Exit-Voice Dynamics in Collective Action: An Analysis of Emigration and Protest in the East German Revolution[1]

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What triggers protest in a highly repressive regime? Do opportunities to exit an unfavorable regime through flight spur collective action aimed to reform or replace it? Drawing on Hirschman's micro-economic theory of exit and voice as responses to organizational decline, this article offers a sociological theory of exit-voice dynamics that considers the implications of social embeddedness for collective action. A unique data set on migration and protest in the East German revolution of 1989–90 is used to analyze county-level variations in exit and voice alongside indicators of political loyalty, social movement organization, and social and economic conditions. The analysis finds strong support for the reformulated exit-voice model and its prediction of an inverted-U-curve relationship between emigration and protest.

INTRODUCTION

The collapse of the German Democratic Republic (GDR) in 1989–90 was a startling event in several ways. The revolution's rapid pace caught nearly all social scientists by surprise (Baylis 1999; Goldstone 1994*b*; Kuran 1995). For decades the repressive East German regime had been

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disturbed neither by the popular upheavals that rocked neighboring countries nor by the reforms that were remaking Soviet socialism (Ekiert 1996). The tiny opposition was too weak to pose much of a challenge. The Honecker government pledged to continue its hard-line course and warned it was prepared to employ the so-called Chinese solution—violent repression—to crush unrest. Yet, mass mobilization did occur and, as Timur Kuran observed of 1989, "seemingly unshakable regimes saw public sentiment turn against them with astonishing rapidity as tiny oppositions mushroomed into crushing majorities" (Kuran 1991, p. 13).

In the case of the GDR, most accounts indicate social movement groups took shape out of protest rather than serving as its catalyst (Jarausch 1994; Opp, Voss, and Gern 1995; Oberschall 1996). In addition to its spontaneity and unlikely setting, the East German revolution proceeded according to an unusual sequence of events. Contrary to the presumption that "exit" (or, emigration) is inconsequential in contentious politics, the revolution in East Germany was begotten of the mass exodus of its citizens to neighboring countries. Indeed, emigration has been identified as the key factor in the collapse of the GDR (Pollack 1994; Zapf 1993; Naimark 1992; Hirschman 1993; Offe 1997; Mueller 1999). And a few scholars have considered the relationship between emigration and protest activities within the GDR (Brubaker 1990; Goldstone 1994*a*; Lohmann 1994). Hirschman (1993) offers a conceptual essay on 1989 that refines his exit-voice arguments. But hampered by the lack of appropriate empirical data, no systematic analysis of the exit-voice relationship has been done (Dowding et al. 2000).

However important the emigration issue, emigration in itself was unlikely to have led to the capitulation of an intransigent, orthodox Leninist regime. Rather, it seems large-scale emigration followed by mass protest dealt hard-liners a fatal blow. Indeed, the data on the East German revolution that we have assembled reveal a remarkable incidence of both exit *and* voice. Police authorities in the GDR registered more than 1,500 public events linked to political contention that took place in hundreds of towns and cities between September 1989, when protest first appeared, and March 1990, when parliamentary elections voted in a prounification government. This revolution, in which both "exit" and "voice" are prominent, raises important theoretical questions as to the exit-voice nexus. Does exit propel voice? Or does an exit option undermine voice by draining away potential protesters and restabilizing the political environment? What mechanisms link exit and voice?

Past literature regarding social movements and collective action is largely silent on these questions. We build upon Hirschman's (1970, 1993) pioneering insights into exit and voice to develop a dynamic theory of the exit-voice nexus that focuses on the complex causal mechanisms link-

ing them. We posit that emigration may facilitate voice by signifying regime vulnerability and making popular grievances manifest. However, if the magnitude of exit surpasses a certain level, exit runs the risk of stifling voice by draining away its agents and eroding the social fabric that supports mobilization. In our analysis, we find that precisely this happened in East Germany during the protest wave of September 1989–March 1990. Emigration and protest were positively related in the counties and municipalities where emigration occurred below a certain threshold, but the relationship became negative where emigration occurred en masse.

The article is structured as follows. We first review the past literature and develop a comprehensive theory of the exit-voice nexus that specifies the signaling function of exit and its ramifications for the formation of activist networks. Next, we discuss the case of the East German revolution to explore the theory's empirical validity. We then test our hypothesis by focusing on protest in 214 East German counties and municipalities and the capital city of East Berlin. Since the revolution was a complex historical event, we analyze the voice effect of exit alongside other variables. We conclude the article by discussing the implications of our findings for research on collective action and comparative political sociology.

THE EXIT-VOICE DYNAMIC IN THE LITERATURE

In *Exit, Voice and Loyalty* (1970), Hirschman, an economist intrigued by diverse consumer strategies in market situations, argues that when a consumer encounters poor performance from a firm, he has three basic options. He could remain *loyal* and tolerate the "lemons" it provides in exchange for some future reward or in hope of improvement. He could raise *voice*, demanding a better product. Or, he could *exit*—opt to walk out and patronize competing firms. Exit and voice thus constitute the two alternative means of expressing grievances.[2] In pluralistic market situations exit is the most common consumer response.

Hirschman identifies three major conditions that facilitate the rise of voice. The first, *loyalty*, is characterized by inelastic demand and thus less sensitive to cost and benefit considerations. It implies an ideological or emotional commitment to an organization that sometimes overrides the maximization of individual interest (see North 1981, pp. 45–58). When

[2] In a stricter sense, voice does not necessarily eliminate exit; it does at least temporarily delay exiting. Exit, on the other hand, means surrendering the subsequent ability to voice grievances. There is also the possibility of a "noisy exit" combining defection with protest, but again this means surrendering voice in the future. Loyalty is not a course of action, but is composed of dispositions and preferences that affect voice and exit behaviors (Barry 1974).

performance is declining and there are no effective constraints on exiting, individuals without a high degree of subjective loyalty to the organization will be motivated to leave. If loyalty is high, or incentives to remain in place are offered, individuals may be less likely to exit. Hirschman proposes that "the likelihood of voice increases with the degree of loyalty" in such circumstances (1970, p. 78).

Clearly, a different set of conditions shape exit and voice in politics. In national politics the equivalent of the firm is the state. In a state, exit means leaving one's own homeland and thus tends to be much costlier than voting, petitioning, and protesting. And, in many cases, either the home state or the destination state obstructs the choice of exit. In this context, citizens have no other choice but to speak up, making voice the dominant means of redressing grievances in political arenas. Thus voice—"various types of actions and protests, including those meant to mobilize public opinion" (Hirschman 1970, p. 30)—is often the "residual of exit" (p. 33), coming only when the exit option is unavailable or too costly.

In Hirschman's schema, exit could undermine contentious politics. Since the exit option in national politics implies migrating to another nation, we might expect that the net effect of widespread exit would drain away human capital (i.e., head counts) available for effective collective action. And, as in the case of East Germany, if by fleeing the exiter could enter a better-performing state with the same language and culture that is willing to extend immediate citizenship, the magnitude of exit should increase. If the degree of exit is too great, it is conceivable that protest movements might falter.

