AN EVOLUTIONARY APPROACH TO PARTY SYSTEM STABILITY

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Western democracies exhibit a remarkable continuity and stability in their party systems. Parties that dominate elections and governments now tend to be the same parties that dominated elections and governments as far back as the 1920s. I illustrate this using a new dataset that draws information from every democratic legislative election between 1930-2000 in 18 West European countries. It is an empirical puzzle as to why established party systems are so stable and why successful new parties are so rare. Existing models of party entry cannot explain why entering parties seem to be strongly disadvantaged with respect to established parties. This paper provides an answer to this puzzle by portraying elections as a coordination game amongst voters. Using a standard model from evolutionary game theory, I am able to show how voters might become coordinated on a set of established parties over time and why it is difficult for new parties to enter successfully once a coordination equilibrium is achieved. The model produces several hypotheses that are open to statistical and experimental testing.

1 Introduction

Social cleavages help determine the nature of party competition.[2] While there is some debate as to whether electoral institutions or societal divisions play the larger role in shaping party systems (Lipset & Rokkan 1967, Amorim Neto & Cox 1997, Boix 1999, Ordeshook & Shvetsova 1994), it seems obvious that social cleavages matter. A natural implication of this is that party systems can be expected to evolve in response to social change. This idea fits nicely with our normative notion that party systems should be representative of the electorate. As the makeup of the electorate changes, so should the composition of the

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[2]Although the somewhat naïve belief that pre-existing social cleavages automatically become politicized has been successfully challenged (Kalyvas 1996, Posner 1998, Laitin 1986, Zielinski 2001), few would argue that these cleavages do not shape party systems in important ways.

party system.[3] It is a puzzle, then, that party systems in Western democracies have exhibited a remarkable degree of continuity and stability since the 1920s despite the enormous changes that have occurred in many of these societies. New parties have not been particularly successful at exploiting huge social changes such as the declines of manufacturing industry, the agricultural community and religious observance. To a large extent, the parties that dominate elections and governments now tend to be the same parties that dominated elections and governments as far back as the 1920s.

Current research has very little to say about *why* party systems exhibit this type of stability. There is a vast empirical and theoretical literature that seeks to explain the number of parties that exist in a particular country or district (Duverger 1954, Amorim Neto & Cox 1997, Cox 1997, Chhibber & Kollman 1998, Golder & Clark 2003). This research is useful if one wants to explain why a particular party system is characterized by a specific number of parties across time. However, it is less useful if one wants to explain why particular parties dominate party systems for such long periods of time and why new parties are so unsuccessful. This is because this research does not explicitly address the identity of the parties in a given system. Perhaps an equally large literature exists examining whether party systems in Western democracies remain as stable as they once were (Dalton, Flanagan & Beck 1984, Dalton & Kuechler 1990). The majority of this work is interested in examining whether Lipset and Rokkan's 'freezing hypothesis' remains valid.[4] Since this research is primarily empirical in nature, it does not directly address the 'mechanics' by which party systems have remained stable for so long (Mair 1997). While both literatures address elements of party system stability, neither can explain why successful new parties are so rare. I remedy this situation by providing a model of party system stability that draws on the tools of evolutionary game theory.

It is important to remember that new parties are not a rare phenomenon. This means that the stability of party systems cannot be explained in terms of an absence of new competitors on the electoral scene. In an analysis of 22 Western countries, Hug (2001) finds that 361 new parties have formed since 1945. The mean number of new parties that emerged in each election ranged from a low of 0.47 in New Zealand to a high of 7.5 in Spain. Nor can it be argued that established parties have generated high levels of public satisfaction or enthusiasm (Aldrich 1995). Evidence for this comes from the decline in electoral

[3]It is precisely this type of argument that underlies most accounts of the emergence of environmental parties on the Left and populist parties on the Right since the late 1970s (Kitschelt 1988, Inglehart 1977, Inglehart 1984, Inglehart & Flanagan 1987).

[4]Until recently, the overwhelming majority of this research has argued that party systems were becoming less stable. Evidence for this conclusion came from three sources: (i)trends in aggregate electoral volatility (Pedersen 1979), (ii) the 'success' of new parties on the Left and Right (Kitschelt 1988, Kitschelt 1997), and (iii) the decline of party organizations and representativeness (Lawson & Merkl 1988). However, Bartolini and Mair (1997) convincingly illustrate that electoral change is a 'myth' on all three counts. Party systems today appear to be no less stable than they were in the 1930s.

turnout that many countries have experienced for the last several decades and the low public trust enjoyed by politicians. The constant public and academic debate about the need to foster third parties in Britain and America also bears witness to the demand for new parties. These facts simply raise the question as to how established parties have managed to keep the door shut on new parties for such a long period of time.

Several formal models have been proposed to analyze party entry. The vast majority are two-stage spatial models (Greenberg & Weber 1985, Greenberg & Shepsle 1987, Feddersen, Sened & Wright 1990, Weber 1992, Weber 1998). In these models potential candidates first decide whether or not to enter an electoral race. Those candidates who decide to enter then compete by adopting positions somewhere along a left-right continuum. Thus, the main difficulty facing a new party is simply to find an ideological position with sufficient support to be successful. While these models are often informative, they suffer from several empirical and theoretical problems. In particular, they fail to adequately explain the empirical evidence showing that new parties are strongly disadvantaged with respect to established parties.

I provide an alternative model of party entry and party system stability that explains why new parties empirically appear to be disadvantaged compared to established parties. Unlike existing spatial models that emphasize the strategic behavior of party elites, my model focuses on the behavior of voters. Moreover, it incorporates both spatial and social aspects of voting. Using a standard approach from evolutionary game theory (Young 1993, Young 1996, Young 1998), I show how voters might become coordinated on a set of established parties over time and why it is difficult for new parties to enter successfully. The problem facing a new party is that voters will be unwilling to individually switch to an alternative equilibrium in which it replaces an established party. This is the case even if the new party locates so as to create an alternative coordination equilibrium that is preferred by a significant number of voters. Not only does the model explain party system stability, but it also provides (i) a causal mechanism that has been missing in earlier models of voter coordination and (ii) the first microfoundations for arguments in which voting is treated as contextually-contingent. The model generates several implications that can be tested using both statistical and experimental methods.

In section two, I provide fresh empirical evidence illustrating the relative stability of Western party systems since the 1920s. It seems that although new parties are a relatively common phenomenon, they rarely enjoy electoral success either in terms of votes or in terms of government participation. Next, I briefly outline the empirical and theoretical problems that characterize current spatial models of party entry. The inability of these models to distinguish between established parties and new parties suggests that they are not well-placed to explain party system stability. In the fourth section, I suggest an alternative way of analyzing party entry in which elections are characterized as a coordination game amongst voters. After providing the basic intuition behind the argument, I formalize it in the form of an evolutionary model in which voters care not only about which party actually wins the election but also about whether other voters in their 'reference group' also support this party. Finally, after deriving the equilibrium outcomes, I discuss the implications of the model and possible statistical and experimental tests.

2 Empirical Evidence on the Success of New Parties

The empirical evidence presented in this section clearly illustrates that party systems in Western democracies have been characterized by a remarkable degree of stability since the 1920s. The evidence is drawn from a new dataset that spans 18 West European countries between 1930 and 2000.[5] A party is simply an organization that presents candidates at general elections. A new party is one that either results from a split from an existing party or is genuinely new in the sense that it emerges without any help from members of existing parties (Hug 2001). Although a new party could also result from a merger or an electoral alliance, I have excluded these on the grounds that they do not represent truly 'new' competitors on the electoral scene. This gives a total of 612 new parties.[6] I decided to exclude those countries that have experienced a dictatorship in the period of interest since it is theoretically unclear what the effect of dictatorial rule is on established party systems; party systems and party system stability may well be distinctly different in countries that have been dictatorships compared to those that have not. Once Germany, Greece, Italy, Portugal and Spain have been excluded, I am left with 385 new parties in

[5]The data covers Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. It comes from several sources (Boothroyd 2001, Caramani 2000, Hug 2001, Mackie & Rose 1991, Day & Degenhardt 1988, Mackie 1991, Mackie 1992, Mackie 1993, Mackie 1994, Mackie 1995, Mackie 1996, Mackie 1997, McHale & Skowronski 1983, East & Bell 1990). Several websites also provided data. Information about these websites can be obtained by contacting the author.

[6]There have been at least two other previous attempts to collect data on new parties. First, Harmel and Robertson (1985) found that '233 new parties formed in 19 West European and Anglo-American democracies from 1960 through 1980.' In their study, a political party was 'defined as an organization that purports to have as one of its goals the placement of its avowed members in governmental office.' Unlike my dataset, they include mergers and 'reorganizations of former parties.' They do not report where their data can be found. Second, Hug (2001) found that 361 parties had formed in 22 Western countries since 1945. Since these parties are listed at *http://uts.cc.utexas.edu/~simonhug/newparty/*, I was able to ensure their inclusion in my dataset where appropriate. I cross-checked these parties with other sources and found additional parties that were omitted. Hug did not collect data on the electoral performance of these parties beyond their initial election or on their participation in government. I used the sources listed above to gather this missing information along with data on parties emerging prior to 1945.

thirteen countries.

Table 1: Descriptive Statistics on Genuinely New Parties and Splits

	Maximum Percentage of the Vote Won							
	0-0.5	0.5-1	1-5	5-10	10-15	15-20	20-25	25+
Genuinely New	137	33	52	16	10	3	2	3
Splits	63	9	36	13	8	0	0	0
Both	200	42	88	29	18	3	2	3

Table 1 indicates that only 8 new parties have ever won more than 15% of the vote in national elections to the lower house since 1930. These parties are listed in Table 2 along with their country, year of formation and highest vote share. It is interesting to note that all but three of these parties had formed by 1949 and that no party formed after this date has ever won more than 16% of the vote.

