

When only a minority of voters identifies with any party, how do citizens learn about issues and candidates, and how does this learning influence their final voting decisions? We claim that citizens in such a setting, which characterizes many recently democratized countries, rely heavily on persuasive information gathered from their immediate social contexts. Utilizing a unique survey implemented during Brazil's 2002 presidential election, we demonstrate the importance of political discussion and neighborhood context within social networks. In this weak-party system, volatility in voter preferences is due to ever-changing waves of political "hot talk," in which shifts in the balance of opinion toward a candidate are communicated via informal conversations. These waves are triggered by media coverage and tend to magnify the impact of media reportage. The political consequences of discussion during the campaign are shown to be vast.

**Social Context and Voter Volatility in Weak-Party Systems:
Networks and Neighborhoods in Brazil's 2002 Elections**

Andy Baker
Northeastern University
a.baker@neu.edu

Barry Ames
University of Pittsburgh
barryames@yahoo.com

Lúcio Rennó
Stony Brook University
lucio_renno@yahoo.com

Thanks to Jorge Dominguez, Chappell Lawson, Katherine Cramer Walsh and members of the Latin American Seminar Series at Harvard University for making valuable comments.

“Until Election Day, I want you to have one goal: get one more vote from someone else. With your vote, plus one more, victory.” — José Serra, 2002 presidential candidate for the Brazilian Social Democracy Party, in his final campaign commercial before losing in the second round of the election.

That democracy is unthinkable without political parties is now conventional wisdom in political science. One of the necessary functions parties fulfill is to simplify the labyrinthine world of politics and elections by supplying voters with relevant information in a digestible form. In stable democracies parties simplify the voting process by providing the informational shortcuts and standing decisions that many citizens rely upon at the start of every campaign (Popkin 1991; Sniderman 2000). Citizens with partisan leanings tend to filter out information contradicting their set beliefs (Zaller 1992). While this makes reasoned voting easier for overwhelmed citizens, it also lends an air of predictability and even inevitability to most elections in stable party systems. Campaign effects tend to be limited or offsetting, so outcomes can often be confidently forecast before campaigning even begins (Zaller 1996; Gelman & King 1993; Campbell & Garand 2000).

When party systems are young and/or in flux, however, parties commonly have a more limited presence in the electorate (Converse 1969; Norris 2004). Partisan attachments are only weakly formed, so voter preferences are more volatile, campaigns more crucial, and election outcomes less predictable. Though this combination — weak partisan cues, low levels of partisan identification, and volatile voters — characterizes many new democracies, scholars have only begun to study how citizens gather political information and make electoral decisions in such contexts. We address this question with a unique public opinion dataset collected during a particularly volatile campaign, Brazil’s 2002 presidential election. Our central claim is that politically colored information gathered by citizens through social networks plays a primary role in short-term attitude change and vote choice. We explain how interpersonal influence produces short-term preference volatility and influences the outcomes of elections. Our analysis thus also contributes to illuminating Brazil’s unpredictable electoral process.

VOTING BEHAVIOR WHEN PARTIES ARE WEAK

Weak partisan identities, rapid preference changes, and unpredictable election campaigns are a staple of many “third wave” democracies. In Russia’s 1996 election, incumbent Boris Yeltsin won by a fourteen percent margin after beginning the campaign with only eight percent of all vote intentions. South Korean Roh Moo-hyun of the five-year-old MDP won in 2002 after beginning the campaign 20 points behind the leader, a swing all the more impressive because it occurred during the country’s rapid 22-day campaign period. Susilo Yudhoyono began his successful 2004 campaign in Indonesia with only five percent in the polls. Volatility even affects supposedly more party-oriented parliamentary systems. In Turkey’s 2002 general elections, the new Justice and Development Party became the first in Turkish history to win an outright majority of seats after doubling its expected vote share during the campaign.

Electoral weak parties and campaign volatility are especially prevalent in Latin America. In Brazil, Fernando Collor won in the presidency in 1989 with less than eight percent of initial vote intentions and with a party he had just created, while Fernando Henrique Cardoso won the 1994 election after starting the campaign 40 points behind his main opponent. In Peru, Alberto Fujimori achieved a landslide second round victory in 1990 after beginning the campaign with a new party and just two percent of vote intentions. Hugo Chávez built a coalition of small parties in 1998 that annihilated Venezuela’s forty-year-old two-party system, a feat recently matched by Uruguayan president Vazquez Tabaré.¹ Limited partisanship and campaign swings are also the norm in Bolivia, Ecuador, Nicaragua, Panama, and even Mexico, long a paragon of party system stability (Mainwaring & Scully 1995; Lawson 1999; Dominguez & Lawson 2003). Panel data tell an even more revealing story: 32 percent of

¹ Electoral volatility across consecutive elections also attests to limited party roots in society. In the region overall, electoral volatility in legislative elections climbed from an average of 19.6 percentage points in the 1980s to 23.2 percentage points in the 1990s (Roberts & Wibbels 1999). In the developed world, by contrast, volatility was only 12.8 in the 1990s, and even that figure was achieved after several decades of alleged dealignment (Dalton & Wattenberg 2000). Electoral volatility is the sum of the percentage changes in all party vote shares between two elections, divided by two.

Brazilians and 29 percent of Mexicans changed their minds in the final months of recent presidential election campaigns.²

When only a minority of voters identifies with any party, how do citizens learn about issues and candidates, and how does this learning influence their final voting decisions? What fills the void left by weak standing decisions and strong partisan cues? Standard voting models developed in long-established democracies fail to address this question adequately. Rational choice theories, assuming that voters have fixed and known policy preferences, stress issue or spatial voting (Downs 1957; Enelow & Hinich 1984; Johnston *et al.* 1993). Psychological models emphasize relatively stable partisan and symbolic attachments (Campbell *et al.* 1960; Sears *et al.* 1980; Carmines & Stimson 1989). In these models, voters begin campaigns with a storehouse of knowledge and candidate assessments that they infer simply upon learning the candidates' partisan affiliations (Rahn 1993; Sniderman 2000). Moreover, citizens' partisan attachments tend to provide them with a filter for incoming politically colored information, inducing them to reject countervailing messages and "homogenizing" much of what they accept and absorb (Zaller 1992). As such, strong partisan attachments and cues make short-term preference change unlikely, with vote switching rates typically in single digits (Lazarsfeld *et al.* 1948; Finkel 1993; Huckfeldt & Sprague 1995; Blais 2004). By contrast, in many emerging democracies, partisan loyalties are weak and partisan cues are confused or even non-existent. Models from stable democracies, then, apply only awkwardly to volatile campaigns in which many voters change their minds at least once.³

²Brazilian results are calculated from the two-city panel data described and used below. Mexican results are from the Mexico 2000 Panel Study. Participants in the Mexico 2000 Panel Study included (in alphabetical order) Miguel Basañez, Roderic Camp, Wayne Cornelius, Jorge Domínguez, Federico Estévez, Joseph Klesner, Chappell Lawson (Principal Investigator), Beatriz Magaloni, James McCann, Alejandro Moreno, Pablo Parás, and Alejandro Poiré. Funding for the study was provided by the National Science Foundation (SES-9905703) and *Reforma* newspaper.

³ Far from refuting these alleged differences between new and established democracies, the volatility customary in U.S. presidential primaries is the exception that proves the rule (Bartels 1988). As intra-

MASS MEDIA, SOCIAL CONTEXT, AND PREFERENCE VOLATILITY

When partisan filtering of new and countervailing information is weak, preference change is likely and frequent. From where, though, does this information come in emerging democracies? To date, scholars of emerging, and especially Latin American, democracies have answered this question by considering the mass media. In particular, the conventional wisdom points to the biased news coverage of major media outlets and to direct appeals by candidates to voters in television campaign commercials. Many television news programs in transitional democracies maintain political biases that date back to the authoritarian regime itself. An extensive body of research indicates that exposure to news coverage that favors one candidate often yields the network's desired effect: attitudes toward the favored candidate among the network's audience grow increasingly positive during the campaign (Skidmore 1993; Lawson 2002; Lawson and McCann 2005). Likewise, some empirical evidence attests to the importance of candidate image-building and personality-based appeals through campaign propaganda, especially television commercials (Skidmore 1993).

While evidence for these media effects is convincing, we suspect that media exposure is not the sole or even most important source of attitude swings during campaigns. Research on media messages and exposure ignores the social context in which voters in emerging democracies are embedded. It is well documented that citizens in established democracies deliberate and discuss politics in consequential ways (Huckfeldt & Sprague 1995; Walsh 2004; Zuckerman 2005). To date, however, scholars have largely overlooked the role of interpersonal cues and communications when considering political behavior in emerging democracies. We propose that, in lieu of a standing partisan choice, citizens in weak-party settings rely heavily on persuasive information gathered during campaigns from their immediate social contexts. In particular, we consider two aspects of voters' immediate social milieus: the "molecular

party contests, primaries effectively nullify partisan cues. The aggregate level of volatility in a country, therefore, is largely a function of institutional factors (clarity of partisan cues) and *not* voter characteristics (e.g., degree or quality of voter knowledge, culture, etc.). This is not to deny, of course, that some individuals are more prone to vote switching than others.

interaction” or “hot communications” of political discussion networks and the slightly broader context of the neighborhood microenvironment (Berelson *et al.* 1954; MacKuen & Brown 1987).

Most importantly, we assess the role of informal and incidental discussions within social networks of friends, family, neighbors, and colleagues. Interpersonal communications are an important but understudied determinant of vote choice in all democracies, but we expect them to be particularly important in explaining the high level of observed voter preference volatility where parties are weak. Even narrowly defined social networks are frequently politically heterogeneous since individuals rarely “choose” interlocutors because of their political affinities (Huckfeldt *et al.* 2004). As a result, political discussion typically exposes citizens to new information and to beliefs contradicting their own. Neighborhoods also hold a similar potential: it is the rare individual who chooses a neighborhood based on the agreeableness of its political leanings. Neighborhoods, moreover, are rarely unanimous in their political orientations. As such, exposure to subtle environmental cues around one’s neighborhood – eavesdropping on others at bars or bus stops, seeing yard signs and bumper stickers, noting which parties canvass the area – can introduce countervailing information to citizens even in their everyday activities and send signals about which candidates are electorally viable (Weatherford 1982). The neighborhood microenvironment, then, is another potential contextual source of campaign volatility.