Conversely, it is also plausible that large-scale emigration would mollify grievances among those left behind and reinforce political control. Disaffected citizens would be the first to flee. The flight of skilled workers and professionals could create opportunities for social mobility for those who remain behind. Indeed, it is plausible that exit could boost popular satisfaction by offering remaining citizens new advantages. In the socialist context, scarce goods such as housing space, consumer articles, and attractive jobs may become more plentiful. In the GDR before 1961 mass exit apparently created a labor shortage that favored those who remained and made officials more responsive to popular demands (Ross 2001). There is also evidence that mass flight helped stabilize the Castro regime by reducing overcrowding and eliminating deviants (Garcia 1983; Eckstein 1989). Large-scale exit might also temper the severity of repression. In an analysis of migration and racial violence in the U.S. South from 1910 to 1930, Tolnay and Beck (1992) found that out-migration of blacks was greatest in counties where lynching occurred most frequently. Subsequently the frequency of lynching declined as local elites anxious to retain valuable labor resources tried to suppress these atrocities.

Exit and voice are best understood as *alternative* responses to discontent. Particularly under repressive regimes, exit is often a lower cost option than voice, which generally relies on collective action. And once an individual has exited, particularly from a state, she is no longer available for voice. So, as a rule, easily available, low-cost exit would tend to undercut the capacity for collective action. Of course, voice may arise even with an exit option present, but only if individuals are sufficiently convinced that it will be effective. If voice has a chance of success, some actors may well postpone exit. Thus, "voice will depend also on the willingness to take the chances of the voice option as against the certainty of the exit option and on the probability with which a consumer expects improvements to occur as a result of actions" (Hirschman 1970, p. 39).

In most situations, "the effectiveness of the voice mechanism is strengthened by the *possibility* of exit" (Hirschman 1970, p. 83; emphasis added). In short, exit threats make commitments among actors more credible. This is an oft-observed factor in politics; as Douglass North (1981) notes, rulers tend to grant more concessions to subjects with opportunities for mobility than to those who have none. Experimental studies demonstrate that the threat of exit provides contending parties with leverage in their interactions, acting as a sanction against noncooperative partners (Schuessler 1989). Even if they prefer cooperation, prudent actors will not remain in an exploitative exchange if a viable exit option is provided (Vanberg and Congleton 1992). Investors can withdraw their capital if their policy preferences are unmet. An unhappy spouse can threaten to leave unless concessions are made. Workers can threaten a walkout unless pay and conditions improve. What is unusual in politics is when there is no exit or voice option.

In repressive one-party states such as East Germany, the cost of both exit and voice is ordinarily prohibitively high and the perceived efficacy of efforts to influence change is probably small. Consequently, most people will usually take neither step, enduring political impotence even in the face of declining quality of public goods. Should the perceived costs or benefits of either exit or voice change, however, there may be a very rapid upsurge of protest, particularly where large-scale exit threatens goods upon which the rest of the population relies (Hirschman 1993; Goldstone 1994*a*).

In sum, voice would arise if one remains loyal to the organization; if exit is costly, infeasible, or blocked; or if the prospect of redress is high enough. Although it is not impossible to imagine "an optimally effective mix of exit and voice" (Hirschman 1970, p. 125), the conditions for so favorable a mix are extremely rare. Oscillation between the two is the most common result. Thus, in Hirschman's formulation, exit and voice ultimately occupy a seesaw relationship: Where one is predominant we

expect a decline in the other. The central message is clear: "The exit alternative can therefore tend to *atrophy the development of the art of voice*" (p. 43, emphasis in original) by "depriving it of its principal agents" (p. 51). Yet in his modification of the theory to meet the East German case, Hirschman argues that under certain conditions exit may actually be the "confederate" of voice, especially where authorities block defection or exiters impose costs on those who remain behind (Hirschman 1993). Hirschman contends "exit (out-migration) and voice (protest demonstrations against the regime) worked in tandem and reinforced each other, achieving jointly the collapse of the regime" (1993, p. 177).

Hirschman's theory underestimates the difficulties associated with the effective exercise of voice. Exiters can act alone quite effectively; protesters cannot. The theory of collective action demonstrates that people sharing a common interest do not always act in common (Olson 1965; Hardin 1982). East Germans in 1989 were facing a public goods dilemma. Even if opposing the state was a widely shared collective good, people had opportunities not just to protest or stay at home but also to exit the country. In experimental research on social dilemmas, exit is an attractive choice over contributing to collective action for subjects facing free-rider problems. For example, spontaneously adopting "out-for-tat" strategies, actors exited a relationship and choose a new partner, both to punish noncooperation and manage uncertainty (Kollock 1998; Hayashi and Yamagishi 1997). Indeed, the lower the cost of exit the more frequently it may be chosen (Yamagishi 1988). Other studies have shown that although cooperators are less prone to exit than others, they also prefer it when others defect or when coordination is difficult (Van Lange 1994). A sufficiently large level of exit could reduce the expected utility of voice, in addition to undermining its structural basis. The "optimally effective mix of exit and voice" becomes unimaginable if individual exit is more efficacious and inexpensive than voice or if many would-be protesters have already exited.

Furthermore, the practical importance of the causal mechanisms Hirschman views as crucial for the seesaw relationship between exit and voice are crucially undermined if we seriously consider the free-rider problem. Demography is fundamental to contentious politics (McAdam 1982; Goldstone 1991), and grievances are the very raison d'être of voice. Being discontented with the state (i.e., having in this respect a common interest) does not result in collective action unless some other social structural and political conditions are met, as resource mobilization theory convincingly argues. And social network structure will likely affect voice by facilitating or hindering coordination among the aggrieved population. The seesaw model of exit and voice, the hallmark of Hirschman's theory, emphasizes

the *negative* effect exit should have on voice. But applied to the East German case, exit and voice are "confederates."

Historians suggest that this revolution was triggered by mass emigration that occurred *prior* to the revolutionary cycle of protests (Jarausch 1994; Maier 1997; Lindner 1998). The sociopolitical conditions in East Germany during that period were too barren to create the "optimally effective mix of exit and voice" that Hirschman's (1993) reformulation asserts: the government monopolized resources; the cost of voice remained high; activist groups were too small and weak; and, at least initially, the prospect of movement success appeared to be nil. Still, Hirschman argues, in the GDR exit worked in collaboration with voice by magnifying grievances, stimulating political demands for the right to emigrate, and awakening the need to mobilize for reform. A careful reading reveals that *blocked exit* drives this scenario. Exit in and of itself remains devoid of its revolutionary capacity and, moreover, logically erodes the capacity for voice. Yet, it follows from Hirschman's original insight concerning the attractiveness of exit that if the risks associated with both exit and voice decrease, more people should exercise the exit option than remain behind to engage in a costly and uncertain reform movement. So what generated the feedback effects Hirschman identifies between emigration and protest in1989? Why would exit increase the propensity to voice?

It may be, as Carol Mueller asserts, that "symbolically the flight of large numbers of people from a system, particularly against resistance entailing significant risk, discredits a regime and threatens its legitimacy as a functioning political system to a wider international audience and to those who stay" (Mueller 1999, p. 702). General details of the crisis were available through Western television and radio reports. This brought the reality of the country's situation to a wide audience of East Germans who rewarded the regime's intransigence by joining urban protests. However, without robust social movement organizations or a leadership prepared to exploit opportunities and coordinate action, the effect of generalized signals on mobilization could be expected to be quite limited. In a Leninist regime the resources of collective action are generally monopolized at the center by orthodox elites (Kim and Bearman 1997). A general crisis need not result in a protest movement if the local conditions for mobilization do not obtain. One must consider how generalized signals will motivate action. But Hirschman's theory makes no distinction between the separate phenomena of exit as a general crisis and the proximate effects of exit in an actor's own neighborhood.

