, and comes close to doing so in 2005. In 2003, the benefit the government derives from malapportionment (smaller average electorate size) appears to be overcome by the DPJ's advantages in terms of fewer wasted votes and lower turnout in seats it won (the average number of votes for minor parties and/or independent candidates is also 25% higher in DPJ seats; result not shown). In 2005, the government had an edge by virtue of both lower turnout in districts it won and a widened advantage in surplus votes. Overall, these results suggest that there is no systematic partisan bias favoring the LDP-led coalition.

In fact, one may note a consistent partisan bias in favor of the DPJ when comparing figures in Table 1 with the reverse vote share columns in Table 2. Whereas the government parties gained 55 more seats than the main opposition in 2003, if one reverses their vote shares, the DPJ would hold a 91-seat margin over the LDP-led coalition. Similarly, if less dramatically, the equivalent figures are 170 and 189 seats in 2005, respectively. The DPJ also enjoys wider advantages in terms of effective vote percentages when actual vote shares are reversed. The partisan bias benefiting the DPJ is all the more remarkable given that malapportionment assists the government parties more clearly in this instance than under actual or equal vote shares. These simulation results further reinforce findings from the previous paragraph on the absence of an often asserted partisan bias bolstering the LDP-led government.

While the above simulations are only possible with the exclusion of districts where either the government or the main opposition party did not nominate a candidate,

[11] Both simulations assume uniform swing across districts. For example, if party A receives 50% of votes nationwide, and party B 40% (with the reminder divided among independent and minor party candidates), the *equal vote share* simulation subtracts 5% from party A's vote share in every district and adds the same percentage to party B; under the *reverse vote share* simulation, the vote share subtracted from party A and added to party B in each district is 10%. Shares for other candidates are unaltered.

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Table 2. *Vote distribution – simulated results*

	equal vote share				reverse vote share			
	2003		2005		2003		2005	
	government	*DPJ*	*government*	*DPJ*	*government*	*DPJ*	*government*	*DPJ*
electorate size (in thousands)	322.1	351.1	342.5	340.6	313.1	349.0	327.0	342.6
turnout	60.27%	59.14%	66.79%	68.01%	60.64%	59.17%	67.02%	67.49%
surplus votes per seat won	25,723	26,028	22,244	24,176	26,352	29,897	17,971	35,834
wasted votes per seat lost	75,669	70,705	86,662	85,781	73,894	68,112	81,539	82,930
effective vote	40.36%	44.34%	43.54%	42.35%	27.33%	53.39%	15.43%	60.21%
simulated vote share	43.33%	43.33%	44.46%	44.46%	40.56%	46.11%	38.42%	50.49%
seats*	127	133	138	133	83	174	43	232

Notes: Based on districts with both government and DPJ candidates (265 in 2003; 289 in 2005)
*independent victories:
equal share 2003–5
equal share 2005–16
reverse share 2003–8
reverse share 2005–12

Table 3. *Partisan bias (in seats)*

	2003	2005
distribution effect	−12.2	2.3
electorate	11.2	−0.8
turnout	−2.2	2.6
minor party/ind. vote	−1.4	0.4
minor party/ind. win	−5	0
total size effect	2.6	2.2
NET PARTISAN BIAS	−9.6	4.5

Note: Positive = bias favouring government; negative = bias favouring DPJ.

one can speculate on patterns of partisan bias had all seats been included. Since in practical terms the LDP and its allies ran candidates in nearly all seats, while the DPJ was unable to enter some contests, attention will be focused on the governing coalition only. The LDP's actual vote shares in both elections exceeded figures presented in Table 1, since it won the majority of seats that are excluded from the analysis above. However, this does not necessarily imply that its percentage of effective vote would increase. In 2003, where the LDP won over minor opposition party candidates, it tended to do so by significantly greater margins than when its main opponent was the DPJ, thus amassing large surplus votes. 2005 presents a more ambiguous case, because in many of the seats won by independents, the LDP came much closer to defeating these (ex-LDP) candidates than the DPJ. This means the LDP was saddled with more wasted votes. As the DPJ had most difficulty finding suitable candidates in rural areas, a majority of the excluded cases are found in these LDP (and ex-LDP independent) strongholds. Inclusion of these districts in the analysis would give the LDP an advantage on account of smaller electorate sizes, but a disadvantage due to higher turnout.

