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## Chapter 3: Foundations of Non-competition: Strategic Entry

“ . . . it is difference of opinion that makes horse races.”

- Mark Twain

### 1. Introduction

Competition is usually considered essential for healthy democracy. Perhaps as a result, political science research takes electoral competition in democracies to be natural. I argue otherwise. Candidates' general incentive is to avoid races they anticipate losing. Strategic entry decisions by elites should thus produce uncontested elections, contrary to Duvergerian expectations. In this chapter, I show formally that non-competition should be our default expectation in theory, and show empirically that this approach offers powerful explanations for electoral outcomes in practice.

What ultimately needs to be explained is not why some elections go uncontested in the United States, Japan, and elsewhere, but rather why many elections *are* contested, whether by strong or by weak challengers. I argue that competition arises if uncertainty or political parties intervene to produce it, but that such intervention cannot be taken for granted. The results suggest a new approach to the nature of political competition, and help explain the persistence of incumbent and dominant party advantage. They also set the stage for later chapters' closer discussion of why parties are as likely to thwart competition as to provoke it.

Guided by a simple model of electoral entry, I argue that single non-transferable vote (SNTV) districts with  $M$  seats at stake should usually attract only  $M$  entrants. In theory,  $M+1$  or more candidates will enter -- that is, the election will be contested -- only when even the weakest expects to tie for a seat. In practice, elections should be either uncontested or closely-contested, in proportions that vary according to the electoral environment.

Extensions of Duverger's Law to SNTV in multi-member districts (Reed 1990, Cox 1994 and 1997) have relied heavily on Japanese Lower House data, which cover only a single election type and a narrow range of medium-sized district magnitudes. My contrary predictions are supported by more richly-varied evidence juxtaposing four types of Japanese election -- not only Lower House, but also Upper House, gubernatorial, and prefectural assembly -- and sometimes Taiwanese elections as well. The results confirm that uncontested races are no figment of the theoretical imagination, and that they do grow more common when outcomes grow more predictable. Low-magnitude districts -- and particularly single-member districts (SMDs), the very type that inspired Duverger's Law -- prove especially prone to non-competition.

The simple entry model by no means explains entry decisions fully. It assumes away long-term strategy, incomplete information, political parties, and idiosyncratic individual decisions. As the empirical tests will show, any of these may prove important in practice. But a stripped-down theory of purely myopic strategic entry provides a baseline. It establishes non-competition as the general default, what we should expect when more changeable influences are at their weakest. Often these influences are indeed weak and the model performs fairly well. What competition does occur, like Olson's (1965) collective action, is not natural or self-supporting, but sustained by something else -- it is a by-product of either uncertainty, non-instrumental behavior, or aims beyond the immediate election.

Political parties are often responsible for the latter two -- but how often we can expect them to intercede and instigate competition is an open empirical question.

## 2. Number-of-entrants Theory

Political science's common understanding is that under normal conditions, elections will be contested, whatever the strength or number of losers might be. The prototypical statement is the district-level application of "Duverger's Law" (Duverger 1954), which holds that SMDs tend to produce two-candidate elections. Reed (1990) extends this to SNTV elections in multi-member districts of  $M$  seats (including SMDs, in which  $M = 1$ ), arguing that  $M+1$  candidates will run in equilibrium. Cox (1994 and 1997), in the most general and state-of-the-art approach, deduces that  $M+1$  is typically an upper bound on the number of entrants in equilibrium. Results from several countries, particularly Japan, have been marshaled in support of the  $M+1$  rule (Reed 1990, Cox 1997, Hsieh and Niemi 1999, Jesse 1999).

But there is persistent evidence to the contrary. Uncontested elections do, in fact, occur fairly often in plurality districts, and spatial theories of elections even *predict* they should occur under certain conditions. Yet most research views uncontested races as rare or strange. Deductive theorists dismiss predictions of uncontested elections as signs of still-imperfect theory, or simply report them with no special significance attached. At the same time, empirical researchers defer to Duverger: they observe uncontested elections, but conclude these must be exceptional or out-of-equilibrium cases.

I argue that non-competition is not the empirical oddity some assume it to be, and that its theoretical foundations are anything but unconventional. The oft-noted similarity between party systems and oligopoly (Robertson 1976, MacPherson 1977, Ware 1979) suggests that inherent incentives not to compete inhere in elections. More immediately to the point, the causal framework of Duverger's Law itself, upon closer examination, suggests this as well.

Duverger's Law and related theories are driven by a whittling down of the contestant field: electoral system rules exclude losers, voters abandon likely losers, and potential candidates drop out if they expect to lose. Conventional wisdom finds no fault with these causal mechanisms -- at the same time, it presumes they grind to a halt once only one eventual loser remains. But absent any countervailing force, what stops the relentless whittling down from continuing until no contest remains at all?<sup>1</sup>

I argue that strategic contestants, through these conventional mechanisms, will push any election toward non-competition, even in "competitive" party systems.<sup>2</sup> The core intuition -- exceedingly simple and consistent with much previous research -- is that contestants won't run if they think they can't win. The more clearly the winner(s) can be predicted beforehand, the less likely anyone is to challenge that eventual winner(s). Spatial theories of electoral competition generally make this assumption, and often predict uncontested elections, but their findings are rarely tested empirically. Non-spatial theories, meanwhile, claim support for Duverger's Law, but are rooted in faulty approaches to contestants' behavior.

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<sup>1</sup> Riker (1976) argues that candidates' support coalitions might fracture if they grow too broad; see Uslaner (1975) for one counterexample.

<sup>2</sup> The term "contestant" is used to refer generically to *potential* entrants of all kinds: independent candidates, party-sponsored candidates, and parties running under proportional representation.

## (1) General Causal Mechanisms

Both spatial and non-spatial theories rest, at least in part, upon basic causal mechanisms that might be called Duverger's three forces: his "mechanical effect," which is always at work, and the twin "psychological effects" of strategic voting and strategic candidate entry. All three generally work to reduce the size of the contestant field.

The mechanical effect is simply a baseline effect of electoral rules: contestants whose vote share falls below their district's effective winning threshold will be denied seats. Under SNTV at the constituency level, its workings are straightforward: in districts of  $M$  seats, the top  $M$  finishers win.

Voters may behave sincerely and simply vote for their favorite entrant. Strategic voters, however, try to maximize the utility they gain from the electoral result. They are mindful of their district's winning threshold, and realize that casting a vote for a likely loser (or winner) has little chance of influencing the election's outcome. Strategic voters who judge their preferred candidates to be out of the running will abandon them, and vote instead for the candidates they most prefer among the possible winners, if doing so might produce a more desirable outcome (see Cox 1997 for a review).

Contestants, similarly, may behave sincerely and simply enter the race. Strategic contestants, however, anticipate both the mechanical effect and the effects of any strategic voting, assess their likelihood of winning, and run only if they judge entry to be worthwhile.

## (2) Spatial Models

Spatial models generally posit a distribution of voters' fixed ideal points along one or more dimensions of policy. Voter preferences over particular contestants are a function of the distance between contestants' policy positions and voters' own ideal positions.<sup>3</sup> The models often concern themselves only with which policy positions a given number of entrants will take, but some endogenize the number of contestants (for reviews, see Shepsle 1991 and Merrill and Grofman 1999). Most endogenizations of entry assume that contestants enter only in an attempt to win the race.<sup>4</sup> Most also assume complete information (more for exposition's sake than as a crucial condition), which lets prospective contestants gauge precisely whether a given policy stance will yield an outright win, a tie for a winning place, or a loss.

Under these conditions, models that endogenize entry in SNTV districts of  $M$  seats generally support equilibria that include at least one of the two following results: (1)  $M$  contestants enter and win with certainty, or (2) so long as the benefits of winning are at least  $n+1$  times as great as the costs,  $M+n$  contestants ( $n \geq 0$ ) enter, and when  $n > 0$ ,  $n+1$  of them tie for  $M$ th place and win the equiprobable tiebreaker with probability  $1/(n+1)$ . These results sometimes assume an SMD (Feddersen, Sened, and Wright 1990; Feddersen 1992; Osborne 1993; Osborne and Slivinski 1996; Besley and Coate 1997), and sometimes are found to hold only in SMDs or when  $M$  is below a certain threshold (Greenberg and Shepsle 1987, Shvetsova 1994a). Thus, most spatial models of SNTV elections predict that under some

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<sup>3</sup> Spatial models of electoral competition are analogous to models of agenda-setting in legislative committees (Shepsle and Cohen 1990, 14-15).

<sup>4</sup> Models might also allow entry by a contestant who expects to lose but hopes to maximize votes, gain publicity, or influence the outcome (Osborne and Slivinski 1996).

conditions, especially in low-magnitude districts, non-entry by contestants who expect to lose will produce  $M$ -entrant equilibria.

### (3) Non-spatial Models

In non-spatial models, voters are assigned preferences over contestants, not policy positions: 25% of the electorate may be specified to prefer Contestant A to Contestant B to Contestant C, 15% to prefer A to C to B, and so on. Since the preference orders are fixed, contestants' hands are tied. Contestants cannot increase their vote -- at least for the immediate election -- except by forming coalitions or convincing others to stay out of the race.<sup>5</sup>

But if candidates are more constrained in non-spatial models than in spatial ones, voters are less so. The non-spatial approach is agnostic about how voters rank contestants. It can accommodate spatial criteria, which require both voters and candidates to choose policy positions, but it can also accommodate vote choices driven by party identification, demographic or geographic allegiances, or candidates' personal attributes.

Of course, both spatial models and non-spatial models use simplifying assumptions: the former posits pure policy-position-based preferences and allows its contestants complete mobility across policy positions, while the latter leaves contestants completely powerless in the face of voters' contestant-specific preferences. I take the non-spatial approach. The general, fundamental power and widespread acceptance of Duverger's causal mechanisms confirms that non-spatial assumptions are basically plausible. Cox (1997), among others, has used them profitably in analyzing a wide variety of elections. For Japan in particular, whose elections provide most of the evidence examined below, the non-spatial approach seems quite appropriate. National elections are for the most part marked by some combination of personal voting and attention to party labels, and relatively little emphasis on issues, for reasons including intra-party competition in multi-member districts, campaigns managed either through personal support organizations or machine-like party organizations, and recent party label volatility (see, for example, Richardson 1988; Kobayashi 1997 *passim*; Grofman 1999, 380-382; Miyake 1999, 178). In local elections, "friends-and-neighbors" voting only intensifies (see, for example, "Yuukensha" 1999).

Non-spatial models also seem more amenable to empirical testing. A full mapping of voter preferences across all potential contestants might be impossible, but we might derive estimates from opinion polls, past election results, or candidate attributes like incumbency. Gauging voters' and contestants' policy positions is more difficult, especially at the constituency level. In addition, since the complete mobility of contestants often yields predictions of tie votes, spatial theories' number-of-contestant predictions often hinge on benefit-cost ratios, which themselves are difficult to measure. This may help explain why spatial theories of strategic entry are rarely subjected to empirical tests.<sup>6</sup>

As a tool for studying strategic entry, then, non-spatial models seem attractive. In their current state, though, they are crucially underdeveloped: they fail to account convincingly for independent strategic decisions by contestants.

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<sup>5</sup> "Convincing" others not to run might involve intimidation as well as persuasion ("Yamato" 1995).

<sup>6</sup> Shvetsova (1994a and 1994b) bases the tests of her spatial theory on non-spatial measures of electoral viability.

Existing models offer two types of causal mechanism.<sup>7</sup> Reed (1990) bases his equilibrium point prediction of  $M+1$  entrants on *party* nomination strategies: “The party with the most votes left over after subtracting as many full quotas [of  $(1/[M+1]) + 1$  votes] as possible can run an extra candidate without fear of losing a seat. It is still guaranteed the number of seats that it has quotas and has some chance of winning an extra seat if the vote swings [its] way or if the opposition follows a sub-optimal strategy. In general, in each district one party has an incentive to run an extra candidate, producing an equilibrium of  $[M]+1$  serious candidates in each district. Any more than  $[M]+1$  and some party might win fewer seats than it has quotas. Any less and the most confident party has an incentive to run one more.” (339-340)

Reed’s argument is unusual, and laudable, in that it provides an explicit reason why the number of entrants should ever rise above  $M$ . But the causal mechanism is inconsistent -- for example, the party with incentive to run an extra candidate hopes to capitalize on a favorable vote swing, even as it remains fully confident that its own votes are immune to unfavorable swings. More important here, though, is that parties are assumed to sponsor candidacies, and sponsoring an extra candidate is assumed to be costless. For the candidate chosen to be the “extra” -- or for a candidate not aligned with any party -- the decision to run may not be so simple. When we should observe the conditions that encourage exactly  $M+1$  candidates to run, and why these constitute an equilibrium, remains unclear.

Cox (1997) generalizes Reed’s results, but uses a causal mechanism more closely related to those of spatial models. He builds on previous work (Cox 1987, Palfrey 1989, Myerson and Weber 1993, Cox 1994) to produce an entry model driven entirely by strategic voting. Given complete information, strategic voting yields two possible results in equilibrium. The first, which I will call a “distinct-rank” equilibrium, occurs when voters are clear on who (if anyone) the pivotal  $M+1$ th finisher will be.<sup>8</sup> This allows them to carry out Duvergerian strategic voting to the fullest: candidates expected to finish  $M+2$ th or lower are judged sure losers and deserted by all their supporters. Of course, given complete information, a candidate certain to finish  $M+1$ th is a sure loser as well -- but once the field has been narrowed to  $M+1$  candidates, supporters of the  $M+1$ th have no incentive to desert it, because doing so would have no effect on the outcome of the election.<sup>9</sup> Distinct-rank equilibria thus effect an “ $M+1$  upper bound” on the number of candidates who expect to receive any votes. Since any candidate with a positive expected vote is presumed to enter the race, the  $M+1$  upper bound governs the number of entrants as well: there are  $M$  winners and, at most, one runner-up, the  $M+1$ th finisher. Where the number of candidates might fall *within* the upper bound is indeterminate, so  $M$ -candidate equilibria are also possible.<sup>10</sup>

A “tie-vote” equilibrium, the second type, occurs when at least two candidates are expected to tie for  $M+1$ th place (or, more generally, when at least  $n$  candidates are expected to tie for  $[M-z+3]$ th place,  $M+2 \geq z \geq 2$ ). Supporters of the candidates expected to tie for  $M+1$ th will not abandon these candidates, because to gain by doing so requires solving an

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<sup>7</sup> For one effort to reconcile the two, see Kohno and Fournier (2000).

<sup>8</sup> Cox calls this “Duvergerian equilibrium,” and calls the “tie-vote” equilibrium introduced below a “non-Duvergerian equilibrium.” Because I argue that “Duvergerian forces” can produce equilibria not predicted by Duverger, I use different labels.

<sup>9</sup> Since the election result is a foregone conclusion, that anyone bothers to go to the polls at all is ensured by an assumption that voting is cost-free for at least some voters. For another method of ensuring positive turnout, see Feddersen (1992).

<sup>10</sup> Equilibria of fewer than  $M$  entrants are theoretically possible as well, and such “hyper-uncompetitive” elections do occur occasionally in practice (Wright and Riker 1989, 161; “Teisuu” 1998, Ishikawa 1999). Since these reflect extreme extensions of -- and not departures from -- the causal mechanisms at work in  $M$ -entrant elections, they are ignored here for convenience.

intractable coordination problem. Tie-vote equilibria can support any number of candidates greater than  $M+1$ :  $M$  winners plus two or more runners-up tied for at least  $M+1$ th place.

Cox's analysis of strategic voting is pathbreaking, but its seamless translation into a theory of strategic entry ignores crucial differences between voters and contestants -- in particular, between the motives of the  $M+1$ th contestant and that contestant's supporters (or, in a tie-vote equilibrium, the contestants tied for  $M+1$ th and their respective supporters). In a field of  $M+1$  candidates, even if the  $M+1$ th candidate is commonly expected to finish far out of the running, at least some of the  $M+1$ th candidate's supporters may well vote sincerely for the sure loser, because they have no better option. But why should the sure loser enter the race? Recall that in spatial models with complete information, only contestants who expect at least to tie for a seat have any incentive to enter. The strategic voting result, though, presumes that contestants who expect at most to be *first runner-up* have reason to enter. Given an assumption of short-term instrumentality, this seems insupportable.<sup>11</sup>

Scholars of various theoretical bents have agreed that elite-level decisions to stand down are as important as voter strategy in driving Duvergerian processes (for example, Riker 1982, 764-765; Reed 1990, 353-355; Blais and Carty 1991; Cox 1994, 615-616; Shvetsova 1994b, 1). Contestants' own decisions, even if guided by anticipation of voters' strategic behavior, are what ultimately delimit the range of voter choices. If we are interested in entry by strategic contestants, it seems plain that we must fully account for contestant strategies. Doing so, given that strategic behavior generally shrinks the contestant field, shows that models ignoring strategic contestants have overestimated the number of entrants in equilibrium.

### 3. A Non-spatial Model of Strategic Entry in SNTV Elections

The simple model of strategic entry proposed here marries the defining characteristic of the non-spatial approach (exogenous voter preference rankings of contestants) to the common-sense specification of contestant behavior already standard in spatial models (contestants only enter if they have a chance to win). The model is kept as spare as possible -- there are no parties, no future elections to consider, no aggregation of results into a legislative body. Conditions 1 through 5 below set the basic conditions: exogenous, non-spatial voter preferences; complete information; narrow instrumentality; and costly and strategic entry.

The equilibria are analogous to those of Cox's strategic-voting-based model, but with a crucial difference: whether or not a tie is expected for  $M$ th place, not  $M+1$ th, is pivotal. The upper bound on contestants in distinct-rank equilibrium, when Duvergerian forces work themselves through completely, is  $M$ . Any larger number of entrants, including  $M+1$ , can occur only when an expected tie for  $M$ th place prevents clear predictions about who the ultimate winners will be.<sup>12</sup>

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<sup>11</sup> Following Riker (1976), Cox also holds that when there are sure winners, we might even expect *most* voters to vote sincerely, since they should be able to tell from the start that strategic voting cannot change the ultimate outcome (1997, 97). This seems to imply that in races whose outcome is extremely clear, more candidates might expect positive votes, and that in turn there might be more than  $M+1$  entrants. But even if more eventual losers can expect votes, these should be precisely the races in which entry is *least* attractive for them.

<sup>12</sup> These district-level dynamics may also affect the aggregation of parties across districts. Plurality presidential and gubernatorial elections generally take place in SNTV districts, and so should have only  $M$  expected entrants in equilibrium, absent expected ties. Presidential races in the U.S. and Latin America usually have two or more effective entrants in practice (Jones 1994), but an incentive "to coalesce behind one principal challenger" (Shugart and Carey 1992, 209) cannot be derived from Duvergerian forces alone. In gubernatorial elections,

The many simplifying assumptions leave little “distance” between themselves and the results. Given the model’s conditions, equilibrium predictions follow directly, and most of the analytical effort is devoted to confirming that non-equilibrium cases should be rare. But this makes the results all the more striking: they are plain and intuitive, produced by assumptions conventional in existing research, and nonetheless contradict conventional wisdom.

Of course, the assumptions fit some elections better than others. Below I examine the theoretical consequences of relaxing them, and the empirical consequences for the Japanese case. In Chapter 6 I do the same cross-nationally. One might incorporate parties, simultaneous elections in other districts, concern for future elections, or relationships between executive and legislative elections, for example, and I add such detail in Chapter 4. The bare-bones model is used here to highlight candidate strategy as the most fundamental determinant of entry decisions, and to define a theoretical default for all cases.

### (1) Conditions of the model

1. *Exogenous determination of voter preferences over contestants.* A set of contestants, a set of voters, and a utility function for each voter defining a preference ranking for each contestant is specified exogenously.<sup>13</sup>

Each voter ranks all contestants, and (for simplicity’s sake) is never indifferent between them. Voters vote sincerely -- though strategic voting produces similar results, as discussed below. Also assume that no voter abstains; the effects of relaxing this assumption are discussed below as well. Voters thus vote for their first-preference contestant if that contestant enters the race, for their second-preference contestant if their first-preference contestant stays out of the race, and so on.

Let  $N$  be the set of contestants,  $j \in N = \{1, 2, \dots, n\}$ ; let  $E$  be the set of all entrants; and let  $v(j, E)$  be the proportion of the vote  $j$  expects to receive when all contestants in  $E$  enter, with  $0 \leq v(j, E) \leq 1$  and  $\sum_{j=1}^n v(j, E) = 1$ . Let  $E'$  be a set of entrants that includes  $j$ .