A SIGNALING AND NETWORK MODEL OF EXIT AND VOICE: THEORY AND HYPOTHESIS

In order to arrive at a better understanding of protest and emigration, we develop a dynamic model of exit and voice. We focus on the signifying role of exit and extend the demographic implication of exit to theorize how exit, especially large-scale exit, would affect the possibility of successful collective action. We specify under what conditions exit and voice can be confederates and under what conditions exit undermines voice. We pay particular attention to the implications of social embeddedness for cooperation among actors. Exit can trigger collective action by disrupting a repressive equilibrium but in sufficient magnitude exit will drain away the agents of voice without making a continuous contribution to mobilization. Our contention is that the overall effect of exit on voice depends on the shifting salience of these two mechanisms and the order of their occurrence.

The Signaling Function of Exit

First, we argue that exit, especially if it is large-scale defection that becomes "common knowledge," can signify to those left behind that the exiters, and by extension the public in general, are discontented with the system. By "voting with their feet," exiters publicly authenticate whatever grievances have been latent in a population under the mask of feigned loyalty (Kuran 1991, 1995). Even in repressive mono-organizational regimes, general knowledge of the state's poor performance is not difficult for citizens to obtain. What is often left secret is how widely grievances are *shared* among one's neighbors, particularly where extralocal communication is difficult and actors are clustered in localized, homophilous social niches (McPherson, Smith-Lovin, and Cook 2001). In the absence of such information, individual grievances remain too compartmentalized to fuel collective action. Exiters signal to others that they are not alone in their opposition to the state and thereby disrupt the equilibrium of what social psychologists term "pluralistic ignorance" (O'Gorman 1979, 1986; Noelle-Neumann 1984). This newfound realization of shared grievances can motivate voice, for two reasons.

On the one hand, the knowledge of shared grievances enhances opportunities to coordinate voice. In repressive settings, disaffected citizens are probably looking for some sign that if they act, neighbors will act with them. A commonly understood signal of the magnitude of public grievances will likely raise the expectation that others will speak out. This can set in motion bandwagon effects and a very rapid expansion of protest. As Thomas Schelling observed, "The role of 'incidents' can thus be seen

as a coordinating role; it is a substitute for overt leadership and communication. Without something like an incident, it may be difficult to get action at all" (Schelling 1960, p. 91; Macy 1991). Spontaneous revolt relies on unambiguous signals that reassure potential participants that there will be others present in sufficient numbers to reduce the individual risk of participation. Exit offers such a signal for action because large numbers of people understand it the same way and reach similar decisions to act without requiring extensive coordination.

Second, spreading knowledge of shared grievances enhances social recognition as people receive the unmistakable message that they are all against the regime. An exiting crisis thus creates "common knowledge." Chwe asserts, "It is not enough for everyone to simply know that there is sufficient discontent; what is required is 'common knowledge': everyone has to know that there is sufficient discontent, everyone has to know that everyone knows, everyone has to know that everyone knows that everyone knows, and so on" (Chwe 1999, p. 136). In this new state of mutual recognition, actors would turn keen eyes to how their neighbors behave and may feel vulnerable to social sanctions if they do not act accordingly (Hechter 1987; Coleman 1990). As Chong (1991) suggests, reputational concerns and other "soft" selective incentives can motivate even the most self-interested actors to join collective action (see also Calhoun 1991). In fact, in 1989 Leipzigers avoiding the Monday demonstrations ran the risk of being shamed in the eyes of friends and neighbors (Opp 2001; Goodwin and Pfaff 2001).

The signaling effect of exit on voice is neither uniform nor constant, however. It varies by the *degree* of exit. The signaling effect of exit does not require mass exodus, nor does it increase monotonically with the level of exit. Rather, it is likely that as a symbolic act, the signaling potential of exit follows what is often known as an S-shaped (sigmoid) production function vis-à-vis exit (Marwell and Oliver 1993; Oberschall 1994). For exit to induce mutual recognition of discontent and grievances, it needs to take on the character of a "social phenomenon." A few scattered incidents of exit fail to break the ice of pluralistic ignorance. *Beyond a certain point, however, exit starts to take on the social character of a "crisis" and spreads an unmistakable signal of generalized discontent.* Tens of emigrants do not make a regime crisis, but thousands do. The perception of "emigration crisis" and accompanying mutual recognition of generalized grievances intensifies with further increase in the level of exit. *As it approaches a higher point, however, additional incidents of exit would have an increasingly diminished impact*. It does not make much difference how many hundreds of thousands of people opted to exit. The message is already clear and unmistakable; the political crisis has become apparent.

The Network Implications of Exit

While the signaling effect of exit works largely to induce voice, exit can also be deadly to it. In our model we consider not just the communicative effect of exit but its implications for the connectivity between actors. By definition, exit removes people from a social system, such as the social networks they had constituted. We thus contend that if emigration occurs en masse, as in East Germany, it may undermine the very relational foundation for voice. This network erosion among potential activists seems to occur in two related manners. Removal of "nodes" from a network—by emigration or death—inherently entails removing existing "edges" that are arrayed surrounding the nodes. This has implications for the connectivity and density of a subsequent network. Network connectivity has been widely noted as affecting diffusion. Diffusion is more likely to succeed in a network that connects nodes more closely (Rogers 1995; Marwell and Oliver 1993; Valente 1995). But removal of a node and its associated edges appears to damage the connectivity among those left behind. While investigating the underlying mechanisms of what we often experience as a "small world" phenomenon, Duncan J. Watts notes, "The introduction of a single shortcut is likely to connect vertices that were previously widely separated. This shortcut then contracts the distance not only between that pair of vertices, but also between their immediate neighborhoods, their neighborhoods' neighborhoods, and so on" (1999*a*, p. 511). Inasmuch as a newly added edge (or shortcut) has the potential to enhance overall network connectivity beyond the ego network of its node, removal of a node and its associated edges can reduce overall connectivity among those left behind (Watts 1999*a*, 1999*b*).

Students of social movements and collective action concur that the formation of interlocking networks among like-minded activists is crucial for the onset and spread of social movements: such networks help activists coordinate actions, pool resources (McAdam and Paulsen 1993), and form an "ideological envelope" from which fresh activism spreads across a population (Kim and Bearman 1997). A dense network into which potential activists are interlocked is crucial for this. And, this is particularly so under highly repressive and intrusive regimes. In such regimes communication of information entails revealing one's political opinions and intentions. Posing a high risk to individuals (Kuran 1995), information tends to travel within short distances. It follows that sparse networks in this setting are more likely to delimit informational cascade, failing to produce Kim and Bearman's "ideological envelopes." We find this dynamic in East Germany and other communist societies where the predominant social structure was the "niche society," characterized by dense clusters of strong social ties (Völker and Flap 2001). In a repressive social

structure, social networks tend to be highly clustered, making them highly vulnerable to local erosion. Studies find that cooperation in clustered networks is highly sensitive to defection, meaning that exit would tend to disrupt local interaction structures, particularly where cooperative emulation across networks is difficult (Cohen, Riolo, and Axelrod 2001).

However, the effect on network density of removal of a node and its associated edges varies depending on which node is removed. On average, removal of a node and its edges from a network should not affect the density of a subsequent network. If a node with an above-average number of edges is removed, however, it decreases network density of the subsequent network in comparison to the original one. By the same token, removal of a node with below the average number of edges will increase network density.