Social Context and Attitude Change

Initial inquiries into the sociology of voting in the United States were ambivalent about the relationship between social networks and voter volatility. On the one hand, the Columbia school found that social contexts were largely stable and homogenous, so engagement with one’s immediate social milieu made voting preferences all the more stable (Lazarsfeld *et al.* 1948; Berelson *et al.* 1954; also see Mutz and Martin 2001 and Walsh 2004). On the other hand, these scholars also concluded that personal contacts and conversations were the most crucial information source among those rare individuals whose vote preferences wavered or crystallized late in presidential campaigns (Lazarsfeld *et al.* 1948: p. 151-152). More recent research leans in the latter direction because of the rather surprising finding that

political discussion networks tend to be heterogenous and filled with disagreement, thereby exposing individuals to diverse information and competing viewpoints (Huckfeldt *et al.* 2004). These studies have concluded that, at least theoretically, discussion within networks has the *potential* to induce short-term attitude change. For example, Huckfeldt, Johnson and Sprague (2004) have shown that discussion (and especially politically heterogeneous networks) makes voters more ambivalent about candidates.

Still, something is missing from these studies. Despite laying the groundwork for a sociological model of campaign effects and voter volatility, research to this point has instead revealed a cause in search of an effect because of the infrequency of preference change in U.S. campaigns.⁴ Indeed, Huckfeldt and Sprague's research program (Huckfeldt *et al.* 2004) must call on (an albeit fascinating and very useful) simulation to draw conclusions about the impact of interpersonal contacts on volatility. In short, researchers studying voter volatility are handicapped when they use data from countries with consolidated party systems and relatively deep partisan sympathies. Social networks in such countries have no real political relevance in campaigns: they rarely determine winners and losers.

Mechanisms of Momentum Runs: Media Exposure or Voter Cascades?

In emerging democracies, winners and losers have often been determined by dramatic "momentum runs," when a candidate's (or candidates') expected vote share undergoes major changes, either growing or declining, in a concentrated amount of time (Bartels 1988). In a framework in which mass media is the sole source of campaign information, momentum runs occur when citizens are directly exposed to a shift in the balance of flattering or unflattering news about a particular candidate. This "exposure" model holds that attitude change results only through direct exposure to the actual coverage itself. Citizens must view or hear the media coverage to be affected by it, so attitude conversion occurs only among the exposed as individualized responses to a news story.

⁴In their 1984 South Bend data, only one percent of respondents switched candidate preferences after the party conventions (Huckfeldt & Sprague 1995).

A social context model of preference change tracks a much different mechanism of momentum runs: “voter cascades.” In a society characterized by high degrees of interdependency and attitude flexibility, a single citizen’s changed opinion can initiate a chain reaction cascading through society (Fowler 2005; Huckfeldt *et al.* 2004). The original citizen communicates with and influences an acquaintance. That acquaintance in turn communicates with and influences one of his or her own acquaintances, who in turn influences an acquaintance, and so on. In this case, momentum runs are characterized by waves of political “hot talk,” i.e., ongoing conversations exchanging valenced and persuasive messages that are largely favorable (for positive momentum runs) or unfavorable (for negative momentum runs) about a candidate (MacKuen & Brown 1987). Such hot talk may directly influence an individual by providing new and persuasive information, but it also may operate by lending credibility to an already existing but tentative predisposition of the message recipient (Mutz 1997). The result is a major shift in aggregate opinion unfolding over a short period of time.

Mass media coverage of candidates and events still play a crucial role in this voter cascade scenario. Negative or positive coverage of a given candidate triggers voter cascades by converting a few exposed individuals, who then pass on their newfound preferences to acquaintances in conversation. Ruminations about campaign events and media coverage thus ripple and reverberate through the electorate (Huckfeldt *et al.* 2004). As such, social interaction actually *magnifies* the impact of media coverage because it produces attitude change among those who were never directly exposed to the original coverage itself. Far from posing a trade-off with media influence, discussion may actually magnify it (Mondak 1995; Druckman & Nelson 2003; Schmitt-Beck 2003).

What makes socially-induced preference change and, therefore, voter cascades likely? Once again, the literature is ambivalent on this point. The Columbia school’s classic hypothesis held that “cross pressures” exerted from a network made individuals more likely to switch during campaigns, yet the concept seemed to encompass two theoretically distinct scenarios. First, citizens embedded in networks that lean against their current predispositions were considered to be cross-pressured. “The stability of a preference ... varies with the chances of social support for it,” so disagreement from one’s

conversation partners may often lead to conversion (Berelson *et al.* 1954). The second case of a cross-pressured individual is one who is embedded in a diverse network that supports multiple opinions (Lazarsfeld *et al.* 1948). Recent studies would seem to concur that such individuals are more likely to be flexible: “Heterogeneous opinion distributions within networks ... produce an electorate that is more volatile and persuadable, but also more responsive to the compelling issues, events, and debates of the larger political environment” (Huckfeldt *et al.* 2004: p. 177). Homogenous networks featuring little political disagreement make it less likely that individuals will be exposed to countervailing information, so attitude change is less probable. At the same time, however, Huckfeldt, Johnson and Sprague’s notion of “autoregressive” influence holds that a conversation partner has more influence on a citizen when that partner’s views are shared by other people with whom the citizen converses (Huckfeldt *et al.* 2004). As such, heterogeneity will lower the number of people sharing that partner’s views, thereby potentially *decreasing* the probability of interpersonal influence once disagreement, and therefore the potential for attitude change, occurs.

BRAZIL AS AN IDEAL CASE

Brazil constitutes an ideal case for studying discussion effects and campaign volatility in weak party contexts. The nation’s party system has notoriously weak roots in the electorate, with only about 30 percent of the population claiming a partisan identification (Mainwaring 1999; Kingstone & Power 2000; Ames 2001). With the exception of the leftist Workers Party (PT), party labels do not provide very useful informational shortcuts about candidate ideology or potential policy stances.⁵ Indeed, in a 1999 poll of urban Brazilians (administered just five months after a presidential election) only 36 percent of respondents could correctly identify the President’s party affiliation. These many political “independents” seem to point to social contacts as a primary source of information. According to self-reports from surveys as far back as 1989 (the year of Brazil’s first presidential election in 29 years) the most-used political information source was discussion with friends and family, outdistancing journalistic

⁵It is no coincidence that about one-half to two-thirds of Brazil’s partisans are *petistas*.

sources and campaign propaganda (Straubhaar *et al.* 1993). Does this combination of traits lead to volatile election campaigns?

Momentum Runs and Volatility in Brazilian Elections

The Brazilian elections of October, 2002, will be remembered most for the convincing victory of a non-elite, left-leaning presidential candidate, Luís Inácio Lula da Silva. Indeed, aside from the 2000 contest in Mexico, no election in the region has received more international attention since Latin American countries began democratizing in the 1980s. Still, despite Lula's impressive margin of victory and the popular interpretation that his victory granted him a left-wing mandate, his success was hardly a foregone conclusion during the lengthy pre-campaign and campaign season. Two different candidates, *neither of whom survived to the second round*, were technically tied with Lula in some polls at different points during election year.

[Figure 1 about here]

Figure 1 illustrates this volatility by plotting smoothed vote intentions for the five main candidates during the fourteen months preceding the first round election on 6 October. The figure also gives some context to these numbers by providing a timeline of important events, including the campaign's "official" commencement and the initiation of the *HGPE* (*horário gratuito de propaganda eleitoral*), i.e., the seven-week period in which two hours per day of television and radio time are devoted solely to campaign commercials.⁶ Lula's competitors, in order of finish, were José Serra, the incumbent party's candidate and Lula's second round opponent, Anthony Garotinho, former governor of Rio de Janeiro state, and Ciro Gomes, a former governor and finance minister running for the second time. Vote intentions are also depicted for Roseana Sarney, an early strong candidate that departed the race in April amidst a corruption scandal.

⁶ Except for party-based commercial allowed in March and April, campaign commercials are not allowed before this date, and candidates do not have to pay for air time.

Lula's vote intentions followed a wavy path, although, except for a few statistical ties, he was always the frontrunner. More telling, however, are the seismograph-like patterns and fierce jockeying for position among Lula's challengers. Roseana in February, Serra in March, and Ciro in August all held seemingly solid second place positions while nipping at Lula's heels.⁷ At the peak of their ephemeral favorable momentum runs, Roseana and Ciro were technically tied with Lula in some polls. Ciro rode the most erratic roller coaster, zooming from fourth to second then, as evidence that volatility did not abate during the official campaign period, falling to a disgraced fourth in the six weeks preceding Election Day. Even third-place finisher Garotinho added some suspense at the end of the campaign by making a last-minute run at Serra's second-round spot.

This preference volatility was hardly exceptional in Brazil's recent electoral history. Panels A and B of Figure 2 demonstrate that in two of the previous three presidential elections (1989 and 1994) the eventual winner began with less than 20 percent of the expected vote. Unpredictable elections are also common at the gubernatorial level, where – because Brazil has a strong federalist system and several states with country-sized populations – elections tend to be highly visible, contested, and consequential. Panels C and D of Figure 2 present examples of volatile vote intentions during some recent gubernatorial races in larger states. Various types of momentum runs are evident in these elections. As Panels A, B and D demonstrate, little-known candidates (Collor in 1989, Cardoso in 1994 and Germano Rigotto in 2002) often come from nowhere to ride favorable momentum runs into the second round or into office, often at the expense of better-known candidates.⁸ In some cases, momentum runs are zero-sum trade-offs between two candidates (as in Panels B and D), while in others a candidate attracts (Collor in Panel A) or loses (Ciro in 2002 and Rossi in Panel C) voters in relatively equal numbers to her or his competitors.