Table 2: Parties that have Won more than 15% of the Vote since 1930

Party	Country	Year of Formation	Highest Voteshare
1. Progress Party (Anders Lange's Party)	Norway	1973	15.3
2. Democrats '66	Netherlands	1967	15.49
3. Progress Party	Denmark	1973	15.89
4. Democratic and Social Union of Resistance (UDSR)	France	1945	21.8
5. Democratic Party	Luxembourg	1937	23.29
6. Freedom Party (League of Independents)	Austria	1949	26.91
7. Popular Republican Movement (MRP)	France	1945	28.11
8. Gaullists (RPF/RPR)	France	1946	38.03

Table 3 provides information on the electoral success of new parties by country. It is clear that all of the countries exhibit the same pattern in which most new parties never receive more than 1% of the national vote share and very few ever get more than 10%. In fact, the number of parties receiving less than 0.5% of the vote is likely to be an underestimate of the true number.[7] Since official sources tend to collapse all parties receiving less than 0.5% of the vote into an 'other party' category, it is all but impossible to know how many new parties have formed and received less than this percentage of the national vote. However, there is reason to believe that the number of parties in the United Kingdom falling into this category (115) may not be unusual. For example, Lucardie

[7] The one exception is the United Kingdom, where Boothroyd (2001) provides an exhaustive list of the parties presenting candidates to parliament since 1801.

(1996) reports that 257 new parties have presented candidates in parliamentary elections in the Netherlands (cited in Hug 2001: 81). The vast majority of these parties must have failed to attain more than 0.5% of the vote since my dataset only includes 22 new parties for the Netherlands. The electoral results found on the website of the Vrije Universiteit Brussel indicates that at least 100 parties presenting candidates to the Belgian parliament since 1930 have won less than 0.5% of the vote.[8] Thus, the pattern in which most new parties receive below 1% is actually likely to be much more stark than it appears in Table 3.

Table 3: Descriptive Statistics on New Parties and Splits by Country

	Maximum Percentage of the Vote Won							
	0-0.5	0.5-1	1-5	5-10	10-15	15-20	20-25	25+
Austria	10	1	5	2	0	0	0	1
Belgium	11	7	6	2	2	0	0	0
Denmark	4	1	9	3	1	1	0	0
Finland	11	2	12	2	1	0	0	0
France	16	2	7	2	3	0	1	2
Iceland	6	3	8	6	2	0	0	0
Ireland	9	5	7	3	3	0	0	0
Luxembourg	1	1	8	2	2	0	1	0
Netherlands	3	5	11	2	0	1	0	0
Norway	6	2	4	0	2	1	0	0
Sweden	3	3	1	2	1	0	0	0
Switzerland	5	5	9	3	0	0	0	0
United Kingdom	115	5	1	0	1	0	0	0
Total	200	42	88	29	18	3	2	3

Table 4 illustrates that 30 new parties have made it into government since 1945, but that only 3 of these have been formateurs. All of these parties are listed in Table 5 along with their country and the year they first entered government. The table also indicates whether these parties still exist and whether they resulted from splits or whether they are genuinely new.[9] It is interesting to note that fifteen (50%) of these parties have died since being in government. Of the three parties that became formateurs, all are French: the Popular Republican Movement (MRP), the Democratic and Social Union of Resistance (UDSR), and the Gaullists (RPF/RPR).[10]

[8] A problem with this data source is that the full name of these parties is not provided. This means that it is hard to know for sure whether these parties are genuinely new or emerge as a result of splits or mergers. As a result, I have not included them in my dataset.

[9] The Francophone Democratic Front (FDF) in Belgium formed an electoral alliance with PPW in 1991. It then formed an electoral and political alliance with the Liberal Reform Party (PRL) in 1995. In 1999 this political alliance was joined by the Citizen's Movement for Change (MCC). Thus, the FDF is considered a dead party that has been replaced first by an electoral alliance and then by a merger. The Radical Political Party in the Netherlands merged with the Communist Party, Pacifist Socialist Party and the Evangelical People's Party in 1990. They ran as an electoral alliance in 1989. Thus, this party is recorded as being dead from 1989. The Democratic Left is recorded as dead since it merged with the Labour Party in Ireland in 1999.

[10] The UDSR and MRP developed out of wartime resistance movements. The UDSR was

Table 4: New Parties and Government

	Number of Parties	
	Government	Formateur
Genuinely New Parties	16	3
Splits	14	0
Both	30	3

Table 5: New Parties that have Entered Government

Party	Country	First Government	Dead	New or Split
1. Democratic and Socialist Union of Resistance (UDSR)	France	1946	Yes	New
2. Popular Republican Movement (MRP)	France	1946	Yes	New
3. Family of the Land	Ireland	1948	Yes	New
4. Family of the Republic	Ireland	1948	Yes	New
5. Gaullists	France	1958	No	New
6. Independent Republicans (FNRI)	France	1962	Yes	Split
7. Social Democratic League of Workers and Smallholders	Finland	1966	Yes	Split
8. Democratic Center	France	1968	Yes	Split
9. Democrats Socialist '70	Netherlands	1971	Yes	Split
10. Francophone Democratic Front (FDF)	Belgium	1971	Yes	New
11. Union of Liberals and Leftists	Iceland	1971	Yes	Split
12. Radical Political Party	Netherlands	1972	Yes	Split
13. Democrats '66	Netherlands	1972	No	New
14. Center Democracy and Progress (CDP)	France	1973	Yes	Split
15. People's Union	Belgium	1977	No	New
16. Center Democrats	Denmark	1981	No	Split
17. Rural Party	Finland	1983	Yes	Split
18. Freedom party	Austria	1983	No	New
19. Citizen's Party II	Iceland	1987	Yes	Split
20. Progressive Democrats	Ireland	1989	No	Split
21. Christian Democratic Union	Sweden	1991	No	New
22. Christian League	Finland	1991	No	New
23. Left Radicals (MRG)	France	1991	No	Split
24. Democratic Left	Ireland	1992	Yes	Split
25. Christian People's Party	Denmark	1993	No	New
26. Greens	Finland	1995	No	New
27. Movement for Citizens (MDC)	France	1997	No	Split
28. Greens	France	1997	No	New
29. Francophone Greens (Ecolo)	Belgium	1999	No	New
30. Agalev	Belgium	1999	No	New

organized around a federation of resistance movements from the war: Organisation Civile et Militaire, Libérer et Fédérer, Libération-Nord, along with some members from Ceux de la Résistance and France Libre. The MRP also came out of the resistance and was closely associated with the interwar Popular Democratic Party. The origins of these parties clearly indicate that these parties had well-developed organizational structures before their decision to enter electoral competition.

The empirical evidence presented here indicates that new parties are commonplace but that they often fail to enjoy electoral success in terms of votes or in terms of government participation. Only 7.8% of new parties have ever managed to enter government and less than 1% have ever been a formateur. These figures are actually overestimates given the difficulty in gathering information on parties that receive less than 0.5% of the vote. Of those parties that have actually entered government, half have since disappeared. This means that parties established prior to 1930 have been surprisingly successful at keeping the door to government participation shut to new parties. How was this possible?

3 Spatial Models of Party Entry

Spatial models are rapidly becoming the dominant paradigm for the study of party entry.[11] Although the application of spatial models to political contexts has a long history (Hotelling 1929, Smithies 1941, Downs 1957), it is only recently that they have been applied to questions of party entry. Since Palfrey (1984) provided the first formal model of party (candidate) entry, there have been numerous spatial models analyzing electoral equilibria and the possibility of party entry (Greenberg & Weber 1985, Greenberg & Shepsle 1987, Feddersen, Sened & Wright 1990, Weber 1992, Weber 1998, Osborne & Slivinski 1996, Besley & Coate 1997).[12] These models have clearly increased our knowledge of party entry. However, they suffer from both empirical and theoretical problems. For example, they tend to produce implausible results and ignore the strategic behavior of voters and elites. They have also generated hypotheses that have proven particularly difficult to test.[13] After outlining the basic structure of these spatial models, this section briefly illustrates some of their empirical and theoretical problems. These problems suggest that spatial models of party entry are unsuited to explaining why new parties are strongly disadvantaged compared to established parties.

Spatial entry models tend to share a similar structure and set of assumptions. Typically, potential candidates first decide whether to enter an electoral race. Those candidates who decide to enter then compete by adopting positions somewhere along a left-right continuum. One assumption that is common to virtually all of these models is that the electorate votes sincerely.[14] Another shared

[11] Hug's (2001) recent model of party entry represents an exception.

[12] For a detailed review of many of these models, see Shepsle and Cohen (1990), Shepsle (1991) and Cox (1997).

[13] Olson and Morton (1994) provide the only example to my knowledge where these models have been tested empirically. They conducted an experimental test of Palfrey (1984). Although they found some evidence in support of the model, they also concluded that the model ignored significant coordination problems.

[14] Only Feddersen, Sened and Wright (1990) allow for strategic voting. Despite this, they find that all voters behave sincerely in equilibrium.

assumption is that candidates know the distribution of voters. No assumption is made as to whether the voters know this distribution since the electorate is nearly always assumed to vote sincerely. A final assumption common to these models is that voters are not allowed to abstain. Other assumptions relating to the type of electoral system or candidate objective vary from model to model. Some models assume that candidates maximize votes, while others assume that they maximize rank. In terms of the electoral system, some assume plurality-rule elections, while others assume multi-seat contests of one form or another. These spatial entry models can be criticized on both empirical and theoretical grounds.