Given these network implications of removing a node and its associated edges, we contend that whether exit would indeed have the expected network erosion effect depends on *who* the exiters are: if exiters come from the ranks of would-be protesters, exit may well have the expected negative effect of eroding the relational foundation for future protest. Otherwise, it may leave the relational capital of future protesters intact and fail to have the expected negative effect. Let us elaborate this with reference to the threshold model (Granovetter 1978; Schelling 1978). Suppose that actors have two types of thresholds—"exit threshold" and "voice threshold." A threshold represents the adoption rate of an action strategy by other actors that should be reached before an actor decides to follow suit. Accordingly, an actor with "low" exit threshold but "high" voice threshold would be the first to adopt the exit strategy; an actor with "high" exit threshold but "low" voice threshold would be the first to join (or initiate) a protest.

Given this, how exit would affect the network foundation of future protest events depends on *how the two thresholds are jointly distributed*. If exit and voice thresholds have a perfect negative association in which those with "lowest" exit thresholds tend to have "highest" voice thresholds and vice versa, the group of people who opt to emigrate out of a country would not affect the activist network of protesters since they come from separate demographic pools. In case of a perfect positive association between exit and voice thresholds where both are low, both exiters and future protesters come from the same demographic pool. Potential members of a "critical mass" (Marwell and Oliver 1993) would go away first. So people embedded in cliques characterized by low exit and low protest thresholds are crucial here; their exit is highly consequential for others in their network. When they communicate their willingness to exit, the perceived efficacy of protest collapses for would-be activists. This is because people with low thresholds are influenced more by the actions of others

in their network than people with high thresholds who care more about the actions of the large mass (Chwe 1999). Consequently, exit in this scenario is expected to delay the onset of a movement. If, however, exit and voice thresholds are distributed randomly with each other, the inherent size differential of protest organizers and followers suggests that members of a critical mass would still remain to organize protest events, but the resulting protests would encounter difficulty in attracting broader popular support.

Historical reality would fall somewhere in between these ideal-typical joint distributions, with various factors affecting this crucial joint distribution of exit and voice thresholds. Despite the seemingly logical presumption of a negative association between exit and voice thresholds, we believe that in the case of East Germany, the exit and voice thresholds are more likely to have formulated a positive, even if weak, relationship with each other. First, available evidence suggests that both exiters and protesters shared similar socioeconomic and demographic characteristics. Demographic evidence points to the emigration wave's consisting largely of younger, well-informed urban residents. For them, the option of exit was probably less costly (young people have less invested in the home country), more opportune (international ties are more available to urban residents), and more viable (portable skills or education make a person more likely to succeed in the host country) than for others. Protest initiators—generally church-based dissidents—were also generally young and urban, although they tended to come from a better-educated group than the typical exiter. In Leipzig, the first demonstrations were launched by a coalition of human rights activists and would-be exiters (Opp et al. 1995; Oberschall 1996; Pfaff 1996). So exit probably removed some portion of the sort of people generally understood as being the most "biographically available" for movements (McAdam 1988).[3]

Second, many of the popular grievances in the GDR—economic and environmental decay, political repression, intransigent party hard-liners—apparently motivated both exiters and protesters (Grundmann 1998, chap. 4; Opp et al. 1995; Mitter and Wolle 1990). Net of the threshold effects

[3] Demographic data suggest subtle differences between exiters and protesters: there tended to be a greater proportion of college-educated persons among the latter than the former. Data from Leipzig protests show workers were underrepresented in demonstrations (Muhler and Wilsdorf 1991). This was likely the result of prior emigration, as skilled technical and craft workers could expect immediate improvement in their labor market position. But people with higher education confronted an obstacle in the lower relative portability of socialist educational credentials. And equivalent professional and administrative positions were rarely available in the West (Hardin 1974). For descriptive data on emigrants see Grundmann (1998), Grundmann et al. (1992), *SJDDR* (1990), and Ammer (1995).

of loyalty (aggrieved but loyal persons may prefer voice whereas aggrieved and disloyal persons exit), aggrieved people would not inherently distinguish between exit and voice, behaving more "opportunistically" when exit became available. This scenario fits the unique sequence in which exit and voice occurred in East Germany. We know from the few cities, such as Leipzig, where scattered protests did occur prior to September 1989, that these were composed chiefly of church-based dissidents and young people who had filed applications with the state to emigrate. Until the Iron Curtain collapsed, these groups made common cause (Mueller 1999; Oberschall 1996; Pfaff 1996). The exiting wave uncoupled them.

In the context of a more or less positive association between exit and voice thresholds, exit tends to erode the relational foundation for subsequent voice and thus inhibit its occurrence. However, this network erosion effect of exit is not uniform for both early exiters and their followers. As inelastic demand, loyalty retards exit and becomes a prerequisite for voice (Hirschman 1970). This implies that early exiters are more likely to come from those discontented persons with the least degree of loyalty to the state. In the case of the GDR, early exiters were generally younger, skilled workers who would have seen immediate improvement of their economic circumstances in fleeing to the West. Lacking loyalty, however, they are not among the primary candidates for sustaining the movement anyway. In sufficient degree exit becomes so generalized that highly aggrieved but partially loyal citizens may also leave the country. These defections would be a devastating blow to movement prospects. That does not mean that no protest will occur at all; exit is probably least damaging to voice by an activist core. Too much movement out of a locality could have the effect of putting an immediate break on protest expansion because it reduces the chance that bystanders will join protests initiated by activists. If the level of initial exit is high, a "reverse bandwagon effect" could rob voice of its agents (Granovetter 1978, p. 1433).

If a generalized exit crisis creates the perception that the provision of desired goods is at risk, rational loyalists may join reformist mobilization. Furthermore, social ties (family, friends, colleagues, etc.) inhibit exit. This implies that exit should have been most attractive to highly mobile people with fewer restraining ties. Those with greater social capital are likely to join the exit wave only if it becomes a mass social phenomenon undermining the stability necessary to make reforms. Given this, we contend *that the network-eroding effect of exit is minimal when it occurs on a small scale but it becomes conspicuous as exit occurs at a greater level.*

Developing the Research Hypothesis

In sum, we posit that exit is a dynamic process that signals the shared nature of grievances but can also undermine the relational foundation of voice. How exit would affect voice in a particular historical instance depends on which dynamic of exit becomes predominant, the signaling effect or network erosion effect. Our theory of exit and voice discussed above suggests that it is the *degree* of exit that matters: if exit occurs at a level large enough to be unambiguously recognizable as a "crisis," it is likely to invoke the protest-facilitating "signaling effect." The degree of exit is still not enough to damage the social fabric of a community. At this moderate level of exit, the signaling dynamic of exit dominates the causal nexus of exit and voice, thus making them positively associated. If exit occurs en masse, however, its signaling effect may reach its upper limit, failing to further instigate resistance. As exit reaches this point, the network-eroding effect of exit becomes increasingly dominant with further increase in exit. The most discontented have already left and the local networks that connect those left behind have been eroded. Although exit might leave scattered dissident groups intact, mass exit would undermine the likelihood of their expansion into a movement. This dynamic means that affected communities lack the relational capacity to mobilize the voice that exit might otherwise have provoked.