2. *Complete information*, as is often implicit in spatial models. Each contestant has precise knowledge of the complete set of voter preference functions. In turn, each can predict the

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single-entrant races do occur more often, as the Japanese data below suggest. In turn, the number of executive candidates often helps determine the aggregate number of parties across legislative districts (Shugart and Carey 1992, Jones 1994, Cox 1997, Samuels 2000). In systems with one executive candidate (or effective executive candidate), the number of parties represented among each district’s legislative candidates might tend toward one as well, even as each legislative district’s number of *candidates* is shaped by district  $M$ .

The same basic logic seems to apply even in parliamentary systems. In general, candidates “will want to affiliate not only with the party in power but also with other parties that may have a chance of attaining power,” (Chhibber and Kollman 1998, 335). The number of parties in the aggregate comes to reflect the number of parties capable of taking power, whether the locus of that power is national or local (Chhibber and Kollman 1998, Samuels 2000). Chhibber and Kollman hold that given single-member, simple-plurality districts, two main competitive parties “will tend to emerge” at the aggregate level (1998, 335). But prime ministerial selection within the parliament essentially constitutes an SMD election itself, and the argument developed in this chapter suggests there may be only one party (or coalition) seen capable of winning it, even in the long term. The Indian case seems supportive here on balance, as do clearer cases of one-party-dominant systems, like Japan’s, under other electoral systems.

<sup>13</sup> Given  $n$  candidates, an analogous spatial model can be constructed in  $n-1$ -space, if each contestant may only enter at a single, fixed point.

outcome of any given race with precision, and the payoff any given contestant gains from any given strategy is common knowledge.

3. *Strategic entry by contestants.* Contestants make entry decisions so as to maximize their own expected utility. Each contestant  $j$  decides either to enter the race alone or not to enter. Though the possibility of coalitions between contestants does technically exist, conditions 4 and 6 below make it safe to ignore here. All contestants make decisions simultaneously.

4. *Benefits are private goods and can only be gained by winning elections.* A fixed amount of office benefits  $Mb$  is at stake,  $b > 0$ , and  $b$  is awarded to each of the  $M$  winners. This implies, first, that each contestant maximizes the probability of winning a seat, not votes or order of finish. Second, running and losing offers contestants nothing in the way of self-expression, publicity, or a foothold in the district (Kazee 1980). Third, contestants have no interest in policy per se, and never enter solely to influence an election they expect to lose. Fourth, there are no side payments.

Since benefits are not distributed to party members, supporters, or interest groups, occupying seats is the only goal, and no mechanism exists to support electoral coalitions.<sup>14</sup>

5. *Costly entry.* This assumption seems reasonable, and perhaps necessary, in any non-trivial consideration of entry (though see Benoit 1999). Each entrant incurs equal entry costs of  $c$ ,  $c > 0$ , and each non-entrant incurs entry costs of 0.

Assume here that entry costs are only large enough to deter contestants who expect to lose:  $0 < c < b/n$ .

6. *Contestants are methodologically individual candidates* (so hereafter “candidate” replaces the generic “contestant”). This assumption is most clearly satisfied when all candidates are non-partisan individuals. Parties (or factions, labor unions, etc.) can only act like individual, short-term-instrumental candidates: they might endorse, aid, or even control candidates, but they cannot enforce coordination, and do not consider conditions in other districts.

7. *Single non-transferable vote.* Each district has a seat magnitude  $M$ ,  $M \geq 1$ , and each voter casts a single vote for a single candidate. The  $M$  entrants who receive the greatest vote totals win seats; ties that must be broken are broken equiprobably.<sup>15</sup>

8. *One-shot, constituency-level election.* Voters and candidates ignore future elections in the district, as well as individual or aggregate results of elections in other districts. There are no primary elections. Past election results may shape beliefs and expectations about the

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<sup>14</sup> If the winner were able to distribute benefits, coalition would be theoretically possible but still difficult to support: one candidate might drop out of the race and support another candidate in return for a share of the latter’s winning benefits (see, for example, Ferejohn 1991), but there would be no means of enforcing the agreement. Over a series of elections two candidates might agree to alternate between roles as candidate and behind-the-scenes supporter, though this agreement would also require a particular discount rate and enforcement strategy to be tenable. The “Costa Rica” method of alternation among legislative candidates and the pact for alternation of the prime ministership under Israel’s grand coalition are examples -- not always successful ones -- of such tactics. A universal logroll over distributive proposals that are considered sequentially, but that each benefit one legislator exclusively, is analogous.

<sup>15</sup> Candidate  $j$  finishes in a tie that must be broken if  $\#\{k \mid v(k, E') > v(j, E'), k \neq j\} = M - z + 1$  and  $\#\{k \mid v(k, E) = v(j, E), k \neq j\} = n_t - 1$ ;  $2 \leq z \leq M + 1$ ;  $z \leq n_t$ . Other ties need not be broken to determine which  $M$  entrants win. The simplest such tie is one for  $M$ th place between  $j$  and  $n_t - 1$  other entrants, and hereafter I simply use “tie for the last seat” or “tie for a seat” to indicate any tie requiring a tiebreaker.

immediate election, but may not serve as previously-completed stages of cooperative arrangements such as “Costa Rican” alternating candidacies.

Now let  $v_j$  be the proportion of the electorate that prefers candidate  $j$  to all other candidates, or  $j$ 's proportion of “first preferences.” Given sincere voting, this is  $j$ 's “guaranteed” vote in any race it enters:  $v(j, E) \geq v_j$ . For convenience, candidates are numbered in order of decreasing proportion of first-place preferences:  $v_j \geq v_{j+1}$  for all  $j$ . Let  $v_{jk}$ ,  $k \neq j$ , be the proportion of voters who prefer  $j$  most, and who prefer  $k$  to all candidates whose subscripts are omitted. In a field of three contestants, then,  $v_1 = v_{12} + v_{13}$ .

When a candidate decides not to enter the race, voters who prefer that candidate most allocate their votes sincerely to the next-most-preferred entrant, as dictated by their preference rankings. Let  $X$  be the set of non-entrants,  $k \in X = \{1, 2, \dots, y\} \mid X + E = N$ . The proportion of the vote candidate  $j$  expects to receive when a given group of contestants enters the race, then, is

$$v(j, E) = \begin{cases} v_j + \sum_{k \in X} v_{kj} + \sum_{k \in X} \sum_{m \neq k} v_{km} v_j + \dots \\ \quad + \sum_{k \in X} \sum_{m \neq k} \dots \sum_{y \neq \dots \neq m \neq k} v_{km \dots yj} & \text{if } j \in E, \end{cases} \quad (1a)$$

$$\left. \begin{array}{l} \\ \\ \\ \end{array} \right\} 0 \quad \text{if } j \notin E. \quad (1b)$$

In the three-candidate example, if candidate 1 chooses not to enter, then 2 receives  $v_{12}$  in addition to its own first-preference vote, and 3 receives  $v_{13}$  in addition to its own first-preference vote, so that  $v(2, \{2,3\}) = v_2 + v_{12}$ , and  $v(3, \{2,3\}) = v_3 + v_{13}$ .

Now let  $p_j$  be candidate  $j$ 's probability of winning the election. If  $j$  expects to win a seat outright,  $p = 1$ . If  $j$  expects to finish in an  $n_t$ -way tie for  $(M-z+2)$ th place,  $2 \leq z \leq M+1$ ,  $z \leq n_t$ ,  $j$ 's probability of winning the resulting tiebreaker is  $(z-1)/n_t$ . If  $j$  stays out of the race or expects to lose outright,  $p = 0$ .

Denote by  $u(j, E)$  candidate  $j$ 's expected utility given a field of entrants  $E$ , defined in the standard manner by the quantity  $p_j b - c$ . Then

$$u(j, E) = \begin{cases} b - c & \text{if } \#\{k \mid v(k, E) \geq v(j, E), k \neq j\} < M, \end{cases} \quad (2a)$$

$$\left. \begin{array}{l} \\ \\ \\ \end{array} \right\} \begin{cases} [b(z-1)/n_t] - c & \text{if } \#\{k \mid v(k, E) > v(j, E), k \neq j\} = M - z + 1 \\ & \text{and} \\ & \#\{k \mid v(k, E) = v(j, E), k \neq j\} = n_t - 1; \\ & 2 \leq z \leq M+1; z \leq n_t, \end{cases} \quad (2b)$$

$$\left. \begin{array}{l} \\ \\ \\ \end{array} \right\} 0 \quad \text{if } j \notin E, \quad (2c)$$

$$\left. \begin{array}{l} \\ \\ \\ \end{array} \right\} -c \quad \text{if } \#\{k \mid v(k, E) > v(j, E), k \neq j\} \geq M. \quad (2d)$$

If all other candidates' decisions were already known to candidate  $j$ , the entry decision would become a standard decision-theoretic problem:  $j$  would enter alongside any given set of pre-committed opponents so long as this promised greater expected utility than staying out.

Since staying out always yields expected utility of 0, and since we assume  $0 < c < b/n$ , this means  $j$  prefers to enter any potential race in which it expects to win or tie for a seat.<sup>16</sup>

But if we assume that all entry decisions are simultaneous, candidates may not know who their opponents will be. Their entry decisions may become interdependent, and so are best expressed as a non-cooperative game. The generic extensive form of this simultaneous entry game, for the three-candidate case, is shown in Figure 1.

## (2) Characterization of Outcomes

Each possible set of voter preferences supports one of three possible outcomes. Some voter preference sets leave all potential entrants with dominant strategies, yielding a dominance-solvable outcome and a strong prediction of what result we should observe in practice. Many voter preference sets without a dominance-solvable outcome still do support a unique Nash equilibrium in pure strategies, and thus a somewhat weaker prediction. Some sets, though, support either multiple Nash equilibria or no equilibrium at all in pure strategies. The dominance-solvable and unique Nash equilibrium cases should be most common, and their predictions are consistent: except in some cases where ties are expected, there should only be as many entrants as there are seats.

### Dominance-solvable outcomes

Dominance-solvable outcomes require all candidates to have dominant strategies, in which case at least  $M$  candidates will necessarily have dominant strategies of “enter” -- that is, at least  $M$  candidates will be able to win or tie for a seat no matter who their opponents might be. Whether such invincible candidates exist depends on the intricacies of voters’ exhaustive candidate rankings, which dictate how non-entrants’ supporters cast their votes. A general formulation specifying which possible voter preference sets produce dominance-solvable outcomes will not be offered here, but we can immediately identify a broad range of the m simply by looking at first-preference votes.

“Enter” is a dominant strategy for any candidate  $j$  for whom  $v_j \geq 1 / (M+1)$ . With this large a guaranteed vote share,  $j$  is assured at least a tie for one of the  $M$  seats at stake, no matter how non-entrants’ votes might be redistributed.<sup>17</sup> This simply reflects a piece of electoral common knowledge also known as the Hagenbach-Bischoff quota. More generally, recalling that candidates are ordered by decreasing size of first-preference vote,  $j$  candidates will always be entry-dominant whenever the  $j$ th is certain to win or tie for one of the  $(M-j+1)$  lowest seats, which occurs when  $v_j \geq [1 / (M-j+2)][\sum_{k=j}^n v(k, E')]$ . Note that “enter” may dominate even for some candidates whose expected vote share falls below  $1/(M+1)$ , since the

<sup>16</sup> With  $b/n < c$ , the cost/benefit ratio might discourage entry by some contestants who expect to tie for a seat; with  $b < c$ , even contestants certain to win would be deterred.

<sup>17</sup> Given that  $v(j, E') + \sum_{k \in E'} v(k, E') = 1$ ,  $k \neq j$ , and since the  $M$ th largest  $v(k, E')$  can be no larger than  $[\sum_{k \in E'} v(k, E')] / M$ , it is straightforward to show that  $v(j, E')$  is at least as large as the  $M$ th largest  $v(k, E')$  if  $v(j, E') \geq 1 / (M+1)$ . And since  $v(j, E') \geq v_j$  for all  $E'$ , then  $v(j, E')$  is at least as large as the  $M$ th strongest opponent’s vote for all possible  $E'$  if  $v_j \geq 1 / (M+1)$ . Thus, if  $v_j \geq 1 / (M+1)$ , then either  $\#\{k \mid v(k, E') \geq v(j, E'), k \neq j\} < M$ , satisfying condition (2a), or  $\#\{k \mid v(k, E') > v(j, E'), k \neq j\} = \emptyset$  and  $\#\{k \mid v(k, E') = v(j, E'), k \neq j\} = M$ , satisfying condition (2b).

vote share needed to win drops when other entrants surpass that quota.<sup>18</sup> Note also that when the number of candidates is  $M+1$ , entry *always* dominates for  $M$  candidates.<sup>19</sup>

Even a  $j$ th candidate who expects fewer than  $[1 / (M-j+2)][\sum^n_j v(j, E)]$  first-preference votes may be able to win or tie any possible race if support for other candidates is dispersed enough, and/or if votes from supporters of non-entrants are plentiful enough, always to compensate for the first-preference shortfall. For example, only 28% of the electorate in a two-seat district might prefer candidate  $j$  most, but if the remaining 72% splits its first-preference support evenly between three other candidates and gives all second-preference votes to  $j$ , then  $j$  expects to win against any possible field of opponents.

If there are  $M$  or more candidates whose entry is assured in this way “from the start,” independent of all other candidates’ decisions, then the game proves dominance-solvable “from the start.” Even if entry is certain for only one candidate, though, then eliminating potential outcomes that presume non-entry by this candidate may leave others with dominant strategies of “enter” as well. In a one-seat district, for example, a candidate who only wins if no other candidate enters would be forced out of the race. If the iterated elimination of such dominated strategies leaves all  $n$  players with dominant strategies of either “enter” or “stay out,” a dominance-solvable outcome ultimately results.

In almost all cases, the game does prove dominance-solvable once “enter” becomes a dominant strategy for at least  $M$  candidates. If exactly  $M$  entry-dominant candidates always expect to *win* outright, then only these  $M$  candidates enter in equilibrium (see Figure 2 for one example).<sup>20</sup> If at least one of  $M$  or more entry-dominant candidates expects to tie in some possible race, there will usually be a dominance-solvable outcome with entry by all these candidates, and a tie for at least the lowest seat if these candidates number more than  $M$ . In a small number of cases, some other candidates are left without dominant strategies.<sup>21</sup>

<sup>18</sup> In Japanese Lower House districts, for example, very popular entrants absorb most of the vote and leave other candidates to battle for tiny slivers of the remaining “available” electorate. In the four-seat Gunma 3rd District in 1972, for example, future prime minister Fukuda Takeo won the top seat with 46.2% of votes cast, and future prime minister Nakasone Yasuhiro won the second with 24.3%, allowing then-younger future prime minister Obuchi Keizou to capture the fourth seat with only 9.7% (Asahi Shinbun Senkyo Honbu 1993, 344).

<sup>19</sup> Given any set of elements  $j \in N = \{1, 2, \dots, n\}$ , ordered from 1 to  $n$  by decreasing size of a quantity  $v_j$ ,  $v_{n-1}$  is always at least as large as  $(\sum_{j=n-1}^n v_j) / (n+1 - [n-1]) = (v_{n-1} + v_n) / 2$ . Following from above,  $M$  candidates are certain to win or tie for seats when the  $M$ th candidate is certain to win or tie for the lowest seat, which is the case when  $v_M \geq [1 / (M-M+2)][\sum_{j=M}^n v(j, E')] = [\sum_{j=M}^n v(j, E')] / 2$ . If  $M = n-1$ , the right-hand side of the inequality becomes  $[\sum_{j=n-1}^n v(j, E')] / 2$ , or  $(v_{n-1} + v_n) / 2$ .

<sup>20</sup> The examples in Figures 2 and 3 could be accommodated by a one-dimensional spatial model of voting.

<sup>21</sup> This occurs only, but not always, when at least two candidates other than the certain entrants might tie for a seat. For example, when candidates A, B, and C compete for one seat, certain entry by A fails to produce a dominance-solvable outcome if:

- (a) both B and C can tie A in two-way races, but A defeats both outright in a three-way race. Once A enters, B and C find themselves locked in a game similar to Chicken (see Figure 3). Entry only by A and B is a Nash equilibrium, but so is entry by only A and C.
- (b) A finishes in a three-way tie with B and C in a three-way race, but defeats either opponent in two-way races. Once A enters, entry by both B and C supports a Nash equilibrium, but so does entry by neither of the two.
- (c) A ties B in a two-way race and defeats C in a two-way race, but defeats B and ties C in a three-way race. Once A enters, B and C find themselves in a game similar to Matching Pennies: B prefers to enter if C stays out and to stay out if C enters, while C prefers to enter if B enters and to stay out if B stays out. No equilibrium exists in pure strategies. The same result holds, in reverse, when B ties only in the three-way race and C ties only in a two-way race.

Humes (1990) discusses analogous outcomes in more detail.

Certain entry by A produces a single-entrant race despite the potential for ties when A ties only either B or C in a three-way race and defeats both in two-way races.

## Unique Nash equilibrium outcomes

Dominance-solvable outcomes already constitute Nash equilibria, situations in which no candidate has incentive to change its strategy unilaterally. But Nash equilibria may also exist when some players lack dominant strategies. If there is a unique Nash equilibrium in such a case, this offers a prediction, albeit a less powerful one, for the simultaneous entry game.

Except when ties are possible, a unique Nash equilibrium exists only if the candidate pool includes an “ $M$ -tuple” of Condorcet winners (for similar findings, see Besley and Coate 1997). In a simple plurality election, a Condorcet winner is a candidate who beats or ties any opponent head-to-head, whatever the results might be against a larger entrant field. “Condorcet  $M$ -tuple” denotes any set of candidates whose members always win or tie for one of  $M$  seats in races of  $M+1$  entrants.

To see why a unique Nash equilibrium requires a Condorcet  $M$ -tuple, first consider all possible entrant sets lacking Condorcet  $M$ -tuples. Assume at first that tie votes never occur. In all races with fewer than  $M$  entrants, at least one non-entrant would prefer to enter and win a seat. If more than  $M$  candidates enter, at least one loses and would prefer not to enter. If exactly  $M$  candidates enter, there always exists at least one non-entrant who could win a seat by entering, since no group of  $M$  candidates is completely invulnerable in races of  $M+1$  entrants -- that is, there is “cycling” in contests of  $M+1$  entrants. For each possible combination of entrants, then, at least one candidate has an incentive to change its strategy. But when a Condorcet  $M$ -tuple does exist and only its members enter -- again, assuming no ties -- no candidate has incentive to switch strategies. No non-entrant can win by entering, and no member of the Condorcet  $M$ -tuple has any incentive to stand down. Entry by the  $M$  members of the Condorcet  $M$ -tuple, therefore, constitutes a unique Nash equilibrium.

Allowing ties has roughly the same effect when a Condorcet  $M$ -tuple exists as when  $M$  or more entry-dominant candidates exist: when ties are possible between a member of the  $M$ -tuple and at least one other candidate, there may exist either a unique Nash equilibrium with  $M$  entrants, a unique Nash equilibrium with more than  $M$  entrants, or, in some exceptional cases, multiple or no equilibria.

Generally, if no Condorcet  $M$ -tuple exists, no equilibrium holds. Some combinations of potential ties, though, may support a unique Nash equilibrium even when no Condorcet  $M$ -tuple exists.<sup>22</sup>

### (3) Equilibrium predictions and their frequency

Any given voter preference set thus produces one of three types of prediction about the number of entrants expected in an election:

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<sup>22</sup> For example, given a group of four candidates in a two-seat district, a unique Nash equilibrium exists without a Condorcet double when  $v_1 = 0.7, v_{12} = 0.7, v_{123} = 0.7, v_{124} = 0, v_{13} = 0, v_{14} = 0; v_2 = 0.1, v_{21} = 0, v_{23} = 0.1, v_{231} = 0.1, v_{234} = 0, v_{24} = 0; v_3 = 0.1, v_{31} = 0, v_{32} = 0, v_{34} = 0.1, v_{341} = 0.1, v_{342} = 0; v_4 = 0.1, v_{41} = 0, v_{42} = 0.1, v_{421} = 0.1, v_{423} = 0, v_{43} = 0$ . Candidate 1 is entry-dominant, and its supporters all prefer Candidate 2 to 3 and 3 to 4; the other three candidates have equal first-preference votes, second-preference votes that cycle among the three, and third-preference votes that only aid Candidate 1. In equilibrium, all four candidates enter: 1 wins outright and 2, 3, and 4 tie for the second seat. All other combinations of entrants leave at least one candidate with an incentive to change strategies.