Formulae proposed by Brookes (1959) and re-introduced by Johnston *et al.* (1999) allow one to measure precisely the magnitude of each component of partisan bias, expressed in terms of seat differences (see Appendix for details on formulae). Simulating equal vote shares, Table 3 displays the results, with positive signs denoting bias favoring the LDP-led coalition. The most striking observation when one compares figures from 2003 with 2005 is probably the opposite direction of bias for each component: in 2003, vote distribution (gerrymandering), turnout, and minor party/independent vote share all favor the DPJ, while the government benefits from the electorate size effect (malapportionment); in 2005 the exact opposite is true. Given equal vote shares, the DPJ enjoys partisan bias in its favor worth about ten seats in 2003, but the government parties has an advantage of four seats in 2005. Half of the DPJ's large bonus in 2003 is attributable to the fact that five seats where the LDP has more votes than the DPJ are won not by the LDP, but instead by independent candidates. In this sense the LDP is

biased against. The LDP has this disadvantage in nine seats in 2005, but the DPJ suffers the same fate in an equal number of districts, so the net minor party/independent victory effect is zero.

The sizes of each component of partisan bias are also worth noting. Malapportionment, the bête noire of Japanese advocates of redistricting, indeed gives the LDP an 11-seat bonus in 2003, a margin that could conceivably tip the balance of power in a more closely contested election. What has attracted less attention, at least in discussions of partisan bias, is the equally large bias *against* the LDP in terms of vote distribution efficiency. While districting plans require legislative approval, and parliament is under no obligation to enact plans presented by the redistricting commission (which is appointed by the prime minister with parliamentary consent),[12] the fact that government parties suffer from a fairly large disadvantage offers indirect evidence that deliberate gerrymandering does not play a role in redistricting decisions. Considering the large impact of both effective vote distribution and malapportionment in 2003, it is surprising that these factors make much less difference two years later, though this can be readily explained by the profile of seats that the LDP wrests from the opposition in 2005: more urban, under-represented districts. That these districts feature lower turnout rates and greater third party (in many cases communist) vote shares also accounts for the reversal in the direction for both the turnout and minor party/independent vote components of partisan bias.

Discussions and conclusion

The preceding pages have explored different forms of electoral bias and measured the impact of each component of partisan bias in Japan. The formulae used not only distinguish between distributional and size effects of electoral bias, but also among different components comprising the latter, taking into account turnout and minor party performance in addition to the frequently discussed malapportionment issue. This approach is particularly suitable for examining recent elections in Japan, in the context not only of the creation of single member districts, but also the consolidation of a two-party system. Despite the short time span covered, I believe the contributions of this study – to both the debate over the effect of districting distortions in general and the means of identifying and quantifying each source of such bias specifically – will hold longer-term validity provided that both electoral rules and patterns of party competition remain stable.

At the same time, one must also acknowledge the limitations of this methodology, most importantly its inapplicability to multi-party systems and the strict assumption of uniform swings. Also, it aims only at offering precise measurements of, and drawing distinctions among, various sources of partisan bias in the process of translating votes into seats, and cannot serve any predictive purpose. While one can observe general

[12] For details on redistricting criteria and potential sources of partisan influence in the process, see Christensen (2004: 264).

trends in how turnout and third party/independent candidate performance differ across districts, these factors, along with the efficiency of vote distribution, can only be known after actual ballots are counted. With the exception of electorate size, each component of bias is dynamic rather than structurally predetermined, and is therefore liable to change in both direction (i.e. which party is favored) and magnitude from one election to another. Nevertheless, I argue that the method presented here constitutes a valid and useful approach not only for elections examined in this paper, but also cases that have been used to explore gerrymandering, malapportionment, and other forms of electoral bias in the literature, because it is simple to compute, produces results that are easily comprehensible in practical terms (expressed in seat bonuses gained by one party or another), and integrates estimates of partisan bias arising from various sources.

Results from the analyses above clearly demonstrate that where partisan bias exists in Japan, disadvantages toward one party in some components are likely to cancel out benefits derived from others, producing a relatively small net effect. Christensen's conclusions from a study of redistricting in Japan are apt for the overall findings in this study, namely that there is 'very little discernible partisan bias', and that contrary to prevalent assertions, 'the LDP has no built in advantage over its main competitors in translating seats into votes' (2004: 268–9). Instead, one may infer from figures presented in Tables 1 and 3 that electoral bias in Japan awards sectoral rather than partisan seat bonuses. Specifically, winners in rural seats enjoy fixed size effect advantages over parties that perform better in urban areas, because districts in the former sector contain smaller electorates.