A strong test of our theory of exit and voice as developed above would require measuring the two intervening mechanisms of exit: shifting perceptions of system crisis, as these are shared by the populace, and social networks, especially among protest participants. For both, empirical data are unavailable. However, it is possible to test our theory by focusing on the functional forms our theory predicts exit and voice should have taken. The countervailing dynamics of exit and their shifting salience according to the degree of exit imply that exit will increase the probability of protest in those localities where emigration occurred in small or moderate quantity. Where emigration occurred en masse, however, this positive effect of exit will decrease with the degree of exit because of the increasingly salient network-eroding effect of exit. Consequently, we hypothesize that *the level of exit has an inverted-*U*-curve relationship with the frequency and magnitude of protest events.*

THE CASE: EAST GERMANY'S "EXIT REVOLUTION," 1989–90

To evaluate the signaling and network model of exit and voice that we developed, we focus on the historical case of the East German revolution of 1989–90. While our analysis is based on systematic evaluation of the exit and voice phenomenon in the GDR, a brief outline of the events

surrounding the revolution is essential for contextualizing the statistical analysis. The general contours of the revolution are well known, thanks to excellent historical accounts and summaries (see, e.g., Zwahr 1993; Jarausch 1994; Maier 1997; Lindner 1998). Most scholars agree that the Honecker regime first faltered in September 1989 in the wake of the mass flight of GDR citizens. New holes in the Iron Curtain, created when a liberalizing regime in Hungary opened its border with Austria in May, initiated the emigration wave (Hertle 1996; Naimark 1992). In the face of mass flight and urban protest, the regime's resolve began to waver, and then, in the space of just a few months, the GDR collapsed.

Emigration had been a standing threat to East Germany, and its stability relied largely upon coercive restraint of individual mobility (Mueller 1999; Hirschman 1993; Tietzel and Welser 1994; Hardin 1974). Before 1961 some 2.7 million East Germans had "voted with their feet" and fled to a more prosperous West Germany offering citizenship and resettlement benefits (Hertle 1996). As early as 1953 Soviet leaders conceded that mass migration suggested "huge dissatisfaction" prevailed and armed force was necessary to protect the GDR regime (Adomeit 1998, p. 93). East German authorities responded by banning emigration and making unapproved exit a state offense (Ross 2001). Unable to stem the tide through police measures, the GDR erected the Berlin Wall in August 1961 to halt the gush of emigrants. It worked: in 1960 nearly 200,000 people exited the GDR; in 1962 only about 20,000 people left, chiefly those whose exit the state permitted (Hertle 1996, p. 320).

After the Wall was in place, the regime maintained control through a system of coercive surveillance and social welfare incentives (Pfaff 2001). The Communist Party (SED) enjoyed almost unchallenged power, independent "civil society" was abolished, and what scattered opposition groups survived were loosely organized and socially marginal (Neubert 1998). The state control of emigration now took two forms: selective emigration for exceptional "humanitarian" cases and the expulsion or ransoming of dissidents to West Germany. In this way, the SED rid itself of an average of about 1,300 political dissidents and other nonconformists each year (Przybylski 1992, p. 294). This policy effectively undermined the GDR opposition and helps explain why it was weak in comparison with that in other socialist states (Mueller 1999; Torpey 1995; Joppke 1995).

In spring 1989, the system began to give way. The first crack came from without. In an effort to curry favorable relations with the nonsocialist world and secure West German loan guarantees, Hungary's reformers began to dismantle border fortifications with Austria (Naimark 1992; Bruszt and Stark 1991). Watching Western TV, East Germans learned that it was getting easier to cross the border illegally. In the following

months, tens of thousands of East Germans traveled through Czechoslovakia to Hungary, where they attempted to enter the "back door" to the West. In the first few months of 1989, the Stasi reported that nearly 5,000 people illegally left the GDR (Mitter and Wolle 1990, p. 92), but once Hungary's borders became permeable the stream became a flood: In July and August more than 30,000 GDR citizens fled to West Germany (Federal Republic of Germany, or FRG), principally through Hungary.[4]

The state quickly acted to shut off the exit routes, but exiters had developed another tactic in their efforts to flee the GDR: occupation of West German embassies in neighboring socialist countries (Mueller 1999). Seeking a resolution to the crisis, the GDR foreign ministry accepted a compromise solution on October 1. Embassy occupiers were released to the FRG, but only on the condition of their being formally expelled from the GDR. Closed trains from Prague would carry the roughly 6,000 embassy occupiers through the GDR, where they could be formally deprived of their citizenship before crossing into the FRG. On October 3, a second measure directed at halting the flow of emigrants was announced: visa-free travel with Czechoslovakia, the only country GDR citizens could visit without permission, would be suspended.[5] As the sealed trains bearing the embassy occupiers made their way through the GDR on October 3 and 4, police had to confront protesters in border cities such as Plauen and Dresden who mobbed railway stations in an effort to board the special trains. In Dresden a virtual rebellion occurred. Several days of angry confrontations between protesters, police, and army units left dozens of citizens and policemen injured and resulted in more than 1,300 arrests.

The crisis occurred coincidentally with a highly symbolic, politically charged event: the long-planned celebrations of the fortieth anniversary of the GDR at which Soviet reformer Mikhail Gorbachev was the guest of honor. On the evening of October 6 a candlelight demonstration of more than 1,000 people attempted to march through the city center to protest the government but found their path blocked by security forces. Demonstrators were struck with batons and police made hundreds of arrests, with the crowd shouting "Gorby, help us!" Reported by Western news media, the spectacle was available to most East Germans on their

[4] See the SED report, "Aktualisierte statistische Angaben zu Probleme der ständigen Ausreise in der nicht sozialistischen Ausland," 10/24/89, in Archive of the Parties and Mass Movements of the former GDR (SAPMO-Bundesarchiv Berlin). DY 30/IV.2/2.039/309, pp. 147–48. Also see estimates in Grundmann (1998)

[5] See GDR press reports "Mit internationalem Recht unvereinbar" and "Zur zeitweiligen Aussetzung des pass-und visafreien Verkehrs mit der CSSR," *Sächsisches Tageblatt*, 10/5/89. For Western press accounts, see Henry Kamm, "East Germans Put Hungary in a Bind," *New York Times*, 9/1/89, and Serge Schemann, "More than 6,000 East Germans Swell Tide of Refugees to the West," *New York Times*, 10/1/89.

own TV sets. On October 7, there were further demonstrations not only in Berlin, but also in Leipzig, Dresden, Karl-Marx-Stadt, Halle, Plauen, Potsdam, Arnstadt, and Dippoldiswalde. In the provinces protests were likewise dispersed with the help of riot police and troops, resulting in more than 1,500 arrests and scores of injuries. The regime's threats of a "Chinese solution" to unrest in the GDR appeared to be a real possibility.

The clear focus of both the exiting crisis and the popular upsurge was in the industrial south of the country. Decades of socialist development had resulted in economic stagnation and reduced political importance relative to the center in East Berlin. In the late 1980s living standards worsened and shortages of consumer goods became common. In September 1989, the Leipzig Monday evening peace prayers held by church-based dissidents expanded from silent vigils to demonstrations. In early October, previously uninvolved citizens joined the Monday demonstrations, shouting, "We are staying here!" (Oberschall 1996; Pfaff 1996). The situation reached a critical point by October 9, and all accounts make clear that most citizens expected a bloodbath (Opp et al. 1995). Police and communist militiamen were readied for violent confrontations with the "rowdies," "counterrevolutionaries," and other elements blamed for disruptions of public order. At work, managers warned their employees to avoid the city center and shops were closed early (Zwahr 1993).