1.  $M$  entrants

- (a) when there are  $M$  entry-dominant candidates or members of a Condorcet  $M$ -tuple, all of whom expect to win outright in any possible race
- (b) in some cases when there are  $M$  entry-dominant candidates and at least one expects to tie for a seat in some possible race

2. More than  $M$  entrants: when expectation of a tie vote in some possible race allows there to be more than  $M$  entry-dominant candidates or a Condorcet group of more than  $M$  members

## 3. No unique prediction

- (a) when there is cycling in races with  $M+1$  entrants
- (b) in some cases when at least two non-entry-dominant candidates expect to tie in some possible races

With the exception of certain cases requiring tie votes, *all unique equilibria predict entry by only  $M$  candidates*. The existence of  $M$ -entrant equilibria is consistent with the findings of some spatial models. It also reflects the simple intuition that candidates who have no expectation of winning have no credible reason to enter. Only when some candidate expects to tie for a winning place should there be more entrants than there are seats.

But can we dismiss the possibility of ties? In spatial models, candidates are often allowed to choose the exact same position as an opponent, and this makes ties common, theoretically. In non-spatial models without candidate mobility, though, exact ties require a precise balance of voter preferences. It seems justifiable to consider ties unusual.

The model thus finds the “normal” number of entrants in equilibrium to be  $M$ , in direct contrast to the  $M+1$  upper bound Cox derives from strategic voting alone (1997). Voters might be willing to vote for an expected  $M+1$ th-place finisher, but the candidate has no incentive to run. Races with  $M+1$  entrants, then, are analogous to ones with  $M+2$ ,  $M+3$ , or  $M+15$ . Though conventionally perceived as the “normal” Duvergerian outcome, they should occur in equilibrium only under conditions Cox calls “non-Duvergerian,” when potential ties create uncertainty that puts a damper on Duvergerian causal forces.

Still, even if we largely dismiss the possibility of exact ties, there remain voter preference sets that support no unique equilibrium. How common, then, should sets without Condorcet  $M$ -tuples and unique  $M$ -entrant equilibria be? If all possible orders of finish across all possible  $M+1$ -entrant races are equally probable, such sets are common when the number of candidates exceeds  $M$  by more than two.<sup>23</sup> But voters might well be “impartial” and choose candidate utilities randomly, or rank candidates by their positions on a policy continuum, and this should reduce the possibility of cycling. Condorcet winners do appear more frequently when elections are modeled in such ways (Chamberlin and Cohen 1978, 1343; Merrill 1984).<sup>24</sup> One simulation based on impartial voters in a single-seat district finds Condorcet winners in 92% of three-candidate pools, 76% of five-candidate pools, and 53% of *ten*-candidate pools (Merrill 1984). It seems reasonable, then, to expect most voter preference sets to support unique equilibria. The strategic entry model thus predicts that conventional strategic behavior by candidates should typically produce  $M$ -entrant, uncontested elections.

<sup>23</sup> Under such conditions, if the possibility of ties is ignored, the percentage of voter preference functions that include Condorcet  $M$ -tuples is  $n! / [(n-M)! (M!)(M+1)^{n-M}]$ , where  $n$  is the number of candidates.

<sup>24</sup> Besley and Coate (1997) consider Condorcet winners rare, but in the context of a model in which all members of the electorate are potential candidates.

#### (4) Relaxation of Assumptions

If certain of the model's assumptions are modified or removed, we can be even more confident that cases with Condorcet  $M$ -tuples, and in turn unique equilibria, will predominate. Relaxing the complete information assumption makes  $>M$ -entrant equilibria more likely, and as such proves central to explaining why elections should ever be contested.

#### Abstention

The model assumes zero abstention: voters rank each candidate, and are always prepared to vote for *someone*. In reality, though, some voters may abstain if preferred candidates stay out of the race.<sup>25</sup> In Japan, for example, turnout has been found to decline along with both the number of Liberal Democratic Party (LDP) candidates and the number of candidates overall (Ishikawa and Hirose 1989, 106-109; Cox, Rosenbluth, and Thies 1998; Kohno and Fournier 1998; Horiuchi 2000). In part because of the very strategic non-entry discussed here, many districts lack a candidate from smaller major parties, such as the Clean Government Party or former Democratic Socialist Party (Kohno 1997, Scheiner 1999), and these parties' strong partisans might also abstain if not instructed otherwise.

The more voters who abstain, the fewer votes there are to reallocate among entrants. Vote shares become less sensitive to candidates' entry decisions, and the possibility of cycling is reduced. If *all* voters were to abstain when their most-preferred candidates failed to enter, entrants would always expect only their first-preference votes, and the  $M$  candidates with the highest shares would always be assured of a win or tie for a seat. The entry "game" would become trivial, and *all* sets of voter preferences would yield a dominance-solvable outcome. In general, greater abstention should increase the range of voter preference sets for which a unique equilibrium exists.

#### Strategic voting

The model assumes sincere voting, but a number of studies have shown that at least some strategic voting should be expected in simple plurality and other SNTV elections (see Cox 1997 for a review). As discussed above, Cox (1997) finds that strategic voting effects an  $M+1$  upper bound on the number of candidates who can expect a positive number of votes, so long as no obstacle is presented by expected ties.

If only  $M+1$  candidates expect a positive number of votes, then essentially there are only  $M+1$  candidates. And as noted above, when there are  $M+1$  candidates,  $M$  of them necessarily have a dominant strategy of "enter." In an  $M+1$ -entrant race, each of the top  $M$  vote-getters will win, so long as the  $M+1$ th candidate does not expect to tie for the  $M$ th seat. All other possible races are uncontested. Candidate strategy supersedes voter strategy: voters may whittle the field down to  $M+1$  candidates, but candidates whittle it down further, to  $M$ . If we assume strategic voting, then *all* voter preference sets support dominance-solvable outcomes.

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<sup>25</sup> I ignore abstention caused by essentially random factors like weather, or by voter indifference between entrants. The potential for such abstention might be one reason to relax the assumption of complete information.

## Uncertainty

In practice, candidates might be uncertain about voters' preferences, including how likely given voters are to abstain. This should alter candidates' perceived chances of winning, or  $p$ . Under certainty,  $p$  reflects only rank order: if A's vote is greater than B's, no matter by how much, then  $p_A = 1$  and  $p_B = 0$  in an SMD. With uncertainty, candidates with larger expected votes should still enjoy greater probabilities of winning, but the absolute probabilities should reflect the *degree* to which A's expected vote exceeds B's.

If we continue to assume that  $b/n \geq c$ , then for any candidate with a dominant strategy of "enter" under complete information,  $p$  under uncertainty will still be large enough to make any possible race worth entering.<sup>26</sup> At the same time, if  $b/n > c$ , then some candidates who faced certain losses under complete information should have high enough hopes under uncertainty to make entry worthwhile. For example, in a single-seat district with three candidates whose expected vote shares are 50%, 49%, and 1%, the second candidate might have a  $p$  close to 1/2. The effect should be to transform some non-equilibrium cases into  $M$ - or  $>M$ -entrant equilibrium cases, to transform some  $M$ -entrant equilibrium cases into  $>M$ -entrant equilibrium cases as well, and to expand the overall range of voter preference sets that support unique equilibria.

Thus, uncertainty emerges as a key explanation for competition: it transforms the empirically trivial tie-vote equilibrium into a prediction that strong runners-up will run, should such promising candidates exist. Uncontested and closely-contested elections, opposites by conventional definitions of competition, are theoretical cousins.

Given a certain level of uncertainty, and all else equal, candidates with higher expected votes should be more likely to run. But among candidates of equal strength, those in districts with greater uncertainty should also be more likely to run. Figure 5 illustrates the schematic relationship. When predictability is as high as the model assumes, then theoretical predictions should hold to the letter: no candidate whose expected vote is anything less than 100% of the  $M$ th finisher's should run, and either the election should be uncontested or all entrants should win or tie for seats. When some slight degree of uncertainty is introduced, only candidates whose expected vote is as high as, say, 95% of the expected  $M$ th finisher's might feel confident enough to make running worthwhile.<sup>27</sup> At the opposite extreme, if

<sup>26</sup> If candidate  $j$  always expects to win or tie for a seat, then  $p_j$  must always be at least  $1/n$  under complete information. Under uncertainty, if candidates with larger expected votes are more likely to win, then  $p_j$  in a one-seat district must again always be at least  $1/n$ . And if  $b/n \geq c$ , then a  $1/n$  probability of winning is enough to make expected benefits of  $p_j b$  at least as large as entry costs  $c$ . We can presume that in general, such a candidate's probability of winning the last seat in an  $M$ -seat district is at least  $1/(n-M+1)$ , where the denominator is the number of candidates who haven't "already" won seats.

<sup>27</sup> The expectation that difficult-to-win races will attract only the strongest challengers stands in contrast to conventional expectations for Congressional and other U.S. elections, where difficult races, such as those with incumbents, are thought to deter strong challengers and leave a place open for weaker ones (see, for example, Jacobson and Kernell 1983, Jacobson 1987). But as Banks and Kiewiet (1989) argue, a strategic weak challenger should prefer to run against an incumbent only if this increases the odds of winning by bypassing a primary fight against a strong challenger, who waits for the incumbent to retire. Absent party primaries, though, all candidates run in a single election. A weak challenger would presumably rather run head-to-head against the strong challenger than against the incumbent, and should have as much reason as the strong challenger to wait for the incumbent to retire. It is possible, though, that a weak challenger would rather run against a *single* incumbent than simultaneously against *several* strong challengers, all of whom are waiting for the incumbent's retirement. Fewer candidates yield lower turnout, for example, and low turnout might favor the weak challenger, as proves to be the case for JCP challengers in Japanese governor's elections. Of course, even when

chaotic conditions make the outcome of the race impossible to predict, then winners are essentially chosen at random, and  $p$  loses any connection with mean expected vote: all candidates perceive an  $M/n$  chance of winning, and even candidates with a mean expectation of 1% of the  $M$ th finisher's vote have incentive to run. Uncertainty helps set the threshold of strength above which entry is worthwhile.

#### 4. Empirical Testing

The strategic entry model essentially codifies the commonsense notion that candidates run only if they think they might win. As noted above, some spatial models come to the same conclusion.

But the existing theoretical literature, spatial and non-spatial both, often dismisses predictions of  $M$ -entrant races. Duverger's "belief in 'a natural political dualism'" (Blais and Carty 1991, 79) seems to overwhelm research results. Some treat predictions of  $M$ -entrant races as fantastic (Shepsle 1991, 69) or unimportant in practice (Besley and Coate 1997, 91-92 and 97; Cox 1997, 102), or assume that any sound equilibrium solution must eliminate them (Feddersen 1992, 941). Some acknowledge that uncontested elections do occur in practice, but associate them with what they describe as exceptional conditions -- a Condorcet winner among contestants (Besley and Coate 1997, 91-92 and 97) or one-party dominance (Cox 1997, 166; Hsieh and Niemi 1999).

At the same time, empirical research regularly finds significant numbers of  $M$ -entrant races, especially in SMDs. In the U.S., uncontested elections are fairly common, especially in SMDs and when incumbents run -- this holds for both national and local elections, legislative and executive elections, regular elections and primaries, and the South and other regions. Schantz (1980) finds that about 60% of all U.S. House primaries between 1956 and 1974 were uncontested, across all regions. Squire (1989) finds that about 14% of Congressional elections were uncontested from the mid-1960s to 1988, with the share contributed by Southern Democratic districts on the decline. Jewell and Breaux (1991) find that typically one quarter to one half of incumbents in each Southern lower house running in SMDs (or in equivalent multi-member districts "with positions") were elected without primary *or* general election opposition between 1968 and 1986 (see also Wildavsky 1959, Tullock 1965, Mayhew 1974, Rice 1985, Wright and Riker 1989, Squire 2000; for Canadian party nominations, see Erickson and Carty 1991; for early English and British elections, see Ferejohn 1991 and Coats and Dalton 1992).

In Japan, previous research has acknowledged that about 15% of parliamentary elections under SNTV are contested only by very weak challengers (Reed 1990, Shvetsova 1994b). Below, I find a significant number of such essentially-uncontested and outright-uncontested elections, especially at the local level. Japanese gubernatorial elections, held in SMDs, are more often than not only token contests. Around 20% of all prefectural assembly elections over the last decade have been outright uncontested, particularly in SMDs and other low-magnitude SNTV districts, and many more have been contested only by minor challengers (see "Mutouhyou" 1999).

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the weak challenger gains this *relative* advantage, the odds of winning must still be great enough to make entry attractive. Banks and Kiewiet argue that these odds for weak challengers in Congressional elections, as calculated from past results of primary and general elections, seem high enough (1989, 1007), but whether this holds in Japan and elsewhere is unclear.

Finally, in SNTV elections to the Taiwanese Legislative Yuan, Hsieh and Niemi (1999) find only  $M$  “viable” candidates (ones with at least 70% of the lowest winner’s vote) in nearly one-quarter of all races between 1986 and 1995 -- again, particularly in SMDs and other low-magnitude districts.

Uncontested elections may not overwhelmingly predominate, as the strategic entry model predicts in theory, but neither are they rare enough to be dismissed. If short-term candidate strategy does govern entry decisions, then we should observe uncontested elections when real-world conditions match the model’s stripped-down assumptions most closely.

I test the model’s predictions against outcomes from four types of Japanese elections, and at times from Taiwanese Legislative Yuan elections. Using post hoc data, I first show that most elections are either uncontested or closely-contested, as the model predicts.

I then examine the role of uncertainty in producing outcomes that diverge from theoretical predictions. When certainty is at its greatest and Duvergerian forces work essentially unimpeded, we should observe  $M$  entrants.<sup>28</sup> Districts with slightly greater uncertainty might witness either uncontested elections or closely-contested ones. Weak runners-up, meanwhile, should be observed only in districts where the ability to predict outcomes is most impaired. To test this, I use a measure of the weakness of a district’s entrant field as the dependent variable in OLS regression models.

The strategic entry model performs moderately well, but its predictive power varies considerably across different types of election. This variation sets the stage for the following chapters’ deeper consideration of how political party strategy, largely ignored here, may work either to counteract or to compound general tendencies toward non-competition.

### (1) Descriptive measures

Each possible set of voter preferences supports either an  $M$ -entrant equilibrium, a greater-than- $M$ -entrant equilibrium, or no unique equilibrium at all. Ideally, one would map voter preferences in each electoral district and compare predicted and actual results. But gauging voter preferences for potential entrants across any large number of heterogeneous districts is difficult.<sup>29</sup> This is especially so for elections in which non-partisan candidacies, multiple candidacies by the same party, or volatile party systems make party labels unreliable guides.

The problematic but unavoidable alternative is to use post hoc election results. Entrants’ actual votes are used as proxies of their expected votes. Non-entrants’ expected votes necessarily go unmeasured, but we can at least gauge whether those who do enter likely had reasonable expectations of winning, and whether proportions of uncontested and closely-contested elections vary as the model suggests they should.

An  $M$ -entrant equilibrium simply predicts an uncontested election. A  $>M$ -entrant equilibrium predicts an election with more entrants than seats -- but, theoretically, always with a tie among all losers for the lowest seat. Cases without an unique equilibrium offer no clear prediction at all -- though relaxing certain assumptions makes it plausible to expect relatively few such cases in practice, as discussed above. In any event, since  $M$ - and  $>M$ -

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<sup>28</sup> Jesse (1999) acknowledges the theoretical possibility of an upper bound of  $M$  entrants by using it as a null hypothesis (328-330). He fails to reject it for Irish and Tasmanian single transferable vote districts, but still goes on to argue that the upper bound on entrants in these districts is  $M+1$ . He counts the number of entrants renominated by parties in subsequent elections, though, rather than the number of entrants or effective entrants per se.

<sup>29</sup> See Dietz and Goodman (1987) for one attempt to chart voter preferences in a single election.

entrant equilibrium outcomes *are* identifiable, the model will be held to a strong standard: any election that deviates from equilibrium predictions will be taken as contrary evidence.<sup>30</sup>

If the complete-information condition is relaxed, some predictions must be relaxed as well. Since uncertainty provides an incentive to enter for candidates who think they *might* win, contested elections should be near-ties, even if not exact ones. The prediction of uncontested elections, though, must hold as it is: absent more nuanced data, we cannot look for shades of gray between entry and non-entry. Under uncertainty, then, we should observe uncontested and closely-contested elections, and no weakly-contested ones.

Identifying an uncontested race is straightforward. Judging the relative closeness of contested races is less so. I use two types of measure to gauge how close an SNTV race comes to an exact tie. The first, the “runner-up ratio,” is the ratio of the vote of the first runner-up, or  $M+1$ th entrant, to that of the lowest-finishing winner, or  $M$ th entrant. This ratio is commonly used to measure closeness in SMD and other SNTV elections. I call it the runner-up ratio (or “RU ratio”) to highlight comparison with Cox’s “SF ratio,” the ratio of the second runner-up’s vote to the first runner-up’s vote (1997, 85-89 and 103-108). Uncontested races allow no RU ratio; close races have RU ratios near 1. The closer to 0 the RU ratio falls, the more weakly contested the race, and the greater the violation of the model’s predictions.

The RU ratio provides an important test, but a weak one. Since only candidates who expect at least to tie for a seat should enter, *all* eventual losers, not just the first runner-up, should finish close to the lowest winner. But high RU ratios could hide the weaker finishers in a strong runner-up’s shadow (Gaines 1997). As a harder test, then, I also measure the “last place ratio,” or “LP ratio,” the ratio of the last-place finisher’s vote to the lowest winner’s vote. The closer all losers are to the lowest winner, the closer the LP ratio is to 1; when even one entrant finishes far behind, the LP ratio falls closer to 0.

I also construct modified versions of both the RU and LP ratios, to eliminate “noise” produced by certain candidates whose behavior is conceded to contradict the model’s predictions, and whose presence can be explained by other means. The adjusted ratios first eliminate the votes of Japan Communist Party (JCP) candidates, whose entry decisions are largely divorced from considerations of viability. The party’s unwavering strategy is to field one candidate in virtually every race, with the exception of a few large-magnitude districts in which the party sponsors more than one candidacy, and a larger number of prefectural assembly districts in which it sponsors none. The vast majority of Communist entrants finish far out of the running, but even those few who do enjoy a reasonable chance of winning likely haven’t entered *because* they might win. If weak JCP candidates are often the first or last runner-up, this dulls the raw RU or LP ratio’s sensitivity to other candidates’ strategic behavior, and races that might otherwise have gone un- or closely contested will register low scores. The counterfactual that most other candidates’ behavior would remain constant absent a Communist entrant seems reasonable given JCP candidates’ fairly consistent weakness and their voters’ comparatively exclusive partisan loyalty.<sup>31</sup>

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<sup>30</sup> Outcomes that conform to equilibrium predictions might not constitute supporting evidence themselves, if non-unique-equilibrium conditions could have produced the same results. But while the number of apparent equilibrium results may be inflated to some degree by non-unique-equilibrium cases, we have no reason to expect that such results should predominate *among* non-unique-equilibrium cases. Similarly, as Cox (1997) argues for the strategic voting model, although the outcomes we observe might all simply reflect sincere entry, we have no reason to expect sincere entry to yield the pattern that strategic entry predicts.

<sup>31</sup> Occasionally, though, such counterfactuals might not hold. In 1995 in the Wakayama City prefectural assembly district, for example, one candidate entered the race expressly to keep it from going uncontested, as

The modified ratios also remove candidates who draw less than 20% of the lowest winner's vote, equivalent to 16.7% of the total vote in a two-candidate race. If we can presume that candidates who fare this poorly had no reasonable expectation of doing much better, then they constitute a random infusion of the same type of non-instrumental behavior that JCP candidates provide more consistently. A vote of around two-thirds of the lowest winner's is commonly thought to mark the border between longshot and hopeful in elections in the U.S. and elsewhere (Hsieh and Niemi 1999). Excluding as "frivolous" candidates with less than one-fourth of this viability benchmark should not do too much tautological violence to a test of whether only strong candidates run.

I calculate raw and modified RU and LP ratios for five types of election: prefectural assembly, Diet Lower House, Diet Upper House prefectural district portion, and prefectural governor's elections in Japan; and national Legislative Yuan elections in Taiwan.<sup>32</sup> The prefectural assembly, Lower House, and governor's elections examined here are single-tier SNTV. Until 1980, voters in Upper House prefectural district elections could also cast a separate vote in a nationwide, 50-seat SNTV district, which was replaced in 1983 by a nationwide proportional representation portion whose outcome is not linked to districts results. Legislative Yuan elections were conducted concurrently with a proportional representation portion whose effect on the SNTV races was minimal (Hsieh and Niemi 1999, 106-107). I use two samples of postwar prefectural assembly elections. The first includes all such elections from 1989 through 2000. The second includes all elections in five selected prefectures: Aichi, Akita, Hyougo, Ishikawa, and Kagoshima.<sup>33</sup>

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seemed likely to happen in his absence. The district had sixteen seats; he became the seventeenth candidate, and promptly lost ("Kuyashii" 1995).