⁷We use Brazilian nicknaming conventions, which for some candidates use only the first name.

⁸ Indeed, the inaccuracy of many public opinion polls, a constant topic of heated debate in Brazilian elections, may be due in part to the rapidity and degree of momentum runs. Many voters, as most likely occurred in São Paulo 1998 (Panel C), may change their mind between the final published polls results (published a day or two before the election) and Election Day.

Regardless of its variety, massive preference change during Brazil's campaigns is not meaningless "noise" and ensures that few outcomes are inevitable (Gelman & King 1993).

[Figure 2 here]

Data

The political consequences of individual-level volatility are clearly evident in the rolling cross-section surveys of Figures 1 and 2. Pinpointing the determinants of short-term preference change, however, requires panel data, which provides observations of voters that both do and do not change their minds. Our data come from a four-wave panel study of eligible voters in two mid-sized Brazilian cities: Caxias do Sul, in the southernmost state of Rio Grande do Sul, and Juiz de Fora, in Brazil's second largest state, Minas Gerais. We implemented wave one of the survey in March and April 2002, before the party nominating conventions. Wave two took place in August of the same year, after the first debate and just before the initiation of the *HGPE*. Wave three occurred in October, between the two rounds of the election. Wave four, not used in this paper, was implemented in May 2004. The initial sample size in wave one was 2,500 respondents per city. Sixty-six percent of these respondents remained in the panel for all three 2002 waves, and about 500 fresh respondents were added in each of waves two and three. In Appendix A we discuss sampling protocols and question wordings.

The other unique aspect of the dataset is that it contains – besides standard measures of partisanship, media exposure and demographics – rarely measured attributes of respondents' social context. To measure the nature of respondents' social networks, we asked respondents during the August and October waves to provide information about their political discussion networks. In August we asked respondents the following question: "Could you please indicate the names of the three people with whom you most talk about politics?" Many respondents offered fewer than three names (18.4 percent offered none). We then asked respondents to describe the nature of their relationship with each discussant and for which presidential and gubernatorial candidates each discussant would vote. In October, we again asked

main respondents for whom each discussant would vote for president and governor. More importantly, the dataset includes a November (after the 27 October run-off election) round of interviews with a 2,400-respondent sample of these named discussants.⁹ For clarity, we refer to our interviewees as “main respondents,” those gathered through random sampling and interviewed in at least one of the four panel waves, and “discussants,” those mentioned by main respondents in the August network “name generator.” This name generator performed well. Each respondent mentioned, on average, 2.13 discussants. By comparison, in a seven-nation dataset (Bulgaria, France, Hungary, Poland, Russia, Spain and United States) querying a much larger pool of potential discussants (requesting a list of people with whom the respondent discussed “important matters”), James Gibson (2001) found an average network size of 2.06.

Further descriptive evidence indicates that these networks held an extensive capacity for communications across lines of political difference, laying the groundwork for widescale exposure to conflicting political views and, in turn, short-term preference change.¹⁰ First, 45 percent of named discussants were non-family members (also at Gibson’s cross-national mean). This indicates that a significant degree of political discussion occurs across “weak ties”; with regard to political communication, Brazilian society is not segmented into insular primary groups that fail to communicate with one another (Granovetter 1973). Second, in cases in which both ends of the main respondent-discussant dyad were interviewed, disagreement over candidate preference (based on first round vote choice) existed 44 percent of the time.¹¹ This is far less than 64 percent, the rate of disagreement between two randomly selected individuals – an indication that some clustering among like-minded individuals occurs. But it also demonstrates that *heterogeneity* within political discussion networks is the norm in Brazil. Main respondents mentioning two discussants had only a 31 percent chance of agreeing with

⁹ Discussant reinterviews occurred with the 2004 fourth wave, although these are not used in this paper.

¹⁰This, incidentally, reinforced our confidence in using main respondent reports of discussant voting behavior when a discussant interview was not conducted.

¹¹This calculation excludes all dyads in which either (or both) individuals were undecided or did not respond. It does, however, include non-voters. As such, a dyad featuring a non-voter and a Lula voter is considered a disagreeing one.

both; main respondents with three discussants had only a 18 percent chance of agreeing with all three. Finally, this disagreement, and likewise agreement, was surprisingly well-communicated. Despite the complexity of the party system and the large number of viable candidates, only 14 percent of interviewed discussants had their actual first-round presidential vote choice misperceived by main respondents (Huckfeldt & Sprague 1995).

A final unique feature of the survey design is that neighborhoods (clearly circumscribed and legally defined entities in Brazil) constitute the primary sampling unit in the two cities. In each city, our team interviewed more than 100 individuals in each of about 20 neighborhoods. This number of interviews allows us to capture aggregate characteristics of the respondents' neighborhood milieus. In 2002 the distribution of preferences within these neighborhood microenvironments ran the gamut from highly competitive, four-candidate races to arrangements in which one candidate dominated voter preferences.

WHO IS VOLATILE? HYPOTHESES AND RESULTS

This section assesses what factors made some Brazilians more likely to change their minds during the 2002 campaign. Among those who had a candidate preference in August and did vote in October (each city had about 84 percent turnout), 37 percent in Caxias and 27 percent in Juiz de Fora switched candidates. With a more liberal definition – adding October voters who were undecided in August – volatility rises to 47 percent in Caxias and 35 percent in Juiz de Fora.¹² In other words, during the eight weeks preceding the election, just 53 percent of Caxias voters and 65 percent of Juiz de Fora voters displayed the stable choice pattern typically expected from strong partisans. What explains vote volatility at the individual level? Why do some citizens change their minds during the campaign while others

¹² Why not look at volatility by including the March/April wave results? The percentages would no doubt increase dramatically but also, in many ways, artificially. Roseana Sarney and Itamar Franco, two viable “pre-candidates” whose runs ended before May, were still in the race in March. Respondents who expected to vote for one of them were, in essence, forced to switch.

display a loyalty more befitting of partisan voters?

Dependent Variable and Social Context Hypotheses

To answer these questions we estimate a binary probit model. The dependent variable is a binary indicator of whether respondents changed their minds between August and October. This variable equals one for citizens voting (in round one) for a candidate who was not their preferred choice in August. A score of zero is given to citizens who voted for the same candidate they preferred in August.¹³ The sample is thus limited to respondents expressing a candidate preference in both August and October.

We capture the first notion of cross pressures by considering the extent to which prevailing opinion within main respondents' networks reinforced their August beliefs. Main respondents embedded in networks of like-minded individuals should have been less likely to switch than individuals whose communications tended to be with disagreeing partners. Contrast an August Lula voter listing three pro-Serra discussants with another August Lula voter listing three pro-Lula discussants. If social interaction is at all meaningful and politically relevant, then the former voter should be far more likely to change preferences before Election Day. To capture this possibility, we include a simple measure of *Network disagreement with main respondent*, which counts the number of discussants (from zero to three) in each main respondent's network who had a vote preference in August differing from the main respondent's August preference. We expect this variable to increase the probability of vote switching.

Network heterogeneity holds an ambivalent place in the social network literature. Recalling Huckfeldt, Johnson and Sprague's simulation results, societies with heterogeneous, as opposed to homogeneous, networks are supposedly more conducive to volatility and voter cascades. Citizens embedded in heterogeneous social networks should be more likely to switch their vote choice during the campaign than citizens in homogenous ones. But what if disagreement is held constant? Compare an August Lula voter listing three pro-Serra discussants with another August Lula voter listing one pro-Serra discussant, one pro-Ciro discussant and one pro-Garotinho Lula. Heterogeneity is greater in the latter

¹³ August's undecideds and non-voters are therefore excluded from this analysis.

case but the level of disagreement is the same in both. Discussants in the former case speak with a unified voice while those in the latter case speak with a cacophonous one. Here, Huckfeldt, Johnson and Sprague's notion of autoregressive influence points in a contradictory direction from their expectation about heterogeneity: A discussant's persuasive argument may be more fruitful if it is reinforced by that of other discussants; so network heterogeneity may actually *mute* the propensity to switch preferences. We measure *Network heterogeneity* as the number (from zero to three) of different presidential candidates supported in the main respondent's discussant network in August. For example, network heterogeneity would be one for the former main respondent (with only pro-Serra discussants) and three for the latter main respondent (with discussants supporting three different candidates). When main respondents reported no discussants or knew none of their discussants' preferences, the variable is scored zero. In other words, network heterogeneity represents the diversity of opinion main respondents encountered in their day-to-day political discussions. Because of the theoretical ambiguity, we conduct a two-tailed test of this variable.¹⁴

We also parse the potential cross pressures of the neighborhood microenvironment into aspects of disagreement and heterogeneity. *Neighborhood disagreement with main respondent* measures the extent to which the balance of neighborhood opinion countervailed that of the respondent in August. This variable is the proportion of the neighborhood that disagreed with the main respondent in August (the complement of the August neighborhood vote intention for the candidate that the main respondent preferred). In a neighborhood with Lula at 40 percent, Ciro at 30 percent, Serra 20 at percent and Garotinho at 10 percent, Lula supporters receive a score of .60, Ciro supporters a score of .70, Serra

¹⁴Why not interact network disagreement and heterogeneity, based on the hypothesis that heterogeneity encourages switching when disagreement is low but discourages it when disagreement is high? Consider what occurs when disagreement is low. An increase in heterogeneity from zero to one (heterogeneity cannot exceed disagreement+1) when disagreement is zero implies a move from no discussants to one agreeing discussant. We would still expect the probability of switching to be smaller in the latter case, so heterogeneity should have a negative impact at all levels of disagreement.

supporters a score of .80, and Garotinho supporters a score of .90. We expect individuals facing more disagreement in their neighborhood environment to be more likely to switch.