All these efforts failed to deter citizens from assembling downtown. In the space of a few hours at least 70,000 people joined a peaceful march declaring, "We are the people!" and demanding a host of reforms. As the number of people joining the small core of protesters mushroomed, the police retreated and local officials began to negotiate with protesters. Likewise, in early October communist leaders in Dresden also broke with Berlin and began a dialogue with the nascent opposition (Friedheim 1993). Over the course of the fall these early protests grew to involve thousands and finally hundreds of thousands of participants. On October 18 East German leader Erich Honecker was forced to resign his state and party offices by his own Politburo and was replaced by a conservative successor promising change. Such promises did nothing to stem the mounting tide of protests now expanding to towns and villages throughout the GDR. Egon Krenz, the new party chairman, declared on national television that the GDR had reached a *Wende*—a historical "turning point"—and that the party was embarking on a "serious internal political dialogue." But the ruling elite remained intact and radical reforms were immediately ruled out (Hertle and Stephan 1997; Maier 1997; Jarausch 1994). The government's timid concessions did not stifle protest. On November 4 the largest demonstration of the revolution took place, with more than a half million demonstrators assembling in East Berlin to press for democratic reforms. The façade of party unity soon cracked. An estimated 150,000

proreform members of the SED demonstrated on November 10, demanding a special party congress to reform the organization.

At a press conference following a Central Committee meeting on November 9, a Politburo member mistakenly announced that the GDR had immediately lifted all travel restrictions with the West. Thousands of East Berliners began to assemble at border crossings at the Wall, especially in the vicinity of the densely populated Bornholmer Strasse crossing. Border police, unaware of the new regulations, were under orders to maintain security and not to allow any uncontrolled crossings. Despite a real threat of violent confrontations, the authorities relented and the crowds swept into the West (Hertle 1996; Hertle and Stephan 1997).

The collapse of the socialist state accelerated. On December 4, citizens' committees seized Stasi district headquarters in a number of cities. In a special party congress on December 8, reformists ousted hard-liners. On January 15, the "East German Bastille" fell as protesters sacked the central Stasi offices in Berlin. These demonstrations cemented the dissolution of the one-party state. Assembling a caretaker government with the support of democratic opposition groups on January 28, the new premier, Hans Modrow, called for free elections. On February 1, 1990, Modrow proposed a plan for gradual, stepwise unification with the FRG, but protesters still demanded rapid unification. On March 18, voters completed the "national turn" in the revolution, bringing a noncommunist government pledging rapid unification to power.

RESEARCH DESIGN: A COUNTY-LEVEL ANALYSIS

The above narrative suggests that the emigration crisis provoked the revolutionary cycle of protests, which, in turn, toppled communist rule in East Germany. However, narrative evidence alone cannot discern whether exit and voice proceeded in tandem with each other or whether it was the former that caused the latter. Nor can narrative evidence alone provide systematic data with which to falsify our signaling and network erosion model of exit and voice.

To analyze the effect of exit on voice, we focus on 214 administrative counties and municipalities (*Kreise* and *Stadtkreise*) and the capital city of East Berlin that constituted the GDR and assess how the level of exit was associated with the frequency and magnitude of protest activities in each locality.[6] Counties and municipalities varied greatly in their experience of emigration crisis and subsequent protests. As part A of figure 1

[6] Our data set includes all GDR counties/municipalities save for three counties (Kalbe, Saalkreis, Tangerhütte) that have missing values on Grundmann's (1998) estimates of exiters.

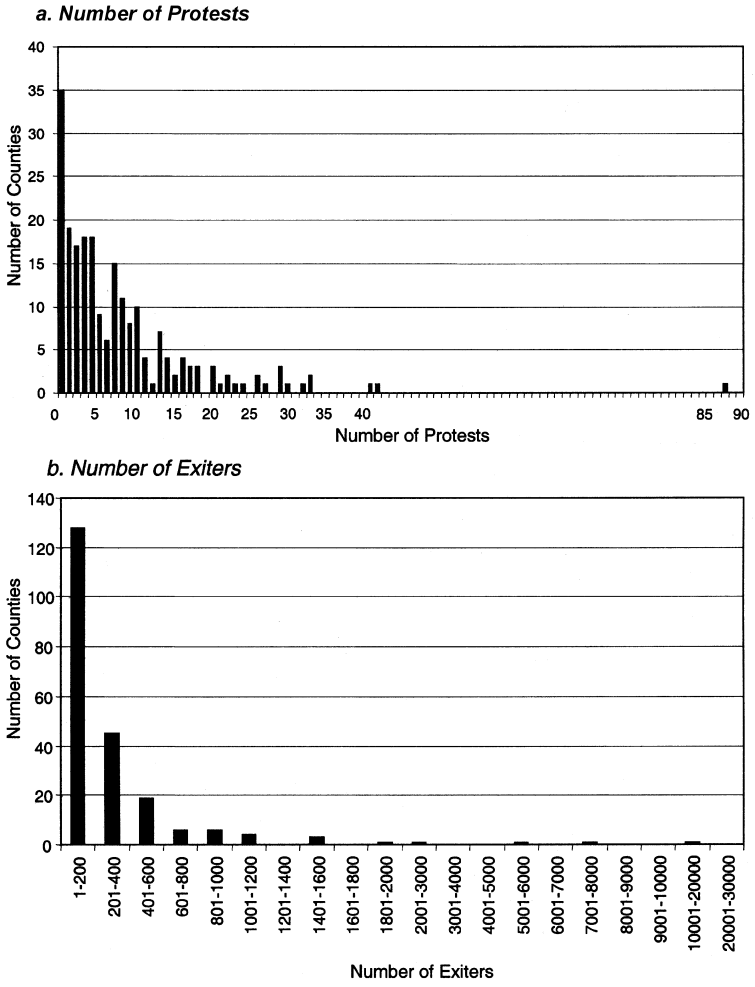

FIG. 1.—Frequency distributions of counties

illustrates, while counties and municipalities experienced on average about 7.6 protest events, a large segment of them (35) witnessed no protest event whereas only a few localities experienced a large number of protest events (40 and over). If we compute the average number of protest participants per 1,000 residents for those counties/municipalities with protest events, the average magnitude of protest was about 38 persons per 1,000 residents for each event, with a median of 30. However, this average participation rate varied between 1.3 and 339 (SD = 36.6). Likewise, although every county was touched by the emigration crisis, counties/municipalities var-

ied in the degree of exit they suffered. As part B of figure 1 illustrates, the median number of persons who emigrated from a GDR county before the onset of the revolution was a meager 148, with a mean of about 366. While the minimum number of emigrants a county experienced was only 17 persons, the maximum number reached 12,057. The great variability in exit and voice in GDR counties/municipalities enables us to examine the intricate relationship between exit and voice.

Our analytic strategy is straightforward. We regress the degree of voice each of the counties/municipalities experienced after the *onset* of the East German revolution in September 1989–March 1990 on the level of exit they had experienced *prior to* the onset of the revolution. Attention will be paid as to whether a measure of *early exit* had a statistically significant effect on *subsequent voice* and what functional forms they assumed. Then, we examine how robust the exit-voice association remains when we control for other factors that the social movement and collective action literature suggest are relevant to protest dynamics, such as indicators of political loyalty, economic grievances, past social movement activity, and state reactions to protest.[7]

The time-lagged pattern in the measurement of the dependent variables and the independent variables allows us to make a reasonable assumption about the causal direction between exit and voice. This measurement strategy offers a distinct advantage: it enables us to determine the causal direction of the correlational relationship between exit and protest, for subsequent protest events cannot affect the likelihood of exit that occurred prior to the onset of the protest wave.[8]

[7] Note that we opted not to include population size variables as control variables because their inclusion renders regression models highly multicollinear and deprives them of the ability to discern separate effects of exit on voice. Instead, we control for population effects by measuring both exit and voice variables as proportions of county population size.