3.1 Empirical Problems

Empirically, these models do not seem able to explain widespread party system stability. Greenberg and Shepsle (1987) provide an impossibility theorem showing that there are always societies for which successful entry is possible. Their model focuses on proportional representation systems in which M seats are at stake and a candidate is elected if she finishes in the top M-votegetters (M can be thought of as the district magnitude). Cohen (1987) qualifies this theorem to some extent by showing that a broad range of voter distributions (unimodal and symmetric) do allow for entry-deterring equilibria in which two existing parties locate at the 1st and 3rd quartiles. However, this qualification is of only limited relevance since it is restricted to electoral systems where there are only two existing parties and where the district magnitude is two; very few empirical cases meet these requirements. Thus, Greenberg and Shepsle's result indicates that even if one accepts the assumptions underlying many of the spatial models of party entry, one cannot explain why successful new parties are so rare.

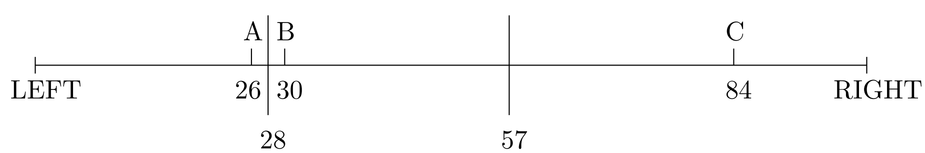
The empirical results generated by spatial entry models also seem implausible in many cases. For example, Feddersen, Sened and Wright (1990) provide a model of party entry in plurality systems where all entrants locate at the ideal point of the median voter with each entrant winning exactly the same number of votes. This means that the winner is actually determined by lottery! Greenberg and Shepsle (1987) indicate that when established candidates can locate so as to deter successful entry, then there are the same number of candidates as there are seats in equilibrium. Given the prediction of no actual competition, it is hard to imagine why there is an election in the first place! In Palfrey's (1984) model a new party enters even though it knows for certain that it will always lose! As a result, it is hard to see how this model provides any insights into the circumstances under which new parties would emerge (Hug 2001).[15]

[15] For a more extensive critique of Palfrey (1984), see Greenberg and Shepsle (1987), Shepsle and Cohen (1990) and Shepsle (1991).

3.2 Theoretical Problems

The fact that these models tend to ignore the strategic behavior of voters and elites means that one can also question their utility on theoretical grounds. Although candidates are assumed to behave strategically, voters are typically assumed to vote sincerely. In other words, voters support the candidate that is located closest to them in ideological space. Consider the following situation in which there is a policy space [0,100], there are three candidates {A,B,C}, the electorate is uniformly distributed and the election is held under plurality rule. Imagine that candidate B is a new candidate, while candidate A and candidate C are established. Given the assumption of sincere voting, those voters to the left of the first vertical line (28) will support candidate A, voters to the right of the second vertical line (57) will support candidate C, and voters in between will vote for candidate B. The outcome of the election would be a victory for candidate C with 43% of the vote. Candidate B would win 29% and candidate A would win 28%. One can think of this outcome as resulting from a 'sincere spatial model'.

Figure 1: Simple Strategic Coordination Example



One thing to note about this 'sincere spatial model' is that it is neutral.[16] This means that the only thing that distinguishes candidates is their spatial position. Thus, the fundamental difficulty faced by potential new parties is to find a location in ideological space that would attract sufficient voters for them to win seats; established parties should locate so as to make this difficult. In the example given above, the new candidate (B) clearly failed to locate at a point in ideological space that ensured victory. An implication of the neutrality assumption is that incumbency, partisanship, name recognition and past electoral history provides no information to distinguish between candidates. More significantly, it means that 'sincere spatial models' cannot distinguish between new parties and established parties. As a result, they cannot explain

[16]Cox (1997: 153) states that a 'spatial model is *neutral* if, whenever candidates A and B switch spatial positions (all other candidates' positions held constant), then they switch expected vote shares and probabilities of victory.'

why new parties empirically seem to be disadvantaged compared to established parties.

There is growing evidence to suggest that voters and elites act strategically during elections (Alvarez, Nagler & Boehmke 2001, Alverez & Nagler 2000, Gschwend 2001). Consider the situation in Figure 1 again. Cox (1997) argues that it is precisely in this type of situation that one would expect to see strategic voting. This is because Candidate C is expected to win the election even though a majority of the electorate prefers both candidate A and candidate B to candidate C. In other words, candidate C is a Condorcet loser. In order to prevent their least-preferred candidate from winning, left voters must vote strategically and coordinate their support behind one of the left candidates (A or B). The problem is that the spatial framework does not allow one to know how this coordination process might occur. Nor does it provide any real intuition as to which candidate voters will coordinate on. Left voters could avoid their least preferred candidate from winning by shifting their support to the established candidate on the left (A) or the new candidate (B). Myerson and Weber (1993), Cox (1997), and Fey (1997) all seem to assume that voters will shift their support to the leading candidate of the left. The implicit belief underlying this assumption is that the 'leading' candidate must maximize the expected utility of left voters. However, why one would believe this is theoretically unclear. As Palfrey (1989) notes, spatial models that allow for strategic voting are essentially indeterminate.[17] This means that 'strategic spatial models' generate multiple equilibria and there is no means to distinguish between them. As a result, these models cannot explain why new parties are rarely successful.

The model that I propose in the next section overcomes the problems associated with both the 'sincere' and 'strategic' spatial models. Not only do I allow voters to act strategically, but I address the issue of multiple equilibria and explain how voters might come to coordinate on a particular candidate. This model can explain party system stability.

4 Elections as Coordination Games

I provide an alternative model of party entry and party system stability that explains why new parties empirically appear to be disadvantaged compared to established parties. Unlike spatial models that emphasize the strategic behavior of party elites given an exogenously determined voter distribution, this model focuses on the behavior of voters. I characterize voting behavior at election time

[17] This is supported by Myerson and Weber (1993) who show that any candidate who is not a Condorcet loser can be the unique and likely winner in a voting equilibrium under plurality rule. They also show that the set of candidates who can be uniquely likely winners at equilibrium may include some Condorcet losers as well.

as a coordination game. The key assumption in the model is that voters care not only about which party actually wins the election but also about whether other voters in their 'reference group' also support this party. This framework allows me to explain why new parties are disadvantaged at election time compared to established parties.[18] I first provide the basic intuition for my argument before presenting a more formal version of the model.

4.1 The Intuition

I argue that an individual's vote choice depends on both the ideological position of a given party and on considerations of group identity or social acceptance. Brennan and Buchanan (1984) illustrate that considerations influencing vote choice which are not discounted by the probability of one's vote affecting the electoral outcome will come to dominate that choice.[19] As a result, it is likely that considerations of social acceptance will ultimately play a more important role in determining vote choice than the ideological position of the parties. In fact, considerable empirical evidence exists to suggest that the relationship between political parties and the electorate is environmentally contingent(Miller 1978, Huckfeldt 1984, Huckfeldt 1986, Books & Prysby 1991, Huckfeldt & Sprague 1992, MacAllister et al. 2001).[20] Several experiments have also indicated that group identification motivates political action such as voter turnout (Schram & Sonnemans 1996). In other words, individual partisanship does appear to be contingent upon partisan surroundings. This should come as no surprise once one recognizes the economic and social benefits that accrue to an individual who takes action on behalf of their reference group (Hardin 1995). It may well be the case that these benefits will be sufficiently large to motivate individuals to support a party that is not their first choice on privately-held policy grounds (Harvey 2001).

In order to receive these group benefits an individual must vote in a manner that is acceptable to others in their reference group. At election time, this means that individuals seek to coordinate on the same political party as other members in their particular group. Thus, the principal difference with standard

[18] The argument is closely related to other models where group benefits are used to explain positive turnout (Uhlaner 1989*a*, Uhlaner 1989*b*, Morton 1991, Schram & van Winden 1991).

[19] Brennan and Buchanan estimate the probability of influencing the outcome of presidential elections in the United States to lie somewhere between 10^{-15} and 10^{-25}. Although this probability is likely to be considerably higher in parliamentary elections, it is hard to imagine that it would become distinguishable from zero in many cases.

[20] There are two traditional criticisms against this type of empirical evidence. The first is that contextual effects are statistical artifacts resulting from a failure to control for sufficient individual-level characteristics (Kelley & McAllister 1985, King 1996). However, Fisher (2000) finds evidence for class contextual effects in British elections even after controlling for a battery of individual-level characteristics. The second criticism is that the mechanism by which the aggregate preferences of a population are translated into a source of influence on individuals is rarely specified. The model that I present can be seen as providing such a mechanism.

models of vote choice is that individuals in this setup care not only about which party actually wins the election but also about whether they are voting the same way as other group members. It is possible to model this situation as an n-person coordination game in which members of some large finite group have preferences over parties on pure policy grounds but also derive benefits from voting the same way as other group members. The large finite group may refer to a social class, ethnic or religious group, neighborhood residents, workplace colleagues etc.. One might call this a 'strategic spatial model' given that the utility received by each player depends on both the ideological location of the parties and the actions taken by other group members.