Neighborhood heterogeneity may also play a role, although again theoretical expectations point in both directions. Citizens living in truly competitive, multiparty neighborhoods – where the four major party candidates received equal levels of support – may have been more volatile than residents of one- or two-candidate dominant neighborhoods because their neighborhood context exposed them to a wide and balanced array of valenced messages. Neighborhoods with a competitive balance may also present more candidates as electorally viable than neighborhoods with skewed support (Mutz 1997, 1998). By contrast, however, heterogeneity in the neighborhood may send confused and contradictory countervailing messages, thus encouraging citizens to stick to their guns. Thus *Neighborhood heterogeneity* used the effective number of presidential candidates supported by each neighborhood's main respondents in August (Laakso & Taagepera 1979). We conduct a two-tailed test for this variable, which has a theoretical range from 1 to 4 but only ranges from about 2.0 to 3.5 in our data.

Media Exposure and Political Characteristics

We include a number of different variables that measure the media “exposure” hypothesis. Brazil’s highly visible *HGPE*, the free air-time campaign commercials that major television networks and radio stations must carry for two hours per day, is deemed by many Brazilian analysts and journalists as the primary source of ebbs and flows in vote shares. Well-thought out and typically highly produced commercial segments, some lasting as long as 10 minutes, carefully craft candidate images.¹⁵ *HGPE exposure* measures the respondents’ estimates of the amount of time they spent each week watching and listening to these programs. We also measure overall *Media attention* with a composite measure of the amount of political news that respondents consumed. Respondents reported up to two television programs, two newspapers, and two news magazines that they tended to watch or read and they also

¹⁵ It is also important to add that a large number of free 30-second commercial spots that are inserted randomly into normal commercial breaks are also allocated to candidates.

mentioned the frequency of exposure (along with how often they listened to political radio shows). This variable is a score generated from a factor analysis of these media type exposure variables. (See Appendix A for details.) If the exposure model holds, then these media variables should be positively associated with the likelihood of preference volatility.

Admittedly, however, these variables do not capture whether individuals confront *disagreeing* information through media exposure. Some individuals may seek out large quantities of information that affirm and reinforce their predispositions, thus making them highly exposed to media yet even less likely to switch candidate preferences. To capture the degree to which media consumption exposed citizens to disagreement, we exploit the Ciro Gomes momentum runs of 2002. With all eyes on his candidacy because of his surprising vault into second place, Ciro committed a series of gaffes in July and August that indicated a hot temper and potentially poor judgment: referring to a caller on a phone-in show as “stupid,” condescendingly suggesting that a “pretty black” audience member was trying to assume ungranted speaking privileges only because he was Afro-Brazilian, saying he didn’t “give a damn” about international investors and markets, and joking that his celebrity wife’s only role in his campaign was to sleep with him. Ciro’s opponents and the Brazilian media reported these events with alacrity. As such, the balance of media coverage and campaign commercials shifted heavily against Ciro in August and September. Ciro’s August supporters with heavy media attention and heavy exposure to the *HGPE* may have been more likely to switch than supporters of other candidates in August, so the impact of the two media variables are estimated separately for those that preferred Ciro in August.

A number of other variables control for remaining sources of volatility. A central premise of this paper is that party sympathizers are less likely to change candidate preferences during an election campaign. Despite the comparatively weak roots of parties in the electorate, partisans do exist in Brazil, so it is worthwhile asking whether they are indeed less likely to switch. The dummy variable *Partisan* equals one for main respondents reporting in March/April that they “sympathized with some political party” and zero for all others.

Another crucial variable is political awareness or knowledge. Political psychologists point to

political awareness as a key correlate of volatility, although findings on the nature of this relationship vary. One leading theory states that voters with middling levels of political awareness are the most likely to change their minds during the campaign season because they have more flexible political preferences than highly aware voters yet they are exposed to more campaign information than highly unaware voters (Zaller 1992). Thus the probability of changing one's vote choice or one's opinion about a candidate could be related to political awareness nonlinearly (concave down, 1). At the same time, research on U.S. primary campaigns indicates that information "mutes" momentum runs because it increases the chances that individuals will vote according to their political predispositions instead of shifting preferences merely to "go with the winner" (Bartels 1988; also see Delli Carpini & Keeter 1996). Indeed, the Columbia school itself also found vote switching to be most common among the ill-informed (Lazarsfeld *et al.* 1948). In this case, political awareness could be monotonically and negatively related to the propensity to change candidates. To test both this monotonic and the nonlinear hypotheses, the model includes *Political awareness* (the results of each respondent's performance on a short "quiz" about objective political facts) and $(Political\ awareness)^2$, the second-order term. If the relationship between awareness and volatility is indeed concave down, then the coefficient on the second-order term will be negative. To isolate the impact of awareness and the other variables *per se*, we also control for potentially confounding demographic variables, including gender, education and age.

Finally, we also include "candidate fixed effects," which are simply three dummy variables (one less than the number of candidates) that indicate who the respondent preferred in August. Even after controlling for all the relevant factors mentioned above, supporters of certain candidates (namely Ciro) may have been more likely to switch than supporters of others. Since certain independent variables are correlated with candidate support in August, we control for these unexplained propensities to switch in order to isolate the impact of the independent variables. One model also includes neighborhood fixed effects to test the robustness of the neighborhood findings.

Results

Table 1 reports the results of three multivariate models. We estimated three different models to try different measures of key concepts and test the robustness of the most important findings. Model 1 is the “Preferred Model” and will be the focus of most of the discussion, with the remaining models discussed in turn. The impact of social context in model 1 is overwhelming. The coefficients for network and neighborhood disagreement are highly statistically significant and properly signed. Those corresponding to network and neighborhood heterogeneity, for which we conducted two-tailed tests, are also statistically significant, although the heterogeneity at these two levels operates in divergent directions.

[Table 1 and Figure 3 here]

Figure 1 depicts the substantive impact of each of these variables. Panel A portrays three different network types using standard conventions. Each network features a main respondent (in the center) with three discussants (each of which communicates with the main respondent as indicated by the connecting lines). Different shapes represent different candidate preferences in August. The first network shows that a typical respondent in a unanimous network had a 21 percent chance of switching. In the second network the three discussants now disagree with the main respondent but are in agreement among themselves. In this instance the probability of switching jumped by 27 percent. The third network indicates the importance of heterogeneity in watering down the impact of disagreement. When the three discussants spoke to the main respondent in discordant (yet countervailing) voices, the main respondent’s chances of switching were 31 percent: greater than when all three discussants reinforced standing views (network 1) but less than when the three discussants countervailed with a united voice (network 2).¹⁶

The influence of the neighborhood microenvironment was also statistically significant and

¹⁶Larger networks tend to have more disagreement and more heterogeneity, so these discussant effects could be spurious due to the omitted variable of network size. However, we estimated various models controlling for the number of discussants named or the number of discussants with known preferences, and these variables were neither statistically significant nor did they alter the other network effects.

substantively important. To test for the robustness of the neighborhood-level findings, we also ran a “neighborhood fixed effects” model that included a dummy variable for each neighborhood (except three to avoid perfect collinearity). These results, shown as model 2 in Table 1, are statistically and substantively equivalent to those of the preferred model. Panel B of Figure 1 depicts the substantive impact of the neighborhood variables. Main respondents living in neighborhoods in which only 40 percent of residents disagreed with them were about 15 to 17 percent less likely to switch than those in neighborhoods with 90 percent of the residents disagreeing with them. Heterogeneity at the neighborhood level also had a positive, albeit smaller, impact on the probability of switching, in contrast to the negative influence of heterogeneity in discussion networks. Although a fuller analysis of the precise reasons for this pattern is beyond the scope of this paper, we suspect that they lie in the different mechanisms of social influence at these two levels. Within discussion networks, social influence occurs through direct persuasion and argumentation. Heterogeneity therefore supplies individuals with multiple perspectives and counterarguments about their non-preferred candidates, thereby making it less likely that one non-preferred candidate will emerge as an untainted, attractive alternative. In contrast, neighborhoods, which encompass a broader collective than discussant networks, may serve as a heuristic about candidates’ electoral viability (Mutz 1998). More effective candidates in a neighborhood’s preference distribution means more viable candidates in that neighborhood, providing a greater incentive to switch. Indeed, if we create an alternative measure of neighborhood heterogeneity by counting the effective number of candidates in the neighborhood among each respondent’s three non-preferred nominees in August, its impact *grows*. Model 3 in Table 1 shows these results.

The impacts of neighborhoods and networks are admittedly nuanced, but the bottom line is that the role of social influence was statistically and substantively large in 2002. How did the other variables affect vote switching? Media exposure did matter for one group of voters: among Ciro’s August supporters, exposure to his gaffes and other negative coverage of him appeared to drive them toward other candidates.¹⁷ Ciro’s August supporters that paid less attention to media abandoned him at lower

¹⁷We also ran a model replacing media attention with media diversity, a mere count of the number of

rates. In contrast, exposure to campaign commercials, both among Ciro's August supporters and everyone else, did not induce switching. Political awareness had a substantial and monotonic impact: highly aware individuals were about 20 percent less likely to switch than the least aware. Although education and age tend to correlate with political awareness, these two demographic variables also had an independent and negative impact on vote switching (Delli Carpini & Keeter 1996). Perhaps the most surprising result of all, however, is the non-impact of partisanship. Partisans in Brazil were just as likely to change their minds during campaigns as were independents, a sign that even expressed partisan sympathies may mask a general susceptibility to campaign appeals and influence. In sum, vote switching in Brazil occurred most frequently among the least aware, least educated, and the young; however, it occurred just as much among independents as it does among declared partisans.