[8] One could argue that this time-lagged measurement strategy is not sufficient to rule out the possibility of reverse causality. A plausible scenario is that, as the level of voice increases, the cost-benefit calculus for voice becomes increasingly attractive relative to that for exit. This micro dynamic is likely to result in the macro phenomenon that in any given county the upsurge in protest after September might have then been accompanied by an unmeasured decline in exit in that county. This scenario is unlikely on the following empirical grounds: The number of people who emigrated after the onset of the revolution increased sharply at the county level by a factor of, on average, 7.8. And the rate of increase in exit was positively correlated with the degree of voice (correlation coefficient = 0.79). These trends imply that, if anything, exit and voice might have developed a mutual reinforcement relationship, which is not controlled for in our study. Since a mutually reinforcing process would force any two involved factors to form a U-curve or at least a monotonically increasing, relationship between them, we view this condition as providing a *conservative* test of our theory that predicts an inverted-U-curve relationship between exit and voice. Still, we acknowledge that

Also note that, in an ordinary setting, counties/municipalities with higher protest at the later period may also have had higher protest rates in the preceding period. This may result in serial correlation in the residual terms. However, the records show that no protests had occurred in the overwhelming majority of localities before September 1989—the only two exceptions being Leipzig and Berlin. Even there, protests were sporadic and extremely small in scale. Serial correlation is unlikely, at least in our research design that divides the periods *before* and *after* the *onset* of a revolution.

DATA

Detailed data—especially on protest and state repression—are difficult to come by for socialist states. Many existing studies are based on the analysis of protest in only a single influential city (Opp et al. 1995; Oberschall 1996; Pfaff 1996; Braun 1994; Lohmann 1994). Most rely on secondary source materials such as Western newspapers and previously published accounts (Mueller 1999; Oberschall 1996) or upon retrospective, self-reported survey data (Opp et al. 1995; Kluegel and Mason 1999). However, the state-controlled GDR media are notoriously unreliable and Western newspaper accounts are limited by the fact that reporters were generally present only in larger cities such as East Berlin, Leipzig, or Dresden. Self-reported data on individual participation often suffer from understandable social-desirability and retrospective biases. We were able to assemble a powerful, if not perfect, county-level data set to test our hypotheses: GDR police reports. Reported by local police and assembled by the Interior Ministry, they cover the whole of the country during the period from September 1989 to March 1990; that is, the period between the first popular demonstrations against the regime and the free elections on March 18, 1990, that led to German reunification.

Police records from Soviet-type states have proven reliable in other studies (see, e.g., Titarenko et al. 2001). The GDR had a very tight system of surveillance, and the monitoring capacity of its police forces was very high (Wolfe 1992). Our data are drawn from crisis reports made by GDR People's Police (*Volkspolizei*) agencies at the county/municipal level to the Interior Ministry in East Berlin. They report politically motivated illegal assemblies, demonstrations, and violations of public order (*Störung der öffentlichen Ordnung und Sicherheit*) occurring within a county. These

declining returns to the signaling effect of exit could reflect the increasing salience of signaling through voice.

crisis reports are complete for the period between September 1989 and April 1990.[9]

When we compare the resulting list of protest events and participation estimates with reliable studies of protest in particular cities (e.g., Opp et al. 1995), with newspaper reports of protest (e.g., from the West Berlin *Tageszeitung*), and with archival tabulations published by historians (Lindner 1998; Schwabe 1999), we find close correspondence and are confident that our data are accurate and complete. The only discrepancy is that GDR police estimates of protest participation are more conservative than other estimates. Nevertheless, drawing on police reports helps to overcome several problems that often obtain in the analysis of protest data. The selective biases of mass media coverage of protest events are well known, as is the tendency of activists to make exaggerated reports. Police reports, particularly in a relatively small, highly bureaucratic, and centralized state, can be assumed to yield fairly standard reporting of events and estimates of protest participation.[10] Most important, these data have the advantage of comprehensive national coverage that no other data source can offer.

MEASUREMENT

Frequency and Magnitude of Protest as Measures of Voice

Our dependent variable is the degree of voice in a GDR county or municipality during the period between September 1989 and March 1990. To measure this concept, we focus on its two dimensions: frequency and magnitude. As an event-based measure of voice, we measured the *frequency* of protest by a log of one plus the total number of protest events in a county per 100,000 residents (hereafter, "protest event rate"). As a population-based measure of voice, the *magnitude* of protest is measured by a log of one plus the average cumulative number of protesters in a

[9] These data are drawn from following GDR Ministry of the Interior files in the Federal Archives of the FRG (Bundesarchiv der Bundesrepublik Deutschland), Berlin, files B Arch DO 1 (Ministerium des Innern der Deutschen Demokratischen Republik): DO 1 2.3/053614: Chronik des MdI, 1989; DO 1 2.3/052445 and DO 1 2.3/052449: Information zur offentlichen Ordnung u. Sicherheit.

[10] Data from former Communist states are sometimes unreliable. Records were often falsified for propaganda purposes (i.e., celebrating the achievements of socialism) or to mislead international agencies and lenders (Lippe 1999). However, data assembled for internal government purposes from local police reports are likely to be reliable. Researchers have found GDR police accounts to be remarkably objective (Oberschall 1996; Schwabe 1999).

county per protest event and per 1,000 residents in a county.[11] In the case of no protest event in a county, it is coded 0. As such, this variable measures the degree of average protest mobilization in a county (hereafter, "average participation rate"). It is generated from GDR police reports of events occurring everywhere in the GDR between September 1989 and March 1990. Again, our data include only those events that involved *public* manifestations of voice, such as demonstrations, assemblies, marches, the seizure of public buildings, strikes, rallies, riots, pickets, etc. To prevent inflation, those activities that were deemed suspicious by the police but did not result in public events, such as church services, meetings of dissidents, or regime-sponsored propaganda events, are not included in our data set.[12] (See table 1 for the univariate statistics of the variables in the analysis and their correlation coefficients matrix.)

Exit Rate as a Measure of Exit

The key independent variable in our analysis is the degree of exit in a county. "Exit rate" measures this construct by the number of exiters per 1,000 residents, who migrated from a particular GDR county from January through August 1989 and took up residence in the FRG; that is, prior to the beginning of the protest wave in September 1989.[13] The data are drawn from the nationwide county-level population register (*Zentrales Einwohnerregister*) based on the records of the GDR statistical agency and compiled by Siegfried Grundmann (1998). This is the most reliable and complete source of migration data available and permits observation of the key exit variable on the same level as our protest event data.

According to Hirschman (1970), loyalty deters exit and can motivate voice behind reform. As such, loyalty may induce a spurious relationship between exit and voice. In the absence of individual measures of subjective loyalty, the question we face is which counties/municipalities would have

[11] The total number of exiters (the key independent variable in our analysis) and population size of a county are highly correlated with each other ($r = 0.96$), making regression analysis of both dependent variables vulnerable to the multicollinearity problem. As a solution, we normalize each of the dependent variables and the number of exiters against population size. Log-transformation is taken of each of the dependent variables to control for highly skewed distribution.