Distribution effects by definition depend on the electoral performance of each party. Higher urban abstention appears to be a persistent feature, and may in part mitigate the advantage given to the party that dominates rural districts. While minor party presence (particularly the communists) is more established is urban areas, rural seats are more likely to see strong independent candidatures (due to more particularistic, clientelistic political dynamics in the countryside), so this component may have an indeterminate effect on partisan bias. Legal redistricting criteria render deliberate gerrymandering impossible, so any advantage a particular party enjoys here is more appropriately deemed a fortuitous bonus rather than an enduring feature, one that is likely to vary from one election to the next. To the extent that the LDP often wins by large margins in its rural bastions, the DPJ benefits from a more efficient vote distribution by virtue of large LDP surplus votes. But if the DPJ strengthens its rural presence, or if it scores poorly in urban areas (as was the case in 2005), partisan bias due to inadvertent gerrymandering would diminish.

These discussions should not make one forget that the goal of both major parties as they enter each electoral contest lies not in maximizing partisan bias in its favor, but instead winning as many seats as possible regardless of how large their surplus and wasted votes may be. Indeed, victories secured through a highly efficient vote distribution, i.e. winning many districts by narrow margins rather than piling up huge majorities, may well imply potential risks to a party, since it would have few safe seats to rely on when the

electoral tides turn against it. This is probably a lesson the DPJ learned in 2005, when seat bonuses it accrued two years earlier through a more favorable vote distribution (see Table 3) were easily overcome by the surging LDP vote.[13] Prudent campaign strategies should never seek to suppress surplus votes for the sake of attaining greater efficiency in vote distribution, though in some cases it may be sensible to avoid allocating campaign resources in hopeless seats, since this would only result in more wasted votes.

This study has sought to examine electoral bias through an integrative approach, with the underlying idea that estimates of partisan advantage can only be understood when all components of bias are probed simultaneously. Findings from Japan illustrate the utility of this method, and also address the longstanding debate concerning the LDP's alleged built-in seat bonuses as an explanation of its persistent hold on the reins of power. Analyses show that the LDP does not enjoy such a benefit, and that any partisan advantage it obtains stems from the size effect of malapportionment can be counterbalanced by distribution effects such as efficiency and turnout. Furthermore, electoral bias does not bolster the government parties *per se*, but rather parties that perform more strongly in rural than in urban districts. These findings broaden the debate over partisan advantages deriving from districting distortions that has long exercised scholars and political practitioners in Japan since SNTV was in use, and provide a basis for discussion applicable in future elections. Equally importantly, insights may also be gained from adapting the method used in this paper to future investigations of partisan bias in other two-party systems.

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[13] Examples drawn from British elections are instructive here: the Labour party saw its vote plummet in 1983, but its seats:votes ratio remained relatively high, whereas when the Conservative vote dropped sharply in 1997, its seats share fell even more. This is because the Conservatives lacked enough safe seats (i.e. large wasted votes) to buttress a significant decline in their vote share.

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Appendix: Formulae for Calculating Components of Partisan Bias

$x =$ the number of seats won by party A with a certain percentage of the votes cast
$y =$ the number of seats won by party B with the same percentage of the votes cast
$b =$ the number of seats in which party A has more votes than party B
$f =$ the number of seats in which party B has more votes than party A
$P =$ the average number of votes cast for parties A and B in seats won by A
$Q =$ the average number of votes cast for parties A and B in seats won by B

$R =$ the average electorate in seats won by A
$S =$ the average electorate in seats won by B
$C =$ the average abstention in seats won by A
$D =$ the average abstention in seats won by B
$U =$ the average number of minority party/independent votes in seats won by A
$V =$ the average number of minority party/independent votes in seats won by B
$G =$ the distribution (gerrymander) effect
$E =$ the electorate component of the size effect
$T =$ the turnout component of the size effect
$M =$ the minor party/independent vote component of the size effect
$W =$ the minor party/independent victories component of the size effect

$$G = [\{y(Px/Qy - 1)\} - \{x(Qy/Px - 1)\}]/2$$
$$E = [\{y(S/R - 1)\} - \{x(R/S - 1)\}]/2$$
$$T = [y\{(R/(R - C))\{(C/R) - (D/S)\}\} - x\{(S/(S - D))\{(D/S) - (C/R)\}\}]/2$$
$$M = [y\{(R/(R - U))\{(U/R) - (V/S)\}\} - x\{(S/(S - V))\{(V/S) - (U/R)\}\}]/2$$
$$W = (x - b) - (y - f)$$