<sup>32</sup> By-elections and a very small number of run-off elections are excluded. Some Japanese results omit fractions of votes, or *anbun*.

Data for prefectural assembly elections from 1989 to 2000 are drawn from various prefectural editions of the *Asahi shinbun* for elections in 1999 and 1995, and from Mainichi Shinbunsha (1991) for 1991, for the forty-four prefectures whose elections were held in those years; and from the *Asahi shinbun*, *Ibaraki*, and *Okinawa taimuzu* for off-year elections in Tokyo, Ibaraki, and Okinawa prefectures, respectively. Data for earlier years are drawn from appropriate years of the *Chuunichi shinbun* and its precursors for Aichi prefecture; from Akita Senkyo Kanri Iinkai (1998) for Akita prefecture; from Hyougo Kengikai Jimukyoku (various years) for elections from 1947 through 1971, and appropriate years of the *Koube shinbun* for elections from 1975 through 1987, for Hyougo prefecture; from appropriate years of the *Hokkoku shinbun* and its precursors for Ishikawa prefecture; and from Kagoshima Senkyo Kanri Iinkai (1975) for elections from 1947 through 1975, and appropriate years of the *Minami nihon shinbun* for 1979 through 1987, for Kagoshima prefecture.

Data for Japanese Lower House elections, originally from Reed (1992), were downloaded in January 1996 from the web site of the Lijphart Election Archive (<http://ssdc.ucsd.edu/lij>). Data for Upper House elections are from *Asahi Shinbun Senkyo Honbu* (1993).

Data for Japanese governor's elections from 1947 through 1955 are generally taken from *Asahi shinbun* (various dates), but in certain cases from various other sources (particular citations available from the author); for elections from 1956 through 1970 from data collected and generously provided by Kataoka Masaaki; for elections from 1971 through 1975 from appropriate years of the *Nihon keizai shinbun*; for elections from 1976 through 1998 from *Asahi Shinbunsha* (various years); and for 1999 and 2000 elections from appropriate years of the *Asahi shinbun*.

Data for Taiwanese Legislative Yuan elections are from appropriate years of the *Zhongguo ribao*.

<sup>33</sup> Results for Aichi were unavailable for 1947.

Together, these five prefectures' districts provide representative variation in district magnitude and urbanness, at least as far as the 1989-2000 data show:

The set of Lower House districts excludes some early postwar elections and the three most recent elections, and the set of Upper House districts excludes the two most recent. All of the excluded elections were marked by unusual conditions of party realignment and uncertainty; the two most recent Lower House elections were also conducted under a new mixed system, whose single-member districts' links with PR lists affect motivations for entry in complicated ways.<sup>34</sup> The prefectural assembly and governor's election sets still do include recent realignment years, however; and all but the Lower House election set capture volatile periods of early democratic transition.

Figures 6a through 6f present distributions of raw and modified RU and LP ratios for each of the six sets of elections. The scores largely support the prediction that elections should either be closely fought or not fought at all.

Most of the six election sets easily pass the weaker RU-ratio test. Once the measure is adjusted, either the uncontested category or the 0.9s decile, or both, is a clear mode in each set's distribution. The raw RU measure shows that genuinely uncontested elections are common in prefectural assembly elections, and the adjusted measure reveals an overwhelming proportion of "essentially uncontested" races in governor's elections as well. Among contested elections, the 0.9s decile is at the peak of a sharply sloped distribution for the adjusted measure in all but the prefectural governor set. In some sets, we observe few elections marked only by token contestation. In others, particularly in the prefectural governor and assembly sets, switching from the raw to the adjusted RU measures enlarges the "uncontested" category. This suggests that for certain types of election, many apparent contests are only forced into contestation by entrants unconcerned about their chances.

The raw LP ratio is extremely sensitive to entry by minor candidates, and the pattern of its distribution varies widely among election types. Prefectural assembly elections from 1989 to 2000 largely meet the exacting raw LP ratio standard. The proportion of uncontested elections, of course, is at the same high value found with the RU ratio. Among contested

	all prefectures	five selected prefectures
N	3728	482
$M = 1$	41.3%	44.8
$M = 2$	30.0	29.5
$M = 3$	14.1	16.4
$M = 4$	5.8	3.7
$M = 5$	3.0	1.9
$M \geq 6$	5.8	3.7
county	35.7	34.0
county/city hybrid	5.8	6.8
city	46.6	43.6
large-city ward	11.9	15.6

The five prefectures also represent different patterns of party strength: dominant conservatives in mostly-rural Ishikawa and Kagoshima, the Socialists at their strongest in mostly-rural Akita, multi-party parity in urban areas and conservative dominance in rural areas in Hyougo, and similar urban-rural differences and the Democratic Socialists at their strongest in Aichi. Chapter 5 describes Akita, Hyougo, and Kagoshima in greater detail.

<sup>34</sup> As in most mixed systems, including the Upper House's since 1983, parties with proportional representation lists often sponsor SNTV candidacies in an attempt to increase their PR vote (Cox and Schoppa 1998). Japan's new system also allows single-member district candidates to run simultaneously on a PR list (Suzuki 1999, McKean and Scheiner 2000). The strength of dual candidates' performance in the district race directly affects their PR fortunes only when needed to break ties with other PR list-mates ranked at the same position. The system thus divorces district-level entry decisions from considerations of viability for some candidates.

elections, the 0.9s decile is again the single mode, although the right “tail” of the distribution is thinner, and the left “tail” thicker, than in the corresponding RU ratio distribution. The five-prefecture, all-postwar set of prefectural assembly elections appears to have a mode at the 0.9s decile among contested elections, but also one near zero. For the other four election types, the raw LP ratio distribution is virtually the opposite of that predicted: most races are contested, and most have at least one challenger who draws no more than ten or twenty percent of the lowest winner’s vote.

Adjusting the LP ratio to account for JCP and “frivolous” candidates yields a far different picture. The results are mixed, but more supportive of the theory. Adjusted LP scores for prefectural assembly elections are distributed as predicted, even if not as sharply as their adjusted RU scores are: a mode among contested elections near 1, with the frequency of contested elections declining as adjusted LP approaches 0.2. Lower House elections also show a clear mode at the 0.9s decile, but also an apparent smaller mode at the lower end of the distribution. The distribution in prefectural governor’s elections virtually matches that for adjusted RU: a large mode at “uncontested” and no apparent pattern among contested elections. In Upper House elections, adjusting the LP ratio produces only an indeterminate pattern, and in Taiwanese Legislative Yuan elections, the adjustment makes the distribution only slightly less contrary to the theory’s prediction.

Taken together, these results seem supportive on balance. Prefectural assembly and Lower House elections largely conform to the model’s predictions. Governor’s elections show a partial fit: the modal result is clearly *de facto* non-competition, but the slightly more than half of governor’s elections that *have* been genuinely contested over the years have varied in closeness. Upper House and Taiwanese Legislative elections are supportive in only the weakest sense: most races do have at least one strong runner-up, but the lower bound of runner-up strength shows no pattern in Upper House races, and consistently falls as low as possible in Legislative Yuan races.

## (2) Testing causal mechanisms: the role of uncertainty

The RU and LP ratio distributions provide an important first layer of support for the strategic contestant model, and for the contention that uncontested elections are a normal outgrowth of candidate strategies. But if the theory’s causal mechanisms are indeed behind these results, predicted outcomes should emerge most when elections most closely approximate the bare-bones assumptions. The RU and LP ratios in their adjusted form already control for candidates presumed to violate narrow instrumentality most egregiously, including those sponsored by one particular party. Here further controls are added to account for variation in the quality of candidates’ information. The role of parties in shaping patterns of competition, which I examine further in following chapters, is then introduced.

As uncertainty in a district increases, our expectations widen beyond uncontested elections, first allowing closely-contested elections, then less closely-contested elections, and ultimately, when outcomes are wholly uncertain, any result at all. With better data, we might measure expected vote and uncertainty as independent variables, and treat them as distinct determinants of the probability of entry. Since observed vote substitutes for expected vote here, and can only be measured for candidates who do enter, the relationship is formulated differently. We should expect extremely strong runners-up under any conditions, but weak finishers only under conditions of great uncertainty.

To gauge the overall weakness of a district's entrant field, I measure the "effective number of weak entrants," a modification of the standard measure of effective number of contestants (Laakso and Taagepera 1979). The degree of uncertainty in a district essentially sets a strength threshold for entry, and *all* candidates whose strength exceeds that threshold should enter.<sup>35</sup> On average, in districts with lower thresholds, we should not only find the very weakest finishers to have lower vote shares, but also find more runners-up of various degrees of weakness.<sup>36</sup> The effective number of weak entrants is calculated by subtracting each loser's percent of the *M*th-place finisher's vote from 1, and then summing across all losers (Figure 5). Using the difference between 1 and the share of the *M*th finisher's vote weights entrants in proportion to their weakness; but to avoid giving too much weight to the "frivolous" candidacies that likely increase along with this difference, the difference is not squared.<sup>37</sup> Theoretically, all races should have zero effective weak entrants: uncontested elections are assigned a value of 0, and an exact tie for *M*th place produces a score of 0 as well. The weaker any losing entrant is, and the more losers there are, the greater the deviance from theoretical predictions, and the greater the effective number of weak entrants.

I estimate OLS regression models for each of the four types of Japanese elections, and for the four types combined. **Effective number of weak entrants**, adjusted to exclude JCP and "unviable" candidates, is used as the dependent variable.

Independent variables represent basic factors likely to shape the quality of information and the confidence of candidates' predictions. Higher district **magnitudes** (logged) should yield more weak entrants. Higher magnitudes lower the Hagenbach-Bischoff quota and put victory in apparent reach for more candidates (see, for example, Reed 1990 and Cox 1997, 105-106, on Japan). They also muddy the informational waters simply by prompting more candidates to enter. The propensity of low magnitudes to deter entry seems most vividly demonstrated by the fact that uncontested elections are most common in single-member districts -- in Japan, the U.S., and elsewhere.

A smaller complement of **incumbents** should also be associated with weaker entrant fields. More incumbents, on the other hand, should generally deter challengers, strong or otherwise (Schantz 1980, Cox and Morgenstern 1993). Incumbents are typically strong candidates, likely to enjoy enough vote support to make entry a dominant strategy from the start -- and even more vulnerable incumbents should increase predictability through their relatively well-defined support bases.<sup>38</sup> The measure used here takes the number of incumbents running as a percentage of the number of seats in the district.<sup>39</sup> Of course,

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<sup>35</sup> The potential for variation in uncertainty among individual candidates within each district is ignored.

<sup>36</sup> This assumes that the strengths of potential entrants are similarly distributed in all districts. Lower LP scores in the election sets above do show a positive correlation with greater numbers of runners-up, but variance remains here that may produce unexplained variance in the results. At any given level of uncertainty, some districts' races might go uncontested simply because there exists no candidate strong enough to run, not because candidates strong enough to run choose not to. I account for "supply side" determinants of Japanese gubernatorial entry patterns in Chapter 4.

<sup>37</sup> Using the sum of the squared differences as the dependent variable in the models that follow yields similar results but a weaker fit.

<sup>38</sup> The analysis here ignores variation in incumbents' vulnerability, and assumes incumbents to be uniformly rather strong. In practice, some are certainly weaker than others, for reasons including poor ideological "fit" with constituents, targeted campaigning by rival parties, limited funds, advanced age, association with unpopular policies if a governing party member (or distance from power if an opposition member), unpopular committee assignments, and lackluster casework (Bond et al. 1985, Krasno and Green 1988, Squire 1989).

<sup>39</sup> Note that the percentage of incumbents varies most in one-seat districts, since it almost always takes values of 0 or 100%. In a very small number of cases, in districts of various sizes, redistricting leaves more incumbents than seats. In these cases **incumbents** is the reciprocal of the percentage of incumbents. The presence of more

whether or not incumbents run could be considered endogenous. I essentially assume that most incumbents will win or finish close to the lowest winner (Hayama 1992, Hickman 1992), contributing little or nothing to the count of effective weak entrants, and so I expect **incumbents'** coefficient to have a negative sign.

The effect of **urbanness** on the number of weak losers is difficult to predict for Japan. In general, more urban districts include more voters who profess no party affiliation, or who are detached from the informal community networks that allow candidates to forecast their voting intentions. At the same time, though, urban Japan is the stronghold of the tightly-organized JCP and lay Buddhist Clean Government Party (CGP), whose supporters' voting behavior can be gauged quite precisely.<sup>40</sup> Because of a lack of readily available data for conventional measures of urbanness at the municipality level, I use separate indices for each type of election, and exclude the variable when different types of elections are combined.<sup>41</sup>

**Closeness (t-1)** is the district's RU ratio in the previous election. Since the RU ratio reflects only the ratio of the  $M+1$ th finisher's vote to the  $M$ th finisher's, its ability to summarize district conditions is limited in districts with more than one winner or loser, but it serves as a reasonable proxy. A close finish in the previous election should signal incumbent vulnerability -- at least on the part of the lowest-finishing incumbent -- and encourage challenges by weaker candidates than might otherwise run. Uncontested races are scored here as 0, at the opposite end of the scale from tie-vote elections: they represent the most extreme demonstration of previous winners' strength, and should give pause to weaker potential challengers.<sup>42</sup>

**Years (log)** simply measures the log of the number of years since 1947.<sup>43</sup> As time passes, a district's voting patterns should grow more predictable. For all four types of election, 1947 also represents the first postwar election year, and as such is marked by the most crowded

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incumbents than seats does increase certainty, but it also makes it likely that one or more will enter and finish as runners-up, albeit strong ones.

<sup>40</sup> Variables that directly measure these parties' strengths might be more appropriate, but would be highly correlated with urbanness. And because the CGP is maximally strategic and rarely runs candidates where it expects to lose, its "normal" strength in many districts and levels of election is difficult to measure (Upper House PR share might be used, but only for those years after the PR section was instituted in 1983).

<sup>41</sup> Prefectural assembly districts are assigned a score of 0 if a county, 1 if a county/city hybrid, 2 if a city, and 3 if a ward within a government-designated large city. Lower House districts are ranked by increasing urbanness on a scale of 1 to 4 according to a conventional index based on the proportion of voters living in agricultural precincts ("Shakai" 1990, Reed 1992). For Upper House and gubernatorial elections, whose districts are simply prefectures, the logged percent of the population living in Densely Inhabited Districts (DIDs) is used (Soumouchou Toukeikyoku 1997, xxv and 24-25). Since DID measurement began only with the 1960 census, data from this census are used for all elections from 1947 through 1964. In a few prefectures whose urban population and population density grew rapidly in the immediate postwar, this may inflate urbanness scores for early elections. DID data for elections from 1965 through 1974 are from the 1970 Census, for elections from 1975 through 1984 from the 1980 Census, for elections from 1985 through 1992 from the 1990 Census, and for elections from 1993 through 2000 from the 1995 Census. **Urbanness** is positively correlated with **magnitude** in Upper House districts, but excluding one or the other variable has little effect on the results.

<sup>42</sup> Contrary to what might be expected, interactive terms combining **closeness (t-1)** and **incumbents** prove not to be significant.

Uncontested races do actually inject a slight amount of uncertainty into the next election's campaign as well, since they rob candidates of detailed vote tallies. For this reason some politicians claim to prefer massively lopsided but contested elections to uncontested ones -- though of course, few go out of their way to recruit opponents (personal interview, Hyougo prefectural legislator, Nov. 1999)

<sup>43</sup> Since 1947 elections are removed for their lack of a **closeness (t-1)** score, undefined logs of 0 are avoided.

and chaotic entrant fields. With each year, this chaos subsides, though at a decreasing rate over time.<sup>44</sup>

**Elapsed time (log)**, similarly, measures the number of years since the previous election. The interval between prefectural assembly elections and between Upper House elections is fixed at four and six years, respectively, so this variable is removed when these election types are examined alone. Gubernatorial elections are generally held every four years, but mid-term retirement or death of the incumbent is followed by an immediate election, whose winner begins a new four-year term.<sup>45</sup> The interval between Lower House elections varies slightly. With time, the ability to base predictions on past results slowly fades, and this should allow an increase in the number of effective weak entrants. Candidates also may need time to replenish campaign coffers and other valuable resources. That the Lower House election of 1980 was the first since 1953 to occur less than a year after the previous dissolution, for example, likely contributed to its record low number of overall entrants (Asahi Shinbun Senkyo Honbu 1990, 317).

These factors, which should help account for variation in the weakness of entrant fields across different districts, may also help explain the varied patterns of RU and LP ratio distributions across the six sets of elections above. To the naked eye, the proportion of elections conforming to equilibrium predictions does appear to reflect each set's particular mix of clear- and muddled-information environments, but within limits. For example, many prefectural assembly elections and all gubernatorial elections take place in single-seat districts. These election types show the most uncontested elections, and prefectural assembly elections seem to fit equilibrium predictions particularly well in general. Upper House elections are dominated by single-seat districts as well, though, and the distribution of their LP ratios shows a poorer fit than that of all election types but the Taiwanese Legislative Yuan -- and the Taiwanese results are for the first elections of a newly democratizing regime, fought in large-magnitude districts.

Tables 1a through 1e report three model specifications for each set of elections. In the second and third specifications for each set, dummy variables for prefectures and for individual years are added (but their coefficients not reported) as controls for spatial and temporal fixed effects (and **years (log)** is removed). The third specification adds a lagged dependent variable, **weak entrants (t-1)**, to account for autocorrelation. Dummy variables for election type are also included for the set of all four election types.<sup>46</sup>

Table 1a presents results for Japanese elections of all four types -- prefectural assembly elections in the five-prefecture set, Lower House, Upper House, and gubernatorial elections. Without controls for fixed effects, the five variables accounting for candidates' ability to predict electoral outcomes take the expected sign; all are statistically significant, though this may simply reflect the large number of cases. Upper House elections are also found to have greater numbers of effective weak entrants. When fixed-effect controls are added, the model's modest fit improves, and the significance of early-year dummy variables replaces that of **years (log)**, but the effects of **closeness (t-1)** and **elapsed time (log)** are cancelled out.

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<sup>44</sup> We might also count the number of elections that have taken place in a given district, but since district lines in all four types of election were rarely redrawn, this is highly collinear with **years**. Changes in magnitude, the usual method of "redistricting" in multi-member districts, show no significant effect on numbers of weak entrants.

<sup>45</sup> Three cases of governor's elections held in the same year as the previous election are assigned a value of 0.

<sup>46</sup> Dummy variables distinguishing between national and local elections, and between the general size of districts in each type of election (districts are formed from single municipalities in most prefectural assembly elections, multiple municipalities in most Lower House elections, and entire prefectures in Upper House and gubernatorial elections), yield similar results.

The effect of **magnitude (log)** is particularly strong. The third specification suggests that an increase in seat magnitude from, say, 1 to 4, increases the number of effective weak losers by about 0.23 on average. This increase is equivalent to an additional runner-up with about 77% of the *M*th finisher's vote, or about 43.5% of the total vote in a two-entrant race -- not far above conventional viability benchmarks. Reed's (1990) finding that Lower House races tend toward *M*+1 effective (strong) entrants might not reflect some general mechanism that produces *M*+1 entrants in equilibrium, but rather the fact that until 1993, almost all Lower House districts had between three and five seats. Now that the Lower House uses SMDs, albeit ones linked to PR lists, we might begin to see *M*-entrant races more consistently.<sup>47</sup>

But the results from pooling all elections mask vast differences in explanatory power within each type of election. Tables 1b through 1e show that the differences between election types largely parallel those observed in the RU and LP ratio tests.

The results for prefectural assembly elections (Table 1b) fall in line with those for the merged group of four election types. All coefficients show the expected sign, and the effects of **magnitude (log)** and **incumbents** are particularly strong. Fixed-effect variables again improve the model's fit somewhat, in part because strongly significant positive effects for early election years replace a **years (log)** variable that similarly showed a decrease in weak entrants over time. The fit of the fuller models is moderate, but reasonably good considering the idiosyncratic factors likely to shape entry decisions by weak candidates. On balance, prefectural assembly elections follow the entry model's predictions: when the complete information assumption is more closely met, fewer weak candidates run, and in many races the outcome of the race is clear enough to discourage challenges entirely.