Consider a basic coordination game in which individuals choose to support Party A, support Party B or abstain. It is easy to see that this setup will generate multiple coordination equilibria and that it is impossible to deduce the outcome without further information. Indeed, it is not even clear that any of the coordination equilibria will be reached if this game is played only once. Coordination problems such as this are commonly resolved by conventions that emerge over time (Hardin 1995). If this voter coordination game recurs, it can be shown that a convention emerges in which individuals coordinate on voting for either Party A or Party B depending on their respective ideological positions. All that is required is that individuals choose the action that maximizes their utility (payoff) given their limited information about how others have voted in the past.[21]

Once coordination on a particular party has occurred there is little or no incentive to do anything but go along with this convention. New parties that emerge after a coordination equilibrium has been reached face enormous difficulties since voters will be unwilling to individually switch their support. This is true even in the unlikely case that the new party is located closer to every individual (except one) than the established party. One might argue that communication is all that is required to convince individuals to shift their support in this case since the new party offers a pareto-improvement for everyone. However, the large size of electorates makes this extremely difficult. An individual would need to know that enough group members were going to shift their vote to the new party for her to do likewise. Moreover, sufficient individuals would need to know this as well. It is hard to imagine that these requirements would be met very often when the size of the electorate is large. It should also be noted that a new party is unlikely to locate so as to be a pareto-improvement for all group members (except one). If this is not the case, it becomes even harder for the new party to convince voters to switch their vote away from the established

[21] One might reasonably argue that the introduction of secret ballot laws means that casting a vote is a private affair. However, there are public aspects to voting that arise due to pre- and post-election conversations about one's vote choice (Harvey & Mukherjee 2003). Although it is possible to lie in these conversations, one must remember that lying is costly (Glazer 1987). This suggests that there is no reason why partisan vote choice should not be modelled as a social convention.

party. This is because individuals are no longer involved in a pure coordination game; instead, the coordination game has an asymmetric structure where group members have conflicting interests. This makes it even more difficult for individuals to move from one coordination equilibrium to another. Thus, the results of the model indicate that party systems become stable over time as voters come to coordinate on a set of established parties. Party system stability is explained in terms of the coordination problem faced by the electorate rather than any institutional or ideological advantage enjoyed by established parties.

It is worth noting at this point how this argument differs from other models of voter coordination. Both Cox (1997, 1999) and Fey (1997) have argued that voters are involved in coordination games at election time. Cox argues that individuals often need to coordinate their voting behavior in order to prevent their least-preferred party from winning the election. Consider an election contested by three parties: one on the right supported by 40% of the electorate and two on the left that each receive 30% of the vote. Although voters on the left form a majority, they would still lose a plurality election because their vote is divided. Cox argues that left-wing voters should coordinate their support behind one of the two parties on the left so as to prevent the Condorcet loser from winning. Fey (1997) provides a similar line of argument and claims that information from public opinion polls can enable voters to coordinate on a particular party.[22]

Neither of these models of voter coordination can adequately explain why new parties should be disadvantaged compared to established parties. Cox argues that individuals attempt to coordinate their behavior by voting strategically. The problem is that he cannot explain why new parties are nearly always the victims of strategic voting and established parties are not. To some extent, Fey provides an answer to this by pointing to the role played by public opinion polls. However, the question then arises as to why new parties never do well in these polls. Neither Cox nor Fey has an answer to this question; the model of voter coordination that I present does. The model that I propose also differs from these models with respect to the informational sources available to individuals who must decide how to coordinate their vote. While Cox and Fey assume that the coordination process starts afresh each election period with no account taken of how people voted in the past, I allow voters to use information from previous elections. Thus, voters have access to more sources of information in my model than are available in the either of those presented by Cox or Fey. I would argue that this makes my model more realistic.

[22] Experimental evidence seems to support the claim that opinion polls can play an important role in coordinating voter behavior during elections (McKelvey & Ordeshook 1985, Forsythe et al. 1993, Forsythe et al. 1996).

4.2 The Voter Coordination Game

To give this intuitive argument more precise meaning, I now turn to a more formal description of its structure, underlying assumptions and equilibria. I assume that each individual i in some large, but finite, population is randomly matched with some other player from the same population to play the voter coordination game illustrated below.

	Vote Party A (A)	Vote Party B (B)	Abstain (AB)
Vote Party A (A)	$\epsilon_A - c + 1, \epsilon_A - c + 1$	$\epsilon_A - c - 1, \epsilon_B - c - 1$	$\epsilon_A - c - 1, \ -1$
Vote Party B (B)	$\epsilon_B - c - 1, \epsilon_A - c - 1$	$\epsilon_B - c + 1, \epsilon_B - c + 1$	$\epsilon_B - c - 1, \ -1$
Abstain (AB)	$-1, \ \epsilon_A - c - 1$	$-1, \epsilon_B - c - 1,$	$0, \ 0$

Each player has three choices: they can either vote for Party A (A), vote for Party B (B), or abstain (AB). The payoff from coordinating on voting for Party A or Party B is one, the payoff from discoordination is -1, and the payoff from coordinating on absention is 0.[23] This payoff structure is intended to capture the social, economic and cultural benefits that accrue to voter coordination. One could think of this as the benefits from group identification. There is also a payoff from helping one's preferred party to win the election (ϵ). This is simply the expected return from voting. ϵ is subscripted by the party name to indicate that the expected return from voting depends on the location of each party in ideological space. For example, if $\epsilon_A > \epsilon_B$, then party A is located closer to the ideal points of both players than party B. The locations of the parties therefore determine whether this is a pure coordination game or not.[24] I assume that there is a small opportunity cost (c) associated with voting. This is assumed to be the same for all players. Since the costs of voting are traditionally viewed as minimal, I make the additional assumption that $c < 1$. This simply means (i) that the costs of voting are less than the benefits from group identification and (ii) that coordinated voting is preferable to abstention. On the grounds that the probability of being pivotal in an election is almost indistinguishable from zero, I also assume that $\epsilon_i < c$. This payoff structure indicates that there are

[23] I assume that the payoff from coordinating voting behavior is greater than the payoff from abstaining because the literature on social capital suggests that conventions which increase the opportunities for social interaction (voting) are more valuable than conventions that do not increase those opportunities (abstention) (Putnam 2000, Harvey & Mukherjee 2003).

[24] It is possible to subscript ϵ by the player too. This would allow the players to have different ideal points. In other words, one of the players may prefer Party A, while the other prefers Party B on purely policy grounds. This would transform the pure coordination game outlined above into one of asymmetric coordination. I have chosen not to do this for the sake of simplicity.

three Nash equilibria in pure strategies $(A, A;\ B, B;\ AB, AB)$.[25] The equilibria $(A, A;\ B, B)$ are always preferred to (AB, AB) no matter what the value of ϵ. If party A is located closer to the ideal points of the players than party B, then $\epsilon_A > \epsilon_B$ and equilibrium (A, A) is pareto-dominant. (B, B) is pareto-dominant if party B is located closer.

Clearly, players would like to coordinate on their most preferred party. However, the existence of these equilibria does not mean that the players will coordinate; it is equally likely that they will miscoordinate. Even if they did coordinate, there is no reason to believe that they would coordinate on voting for party A or B; they could coordinate on abstention.[26] Just as in the discussion of 'strategic spatial models' earlier, it is hard to say what individuals will actually do when faced with multiple equilibria as in this voter coordination game. Traditional game theory throws little light on this type of situation. What we do know is that increasing levels of communication and common knowledge can help coordination (Cooper et al. 1992) and that players can better coordinate their own choices over time by learning from the choices made by others (Van Huyck, Battalio & Beil 1990, Van Huyck, Battalio & Beil 1991).[27] The tools of evolutionary game theory seem better suited to predicting the actions of individuals in this type of game since they emphasize adaptive learning and common knowledge (Mailath 1998, Goeree & Holt 1999, Gintis 2000). The evolutionary model of voter coordination that follows is based on Young (1993, 1996, 1998).[28]

[25] A mixed strategy Nash equilibrium also exists in which each player votes for Party A with probability $(2c + 2 - 3\epsilon_A + \epsilon_B)/8$, votes for Party B with probability $(2c + 2 - 3\epsilon_B + \epsilon_A)/8$, and abstains with probability $(4 - 4c + 2\epsilon_A + 2\epsilon_B)/8$.

[26] Evidence that miscoordination is as likely as coordination in one-shot games of this type comes from numerous experimental tests. Pareto-dominance does not seem to be a selection criterion (Cooper et al. 1990). Haruvy and Stahl (1998) analyzed the frequency with which several selection principles were used in a series of one-shot coordination games; payoff dominance came out worst. There is also evidence that players need not coordinate on the pareto-dominant equilibrium even when the game is repeated (Van Huyck, Battalio & Beil 1990, Van Huyck, Battalio & Cook 1997); much seems to depend on the out-of-equilibrium payoffs (Van Huyck, Battalio & Beil 1991). For an overview of these experimental results, see Ochs (1995) and Camerer (2001).

[27] The effect of communication is not as strong as one might expect in coordination games. Much depends on the type of communication and on the game structure. For example, one-way communication increases coordination in asymmetric games such as the battle of the sexes, whereas two-way communication does not. Two-way communication almost guarantees coordination in pure coordination games, but one-way communication does not.

[28] Crawford (1997) finds that this type of stochastic evolutionary model can better explain the experimental results on coordination games than either traditional equilibrium refinements such as risk dominance (Harsanyi & Selten 1988), quantal response equilibrium (McKelvey & Palfrey 1995) or deterministic evolutionary dynamics.