THE POLITICAL CONSEQUENCES OF DISCUSSION

The analysis thus far has been admittedly apolitical. It is clear that discussing politics with peers and especially with peers holding disagreeing political viewpoints contributes to preference volatility in Brazil. But what are the concrete political effects of discussion? Does political discussion provide the fuel for momentum runs? Can it magnify the impact of media coverage by disseminating media content through "voter cascades"? We answer these questions in two ways. First, we take a microscope to the Ciro Gomes roller coaster in 2002 to determine whether his rise and demise were consistent with the concept of voter cascades and the "magnification" of media effects. Second, we construct a model of vote change and choice.

different magazines, newspapers, political radio shows, and television news programs that respondents regularly consumed. We expected media diversity to more accurately reflect the heterogeneity of information to which individuals were exposed, but it did not vary independently from media attention ($r = +.86$) and did not explain at all the propensity to switch from Ciro.

Ciro's Demise and the Magnification Effects of Discussion

Fortuitously, the second wave of the panel study occurred in early August at *Ciro's* peak, while the third wave occurred just after his nadir, Election Day. *Ciro's* surge into second place was clearly bolstered by a wave of political hot talk. In August, 28 percent of respondents in August said that *Ciro* was the candidate about whom they talked the most in the previous month, with only 14 percent citing *Serra* and 8 percent naming *Garotinho*; the remaining 49 percent named *Lula*.¹⁸ By October, however, this number fell by almost two thirds to just 11 percent, with 19 percent reporting *Serra*, 10 percent reporting *Garotinho*, and 60 percent reporting *Lula*. *Ciro's* ears were happily red from so much talk in August, but they turned pale when it mattered in October.

The decrease in discussion about *Ciro*, however, does not provide definitive support for the claim that discussion magnified the negative media coverage of his July and August gaffes and, therefore, led to his downfall. Indeed, recall that statistical significance tests in Table 1 provide some support for the exposure hypothesis, since they show that *Ciro's* defectors tended to report heavier media consumption than his loyalists. Yet this does not rule out the possibility that negative coverage in the media also triggered a voter cascade that was fatal for *Ciro's* candidacy. For one, the difference in the predicted probability of defection between a highly inattentive (10th percentile on media attention) and highly attentive (90th percentile) August *Ciro* supporter was only about .10, despite the fact that 70 percent of his August supporters eventually did defect. Something besides direct media exposure was at work.

Empirically demonstrating a media-triggered voter cascade with any definitiveness is almost unimaginable, especially with standard social science data. Instead, we consider whether the observable implications of such an event are present in the data that we have. If *Ciro's* fate was sealed by a media-triggered but discussion-driven voter cascade, then the data set should indicate that highly attentive discussants who defected from *Ciro* (presumably because they were directly exposed to his gaffes) also induced August's *Ciro*-supporting main respondents to defect, regardless of the main respondents' level

¹⁸ The exact question wording was "In the last month, when you've talked about politics, about which candidate did you talk the most?"

of media attention. Table 2 shows the results from an empirical test of this scenario. The sample is limited to main respondent-discussant pairs in which both sides of the dyad (a) supported Ciro in August and (b) were interviewed in October. Obviously, sample size dwindles once all of these characteristics must be fulfilled, but the data set still contains 200 valid dyads. The dependent variable indicates whether the main respondent defected from Ciro on Election Day (1) or stayed the course (0). The key independent variable is a dummy variable that indicates when the main respondent's discussant (a) switched from Ciro *and* (b) had a high level of awareness (and therefore was presumably directly exposed to negative media coverage of Ciro). The model controls, obviously, for media attention and a few other political and demographic variables that were deemed important in Table 1. While the standard errors tend to be large, the statistical impact of discussion with a highly aware person who turned on Ciro, even when controlling for media exposure, is distinguishable.

[Table 2 here]

It is worth adding also that some of the candidates themselves were apparently clued into the power of hot talk. José Serra attempted to create a favorable voter cascade in the waning days of the second round election. He devoted his final day of campaign commercials to an unsuccessful attempt at mobilizing each supporter to persuade one acquaintance of his merits. Beyond the quote mentioned at the beginning of this paper, Serra's final program even depicted children convincing their grandparents to vote for Serra. Despite a slight upward blip in the final days of the second round campaign, Serra's efforts largely failed.

A Model of Discussant Effects

Finally, exploiting the panel model and the interviews with both ends of 2,400 main respondent-discussant dyads, we conduct a more general test of discussion effects. Figure 4 illustrates the model design. In the figure, y_{mr} refers to the main respondent's candidate preference while y_d refers to the candidate preference of one of the main respondent's discussants. The t subscripts refer to the time period: with only two time periods in the model, t refers to Election Day while $t-1$ indicates August. Z_{mr}

and Z_d are sets of variables (like partisanship, economic perceptions and issue positions) that help predict main respondent and discussant Election Day vote choice, respectively, and u_{mr} and u_d are disturbances.

[Figure 4 here]

Figure 4 builds in a number of estimable features. The model contains lagged, cross-lagged and synchronous effects (Finkel 1995). The lagged effects make the model dynamic, allowing for the voters' own August preferences to influence their October vote choices. With inclusion of the lagged dependent variable, other variables in the model are explaining *change* in voter preferences between August and October. The synchronous effects (represented by the vertical, double-ended arrow) allow for reciprocal influence between discussant and main respondent. In many cases interpersonal influence is a two-way street, so discussion's influence on a citizen's vote choice should be estimated while controlling for her or his impact on the other person in the dyad (Levine 2005; Huckfeldt & Sprague 1995). Finally, the cross-lagged effects (represented by the diagonal arrows) allow for August political discussions within dyads to influence the eventual October vote choice. Including these effects along with the synchronous effects helps determine whether political discussions take root immediately or whether their impact is more delayed. Given the nature of the "voter cascades" framework developed above, in which discussant effects are presumed to be rather immediate, this is a crucial question.

The model in Figure 4 has two dependent variables (and therefore two equations), so we employ a simultaneous equations approach called two-stage conditional maximum-likelihood (2SCML) (Rivers & Vuong 1988; Alvarez & Glasgow 2000). However, we report only the results relevant to explaining main respondent (y_{mr}) vote choice. The technical particulars of the model are described in Appendix B, but we note here that the richness of the dataset and the complexity of the model make this effort much more rigorous than prior ones at analyzing the influence of political discussion on citizen vote choice. Unlike previous scholars, we control for previous values of y_d , which means that spurious discussion effects arising from either main respondent self-selection into like-minded discussion groups or main respondent projection of personal preferences onto discussants are unlikely (Huckfeldt & Sprague 1995; Kenny 1998; Levine 2005).

Econometric models of voter choice in multiparty contexts tend to present results as a series of pairwise comparisons between each two-candidate combination (Whitten & Palmer 1996; Alvarez & Nagler 1998). Six possible pairwise comparisons exist in a four-candidate race, so the second stage results from six different 2SCML models are reported in Table 3. The second stage is simply a binary probit model (containing an endogeneity “correction”) of main respondent vote choice between the two candidates. (The first stage estimates determinants of discussant vote choice, the other endogenous variable.) The crucial effects discussed above are captured with the following variables: *Lagged DV: Main respondent’s August preference* (lagged effects), *Discussant’s October preference* (synchronous effects), and *Discussant’s August preference* (cross-lagged effects). The inclusion of the lag means that all other variables in the model are explaining *change* in the dependent variable.

Remaining variables are standard “usual suspects” that determine voter choice. *Sociotropic, retrospective economic assessment* and *Sociotropic, prospective economic assessment* capture the role of economic trends and perceptions. Partisanship is measured with three dummy variables for either Lula’s Workers Party (PT: *Petista*), Serra’s Social Democracy Party (PSDB, whose adherents are known as *Tucanos*), and the Democratic Movement Party (PMDB: *Pmdbista*), which endorsed Serra. Other parties, especially Ciro’s PPS and Garotinho’s PSB, did not command a critical mass of sympathizers (<.5 percent). The model also contains *Ideological Self-Placement* on a left-right scale and measures of positions on two divisive and highly politicized issues: *Privatization attitude* and *Land reform attitude*. As is common in many panel models with lagged effects, we pick up the role that changes in these factors may cause by including both the August lagged ($t-1$) value of these independent variables and their change ($\hat{\Delta}$) between August ($t-1$) and October (t) (Finkel 1995). Finally, while demographics like class tend not to play a major role in Brazilian voting behavior, evangelical Christians, it is believed, overwhelmingly flocked to fellow evangelical Garotinho. A dummy variable for *Evangelical Christian* is included in the three models that contain Garotinho voters.

[Table 3 here]

The results *overwhelmingly* support the claim that discussants had short-term impacts on main

respondent vote choice. The coefficient on y_{dA} is statistically significant in five of the six cases. The impact on the probability of voting for the discussant's preferred candidates range, depending on the pairwise comparison, from .18 to .40. Perhaps just as importantly, the coefficient on the lagged discussant variable, y_{dA-1} , is statistically insignificant in all but one case. Taken together, these findings demonstrate that political discussion yields immediate impacts superseding and replacing the influence of past discussions. This further bolsters the claim that discussion can result in rapid voter cascades that change minds in the short-term and determine electoral winners and losers.

CONCLUSION

Social context and, in particular, interpersonal deliberation were the primary movers of voters in Brazil's 2002 campaign. In a milieu of limited partisanship where parties do not have consolidated "brand names," networks of political discussion are the main conduit of preference change. Persuasive communications across lines of political difference often yield the desired effect; disagreement was common and consequential, resulting in persuasion on a massive scale. Communication of this disagreement in the form of political "hot talk" had massive and immediate effects throughout the campaign, creating momentum runs and high degrees of vote switching that, in end, determined the election outcome.

What does this suggest about the quality of citizenship in Brazil's new democracy? Democratic theorists typically consider deliberation, especially in heterogenous settings, a public good that improves the quality of citizenship and democracy by promoting political tolerance, engagement and knowledge (Mill 1859; Habermas 1989; Fishkin 1991; Mutz 2002; Barabas 2004). In contrast, social network theorists express concerns that deliberation can cause "groupthink" (Asch 1951), with voter cascades as mere mindless "stampedes" (Schumpeter 1942). Moreover, political behavior scholars often portray political independents with volatile preferences not as open-minded and inquisitive but as unaware and manipulable (Lazarsfeld *et al* 1948; Campbell *et al* 1960).