Lower House elections (Table 1c) support similar results, with a stronger effect for **incumbents**. **Elapsed time**, which varies more here than in other election types due to the irregular dissolution of the Diet, is also significant. The model's fit suffers in part from a relatively low variation otherwise: almost all districts have magnitudes of 3, 4, or 5 seats, the proportion of incumbents is generally at or fairly near to 1, and first runners-up generally finish quite close to the *M*th winner.

With Upper House (Table 1d) and gubernatorial elections (Table 1e), however, uncertainty's irrelevance is stark. In governor's elections, the uncertainty variables' effects are washed out by -- and their explanatory power overwhelmed by -- temporal and spatial fixed effects. The negative sign of **elapsed time**'s coefficient is also unexpected. With Upper House elections, the explanatory power of uncertainty factors is almost nil. The coefficients of **closeness (t-1)** and, more notably, **magnitude (log)**, have negative signs, contrary to expectations. Something other than short-term strategy is governing entry decisions here.

### (3) Parties' complex role

That "something" appears to be another factor assumed away in the stripped-down entry model: the machinations of political parties. A closer look at Upper House elections shows that entry patterns there reflect a "one-and-a-half-party system" crammed into districts that accommodate only one. Twenty-six of the Upper House's forty-seven districts are SMDs,

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<sup>47</sup> Since the new mixed system has been used for only two elections, both of them amid realignment, comparisons between the new and the old systems would be premature. Between the first and second elections under the new system, though, Reed's preliminary data show an increase in the number of "noncompetitive" SMDs -- ones in which the effective number of (strong) entrants rounds to only 1 (Reed 2000).

and they represent Japan's smallest and most rural prefectures. Virtually all these single-seat contests in pre-realignment years featured the same entrant field: one candidate from the governing LDP, one from the smaller Japan Socialist Party (JSP), and one Communist. Absent a tidal wave of protest votes (such as occurred in 1989), these races were sure victories for the LDP. The strategic entry model predicts that JSP candidates should stand back and avoid a loss, but the JSP invariably sponsored a candidacy. Whether out of principle, an extremely high benefit/cost estimate, or an attempt to improve its national- or PR-portion vote, the Socialists acted in Upper House SMDs as the JCP does generally.

As a result, the weakness of the entrant field in Upper House races is a barometer of JSP popularity, not entry decisions. Figure 7 presents Upper House RU ratios broken down by district magnitude. The distribution in one-seat districts shows no discernible mode, contrary to expectations. Districts with two or more seats, though, show the predicted combination of uncontested and closely-contested elections. Two-seat districts usually have either "reserved seat" races, in which one LDP and one JSP candidate win essentially uncontested elections; or close races between one JSP and two LDP candidates. Three- and four-seat districts, like their Lower House counterparts, usually host more complex patterns of competition.

Differences in party involvement might also contribute to the lesser difference between the theory's fit in Lower House and prefectural assembly elections. In Lower House elections, parties actively sponsor candidacies, either through explicit endorsement or, in the case of the LDP, unofficial faction sponsorship. To be sure, many party-supported losers run strong races, while most pure independents who do enter do rather poorly. But parties back the bulk of candidates who finish far out of the running (Figure 8). Democratic Socialists and LDP faction-supported independents account for a particularly large share of weak non-Communist entrants. Data on party sponsorship of independents are not yet available for prefectural assembly elections, but in general, partisan penetration there is not as deep (see, for example, Muramatsu and Itou 1986; Zenkoku Todoufukengikai Gichoukai Jimukyoku, various years). Compared to Lower House elections, prefectural assembly elections more closely resemble the stylized elections of the strategic entry model, and their results follow accordingly.

These patterns suggest that parties often throw institutional sand in the gears of predictions derived from pure, short-term instrumental strategy. Parties may act strategically, too, but their longer-term incentives and broader resources allow them to manufacture competition where individual self-interest might not.

Party behavior in Japanese governor's elections, though, provides an intriguing hint that the opposite might also be true. Governor's races are dominated by essentially uncontested elections, and on the surface seem to fit theoretical predictions -- but quality of information has little explanatory power. A closer look shows that non-competition in governor's elections sometimes does reflect prudent withdrawals by weaker parties, but just as often represents a proactive and collaborative effort by strong and weak parties alike to *suppress* competition.

Over the last two decades, non-Communist parties in governor's elections have increasingly formed collusive "bandwagon" coalitions behind a single joint candidate. Parties here do not stubbornly instigate competition even when pragmatic considerations might suggest bowing out -- far from it. Instead, they go out of their way to bypass competitive elections and broker an outcome beyond the electorate's reach. Along with simple uncertainty and quixotic longshots, parties may be the best defense against stagnant non-competition, but there is reason to believe that parties also have incentive to work *against* competition instead. In Chapter 4, I turn to an examination of when we should expect

parties to compete despite short-term disadvantages, and when, on the other hand, parties might respond to general non-competitive incentives by pursuing outright collusion.

## 5. Conclusion

Competition in elections is generally considered the norm, but candidates' most basic incentives suggest that, if anything, the opposite should be true. Evidence from Japan, on the whole, supports this contention.

Spatial theories have held that if electoral entry is costly, candidates will run only when they expect to win. Non-spatial theories, meanwhile, hold that candidates may be able to anticipate how well they should fare against a given field of opponents. Combining these two basic principles -- as seems reasonable to do -- leads us in theory to expect uncontested elections when candidates are able to predict election results. And in practice, uncontested elections are no rarity, and occur more often than conventionally acknowledged. From this perspective, *contested* elections are what need to be explained.

Allowances for uncertainty transform the prediction of non-competition into a prediction of either non-competition *or* fierce competition, but not weakly-contested races. The twin predictions hold up well in Japan. Most races, in most types of election, are fought either by at least one strong runner-up or not at all. In prefectural assembly elections, where parties' influence over entry patterns is weakest, and to a lesser extent in Lower House elections, most elections prove fought *exclusively* by strong losers or not at all. As information grows more reliable -- in particular, in districts with lower seat magnitudes and higher proportions of incumbents -- stronger and stronger potential entrants shy away, and when information is clearest, none but the eventual winners run at all. This pattern may be disrupted by political parties, who often sponsor hopeless candidacies -- but in some cases, parties only reinforce the non-competitive tendencies inherent in elections.

The applicability of the results to elections outside Japan may also depend on parties' role. Modern national-level elections in SMDs in Britain, Canada, and India, for example, are rarely uncontested. This likely reflects, among other factors, certain well-institutionalized parties' general policy of backing entrants in every race, much as the Communists do in Japan (on Canada, for example, see Gaines 1999, 848 and 853). The frequency of uncontested elections in the United States, though, should serve as a reminder that the phenomenon is by no means unique to Japan. That both uncontested and weakly contested races are common in American Congressional elections may reflect the permeability and moderate strength of American parties. Parties may actively recruit entrants, including weak ones, but the strength of these recruitment efforts may vary across states and over time (see, for example, Herrnson 1988, Breaux and Jewell 1992). Where recruitment is weak, "self-starters," encouraged in part by the ability to capture a fairly valuable party endorsement, may still run in some districts; but in others, no challenger comes forward.

The intricacies of party involvement, within Japan and without, are examined more closely in the chapters that follow. Party strategy proves to vary widely. Some Japanese parties, like the Communists, rarely pass up a race; others, like the Clean Government Party, ruthlessly calculate their chances in various districts, and ration candidacies accordingly. In some district and election types within Japan, most parties opt to run standard-bearers; in others some choose to sit out, and in yet others parties pursue collusive agreements. Similarly, party decisions to run, abstain, or collude vary within and across other countries. But in all cases, parties *choose* how -- and whether -- to compete.

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Figure 1. Generic extensive form of simultaneous entry game for the three-player case

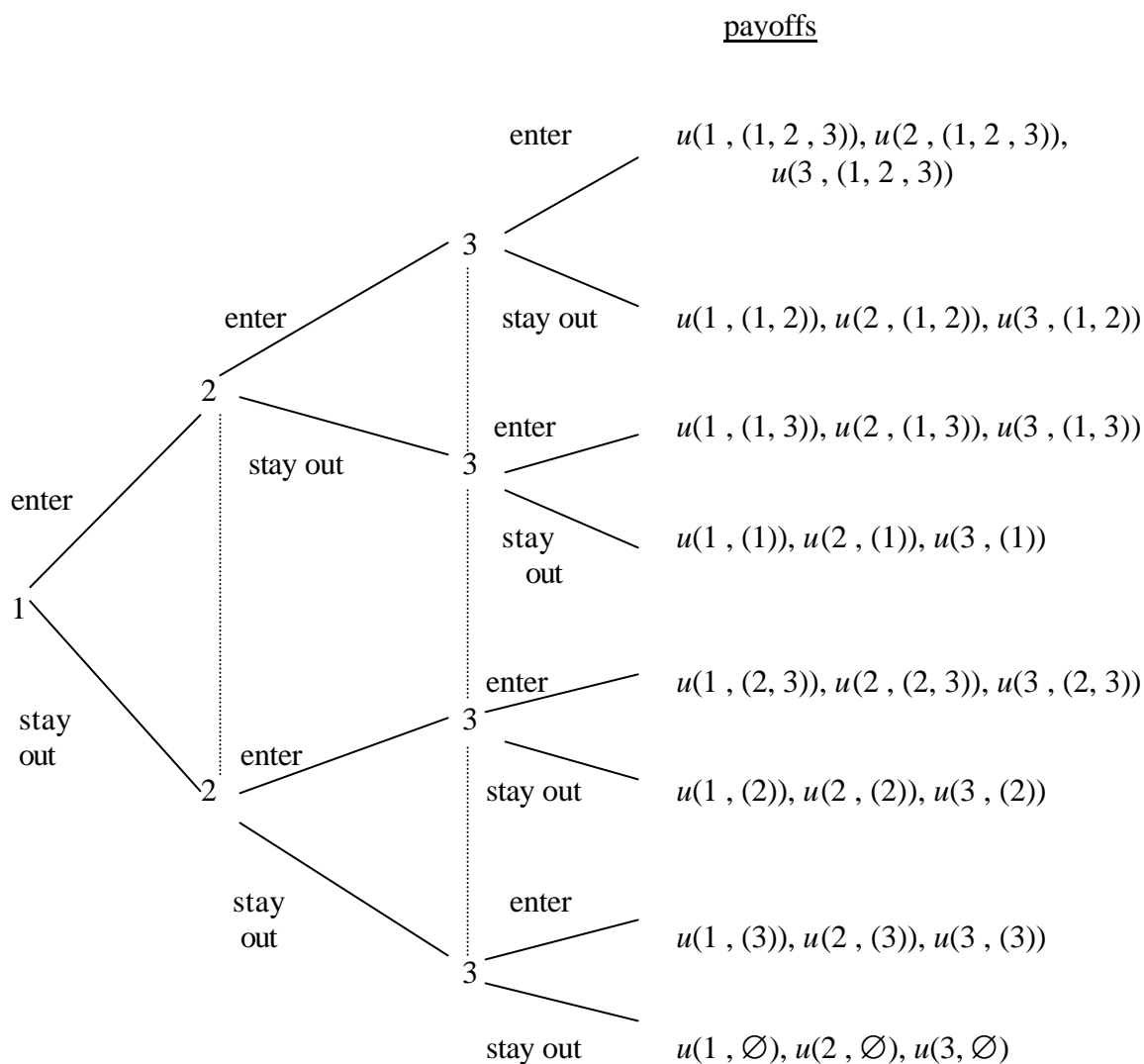


Figure 2. A three-player simultaneous entry game in a one-seat district: dominance-solvable  $M$ -entrant equilibrium

$$v_1 = 0.14, v_{12} = 0.14, v_{13} = 0; v_2 = 0.27, v_{21} = 0.06, v_{23} = 0.21; v_3 = 0.59, v_{31} = 0, v_{32} = 0.59$$

When all candidates enter,

1 receives	$v_1$	= 0.14 = 14% of the vote
2 receives	$v_2$	= 0.27
3 receives	$v_3$	= 0.59

When only 1 and 2 enter,

1 receives	$v_1 + v_{31}$	= 0.14
2 receives	$v_2 + v_{32}$	= 0.86

When only 2 and 3 enter,

2 receives	$v_2 + v_{12}$	= 0.41
3 receives	$v_3 + v_{13}$	= 0.59

When only 1 and 3 enter,

1 receives	$v_1 + v_{21}$	= 0.20
3 receives	$v_3 + v_{23}$	= 0.80

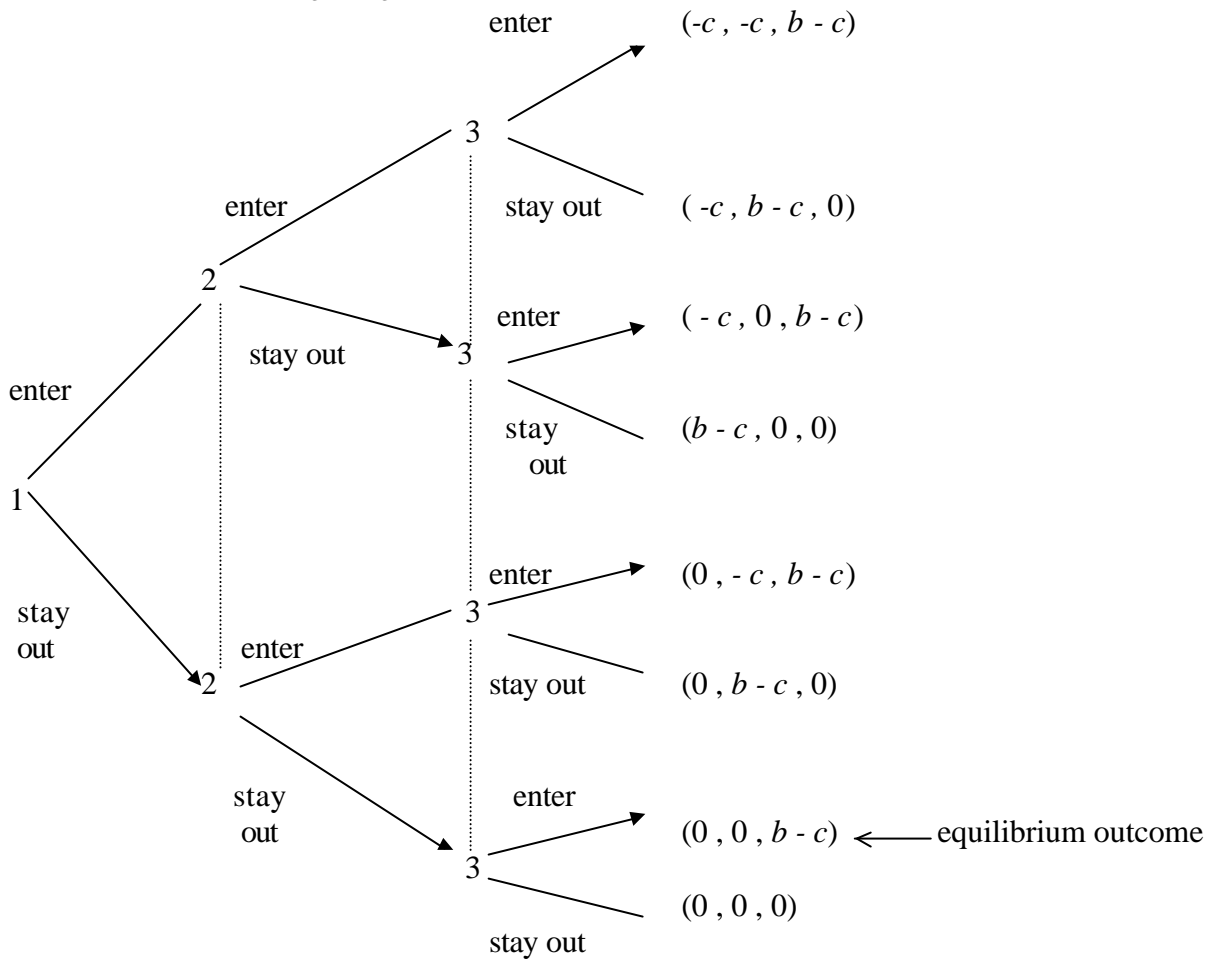


Figure 3. A three-player simultaneous entry game in a one-seat district: multiple Nash equilibria despite dominant strategy of “enter” for  $M$  candidates

$$v_1 = 0.5, v_{12} = 0.25, v_{13} = 0.25; v_2 = 0.25, v_{21} = 0, v_{23} = 0.25; v_3 = 0.25, v_{31} = 0, v_{32} = 0.25$$

When all candidates enter,

1 receives	$v_1$	= 0.5 = 50% of the vote
2 receives	$v_2$	= 0.25
3 receives	$v_3$	= 0.25

When only 1 and 2 enter,

1 receives	$v_1 + v_{31}$	= 0.5
2 receives	$v_2 + v_{32}$	= 0.5

When only 2 and 3 enter,

2 receives	$v_2 + v_{12}$	= 0.5
3 receives	$v_3 + v_{13}$	= 0.5

When only 1 and 3 enter,

1 receives	$v_1 + v_{21}$	= 0.5
3 receives	$v_3 + v_{23}$	= 0.5

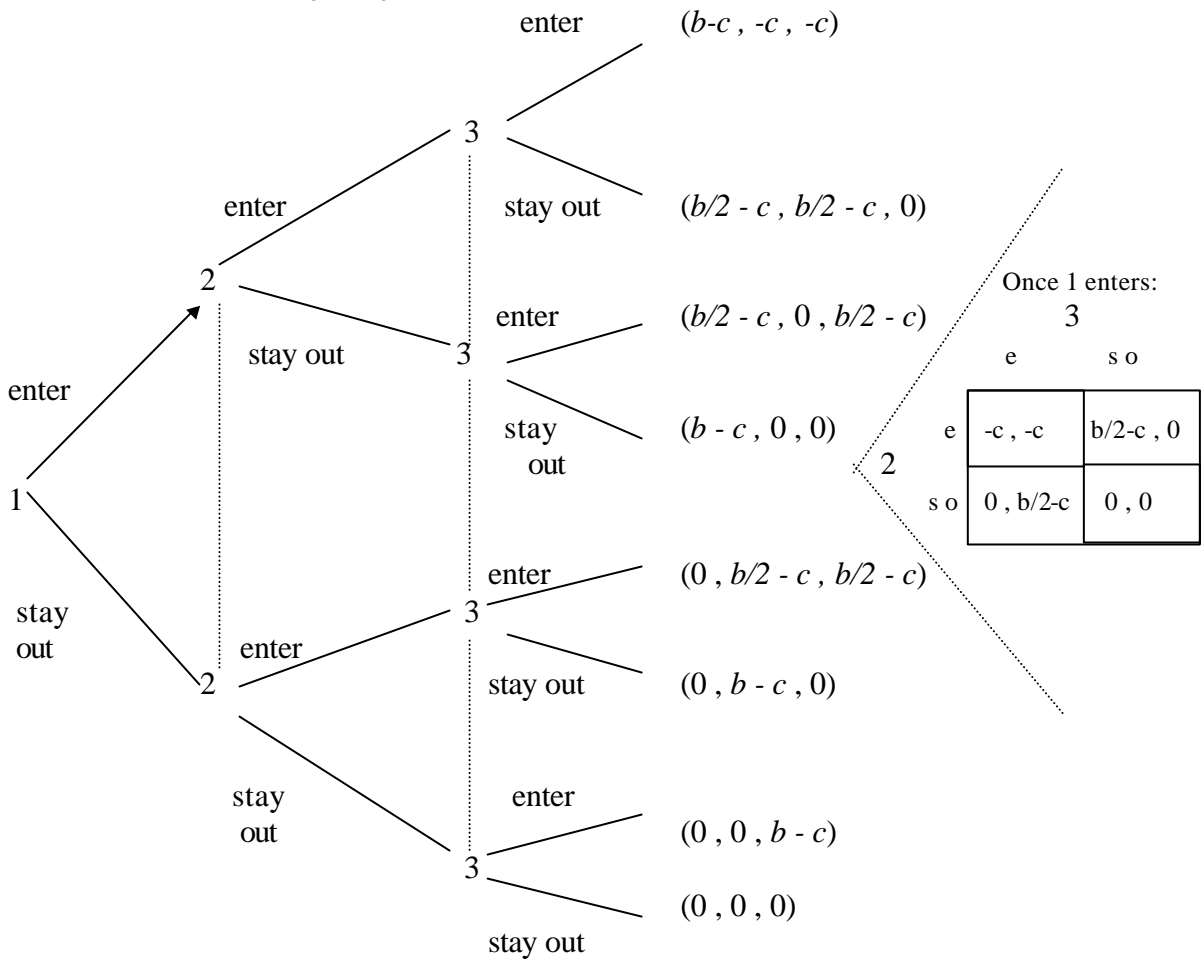


Figure 4. A three-player simultaneous entry game: no Nash equilibrium in pure strategies

$$v_1 = 0.26, v_{12} = 0.26, v_{13} = 0; \quad v_2 = 0.32, v_{21} = 0.08, v_{23} = 0.24; \quad v_3 = 0.42, v_{31} = 0.42, v_{32} = 0$$