4.3 Evolutionary Approach

At the beginning of each period t, each player i is randomly matched with another player j to play the voter coordination game described above. Let x_i^t denote the action chosen by the i player at time t. This means that the record of play at time t is given by the vector $x^t = (x_1^t, x_2^t)$. The history of plays up to and including time t is given by $h^t = (x^1, x^2, \ldots, x^t)$. I assume that the memory of each player only covers the last m periods of play. Thus, the actual remembered history of plays up to and including time t is given by $h_m^t = (x^{t-m+1}, \ldots, x^t)$. The value of m determines how far back in time players are willing or able to look for information about how they should vote at time t. Since a player is unlikely to know the whole history of the game due to information gathering costs or limited past experiences, a player's information set is modelled as a random sample of size s drawn from the set of actions taken by each of the other j players.[29] This information may be collected passively through a network of friends, neighbors and work colleagues or from deliberately asking people how they voted in past elections. Hardin (1995: 15) refers to this type of informational assumption as 'commonsense epistemology'. It is easy to see that the information set is essentially a sample proportion of $j's$ actions in $i's$ sample; it is denoted by p_{ij}^t. Player i plays a best reply whenever he chooses an action that maximizes his expected payoff given the expectation that the other player will choose according to the distribution p_{ij}^t.[30] In other words, individuals formulate best response strategies based on their knowledge of how other people voted in previous elections. Although this behavior sounds reasonable enough, it is unlikely that people will always choose best-replies; individuals may make mistakes or behave idiosyncratically. Put differently, players may simply want to try something different from time to time. Perhaps they are unwilling or incapable of making the calculations necessary to choose a best reply in some particular case. One could also think of these 'errors' as resulting from exogenous stochastic shocks. As a result, I assume that there is a very small probability $\epsilon > 0$ that individuals make mistakes or behave idiosyncratically.

These assumptions differ from those commonly used in classical game theory. For example, players do not know the full history of the game here or attempt to anticipate the strategic consequences of their actions. They simply follow a myopic decision rule by which they choose the strategy which offers them the highest expected payoff given what they know about the distribution of strategies previously chosen by the other players. Moreover, players

[29]The sample (s) reflects the size of a player's informational network and s/m captures the completeness of a player's information relative to surviving precedents (Young 1996: 109). It is not necessary to assume that every possible sample is equally likely to constitute a player's information for a stochastic equilibrium to be reached. For example, a player may be more likely to hear about recent periods rather than more dated precedents. It is enough to assume that every sample has a positive probability of being a player's information for all players (Young 1993: 61).

[30]If there are ties in the choice of best reply, players are assumed to choose randomly.

are allowed to deviate from the dominant population behavior with some small probability. Taken together, these assumptions define a discrete-time ergodic Markov process on a finite state space. This type of process implies that there is a unique stationary probability distribution over the states of the system - vote for Party A, vote for Party B, abstain - that is independent of initial conditions. As a result, it converges to a stochastically stable convention (or subset of stochastically stable conventions).[31]

Finding the stochastically stable equilibrium in a 2×2 coordination game is relatively simple since it is equivalent to the unique risk-dominant equilibrium (Young 1998: 66-70). It is much harder to determine the stochastically stable equilibrium in the 3×3 voter coordination game outlined above. This is because the correspondence between stochastic stability and risk dominance does not automatically extend beyond 2×2 coordination games. In order to compute the stochastically stable equilibrium in this case one must find the path of least resistance from every convention (pure strategy Nash equilibrium) to every other, and then find the convention that has the lowest overall resistance. The resistance of a path is simply the number of mistakes that a player must make in order to move from one convention to another; in other words, it describes how difficult it is to move to a particular convention. Thus, the convention(s) with the lowest overall resistance is simply the equilibrium that is easiest to reach.

It turns out that the stochastically stable convention in the voter coordination game described earlier depends on the value of ϵ_A and ϵ_B.[32] The stochastically stable conventions and their resistances are listed in Table 9 in the appendix. If $\epsilon_A > \epsilon_B$ (i.e. Party A is located closer to the voters' ideal points than Party B), then there is a unique stochastically stable convention that involves coordinating on voting for Party A. The opposite holds if $\epsilon_B > \epsilon_A$. If $\epsilon_A = \epsilon_B$, then both conventions $\langle A, A\rangle$ and $\langle B, B\rangle$ are stochastically stable equilibria. It is clear from this that individuals will coordinate on voting for one of the parties rather than abstention. Moreover, they are likely to coordinate on the party that is located closest to their ideal points. Once individuals have coordinated on a particular party, it is almost impossible for a new party to enter successfully.[33] This is because rational individuals playing best responses to the expected actions of other group members will be unwilling to individually switch their support to a new party. At this stage, the established party enjoys significant advantages in maintaining its dominant position in the party system.

[31] A convention is a state of form $h^* = (x^*, x^*, \ldots, x^*)$ where x^* is a strict pure strategy Nash equilibrium. This is equivalent to a history in which the same Nash equilibrium (x^*) is played in every period of the game for as long as anyone can remember i.e. m periods in succession. A stochastically stable convention is the Nash equilibrium (or subset of Nash equilibria) that is observed with probability close to one when the error term goes to zero.

[32] See the appendix to see how the stochastically stable equilibria are calculated.

[33] Although successful entry is extremely unlikely, it is not possible to entirely rule it out since I allow individuals to exhibit idiosyncratic behavior. It should be clear, though, that it would take an unusual run of idiosyncratic behavior to effect a shift in voting conventions. I plan to show this through a series of simulations

4.4 Potential Criticisms

The evolutionary model presented here provides a micro-foundational process by which party systems could become frozen or stable over time. However, there are at least two concerns that one might have with this particular model. First, one might be concerned that elections occur relatively infrequently and that it may take forever to arrive at a coordination equilibrium. From a pure methodological point of view, though, the 'evolutionary dynamic can mathematically be implemented at any speed, and there is nothing inherently prescribed that change must occur at a glacial level. We can use [evolutionary models] to study genetic change over entire ages, or the changing strategies used by participants in an economics experiment that lasts an hour' (Honaker 2002). Moreover, there are at least two substantive reasons specific to this particular model that suggests that the time needed to reach equilibrium is not a problem. The first is that experimental studies indicate that an equilibrium is reached relatively quickly in similar coordination games (Van Huyck, Battalio & Beil 1990, Van Huyck, Battalio & Beil 1991, Cooper et al. 1990). The second is that voting is just one element of partisan behavior. The decisions to donate money to a political party, to attend a campaign meeting, to put up campaign posters in the garden etc. can all be considered repetitions of the same coordination game. In this sense, there are many more repetitions of this game than are represented purely by the number of past elections.

The second concern is that the evolutionary model requires that the social structure in which actors make decisions remains fixed. This is somewhat problematic in that the puzzle motivating this paper is precisely why party systems have remained so stable *given the huge level of social change that has occurred.* However, this concern should not be too troubling. Since social change happens gradually and not instantaneously, 'reference groups' do not change overnight. This means that people are always in the situation of *individually* deciding whether to alter their voting behavior (thereby foregoing group benefits) or whether to continue coordinating on the same party as other group members. Even if large numbers of individuals did decide to switch their support as a result of social change, they would face a coordination problem in deciding which other party to support. Although I do not think that problems associated with social change will significantly affect the implications of the model, it is possible test this more closely by simulating the model and introducing social change.[34]

[34] I have not come across any evolutionary model in which social change is incorporated directly into the model.

5 Implications and Possible Empirical Tests

Given the increasingly common notion that voters are involved in coordination games at election time, it is perhaps surprising that so little attention has been paid to how and why this coordination comes about. The evolutionary model presented above addresses this problem, outlining both a reason for voter coordination as well as a process through which it occurs. Most importantly, the model explains why successful new parties are so rare and why party systems are so stable. The question then arises as to how plausible this model is. The model generates several hypotheses that are open to experimental and statistical testing.

5.1 Experimental Tests

The evolutionary model of coordination implies that voters will be unwilling to switch their support to a new party once a coordination equilibrium has been achieved. This is the case even if the new party locates so as to offer an alternative coordination equilibrium that is superior for large numbers of voters or elites. In other words, simply being preferred by large numbers of voters is not sufficient for electoral success. This is in stark contrast to the assumptions made by the vast majority of spatial entry models. These models tend to assume that individuals vote for the party that is located closest to them in ideological space. Thus, a new party is expected to be successful whenever it finds an ideological position with sufficient support. This assumption also underlies other arguments claiming that party system change or new party success can be explained in terms of the emergence of new issues and social cleavages on which the new party has some advantage (Sundquist 1983, Key 1955, Inglehart 1985, Inglehart & Flanagan 1987, Kitschelt 1988).

It is possible to test these competing hypotheses in a series of experimental elections.[35] The experiment I propose is quite simple and involves a series of elections in which subjects are asked to vote for one of the listed candidates on a ballot. The experiment is designed so as to match the assumptions of spatial entry models as closely as possible. For example, subjects are not allowed to abstain and spatial preferences are induced through financial rewards that depend on their choices. Subjects are given information regarding the ideological location of each candidate. After several plurality-rule elections in which voters come to coordinate on a subset of candidates, I introduce a new candidate. This

[35]This experiment would build on a growing body of experimental literature analyzing voter coordination under different treatments (Forsythe et al. 1993, Forsythe et al. 1996, Rietz, Myerson & Weber 1998, Gerber, Morton & Rietz 1998, Morton & Rietz 1996, Olson & Morton 1994). Thus far, there has been no experiment to my knowledge analyzing voter behavior in the presence of candidate entry.

candidate is located so that it is preferred by a majority of the electorate to all of the other candidates. If the only problem faced by new candidates is to find an ideological location that is preferred by a sufficient number of voters, then the new candidate should win the election. However, this will not be the case if coordination issues also pose problems for new candidates as the evolutionary model suggests.