The experience from Brazil 2002 is likewise ambivalent. After cascading toward Ciro Gomes in

July, many Brazilians performed a collective about-face in August. While potentially a process of ill-considered groupthink, political discussion seemed to disseminate valuable information – that Ciro was hot-tempered and lacked judgment. Indeed, Brazilians seemed disposed in general to a certain openness in their deliberation, often speaking to individuals that were not like-minded. We conclude agreeing with most democratic theorists that interpersonal communications in Brazil are healthy for democracy and provide an antidote to a young and rather confused party system.

APPENDIX A: SURVEY METHODOLOGY AND QUESTION WORDINGS

To generate the March/April first-wave sample of 2500 face-to-face interviews per city, we employed a multistage sampling technique with random selection at each of the following four stages: neighborhoods ÷ census tracts ÷ domiciles ÷ respondents. Within each city, we chose about 20 neighborhoods using a random number generator, with goals of approximately 100 interviews per neighborhood. Neighborhoods were sampled with replacement, however, so a small number of highly populated neighborhoods were chosen twice or (in one case) even three times. In these cases, we interviewed 200 or 300 residents. Within each neighborhood, we randomly selected from two to ten census tracts. (Each census tract contains approximately 200 domiciles.) Within census tracts, interviewers began at a predetermined geographical point and attempted to interview one randomly chosen person (according to the most recent birthday technique) at every sixth domicile.

The first wave response rate, calculated as the number of completed interviews divided by the number of houses contacted, was 71 percent in Caxias and xyz in Juiz de Fora. Sets of about 500 previously uninterviewed respondents were added in both waves B and C in each city. To obtain these new respondents, interviewers returned to the domicile of the final interview in the previous wave and continued contacting every sixth house. For the second wave, in August, all first wave respondents were contacted and asked for reinterviews. In Caxias 72 percent completed a second wave interview, while 77 percent did so in Juiz de Fora. Of these, 79 percent in Caxias completed a third wave interview and 90 percent in Juiz de Fora did so. All told, then, 55 percent of first wave interviewees completed the panel in Caxias while 69 percent did so in Juiz de Fora. The discussant wave of interviews occurred over the phone and after the third wave (and second round election) of the main respondents panel.

Vote Choice. August – If the election for president were today, for whom would you vote? *Ciro Gomes, Lula, José Serra, Anthony Garotinho, or some other candidate?* October – For whom did you vote for president in the first turn of the election on October 6? *Ciro Gomes, Lula, José Serra, Anthony Garotinho, some other candidate, or did you not vote for anyone?*

Media attention. Respondents were asked in turn whether they watched any news shows, read

news magazines, read newspapers, and listened to political radio shows. If they responded affirmatively, they were encouraged to name up to two sources (only one for radio) per category, and they were then prompted to report how frequently they watched/read/listened to each source. From these reports we created seven variables that recorded the frequency of exposure to each of their seven sources, with the respondent receiving a score of zero for corresponding categories when less than two sources were mentioned. A factor analysis was run on these seven variables and only one significant factor emerged. Media attention is the factor score from this dimension using the sources and frequency of exposure measures from the October wave. Note that *Media diversity* is simply a count, from zero to seven, of the number of different sources used.

HGPE exposure. “Since August 20, free electoral hour has been on television and radio. Between the beginning of the free electoral hour in August and the October 6 election, more or less how much time per week did you watch on television and listen on radio to programs about presidential candidates? (1) Never, (2) less than 30 minutes per week, (3) between 30 and 60 minutes per week, (4) between 1 and 2 hours per week, (5) between 2 and 4 hours, (6) more than 4 hours.”

Political awareness. Political awareness quiz questions had a multiple choice format (Mondak 2001). Awareness is the sum of correct answers (converted to a *z*-score) to the following questions: 1. “What is the political position of Ana Corso/Paulo Delgado [two politicians from the respective cities]? Council (Corso), federal deputy (Delgado), state deputy, or senator.” 2. “Who is the Vice-President of Brazil? Inocência de Oliveira, Marco Maciel (correct), Íris Resende, or Marcello Alencar.” 3. “What is the party of President Fernando Henrique Cardoso? PTB, PMDB, PSDB (correct), or PFL.” 4. “Which of the following countries is a member of Mercosul? United States, Argentina (correct), Colombia, or Peru.” 5. “Which of these politicians is a senator from your state? José Fogaça/José Alencar (correct), Saturnino Braga, Eduardo Suplicy, or Lindbergh Cury” 6. “Who is the President of the Chamber of Deputies? Roberto Jefferson (correct), José Genoíno, Aécio Neves, or Miro Teixeira?”

Partisan. “Do you sympathize with some political party? (1) Yes or (0) No?” Open-ended responses were coded, including *Petista*, *Tucanos*, and *Pmdbista*.

Sociotropic, Retrospective Economic Assessment. “Speaking generally about the country in the last twelve months, do you think that the economic situation (1) improved a lot, (2) improved a little, (3) stayed the same, (4) worsened a little, or (5) worsened a lot?”

Sociotropic, Prospective Economic Assessment. “Thinking about the future, do you think that the economic situation of the country is going to (1) improve a lot, (2) improve a little, (3) stay the same, (4) worsen a little, or (5) worsen a lot?”

Privatization Attitude. “In the last ten years, state-owned businesses, which were directed by the government, were sold to private businesses in a process called ‘privatization.’ With which of the following statements about privatization do you agree more: Privatization is good; or privatization is bad. Do you strongly agree with this statement or only somewhat agree?” (1) Strongly agree that it is good, (2) somewhat agree that it is good, (3) depends/both, (4) somewhat agree that it is bad, (5) strongly agree that it is bad.

Land Reform Attitude. “Another important issue is land reform. With which of the following statements do you agree more? The government should give land from large farms to rural, landless workers; or the government should not give land from large farms to rural, landless workers.” (1) Strongly agree with first statement, (2) somewhat agree with first statement, (3) depends/both, (4) somewhat agree with second statement, (5) strongly agree with second statement.

APPENDIX B: ESTIMATION OF DISCUSSION EFFECTS MODEL IN TABLE 3

The estimation of the Figure 4 model is complicated not only by the presence of two endogenous variables but also by the fact that vote choice dependent variables, especially in four-candidate elections, do not lend themselves to the straightforward two-stage least squares technique typically used for the simultaneous equations case. Therefore, we use two-stage conditional maximum-likelihood (2SCML), a technique appropriate when one endogenous variable is binary and the other endogenous variable is continuous (Rivers & Vuong 1988; Alvarez & Glasgow 2000). From Figure 4, the theoretical equation for the main respondent's vote choice, rewritten as a binary probit model, is as follows:

$$y_{mrA} = M(\beta_{mr0} + \beta_{mr1}y_{mr,t-1} + \beta_{mr2}y_{d,t} + \beta_{mr3}y_{d,t-1} + \beta_{mr}Z_{mr}) \quad (1).$$

The lagged dependent variable ($y_{mrA,t}$) is somewhat tricky because including the true lagged value would result in the loss of many cases. For example, in the Lula vs. Serra model, some Serra supporters in October were Ciro supporters or undecideds in August. Inclusion of the binary lagged dependent variable would require dropping these respondents and any others that preferred neither Lula nor Serra in August. To maintain these respondents, while still preserving the intention of the lagged dependent variable, we add a middle category to the latter that identifies those citizens preferring neither candidate in August. For example, if Lula voters in October are one (1) and Serra voters are zero (0) in the Lula vs. Serra model, then the lagged dependent variable equals one (1) for August's Lula supporters, negative one (-1) for August's Serra voters, and zero (0) for everyone else who eventually voted for either Lula or Serra in October. For the same reasons, the equivalent coding scheme applies to the discussant preference variables (y_{dA} and $y_{dA,t}$).

We implement the 2SCML model in two straightforward stages. In the first stage, y_{dA} (coded as +1, 0, or -1), is regressed on $y_{dA,t-1}$, $y_{mrA,t-1}$, and Z_d as a standard OLS regression model:

$$y_{d,t} = \beta_{d0} + \beta_{d1}y_{d,t-1} + \beta_{d2}y_{mr,t-1} + \beta_d Z_d + \epsilon_{d,t} \quad (2)$$

Z_d is a matrix of exogenous variables measured in the discussant interviews that help explain discussants' vote choice. These include all of the same attitudes and characteristics in Z_{mr} (reported in Table 3) as well

as some others:¹⁹

In the second stage, the binary probit model of equation one is estimated *with the inclusion of the residual from the first stage equation on the right-hand side*:

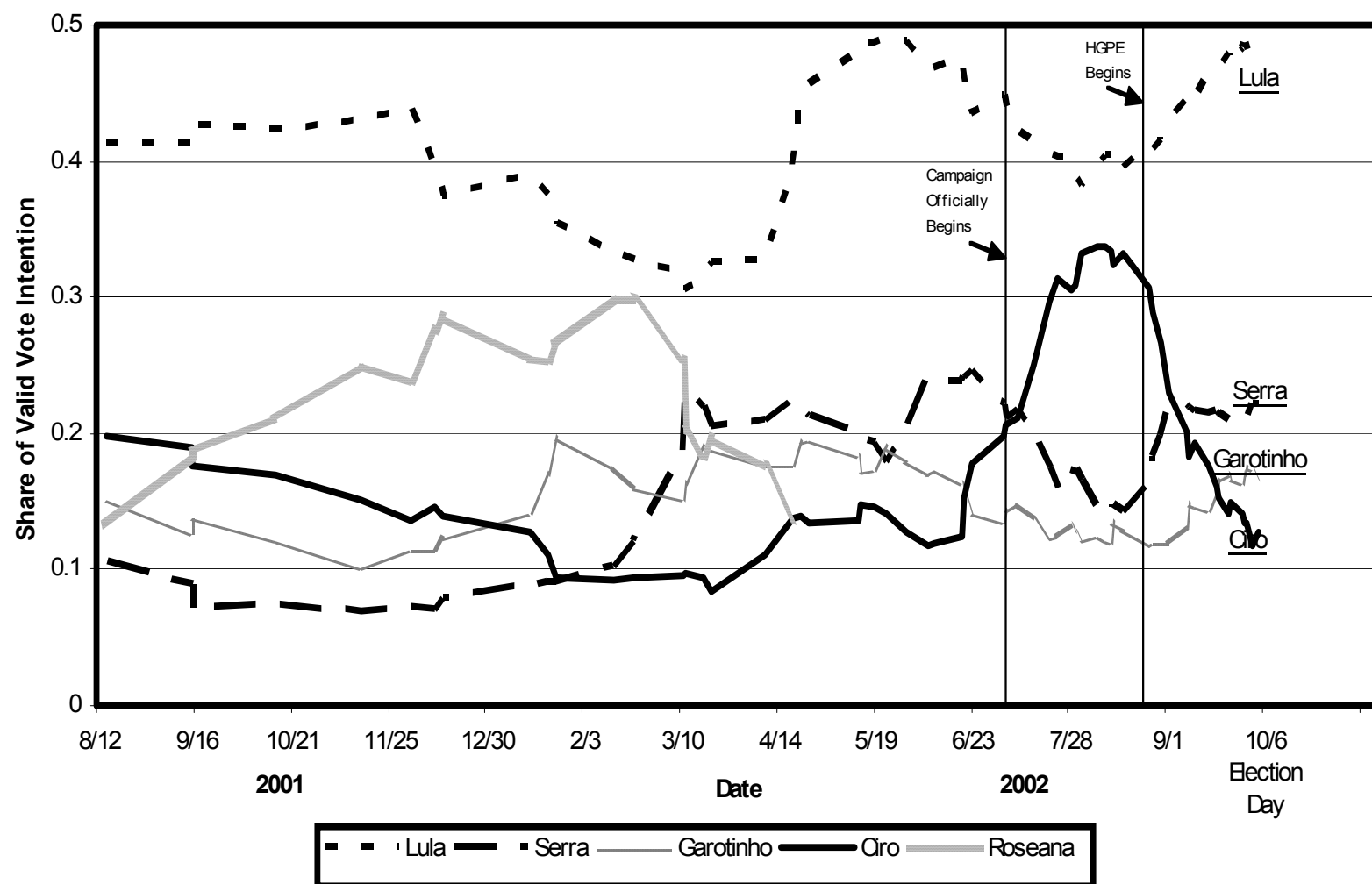
$$y_{mr-t} = M(\$_{mr0} + \$_{mr1}y_{mr-t-1} + \$_{mr2}y_{d-t} + \$_{mr3}y_{d-t-1} + \$_{mr4}\hat{e}_d + \$_{mr}Z_{mr}) \quad (3).$$

This second equation, then, yields consistent estimates of all parameters, with $\$_{mr1}$ measuring the importance of the main respondents' past attitudes (*Main respondent's August preference*), $\$_{mr2}$ measuring the impact of recent political discussions (Discussant's first round vote choice), and $\$_{mr3}$ measuring the impact of political discussions occurring a few months before Election Day (Discussant's August preference).

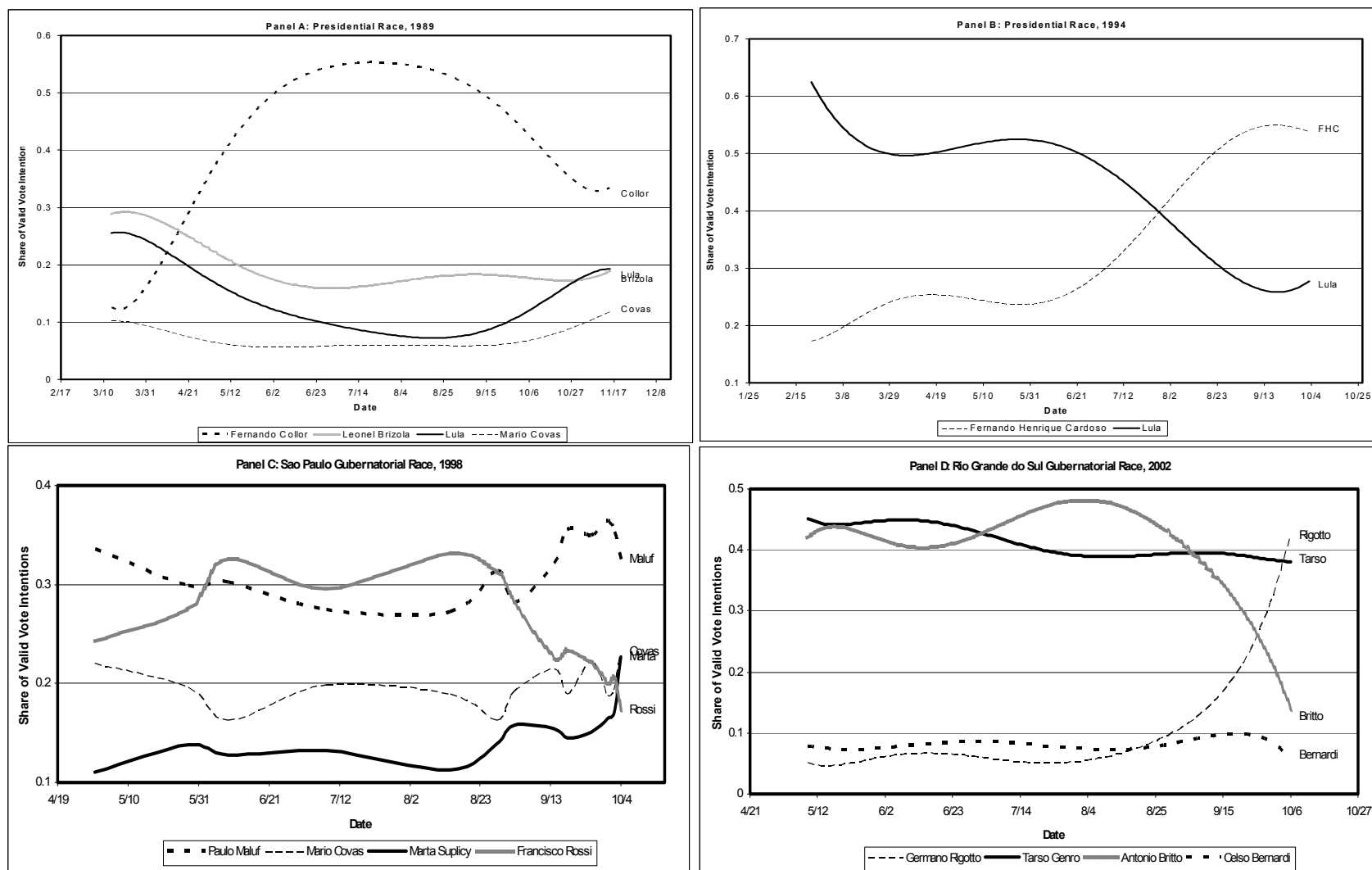
Why not estimate one multinomial logit (MNL) or probit (MNP) model, which would implement this pairwise comparison construction in a single model? Since they only produce $k-1$ (where k is the number of categories) sets of coefficients, these multinomial choice models do not allow for the $k \times (k-1)/2$ different lagged dependent variables necessary to properly estimate the lagged effect for each pairwise comparison. Using a series of pairwise binary models is not a disadvantage over a single multinomial choice model, as Alvarez and Nagler (1998) have demonstrated that MNL, on the one hand, and a parallel series of successive binary probits, on the other, are essentially equivalent. Moreover, subsequent research has found that the much-lauded MNP model is not necessarily superior to the MNL (Dow & Endersby 2004). As such, when the theoretical complexity of a model makes MNP or MNL impossible, little is lost by turning to a series of binary models.

¹⁹The instrumental variables in equation 2 include perceptions of economic well-being (past, future, sociotropic and egocentric), positions on issues (land reform, privatization, right to strike, participatory budgeting), partisan identification, beliefs about governing styles, ideological self-placement, evaluation of President Cardoso, and demographics (income, sex, religion, age, and education).

FIGURE 1. Evolution of Vote Intentions for Major Presidential Candidates, 2002



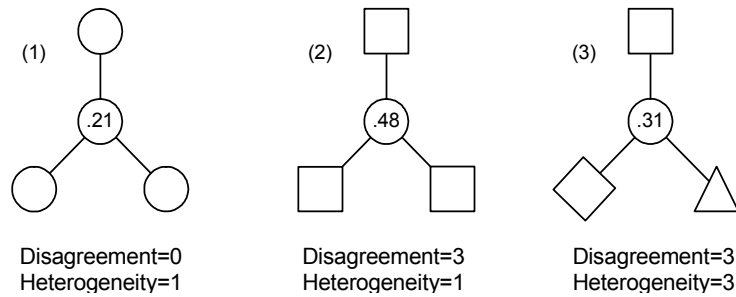
Note: Lines are smoothed (two-period moving average) results from all national polls (Datafolha, IBOPE, Vox Populi, CNT) and represent proportion of valid vote intentions for each candidate. Actual election results are indicated by placement of underlined candidate names. Some minor candidates are omitted. Lula's 61 percent to 39 percent second round victory on October 27 over Serra is not pictured.

FIGURE 2. Voter Volatility in Brazilian Presidential and Gubernatorial Elections

Note: Lines represent smoothed proportion of valid vote intentions for each candidate. Actual election results are indicated by placement of candidate names. Some minor candidates and second round results in Panels A, C and D are omitted. Panel A source is IBOPE (CESOP 1994), panel B sources are Datafolha, IBOPE, Vox Populi, CBPA, and Gallup (Almeida 1996), panel C source is Datafolha, and panel D sources are CPCP, CepaUFRGS and IBOPE).