When all candidates enter,

1 receives	$v_1$	= 0.26 = 26% of the vote
2 receives	$v_2$	= 0.32
3 receives	$v_3$	= 0.42

When only 1 and 2 enter,

1 receives	$v_1 + v_{31}$	= 0.68
2 receives	$v_2 + v_{32}$	= 0.32

When only 2 and 3 enter,

2 receives	$v_2 + v_{12}$	= 0.58
3 receives	$v_3 + v_{13}$	= 0.42

When only 1 and 3 enter,

1 receives	$v_1 + v_{21}$	= 0.34
3 receives	$v_3 + v_{23}$	= 0.66

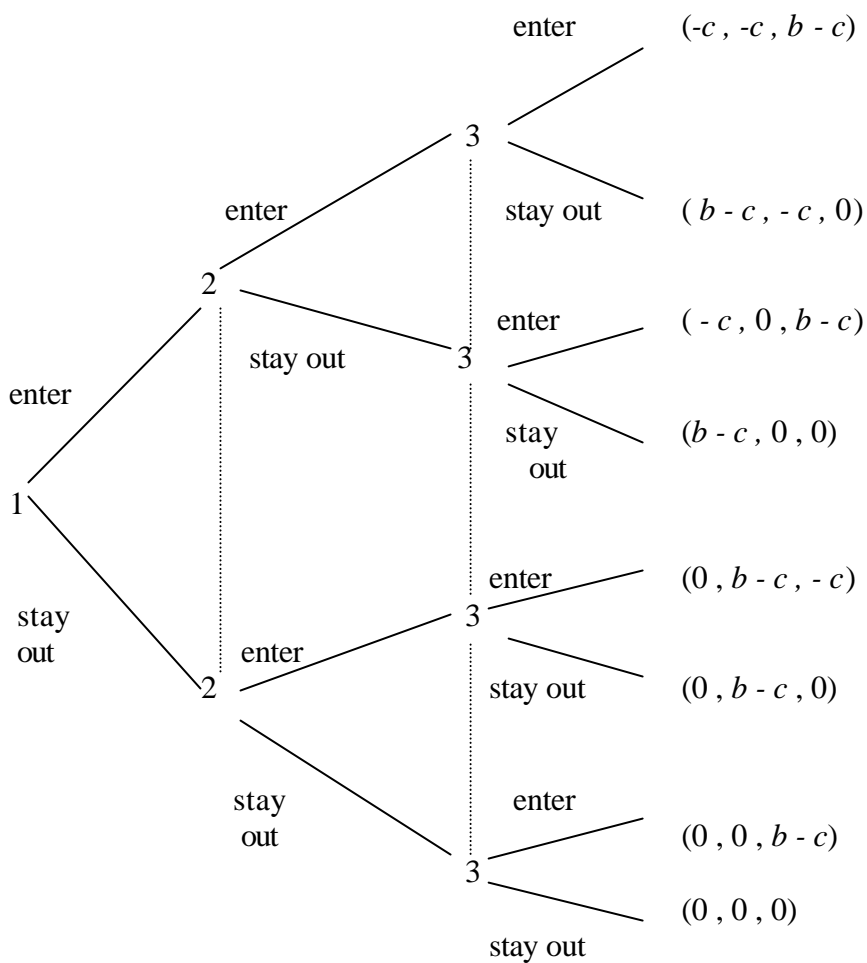


Figure 5. Predicted relationships between district-level uncertainty, entrant strength, and effective number of weak entrants

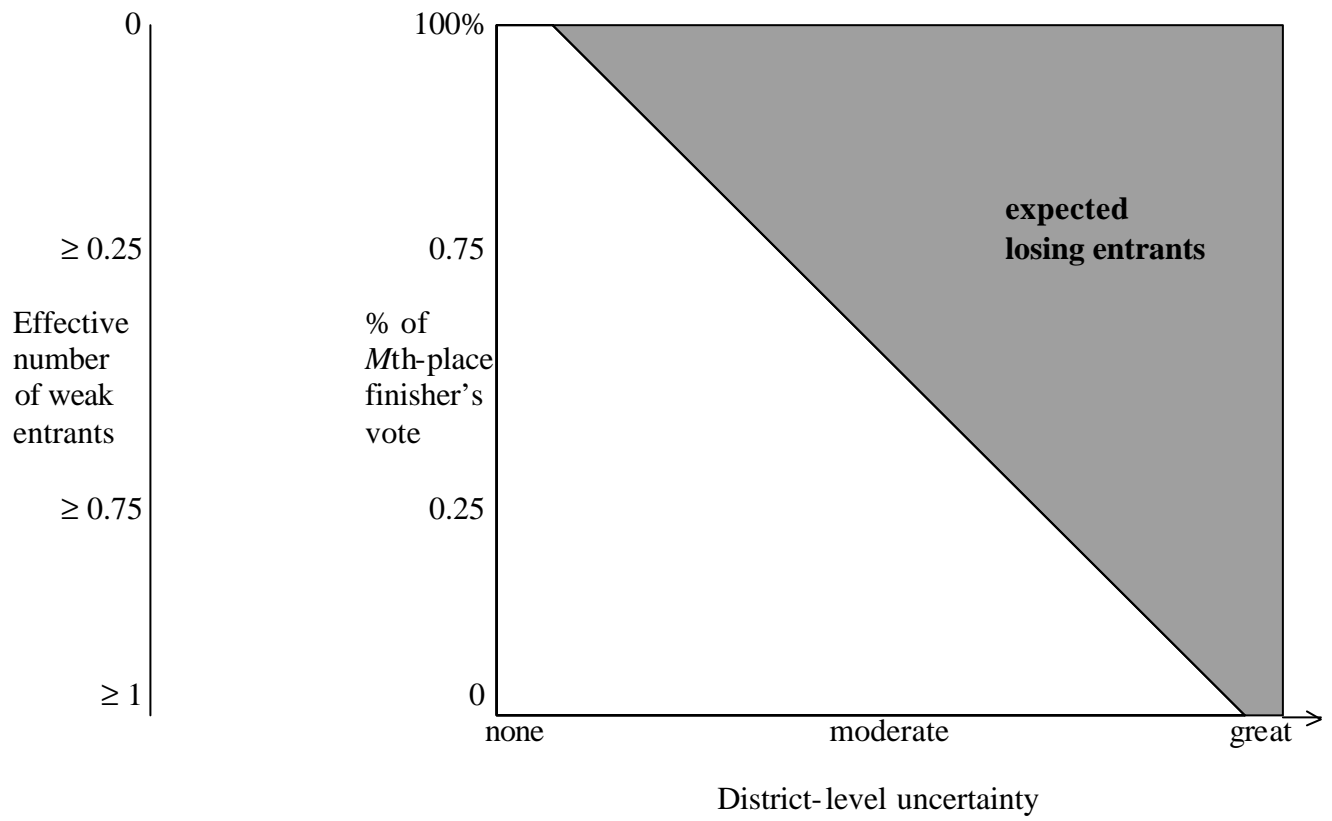


Figure 6a. Prefectural assembly (5 prefectures, 1947-1999) RU and LP ratios

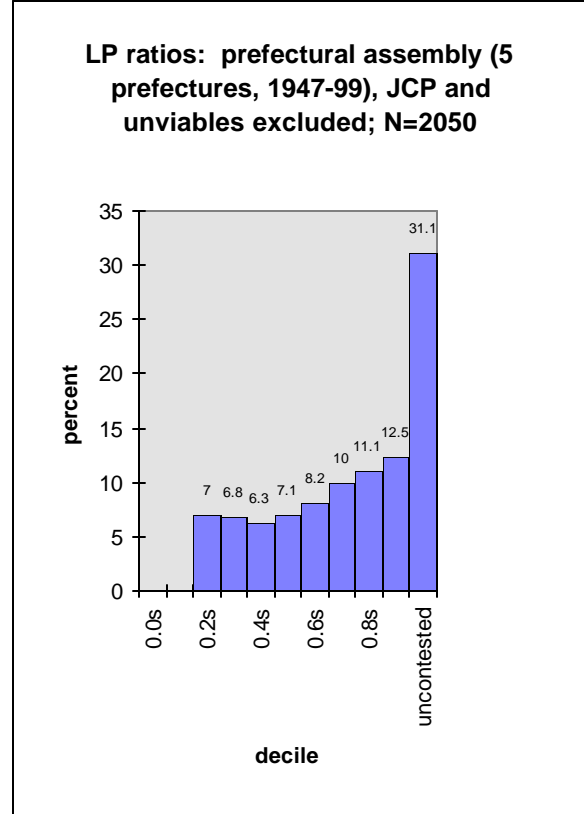
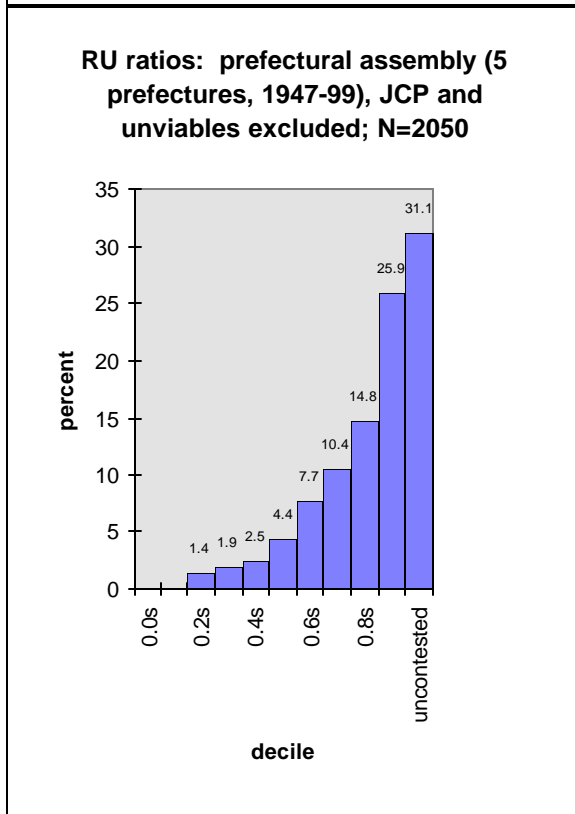
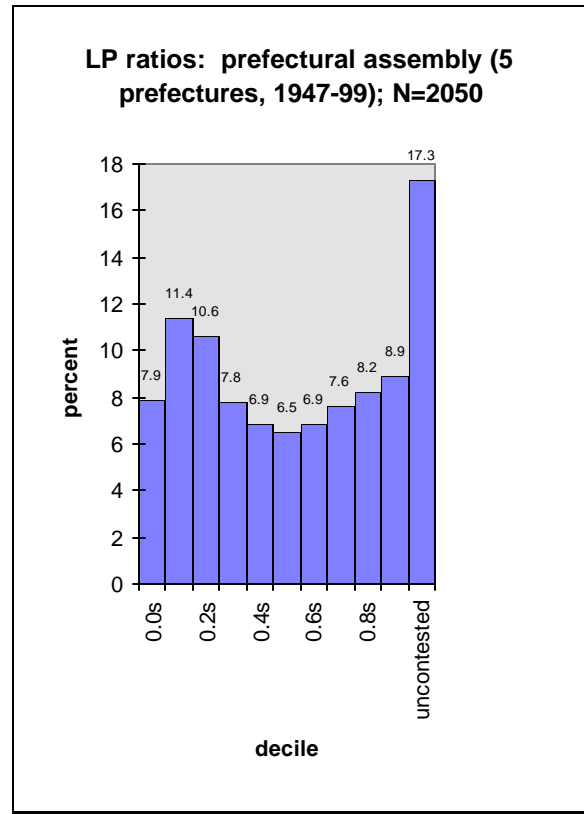
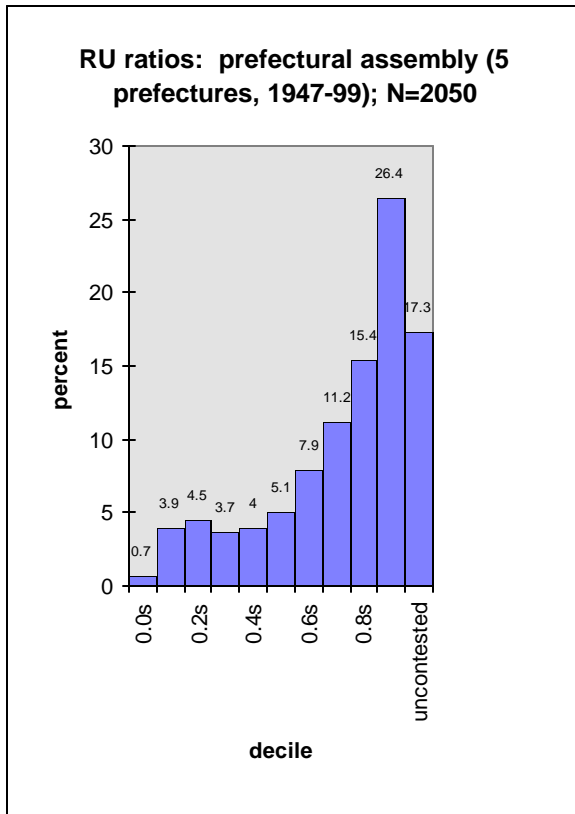


Figure 6b. Prefectural assembly (1989-2000)  
RU and LP ratios

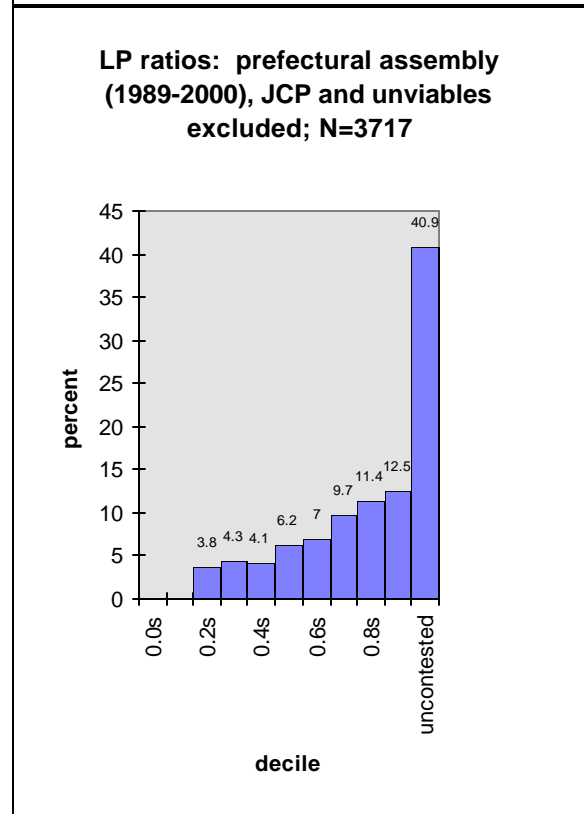
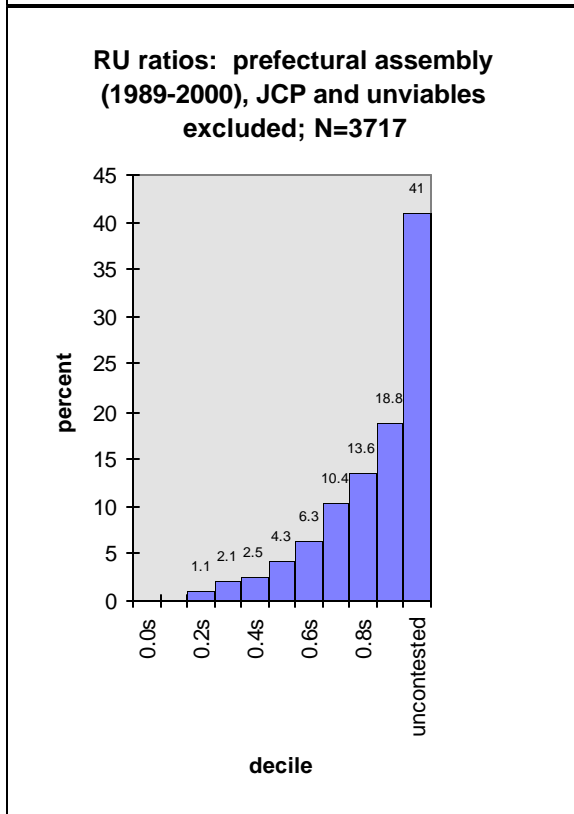
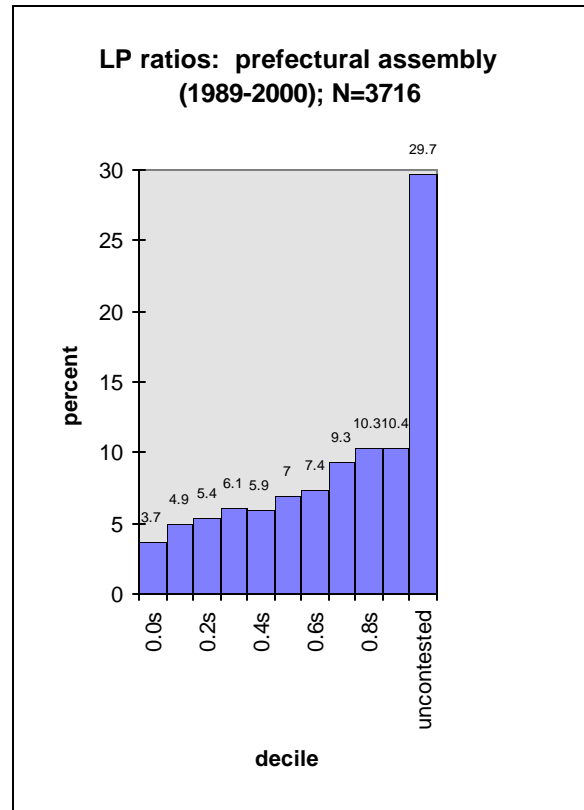
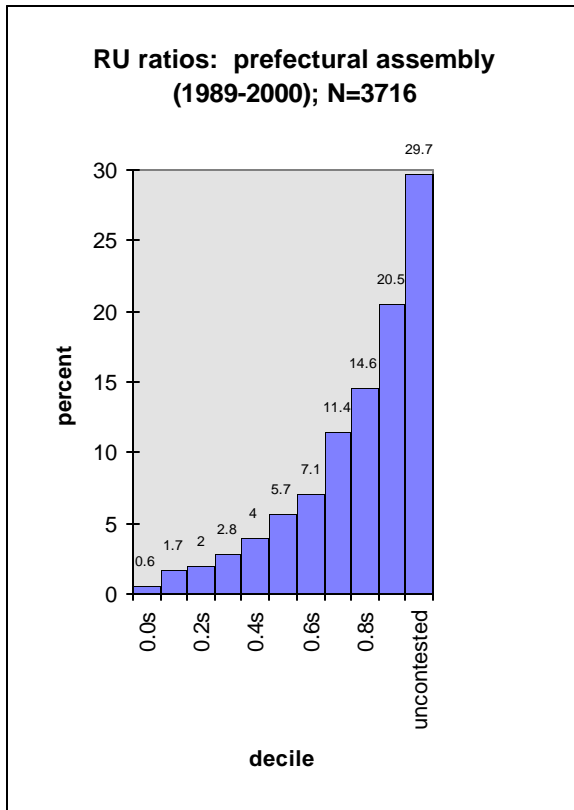