5.2 Non-Experimental Approaches

Since experimental approaches are best used as a complement to other non-experimental empirical analyses, it is necessary to investigate other hypotheses generated by the model that are open to statistical study. There are several such hypotheses. For example, the model implies that party system stability develops over time as individuals learn about how others have voted in the past. Evidence in support of this aspect of the model already exists in the form of Harvey's (2001) study of partisanship in the United States. She argues that regional variation in partisanship rates in the US between 1880 and 1940 can be explained by the length of time that these regions have experienced competitive elections. She finds that those regions with the highest partisanship rates are precisely those that have had competitive elections for the longest period of time. Her conjecture is that these regions have had a longer period of time to 'evolve' towards a convention of partisanship. Another fresh way to test the importance of time would be to examine how party systems that have developed under plurality systems change if a proportional representation (PR) is introduced. The evolutionary model implies that the expansionary effect on the number of political parties normally associated with PR should be lower, the longer voters had to coordinate their voting behavior under the plurality rule system.

The model also suggests that institutional arrangements should affect the extent to which individuals coordinate on voting for a particular set of established parties. This is because institutions can affect the size of the error term (ϵ) in the model. It should be remembered that ϵ influences the likelihood of being in the stochastically stable equilibrium (as ϵ goes to zero the probability of individuals coordinating on a particular party increases; as ϵ increases this probability declines). The error rate can be thought of as a function of the information that players have about how others have voted, aside from the information about the history of play that they receive from the distribution p^t_{ij}. As a result, institutions can alter this error rate by affecting how much information individuals receive.

Once again, some evidence for this already exists. Harvey and Mukherjee (2003) argue that the introduction of secret ballots and direct statewide primaries in the United States reduced the information available to individuals about how others voted, while the introduction of party registration laws increased the amount of publicly available information. They find empirical evidence in support of these hypotheses for the American states between 1880 and 1940. A fresh way to test the model from an institutional perspective would be to examine the effect of laws on party financing. Several formal models and experiments have already suggested that campaign contributions act as a coordination signal to voters (Morton & Cameron 1992, Morton & Myerson 1992, Rietz 1998). Individuals seem to be more likely to vote for those parties that raise the most money since the level of funding acts as a signal of electoral viability and perhaps of political skill as well. However, campaign contributions cannot play this coordinating role to the same extent in systems where political parties are publicly financed. Thus, one would expect to find that new parties enjoy more success in those systems where parties are publicly financed.

One of the driving forces of the evolutionary model is the importance of group identification. Hardin (1995) notes that the value of group benefits should vary both temporally and spatially. For example, he claims that group benefits will be of more value when individuals lack private economic opportunities. Thus, one should expect the pressure to coordinate behavior to be weaker when the surrounding economic conditions are good. This might lead to an increase in abstention rates or an increase in 'uncoordinated' or 'sincere' voting. It may be possible to test this empirically on the new states in Eastern Europe. Those states that have experienced better economic conditions should exhibit lower rates of partisanship and higher levels of success for new parties.

Finally, another implication of the model is that party systems should remain stable unless there is a large exogenous shock that 'knocks' it from the coordination equilibrium in which it had previously existed. If there is a large exogenous shock, one would expect the coordination process among voters and elites to begin again. At this point, new parties may be able to enter successfully. The descriptive data that I provided earlier provides some support for this. For example, all but three of the new parties that won more than 15% of the vote formed immediately after World War II. All three of the new parties that became formateurs were closely connected to the wartime activities of the French resistance. Moreover, nearly all of the new parties that won over 15% of the vote in those countries that experienced dictatorships between 1930 and 2000 formed immediately after the dictator was overthrown. Both dictatorial collapse and world wars could conceivably be thought of as large exogenous shocks which disrupt existing patterns of voter and elite coordination. At first glance, the rapid rise of Forza Italia in the mid 1990s might be seen as an exception to this line of argument since it was not associated with any war or dictatorial collapse. However, it should be remembered that the success of Berlusconi's party was dependent on the total collapse of the Italian party system in the early 1990s.[36]

[36] I do not have a theory of party system collapse. However, it seems reasonable to believe that if a system does collapse, then the coordination process amongst voters and elites would start over again.

6 Conclusion

The empirical puzzle that motivates this paper is the extraordinary degree of party system continuity and stability exhibited by Western democracies since the 1930s. Spatial models of party entry cannot explain why new parties seem to be so strongly disadvantaged with respect to established parties. However, the evolutionary model of voter coordination outlined in this paper can. I argue that the behavior of voters during elections can be characterized as a coordination game. Once an equilibrium is reached, it is extremely difficult for voters to individually switch their support to a new party. Thus, it is not sufficient for new parties to be preferred by large numbers of people for it to achieve success. There are significant coordination problems to overcome as well.

This paper raises important issues about the role of elections and political parties in democratic systems. This is particularly the case if one understands the democratic process as one in which social groups with different ideological programs compete for political power. The democratic process has already been called into question by a substantial literature suggesting that political parties do not offer the electorate a significant choice in numerous policy realms (Garrett 1998, Clark & Hallerberg 2000, Clark, Golder & Golder 2002, Przeworski & Meseguer 2002, Clark forthcoming). This study argues that the democratic process may suffer from additional problems. A common argument is made that party systems represent the underlying cleavages of society in some form another (Lipset & Rokkan 1967, Amorim Neto & Cox 1997, Zielinski 2001). Moreover, it is attractive, in some normative sense, to believe that party systems are representative of the electorate. This implies that party systems should change in response to social change. However, the empirical evidence that I provide suggests that this rarely happens. The same parties that dominate elections and governments now tend to be the same parties that dominated elections and governments back in the 1930s. This is despite the enormous social change that has characterized western democracies over the last 70 years.

Appendix: Stochastically Stable Equilibria in the 3×3 Voter Coordination Game

Finding the stochastically stable equilibria requires (1) finding the paths of least resistance from every convention (pure strategy Nash equilibrium) to every other and (ii) finding the convention that has the lowest overall resistance.

Calculating the Paths of Least Resistance

Before calculating the paths of least resistance for 3×3 games, I illustrate the method using a simpler 2×2 example from Young (1993: 70-73). Consider the following 2×2 game:

		Player 2	
		A	B
Player 1	A	a_{11}, b_{11}	a_{12}, b_{12}
	B	a_{21}, b_{21}	a_{22}, b_{22}

Let there be two conventions: $h_1 = [(A,A),(A,A),\ldots,(A,A)]$ and $h_2 = [(B,B),(B,B),\ldots,(B,B)]$. Imagine that convention h_1 is the state at time $t = m$. To move from h_1 to h_2 requires that at least one of the players chooses action B by mistake. This player must do so often enough that it becomes optimal for the other player to also choose B for at least one sample of size s. Suppose that Player 1 chooses B by mistake from periods $t = m+1$ to $t = m+s'$ inclusive, where $s' \leq s$. Imagine that Player 1 then makes no further mistakes. This information is shown graphically in Table 6.

Table 6: A succession of s' mistakes by Player 1 causes the process to converge to h_2. (B^* indicates a mistake. A(B) denotes an optimal choice of either A or B.)

Period	1	$2\ldots m$	$m+1$	$m+2$	$m+s'$	$m+s'+1$	$\ldots$	$m+s'+s$	$m+s'+s+1$
Player 1	A	A ... A	B^*	B^*	B^*	A	$\ldots$	A(B)	B
Player 2	A	A ... A	A	A	A	B	$\ldots$	B	B

If Player 2 draws a random sample that includes these s' choices of B, as well as $s - s'$ choices of A, then Player 2's best reply is B provided that

$$(1 - \frac{s'}{s})b_{12} + (\frac{s'}{s})b_{22} \geq (1 - \frac{s'}{s})b_{11} + (\frac{s'}{s})b_{21} \tag{1}$$

This gives,

$$s' \geq \frac{b_{11} - b_{12}}{b_{11} - b_{12} - b_{21} + b_{22}} s \tag{2}$$

Thus, s' mistakes are sufficient to move the process from h_1 to h_2 provided that s' satisfies equation (3).[37] The process could converge to h_2 if Player 2 chooses B by mistake s'' times,

[37]One other requirement is that m is sufficiently large relative to s. In this case it suffices that $m \geq 2k$.

where

$$s'' \geq \frac{a_{11} - a_{21}}{a_{11} - a_{12} - a_{21} + a_{22}} s \qquad (3)$$

Let

$$R_1 = min\langle \frac{a_{11} - a_{21}}{a_{11} - a_{12} - a_{21} + a_{22}}, \frac{b_{11} - b_{12}}{b_{11} - b_{12} - b_{21} + b_{22}} \rangle$$

This means that the path of least resistance from h_1 to h_2 is given by $[R_1 s]$. This same method can be applied to my 3×3 election coordination game G.

Since the payoffs in Game G are symmetric, it is only necessary to calculate the number of mistakes required to move from one convention to another for one of the players. This means that I only need calculate s' from equation (2).[38] Since the election coordination game G is slightly more complicated than the 2×2 example, I outline in some detail how one calculates the resistance for the direct path $\langle A, A\rangle \longrightarrow \langle B, B\rangle$. The other direct paths are calculated in a similar manner. Given that the election coordination game is a 3×3 game, there are also indirect paths such as $\langle A, A\rangle \longrightarrow \langle AB, AB\rangle \longrightarrow \langle B, B\rangle$. The resistances of these paths must be calculated as well to see if they are lower than the resistances of the direct paths.