FIGURE 3. Predicted Probabilities of Vote Switching among Main Respondents (MR)

Panel A: Impact of Network Disagreement with MR and Network Heterogeneity



Note: Figures are different network configurations with MR in center. Different shapes represent varying candidate choices.

Panel B: Impact of August Neighborhood Characteristics

Heterogeneity: Effective Number of Candidates Supported in August

		2	2.75	3.5
Disagreement:	40	0.15	0.17	0.2
Percent of				
Neighborhood	65	0.21	0.24	0.28
that Disagreed				
with MR	90	0.29	0.33	0.37

Note: Predicted probabilities in Panels A and B are from Model 1 in Table 1. To generate the predicted probabilities, the remaining continuous variables were held at their means and the remaining categorical variables were held at their medians.

FIGURE 4. Panel Model of Political Discussion Effects

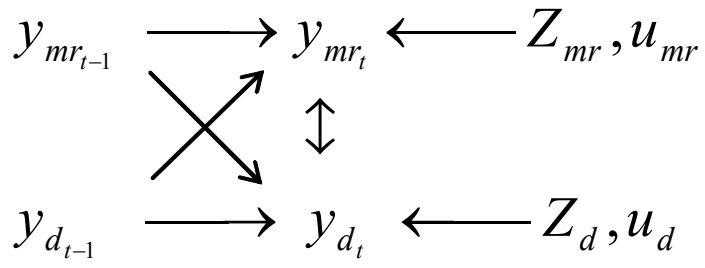


Table 1. Sources of August to October Preference Change among Main Respondents

	1: Preferred Model	2: Neighborhood Fixed Effects	3: Alt. Neigh. Heterogeneity
<i>Social Context</i>			
Network Disagreement with Main Respondent	.246** (.048)	.251** (.050)	.244** (.048)
Network Heterogeneity	-.217** (.047)	-.217** (.049)	-.216** (.048)
Neighborhood Disagreement with Main Respondent	1.008** (.254)	.908** (.275)	1.110** (.260)
Neighborhood Heterogeneity	.137* (.071)	.161** (.053)	
Neighborhood Heterogeneity among Non-Preferred Candidates			.245** (.073)
<i>Media Exposure</i>			
Media Attention among August's Lula, Serra, and Garotinho Supporters	.048 (.051)	.049 (.051)	.054 (.051)
Media Attention among August's Ciro Supporters	.121* (.061)	.121* (.064)	.118* (.061)
HGPE Exposure among August's Lula, Serra, and Garotinho Supporters	-.027 (.025)	-.031 (.025)	-.027 (.025)
HGPE Exposure among August's Ciro Supporters	-.024 (.033)	-.023 (.034)	-.025 (.033)
<i>Political Characteristics</i>			
Partisan	.014 (.062)	.004 (.065)	.012 (.061)
Political Awareness	-.241** (.050)	-.236** (.051)	-.237** (.050)
(Political Awareness) ²	-.050 (.041)	-.048 (.043)	-.051 (.041)
<i>Demographics</i>			
Education	-.025* (.010)	-.021* (.011)	-.023* (.010)
Age	-.005* (.002)	-.004* (.002)	-.004* (.002)
Woman	.041 (.054)	.052 (.057)	.043 (.055)
Juiz de Fora Resident	-.015 (.068)	.165** (.046)	-.024 (.068)
<i>Candidate Fixed Effects</i>			
Lula Supporter in August	-1.847** (.156)	-1.885** (.163)	-1.925** (.160)
Serra Supporter in August	-1.269** (.158)	-1.256** (.167)	-1.311** (.158)
Garotinho Supporter in August	-1.378** (.158)	-1.383** (.166)	-1.453** (.160)
Ciro Supporter in August	0 (0)	0 (0)	0 (0)
Constant	.058 (.348)	-.254 (.349)	-.131 (.343)

Note: Entries are binary probit coefficients with robust standard errors in parentheses. Forty-seven fixed effects coefficients are not shown for model 2. Standard errors are corrected for clustering within the 50 neighborhoods (primary sampling units) and stratification by city. Results are from 10 multiply imputed data sets (King *et al* 2001; Honaker *et al* 2001).

N = 2,686. ** $p < .01$, * $p < .05$. Directions of hypotheses mentioned in text.

Table 2. Sources of August to October Preference Change among Main Respondents in Ciro-Ciro August Dyads

<i>Social Context</i>	
Main Respondent had Discussant with High Awareness who Switched from Ciro	.354* (.210)
<i>Media Exposure</i>	
Media Attention	.263* (.143)
<i>Political Characteristics</i>	
Political Awareness	-.270* (.144)
(Political Awareness) ²	-.026 (.154)
<i>Demographics</i>	
Education	-.057* (.036)
Age	-.016* (.008)
Juiz de Fora Resident	-.487* (.219)
Constant	2.248 (.685)
<p><i>Note:</i> Entries are binary probit coefficients with robust standard errors in parentheses. Because many main respondents had two of their discussants interviewed, we correct for the clustering and statistical non-independence that arises from including the same main respondent multiple times.</p> <p>$N = 210$. * $p < .05$. Directions of hypotheses mentioned in text.</p>	

Table 3. Sources of October Vote Choice among Main Respondents

	<i>Lula</i>	<i>Ciro</i>	<i>Lula</i>	<i>Ciro</i>	<i>Serra</i>	<i>Ciro</i>
	<i>Serra</i>	<i>Lula</i>	<i>AG</i>	<i>Serra</i>	<i>AG</i>	<i>AG</i>
Lagged DV: Main Respondent's August Preference ($y_{mr,t}$)	1.065** (.106)	1.123** (.109)	.904** (.127)	1.081** (.137)	1.132** (.162)	1.126** (.180)
Discussant's October Preference ($y_{d,t}$)	.684** (.139)	.103 (.283)	.689** (.204)	.953** (.325)	.566* (.316)	2.142** (.950)
Discussant's August Preference ($y_{d,t-1}$)	-.141 (.108)	.234** (.107)	-.007 (.137)	.071 (.121)	.255 (.203)	.021 (.241)
Economic Evaluations						
Sociotropic, Retrospective Economic Assessment t_{-1}	.175* (.087)	.049 (.093)	.171 (.098)	.348** (.107)	-.026 (.119)	.365** (.141)
^a Sociotropic, Retrospective Economic Assessment	.154* (.068)	-.011 (.075)	-.006 (.076)	.147 (.090)	-.141 (.089)	-.027 (.136)
Sociotropic, Prospective Economic Assessment t_{-1}	-.179* (.084)	.141 (.088)	-.247* (.103)	-.150 (.098)	-.091 (.112)	-.252 (.161)
^a Sociotropic, Prospective Economic Assessment	-.275** (.067)	.205* (.080)	-.120 (.091)	-.086 (.107)	.073 (.102)	.042 (.124)
Partisanship and Ideology						
<i>Petista</i> t_{-1}	1.633** (.255)	-1.644** (.252)	1.284** (.227)	-.107 (.414)	.643 (.471)	.289 (.642)
^a <i>Petista</i>	1.264** (.245)	-1.155** (.240)	.845** (.185)	.128 (.444)	.401 (.472)	.104 (.560)
<i>Tucano</i> t_{-1}	-.352 (.192)	.144 (.245)	-.348 (.270)	-.553* (.241)	.083 (.231)	-.378 (.354)
^a <i>Tucano</i>	-.696** (.185)	.347 (.266)	-.473 (.272)	-.457 (.258)	.195 (.222)	-.327 (.390)
<i>Pmdbista</i> t_{-1}	-.886* (.441)	.875 (.711)	-.462 (.705)	.005 (.497)	.154 (.504)	-.158 (.669)
^a <i>Pmdbista</i>	-.864* (.402)	.688 (.727)	-.296 (.508)	-.308 (.415)	-.106 (.460)	-.482 (.638)
Ideological Self-Placement t_{-1}	-.135* (.071)	-.086 (.054)	-.041 (.072)	-.291** (.072)	.067 (.073)	-.194 (.100)
^a Ideological Self-Placement	-.294** (.065)	.055 (.068)	-.049 (.082)	-.399** (.107)	.153* (.073)	-.167 (.150)
Issue Positions						
Privatization Attitude t_{-1}	.056 (.046)	-.011 (.055)	-.121* (.055)	.062 (.063)	-.174** (.062)	-.186* (.084)
^a Privatization Attitude	.152** (.055)	-.005 (.057)	.034 (.064)	.170** (.060)	-.185* (.062)	.029 (.088)
Land Reform Attitude t_{-1}	-.153** (.043)	.040 (.048)	.033 (.052)	-.086 (.054)	.091 (.059)	.005 (.081)
^a Land Reform Attitude	-.140** (.041)	.026 (.054)	-.008 (.051)	-.120* (.055)	.013 (.055)	-.096 (.078)
Religion						
Evangelical Christian			-1.630** (.183)		-1.790** (.251)	-2.449** (.353)
First Stage Residual	-.274 (.166)	.223 (.307)	-.309 (.238)	-.428 (.054)	.060 (.353)	-1.870 (.986)
Constant	.420 (.510)	-1.145 (.472)	1.000 (.589)	-.540 (.528)	1.085 (.597)	.490 (.712)
Number of Dyads	1728	1417	1433	729	745	434

Note: Entries are binary probit coefficients with robust standard errors in parentheses. Coding of the dependent variable is indicated in the column headings: the $y_{mr,t}=1$ for the name above line and $y_{mr,t}=0$ for the name below the line. Because many main respondents had two of their discussants interviewed, we correct for the clustering and statistical non-independence that arises from including the same main respondent multiple times. Results are from 10 multiply imputed data sets (King *et al* 2001; Honaker *et al* 2001).

** $p < .01$, * $p < .05$. Directions of hypotheses mentioned in text.

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