Figure 6c. Lower House  
RU and LP ratios

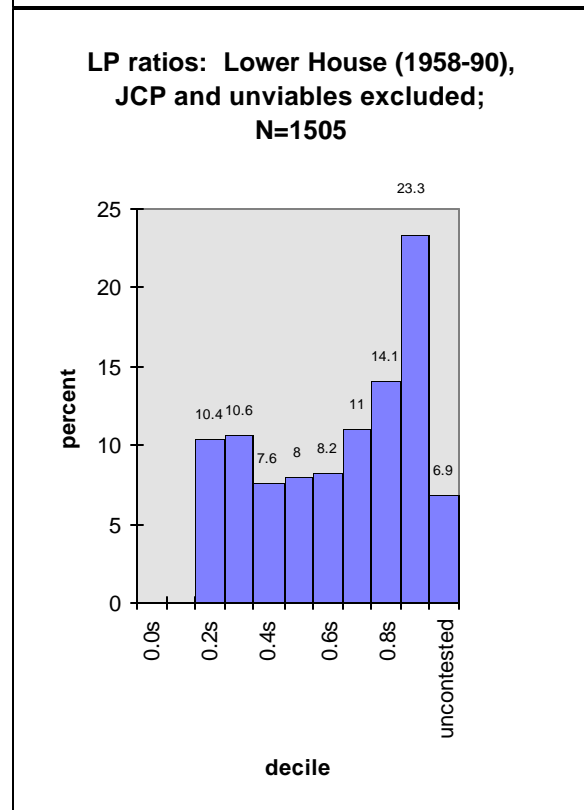
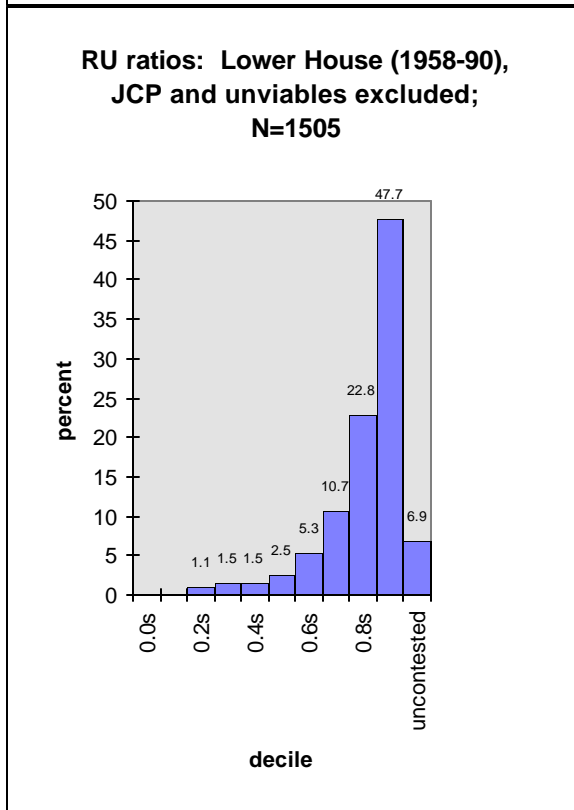
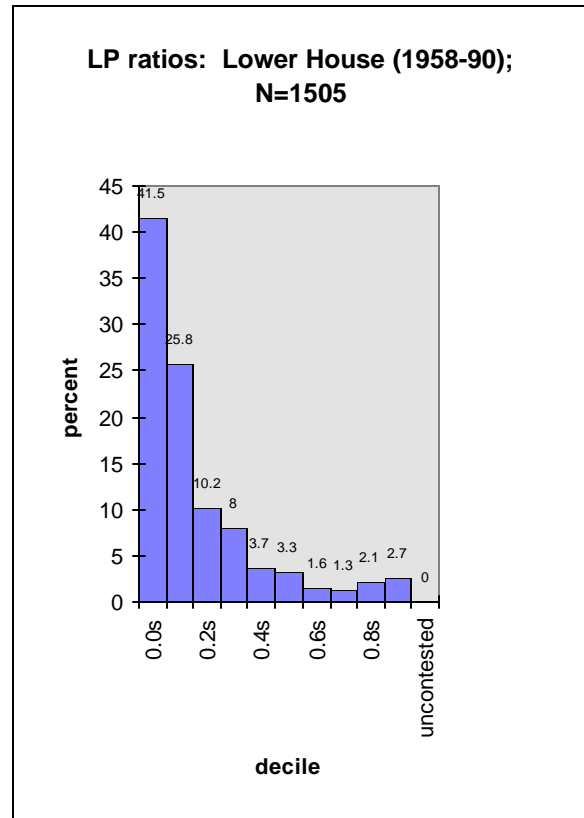
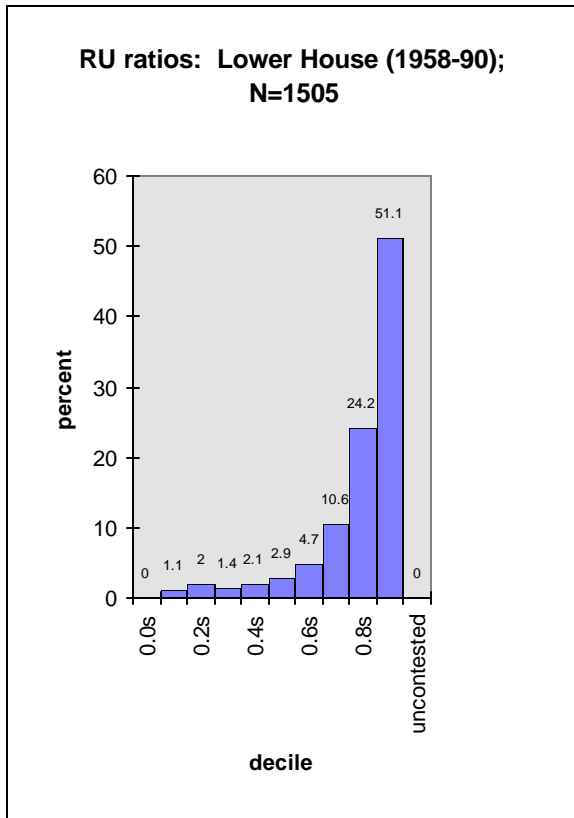


Figure 6d. Upper House  
RU and LP ratios

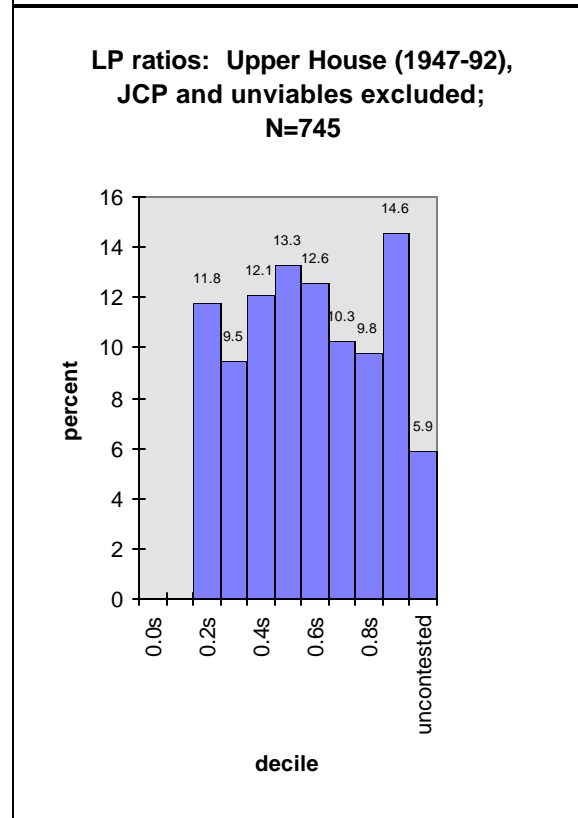
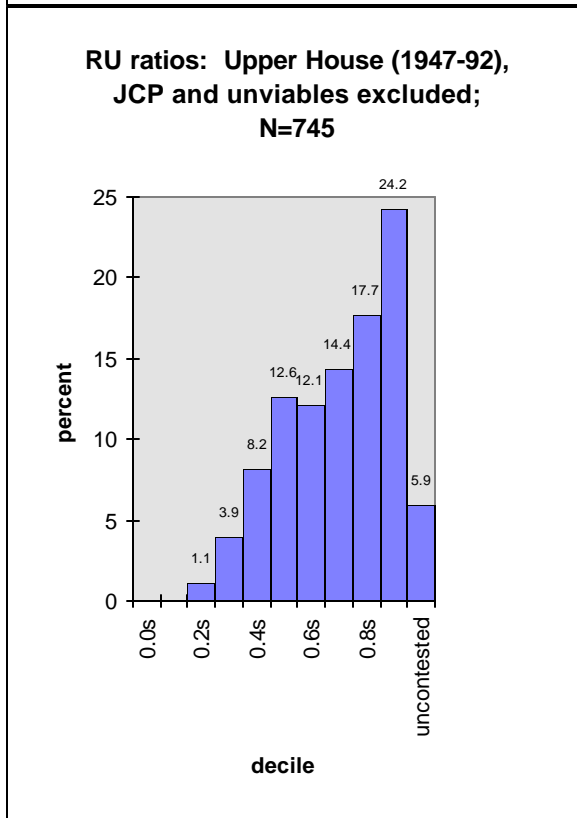
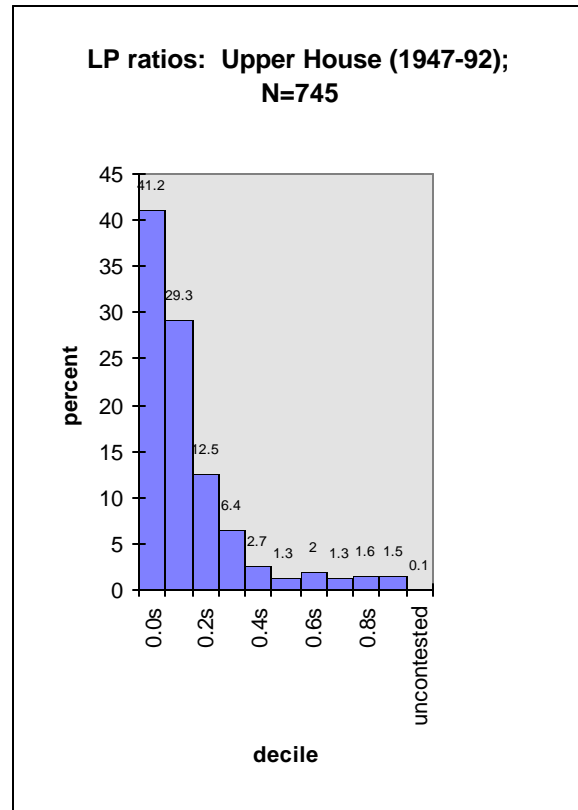
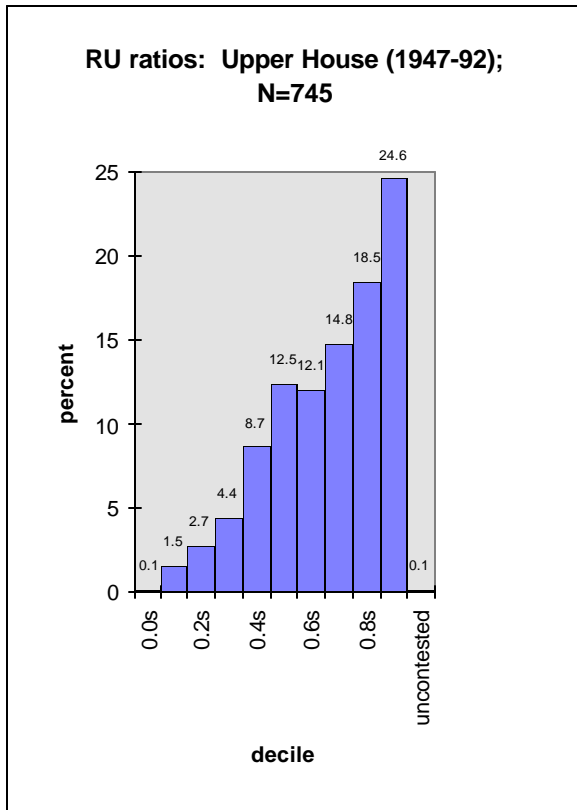


Figure 6e. Prefectural governor  
RU and LP ratios

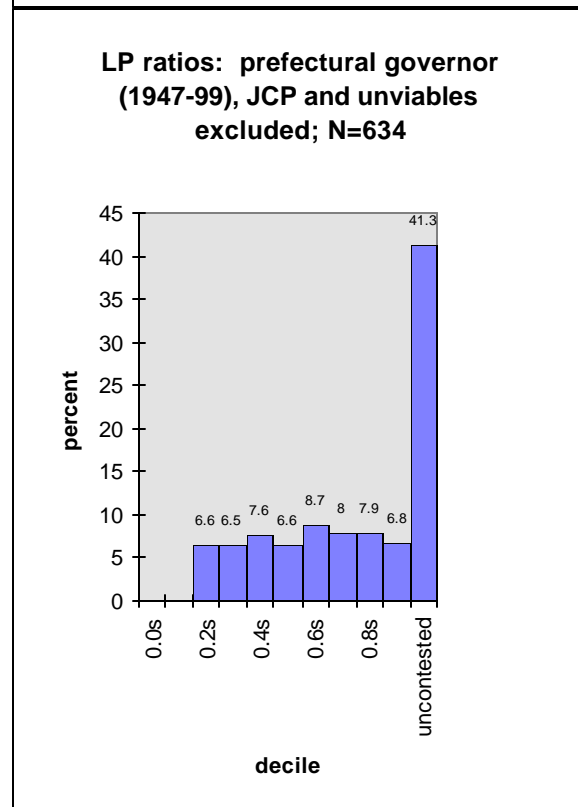
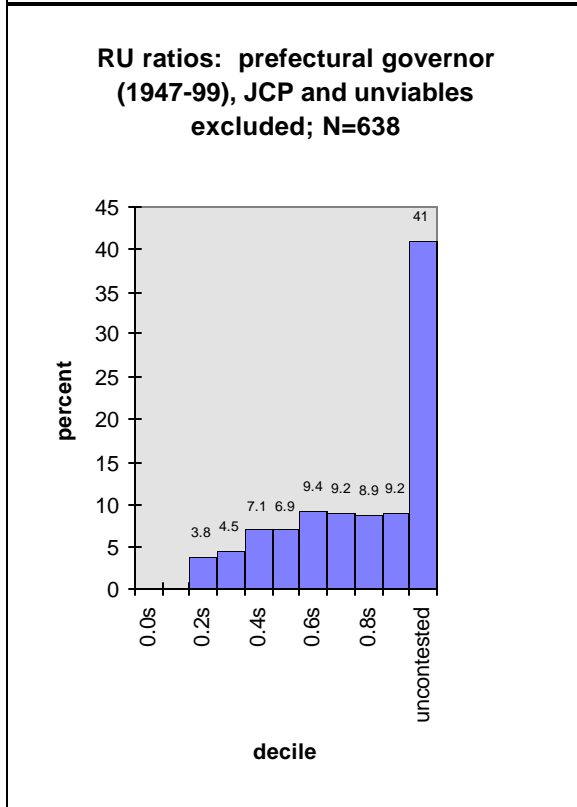
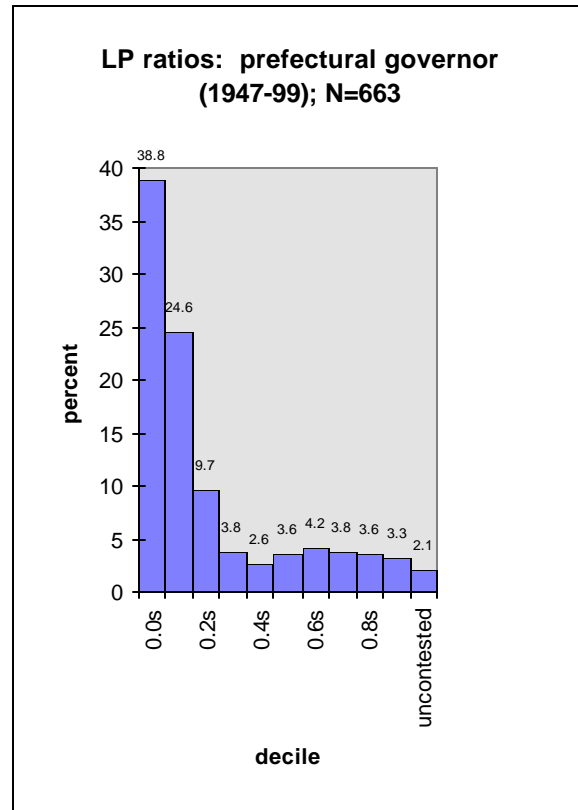
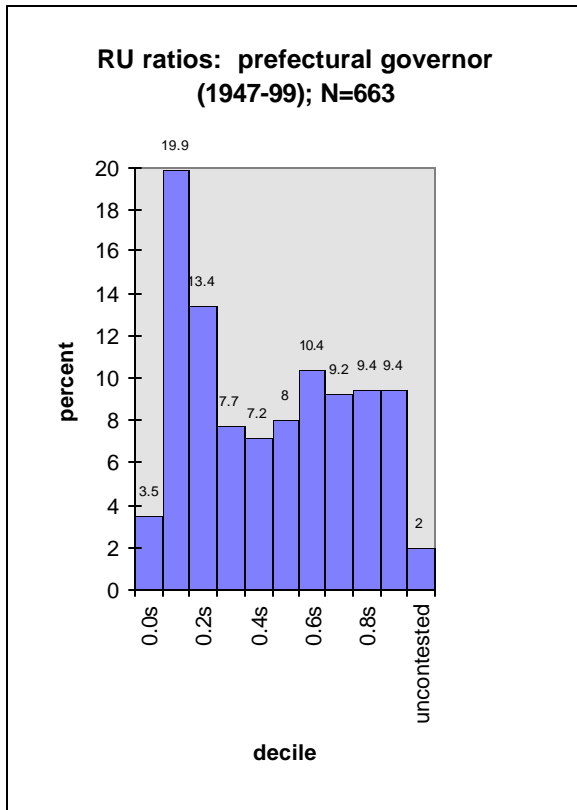


Figure 6f. Taiwanese Legislative Yuan  
RU and LP ratios

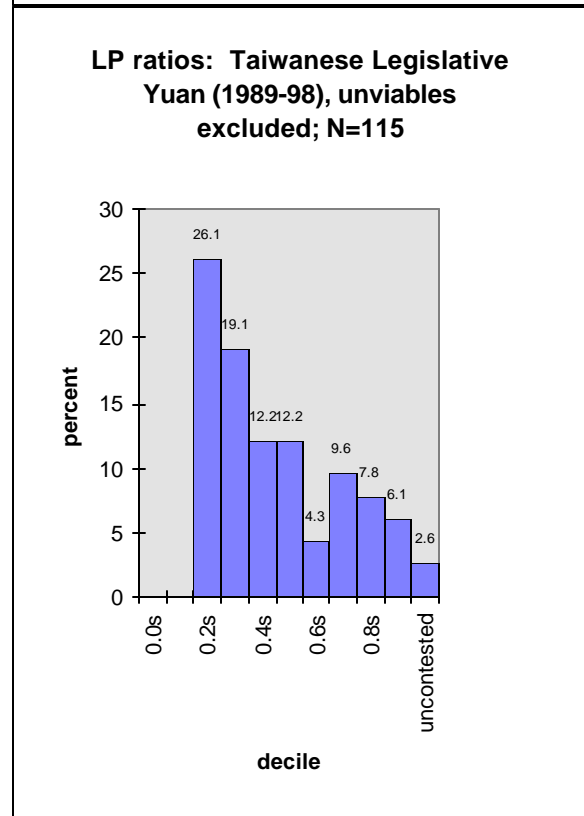
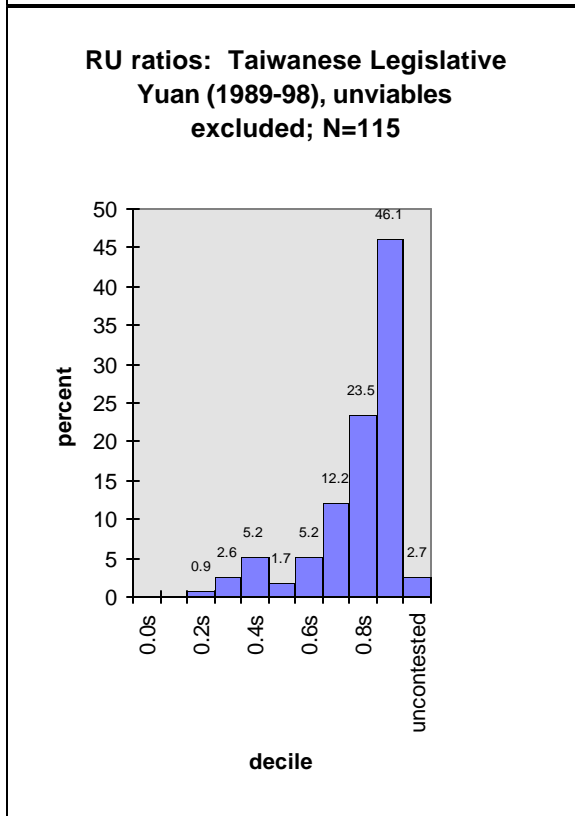
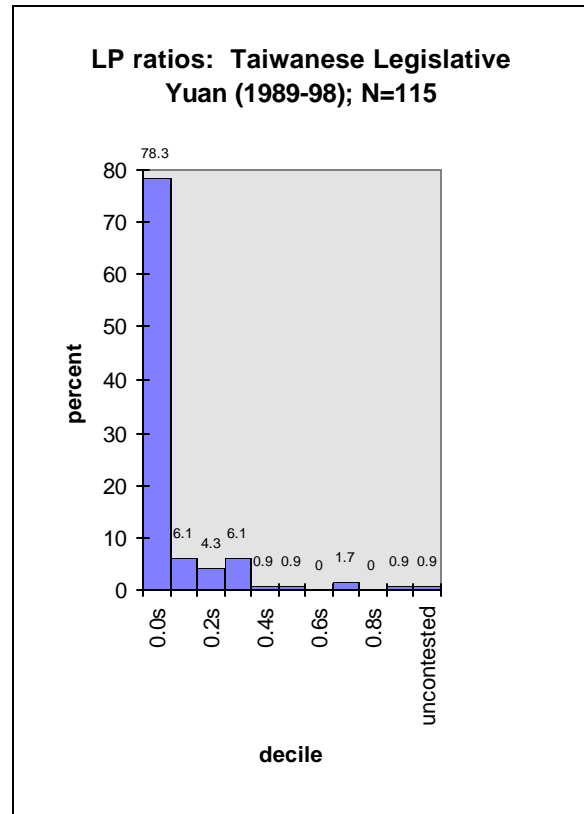
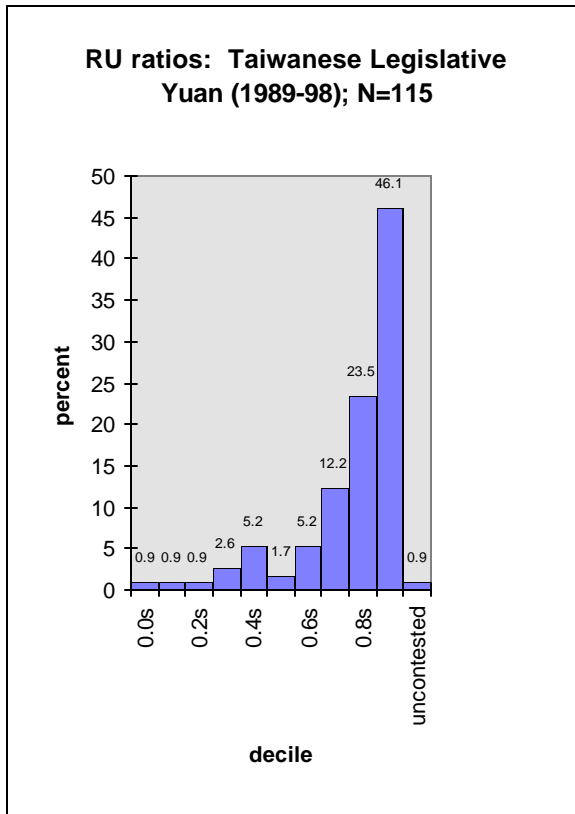