1. Direct Path $\langle A, A\rangle \longrightarrow \langle B, B\rangle$
   In the 2×2 example, there was only one way for a player to make a mistake. In the 3×3 case there are two ways. For example, Player 1 could make the mistake of playing B or AB in this case. It is necessary to calculate the resistances of moving $\langle A, A\rangle \longrightarrow \langle B, B\rangle$ for both of these cases. I do this by using equation (1). The direct path of least resistance is then calculated by comparing these resistances.
   - The resistance for the direct path if Player 1 makes the mistake of choosing B
     $$(1 - \frac{s'}{s})[\epsilon_B - c - 1] + (\frac{s'}{s})[\epsilon_B - c + 1] \geq (1 - \frac{s'}{s})[\epsilon_A - c + 1] + (\frac{s'}{s})[\epsilon_A - c - 1]$$
     This simplifies to
     $$s' = [\frac{\epsilon_A - \epsilon_B + 2}{3}]s$$
   - The resistance for the direct path if Player 1 makes the mistake of choosing AB
     $$(1 - \frac{s'}{s})[\epsilon_B - c - 1] + (\frac{s'}{s})[\epsilon_B - c - 1] \geq (1 - \frac{s'}{s})[\epsilon_A - c + 1] + (\frac{s'}{s})[\epsilon_A - c - 1]$$
     This simplifies to
     $$s' = [\frac{\epsilon_A - \epsilon_B + 2}{2}]s$$
   - Given that
     $$s' = [\frac{\epsilon_A - \epsilon_B + 2}{3}]s < s' = [\frac{\epsilon_A - \epsilon_B + 2}{2}]s$$
     the direct path of least resistance $\langle A, A\rangle \longrightarrow \langle B, B\rangle$ occurs if one of the players chooses B $[(\frac{\epsilon_A - \epsilon_B + 2}{3})s]$ times.
2. Direct Path $\langle B, B\rangle \longrightarrow \langle A, A\rangle$
   - The resistance for the direct path if Player 1 makes the mistake of choosing A
     $$(1 - \frac{s'}{s})[\epsilon_A - c - 1] + (\frac{s'}{s})[\epsilon_A - c + 1] \geq (1 - \frac{s'}{s})[\epsilon_B - c + 1] + (\frac{s'}{s})[\epsilon_B - c - 1]$$
     This simplifies to
     $$s' = [\frac{\epsilon_B - \epsilon_A + 2}{3}]s$$

[38] I could have calculated s'' from equation (3) instead.

- The resistance for the direct path if Player 1 makes the mistake of choosing AB

$$(1-\frac{s'}{s})[\epsilon_A - c - 1] + (\frac{s'}{s})[\epsilon_A - c - 1] \geq (1-\frac{s'}{s})[\epsilon_B - c + 1] + (\frac{s'}{s})[\epsilon_B - c - 1]$$

This simplifies to

$$s' = [\frac{\epsilon_B - \epsilon_A + 2}{2}]s$$

- Given that

$$s' = [\frac{\epsilon_B - \epsilon_A + 2}{3}]s < s' = [\frac{\epsilon_B - \epsilon_A + 2}{2}]s$$

the direct path of least resistance $\langle B, B\rangle \longrightarrow \langle A, A\rangle$ occurs if one of the players chooses A $[(\frac{\epsilon_B - \epsilon_A + 2}{3})s]$ times.

3. Direct Path $\langle B, B\rangle \longrightarrow \langle AB, AB\rangle$

- The resistance for the direct path if Player 1 makes the mistake of choosing AB

$$(1-\frac{s'}{s})[-1] + (\frac{s'}{s})[0] \geq (1-\frac{s'}{s})[\epsilon_B - c + 1] + (\frac{s'}{s})[\epsilon_B - c - 1]$$

This simplifies to

$$s' = [\frac{\epsilon_B - c + 2}{3}]s$$

- The resistance for the direct path if Player 1 makes the mistake of choosing A

$$(1-\frac{s'}{s})[-1] + (\frac{s'}{s})[-1] \geq (1-\frac{s'}{s})[\epsilon_B - c + 1] + (\frac{s'}{s})[\epsilon_B - c - 1]$$

This simplifies to

$$s' = [\frac{\epsilon_B - c + 2}{2}]s$$

- Given that

$$s' = [\frac{\epsilon_B - c + 2}{3}]s < s' = [\frac{\epsilon_B - c + 2}{2}]s$$

the direct path of least resistance $\langle B, B\rangle \longrightarrow \langle AB, AB\rangle$ occurs if one of the players chooses AB $([\frac{\epsilon_B - c + 2}{3})s]$ times.

4. Direct Path $\langle AB, AB\rangle \longrightarrow \langle B, B\rangle$

- The resistance for the direct path if Player 1 makes the mistake of choosing B

$$(1-\frac{s'}{s})[\epsilon_B - c - 1] + (\frac{s'}{s})[\epsilon_B - c + 1] \geq (1-\frac{s'}{s})[0] + (\frac{s'}{s})[-1]$$

This simplifies to

$$s' = [\frac{c + 1 - \epsilon_B}{3}]s$$

- The resistance for the direct path if Player 1 makes the mistake of choosing A

$$(1-\frac{s'}{s})[\epsilon_B - c - 1] + (\frac{s'}{s})[\epsilon_B - c - 1] \geq (1-\frac{s'}{s})[0] + (\frac{s'}{s})[-1]$$

This simplifies to

$$s' = [c + 1 - \epsilon_B]s$$

- Given that

$$[\frac{c+1-\epsilon_B}{3}]s < s' = [c+1-\epsilon_B]s$$

the direct path of least resistance $\langle AB, AB\rangle \longrightarrow \langle B, B\rangle$ occurs if one of the players chooses B $[(\frac{c+1-\epsilon_B}{3})s]$ times.

5. Direct Path $\langle A, A\rangle \longrightarrow \langle AB, AB\rangle$
   - The resistance for the direct path if Player 1 makes the mistake of choosing AB

   $$(1-\frac{s'}{s})[-1] + (\frac{s'}{s})[0] \geq (1-\frac{s'}{s})[\epsilon_A - c + 1] + (\frac{s'}{s})[\epsilon_A - c - 1]$$

   This simplifies to

   $$s' = [\frac{\epsilon_A - c + 2}{3}]s$$

   - The resistance for the direct path if Player 1 makes the mistake of playing B

   $$(1-\frac{s'}{s})[-1] + (\frac{s'}{s})[-1] \geq (1-\frac{s'}{s})[\epsilon_A - c + 1] + (\frac{s'}{s})[\epsilon_A - c - 1]$$

   This simplifies to

   $$s' = [\frac{\epsilon_A - c + 2}{2}]s$$

   - Given that

   $$[\frac{\epsilon_A - c + 2}{3}]s < [\frac{\epsilon_A - c + 2}{2}]s$$

   the direct path of least resistance $\langle A, A\rangle \longrightarrow \langle AB, AB\rangle$ occurs if one of the players chooses AB by mistake $[(\frac{\epsilon_A - c+2}{3})s]$ times.

6. Direct Path $\langle AB, AB\rangle \longrightarrow \langle A, A\rangle$
   - The resistance for the direct path if player 1 makes a mistake by choosing A

   $$(1-\frac{s'}{s})[\epsilon_A - c + 1] + (\frac{s'}{s})[\epsilon_A - c + 1] \geq (1-\frac{s'}{s})[0] + (\frac{s'}{s})[-1]$$

   This simplifies to

   $$s' = [c - 1 - \epsilon_A]s$$

   - The resistance for the direct path if player 1 makes a mistake by choosing B

   $$(1-\frac{s'}{s})[\epsilon_A - c - 1] + (\frac{s'}{s})[\epsilon_A - c - 1] \geq (1-\frac{s'}{s})[0] + (\frac{s'}{s})[-1]$$

   This simplifies to

   $$s' = [\frac{c + 1 - \epsilon_A}{3}]s$$

   - Given that

   $$[\frac{c+1-\epsilon_A}{3}]s < [c - 1 - \epsilon_A]s$$

   the direct path of least resistance $\langle AB, AB\rangle \longrightarrow \langle A, A\rangle$ occurs if one of the players chooses B by mistake $[(\frac{c+1-\epsilon_A}{3})s]$ times.

Thus far, the direct paths of least resistance have been calculated. They can be seen in Table 7 below.

Table 7: Direct Paths of Least Resistance

Direct Path	Lowest Resistance
1. $\langle A, A\rangle \longrightarrow \langle B, B\rangle$	$[\frac{\epsilon_A - \epsilon_B + 2}{3}]$
2. $\langle B, B\rangle \longrightarrow \langle A, A\rangle$	$[\frac{\epsilon_B - \epsilon_A + 2}{3}]$
3. $\langle B, B\rangle \longrightarrow \langle AB, AB\rangle$	$[\frac{\epsilon_B - c + 2}{3}]$
4. $\langle AB, AB\rangle \longrightarrow \langle B, B\rangle$	$[\frac{c + 1 - \epsilon_B}{3}]$
5. $\langle A, A\rangle \longrightarrow \langle AB, AB\rangle$	$[\frac{\epsilon_A - c + 2}{3}]$
6. $\langle AB, AB\rangle \longrightarrow \langle A, A\rangle$	$[\frac{c + 1 - \epsilon_A}{3}]$

However, it may be the case that indirect paths from one convention to another have lower resistances. It is necessary to rule these out.

7. Indirect Path $\langle A, A\rangle \longrightarrow \langle AB, AB\rangle \longrightarrow \langle B, B\rangle$.
    - The lowest resistance for this path is
$$[\frac{\epsilon_A - c + 2}{3}] + [\frac{c + 1 - \epsilon_B}{3}] = \frac{\epsilon_A - \epsilon_B + 3}{3}$$
8. Indirect Path $\langle B, B\rangle \longrightarrow \langle AB, AB\rangle \longrightarrow \langle A, A\rangle$.
    - The lowest resistance for this path is
$$[\frac{\epsilon_B - c + 2}{3}] + [\frac{c + 1 - \epsilon_A}{3}] = \frac{\epsilon_B - \epsilon_A + 3}{3}$$
9. Indirect Path $\langle B, B\rangle \longrightarrow \langle A, A\rangle \longrightarrow \langle AB, AB\rangle$.
    - The lowest resistance for this path is
$$[\frac{\epsilon_B - \epsilon_A + 2}{3}] + [\frac{\epsilon_A - c + 2}{3}] = \frac{\epsilon_B - c + 4}{3}$$
10. Indirect Path $\langle AB, AB\rangle \longrightarrow \langle A, A\rangle \longrightarrow \langle B, B\rangle$.
    - The lowest resistance for this path is
$$[\frac{c + 1 - \epsilon_A}{3}] + [\frac{\epsilon_A - \epsilon_B + 2}{3}] = \frac{c + 3 - \epsilon_B}{3}$$
11. Indirect Path $\langle A, A\rangle \longrightarrow \langle B, B\rangle \longrightarrow \langle AB, AB\rangle$.
    - The lowest resistance for this path is
$$[\frac{\epsilon_A - \epsilon_B + 2}{3}] + [\frac{\epsilon_B - c + 2}{3}] = \frac{\epsilon_A - c + 4}{3}$$
12. Indirect Path $\langle AB, AB\rangle \longrightarrow \langle B, B\rangle \longrightarrow \langle A, A\rangle$.
    - The lowest resistance for this path is
$$[\frac{c + 1 - \epsilon_B}{3}] + [\frac{\epsilon_B - \epsilon_A + 2}{3}] = \frac{c + 3 - \epsilon_A}{3}$$

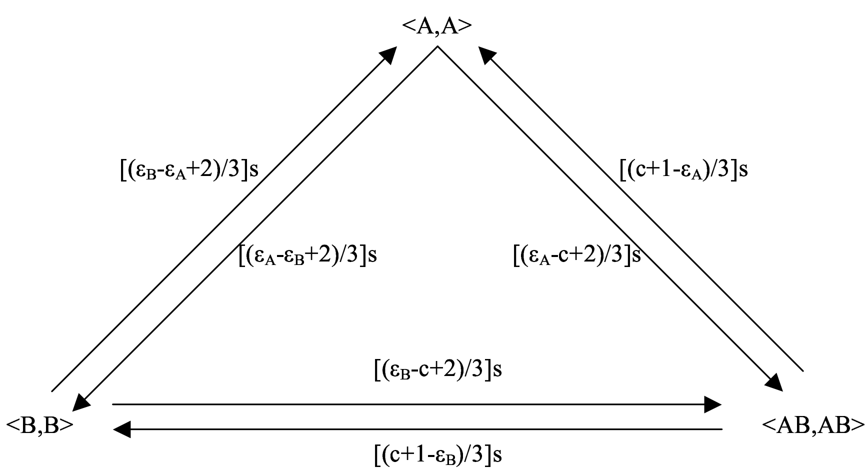
The indirect paths of least resistance can be seen in Table 8.

Table 8: Indirect Paths of Least Resistance

Indirect Path	Lowest Resistance
7. $\langle A,A\rangle \longrightarrow \langle AB,AB\rangle \longrightarrow \langle B,B\rangle$	$\frac{\epsilon_A - \epsilon_B + 3}{3}$
8. $\langle B,B\rangle \longrightarrow \langle AB,AB\rangle \longrightarrow \langle A,A\rangle$	$\frac{\epsilon_B - \epsilon_A + 3}{3}$
9. $\langle B,B\rangle \longrightarrow \langle A,A\rangle \longrightarrow \langle AB,AB\rangle$	$\frac{\epsilon_B - c + 4}{3}$
10. $\langle AB,AB\rangle \longrightarrow \langle A,A\rangle \longrightarrow \langle B,B\rangle$	$\frac{c + 3 - \epsilon_B}{3}$
11. $\langle A,A\rangle \longrightarrow \langle B,B\rangle \longrightarrow \langle AB,AB\rangle$	$\frac{\epsilon_A - c + 4}{3}$
12. $\langle AB,AB\rangle \longrightarrow \langle B,B\rangle \longrightarrow \langle A,A\rangle$	$\frac{c + 3 - \epsilon_A}{3}$

By comparing the figures in Tables 7 and 8 it is easy to see that none of the indirect paths have lower resistances than the direct paths. The paths of least resistance for the three pure strategy Nash equilibria (conventions) in game G are shown graphically in Figure 2.

Figure 2: Paths of Least Resistance for the Three Conventions



Finding the Convention with Least Resistance

It is now necessary to determine the convention that is easiest to reach i.e. the one with the lowest overall resistance. This is the convention that is observed with probability close to one when the error term is very small. In order to determine this stochastically stable convention it is necessary to define an h_i-tree. An h_i-tree is a directed graph on each vertex $(\langle A,A\rangle, \langle B,B\rangle, \langle AB,AB\rangle)$ such that (i) one branch of the graph departs from every vertex except h_i (from which no branch departs) and (ii) there is a sequence of branches leading to h_i from any other vertex. The convention associated with the h_i-tree of least resistance is the stochastically stable convention. It should be clear that there are three h_i-trees for each vertex in Figure 2. All nine h_i-trees are shown in Figure 3.

The overall resistance for each h_i-tree can be calculated by simply adding together the resistances on both branches of the tree. Determining the least resistant tree for the election coordination game depends on the values of ϵ_A and ϵ_B. The resistances and stochastically stable equilibria (conventions) are shown in Table 9 below. The equilibria are underlined and in bold. I have multiplied each resistance by 3 to simplify the expressions.

It is fairly easy to see that both conventions $\langle A, A\rangle$ and $\langle B, B\rangle$ are stochastically stable equilibria if $\epsilon_A = \epsilon_B$. If $\epsilon_A > \epsilon_B$, then there is a unique stochastically stable convention that involves coordination on $\langle A, A\rangle$. If $\epsilon_B > \epsilon_A$, then there is a unique stochastically stable convention that involves coordination on $\langle B, B\rangle$.

Figure 3: The Nine h_i-trees

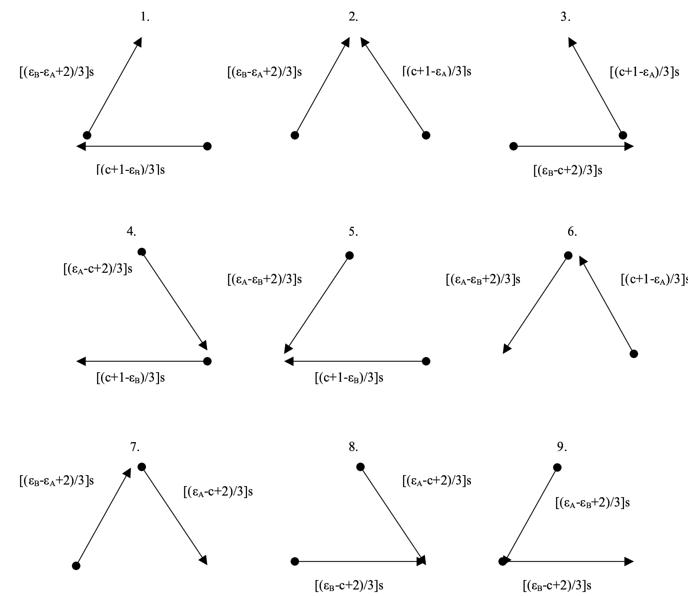


Table 9: Resistances and Stochastically Stable Equilibria

Vertex h_i	Resistance	$\epsilon_A = \epsilon_B$ $c > \epsilon_i$	$\epsilon_A > \epsilon_B$ $c > \epsilon_i$	$\epsilon_A < \epsilon_B$ $c > \epsilon_i$
$h_i = (A, A)$	1. $(\epsilon_B - \epsilon_A + 2) + (c + 1 - \epsilon_B) = 3 + c - \epsilon_A$	> 3	> 3	> 3
$h_i = (A, A$	2. $(\epsilon_B - \epsilon_A + 2) + (c + 1 - \epsilon_A) = 3 + c + \epsilon_B - 2\epsilon_A$	> 3	> 3	> 3
$h_i = (A, A)$	3. $(\epsilon_B - c + 2) + (c + 1 - \epsilon_A) = \epsilon_B - \epsilon_A + 3$	$\underline{\mathbf{3}}$	$\underline{\mathbf{< 3}}$	> 3
$h_i = (B, B)$	4. $(\epsilon_A - c + 2) + (c + 1 - \epsilon_B) = \epsilon_A - \epsilon_B + 3$	$\underline{\mathbf{3}}$	> 3	$\underline{\mathbf{< 3}}$
$h_i = (B, B)$	5. $(\epsilon_A - \epsilon_B + 2) + (c + 1 - \epsilon_B) = 3 + c + \epsilon_A - 2\epsilon_B$	> 3	> 3	> 3
$h_i = (B, B)$	6. $(\epsilon_A - \epsilon_B + 2) + (c + 1 - \epsilon_A) = 3 + c - \epsilon_B$	> 3	> 3	> 3
$h_i = (AB, AB)$	7. $(\epsilon_B - \epsilon_A + 2) + (\epsilon_A - c + 2) = 4 - c + \epsilon_B$	> 3	> 3	> 3
$h_i = (AB, AB)$	8. $(\epsilon_B - c + 2) + (\epsilon_A - c + 2) = 4 + \epsilon_A + \epsilon_B$	> 3	> 3	> 3
$h_i = (AB, AB)$	9. $(\epsilon_A - \epsilon_B + 2) + (\epsilon_B - c + 2) = 4 - c + \epsilon_A$	> 3	> 3	> 3

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