Figure 7. Upper House adjusted RU ratios, by district magnitude

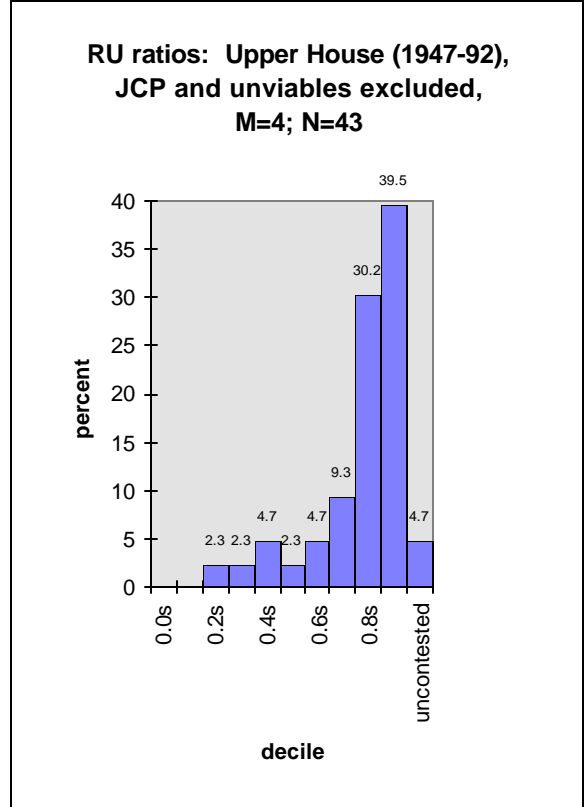
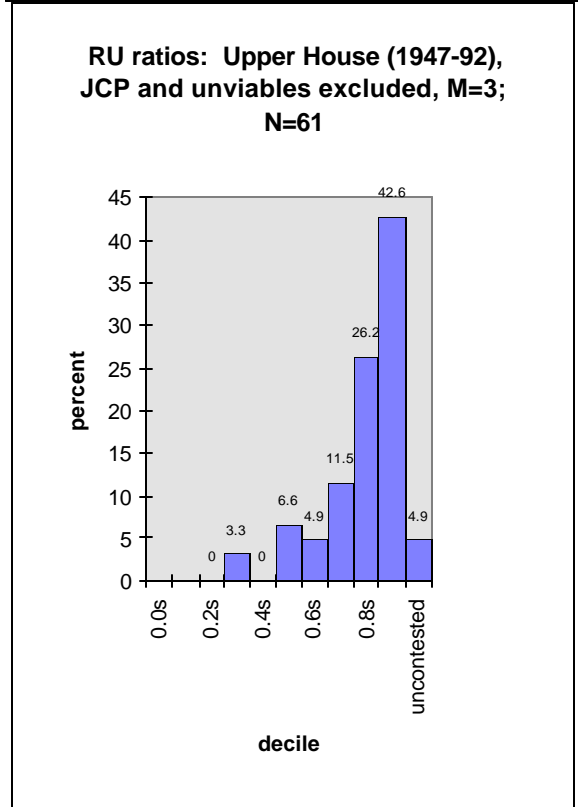
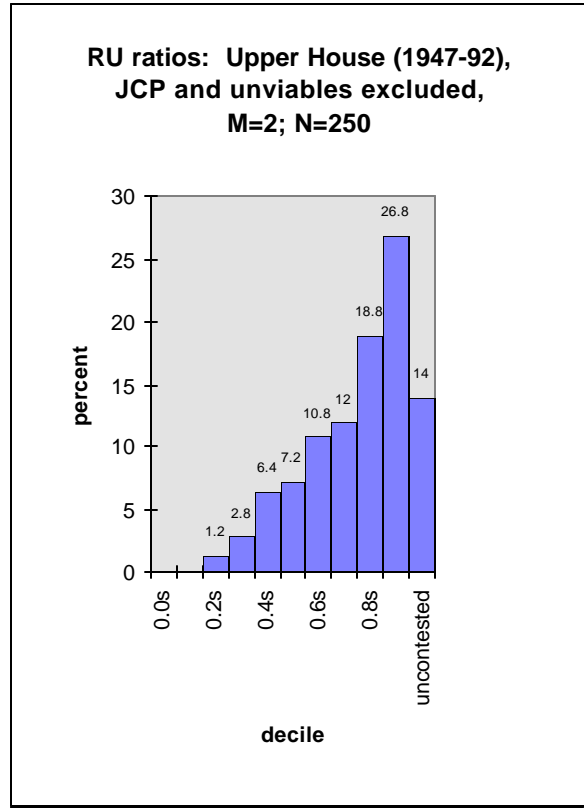
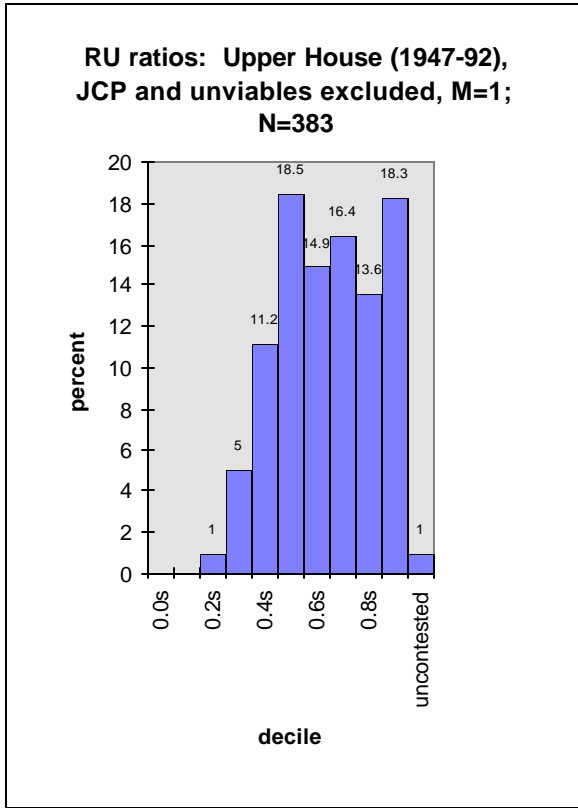


Figure 8. Lower House losers  
by relative vote strength and party

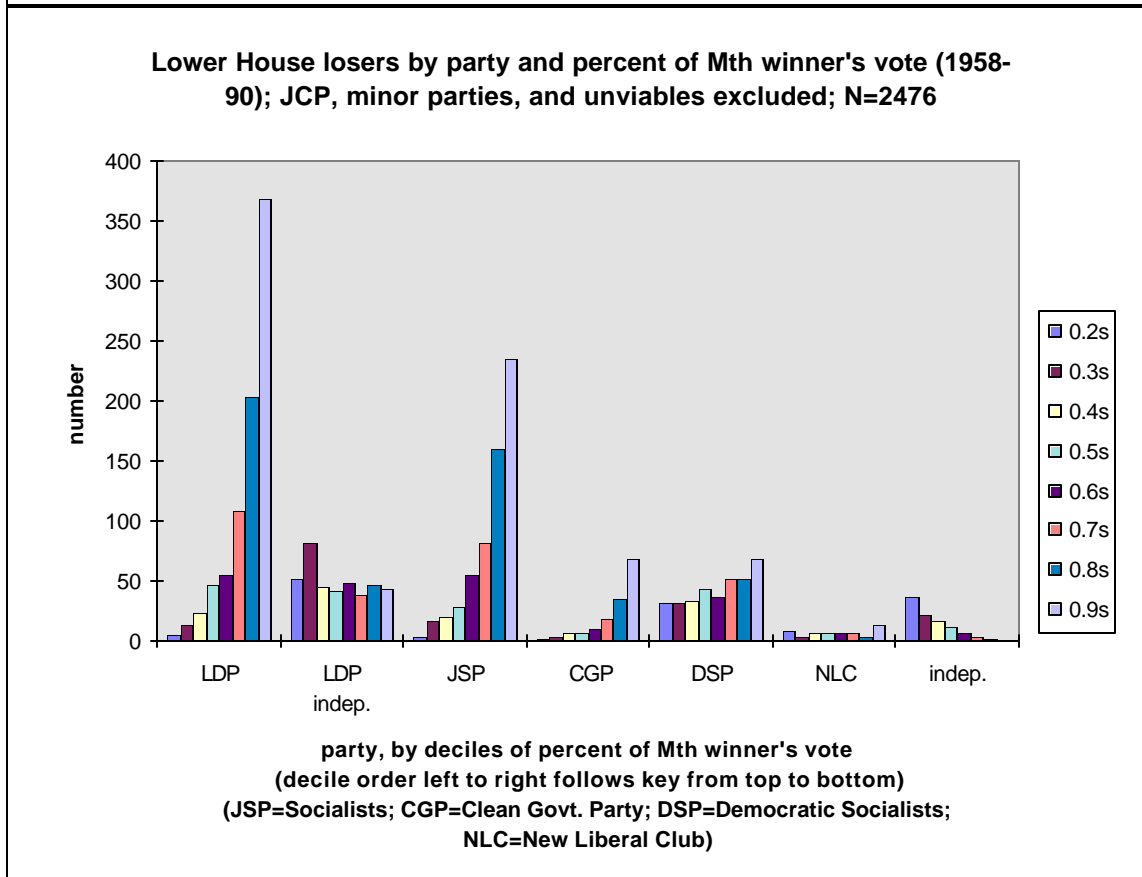
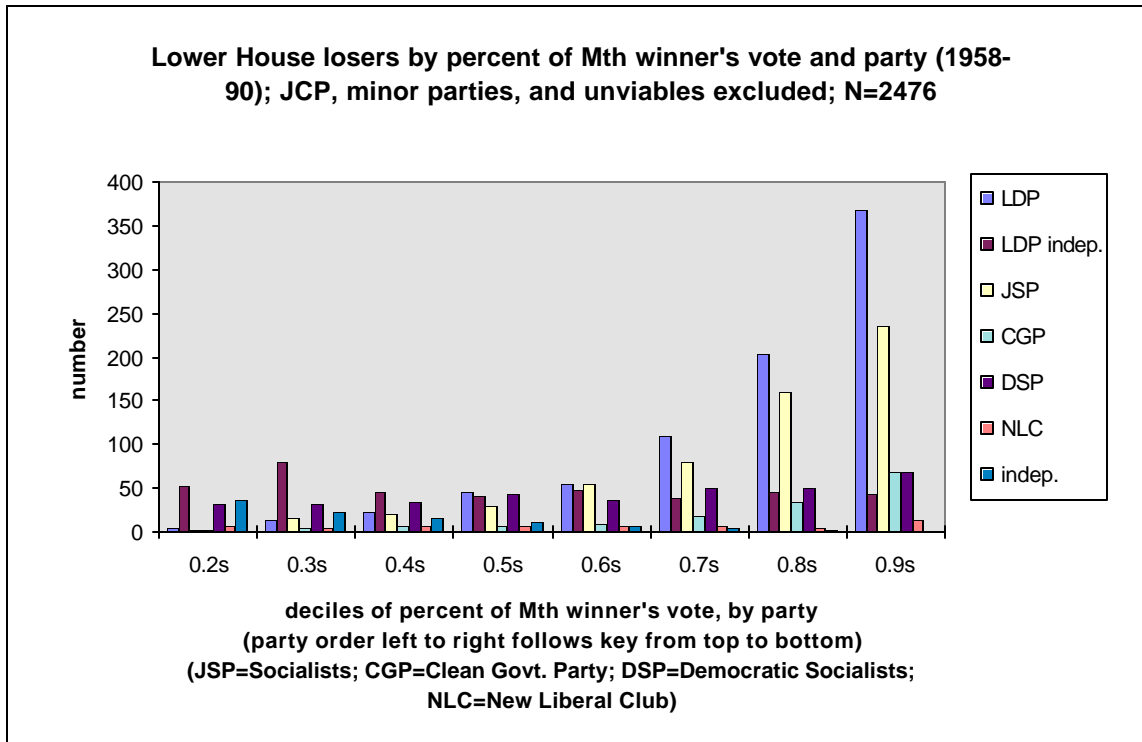


Table 1a. OLS coefficient estimates for models of effective number of weak entrants  
(JCP and unviabiles removed)

election type	all four types N=4386 no year, prefecture dummies	all four types N=4386 year and prefecture dummies	all four types N=4378 year and prefecture dummies
<u>independent variable</u>			
incumbents	-0.12 *** (.02)	-0.12 *** (.02)	-0.11 *** (.02)
magnitude (log)	0.45 *** (.03)	0.47 *** (.03)	0.38 *** (.03)
urbanness			
years (log)	-0.43 *** (.03)		
closeness (t-1)	0.05 ** (.02)	0.03 (.02)	0.00 (.02)
elapsed time (log)	0.16 * (.06)	0.13 (.11)	0.10 (.11)
gubernatorial	0.01 (.02)	-0.03 (.03)	-0.02 (.03)
Upper House	0.08 *** (.02)	0.10 * (.05)	0.08 (.05)
Lower House	-0.01 (.02)	-0.05 (.03)	-0.02 (.03)
weak entrants (t-1)			0.17 *** (.01)
constant	0.80	0.07	0.09
Adjusted R-squared	0.14	0.20	0.23
S.E.E.	0.42	0.40	0.40
Durbin-Watson	1.61	1.69	1.98

\*\*\*  $p < .001$

\*\*  $p < .01$

\*  $p < .05$

Table 1b. OLS coefficient estimates for models of effective number of weak entrants  
(JCP and unviabiles removed)

election type	prefectural assembly N=1844 no fixed-effect dummies	prefectural assembly N=1844 year and prefecture dummies	prefectural assembly N=1844 year and prefecture dummies
<u>independent variable</u>			
incumbents	-0.14 *** (.03)	-0.12 *** (.03)	-0.12 *** (.03)
magnitude (log)	0.51 *** (.04)	0.55 *** (.04)	0.46 *** (.04)
urbanness	-0.01 (.01)	-0.02 (.01)	-0.01 (.01)
years (log)	-0.60 *** (.04)		
closeness (t-1)	0.07 * (.03)	0.05 (.03)	0.01 (.03)
elapsed time (log)			
weak entrants (t-1)			0.16 *** (.02)
constant	1.14	0.21	0.20
Adjusted R-squared	0.25	0.30	0.33
S.E.E.	0.43	0.41	0.40
Durbin-Watson	1.62	1.70	2.01

\*\*\*  $p < .001$

\*\*  $p < .01$

\*  $p < .05$

Table 1c. OLS coefficient estimates for models of effective number of weak entrants  
(JCP and unviabiles removed)

election type	Lower House N=1364 no fixed-effect dummies	Lower House N=1364 year and prefecture dummies	Lower House N=1364 year and prefecture dummies
<u>independent variable</u>			
incumbents	-0.32 *** (.08)	-0.33 *** (.08)	-0.32 *** (.08)
magnitude (log)	0.31 ** (.11)	0.48 ** (.16)	0.43 ** (.15)
urbanness	0.03 * (.02)	0.04 * (.02)	0.03 * (.02)
years (log)	-0.52 *** (.08)		
closeness (t-1)	0.02 (.05)	-0.03 (.05)	-0.03 (.05)
elapsed time (log)	0.16 * (.07)	0.20 * (.09)	0.20 * (.09)
weak entrants (t-1)			0.15 *** (.03)
constant	1.12	0.40	0.36
Adjusted R-squared	0.05	0.11	0.13
S.E.E.	0.48	0.42	0.42
Durbin-Watson	1.63	1.78	2.04

\*\*\*  $p < .001$

\*\*  $p < .01$

\*  $p < .05$

Table 1d. OLS coefficient estimates for models of effective number of weak entrants  
(JCP and unviabiles removed)

election type	Upper House N=604 no fixed-effect dummies		Upper House N=604 year and prefecture dummies		Upper House N=604 year and prefecture dummies	
<u>independent variable</u>						
incumbents	-0.03	(.04)	-0.03	(.04)	-0.03	(.04)
magnitude (log)	-0.12	(.10)	-2.46	(1.81)	-2.47	(1.81)
urbanness	0.32 *	(.12)	-0.36	(.47)	-0.36	(.47)
years (log)	-0.16	(.08)				
closeness (t-1)	-0.10	(.06)	-0.07	(.07)	-0.07	(.07)
elapsed time (log)						
weak entrants (t-1)					0.01	(.04)
constant	0.26		2.48		2.47	
Adjusted R-squared	0.01		0.16		0.16	
S.E.E.	0.37		0.34		0.34	
Durbin-Watson	1.72		1.99		1.99	

\*\*\*  $p < .001$

\*\*  $p < .01$

\*  $p < .05$

Table 1e. OLS coefficient estimates for models of effective number of weak entrants  
(JCP and unviabiles removed)

election type	gubernatorial N=574 no fixed-effect dummies	gubernatorial N=574 year and prefecture dummies	gubernatorial N=566 year and prefecture dummies
<u>independent variable</u>			
incumbents magnitude (log)	-0.08 * (.03)	-0.07 (.04)	-0.06 (.04)
urbanness	0.25 ** (.08)	-0.16 (.41)	0.06 (.42)
years (log)	-0.13 ** (.05)		
closeness (t-1)	0.09 * (.04)	0.00 (.04)	-0.01 (.05)
elapsed time (log)	-0.18 (.15)	-0.21 (.16)	-0.23 (.16)
weak entrants (t-1)			-0.01 (.05)
constant	0.16	0.65	0.33
Adjusted R-squared	0.05	0.17	0.16
S.E.E.	0.32	0.30	0.30
Durbin-Watson	1.76	2.01	1.96

\*\*\*  $p < .001$

\*\*  $p < .01$

\*  $p < .05$