[12] In order to prevent inflation when police agencies estimated protest participation in terms of a range (e.g., 5,000–7,000), we consistently choose the figure at the lower boundary of the range. As a result, our data may tend to underestimate the *magnitude* of protest.

[13] The magnitude of exit before September 1989 pales in comparison to the exit afterward. This notwithstanding, we use the former to avoid a simultaneity issue between exit and voice. Results from measuring exit based on the total number of exiters throughout the whole period largely correspond to those we report here.

TABLE 1

UNIVARIATE STATISTICS AND PEARSON'S CORRELATION COEFFICIENTS OF THE VARIABLES IN THE ANALYSIS

VARIABLE	$\overline{X}$	SD	CORRELATION COEFFICIENT WITH VARIABLE								
			10	9	8	7	6	5	4	3	2
1. Protest event rate	1.92	1.09	.04	.12	.11	.04	.19*	−.03	.13	.28*	.81*
2. Average participation rate	2.82	1.45	.05	.12	.16*	.01	.14*	−.07	.07	.31*	
3. Exit rate	3.21	2.63	.39*	.28*	.47*	−.09	.15*	−.11	.43*		
4. CSR border	.23	.42	.05	.02	−.03	−.19*	−.30*	−.19*			
5. FRG border	.48	.50	−.02	.01	−.03	.08	.08				
6. % employed in tertiary sector	37.15	7.61	.27*	.20*	.38*	−.05					
7. Communist Party density	15.96	1.84	−.00	.05	.10						
8. Research and higher education	1.34	3.51	.76*	.30*							
9. Past New Forum dummy	.23	.42	.30*								
10. Logged number of arrests	.26	1.12									

NOTE.—CSR border is the Czechoslovakian border; FRG border is the West German border.

* $P > .05$.

been most invested in the survival and reform of the GDR? Loyalty is a notoriously imprecise and unstable sentiment. However, it would likely be most durable when linked to investment in an object of loyalty, as when members are dependent on a collectivity for desired goods (Hechter 1987; Coleman 1990). Given this, we presume localities that had benefited most from communist rule were probably more likely to remain loyal. We focus on three indicators: Communist Party density, percentage employed in tertiary sector, and institutions of research and higher education.

Communist Party Density

The SED was not a narrow cadre. It had about 2.3 million members in 1989 (about 20% of the adult population), most employed in desirable jobs in administration, services, and the professions. Access to political capital helped to secure privileges and access to scarce goods. An intransigent regime threatened the possibility of socialist reforms that were apparently favored by many in the party rank-and-file (Koch and Mathes 1993; Holzweißig 1996). Although protest against the regime was not instigated by reformist factions or by party dissidents (Oberschall 1973), our contention is only that "loyalty does not normally mean a mere reluctance to leave a collectivity but rather a positive commitment to further its welfare" by various means, including protest (Dowding et al. 2000, p. 477).[14] For our purposes, the density of party organization could have several implications: a despised and ready target for populist protest; a source of defensive countermobilization by loyalists in the face of the threat to their privileges; or possibly even what Hirschman called active loyalty through voice— that is, mobilization intended to improve the organization. Such prudential loyalty may have found repositories in strong regional party organizations. We measure this by the population proportion of Communist Party members in a region, drawn from a May 1989 analysis of party strength available in SED archives (see Holzweißig 1996, p. 33). This measure is available only at the district (*Bezirk*) level (the 15 regional administrative districts of the former GDR).

Percentage of Labor Force in Tertiary Sector

The other benefit-related possibility that we wish to acknowledge is that people develop loyalty to a regime simply because they are economic beneficiaries. The GDR clearly exhibited what Walder (1994) calls the

[14] For example, in Opp's study of participation in the Leipzig protests, he and his colleagues found that SED members were only somewhat less likely than others to demonstrate (Opp et al. 1995, p. 108).

"organized dependence" of citizens on the Leninist party-state for the allocation of goods and opportunities. It is reasonable to assume that citizens who enjoyed a relatively privileged position in society may have been more attached to the socialist system than those that might have regarded themselves as its "losers."

Although income differences in the GDR were relatively small (Atkinson and Micklewright 1992), this does not mean there was an equal distribution of life chances. There were two principal lines of social inequality, party members versus nonparty members—that is, the line dividing those possessing political capital from those who did not and the line dividing educated professional and technical employees in the most dynamic sectors of the economy from those workers trapped in stagnant, even declining industrial sectors (Solga 1994; Jessen 1999). Many of the advantages the privileged enjoyed in the GDR were noncash benefits, such as preferential access to new and modernized housing, to scarce goods such as automobiles, and to services such as home telephones (less than 20% of GDR households).

Working in the tertiary sector in the GDR (trade, communication, information technology, etc.) generally meant working in the most modern and differentiated part of the economy. Employment in this sector was often linked to advanced technical and professional training, so it is a good indication of local opportunities for social mobility.[15] In the 1980s the regime expended large sums in modernizing the economy, chiefly through investment in microtechnologies (Gutmann 1999; Maier 1997; Dennis 1993). For East Germans lucky enough to benefit from the shift in development priorities to the tertiary sector, there were far better opportunities for career advancement and development of human capital than in other sectors.

We thus expect that on average economically privileged counties/municipalities should be more loyal than less privileged ones. Economic historians of the GDR find that the relative development of the tertiary sector is a good indicator for the level of investment by the central government in a region's technology, advanced industries, and services (Kuhrt, Buck, and Holzweissig 1999). In order to capture this major cleavage in GDR society, we included a measure of the proportion of employment in this sector as an indicator of the extent to which a given county

[15] We recognize that this variable is also likely to reflect the varying degree of grievance the residents of a county had on account of failing economic conditions. Social movement theorists regard grievances as a necessary, if not sufficient, condition for mobilization (see, e.g., Tilly 1978; McCarthy and Zald 1977; Tarrow 1998). Likewise, the exit-voice model is predicated on the initial condition of dissatisfaction with the performance of organizations. Both exit and voice are more likely where performance is poor.

benefited from ongoing state investment. We measure this "economic" loyalty (or, loyalty to one's paycheck) by the percentage of labor force in a county that was employed in the tertiary sector. The data are obtained from the last county-level GDR census in 1981 (Statistisches Bundesamt 1994).

Research and Higher Education

Rather than focus on the distribution of cultural/educational privileges (captured by the tertiary sector variable), we want to explore whether or not the presence of college campuses and research institutes in a county might have provided a reservoir of support for the regime. Locally, these institutions may have served as a site for the formation and mobilization of loyalist networks. Based on the limited public opinion data available on citizens of the GDR, it is evident that students in higher education consistently reported greater commitment to socialism and the state than other young people (Friedrich, Förster, and Starke 1999). And numerous scholars have documented that, in contrast with other intellectuals in Eastern Europe, the East German intelligentsia was generally loyal to socialism (Torpey 1995; Joppke 1995; Jarausch 1991). Even self-proclaimed reformers, like prominent Humboldt University philosopher Michael Brie, wanted no more than the "gradual self-transformation of the society."[16]

Thus, colleges and research institutes may have served as institutional centers concentrating loyalty in particular localities. Measured as the number of universities and technical colleges (*Hoch- und Fachschulen)* and research science centers located within a county/municipality, this variable indicates institutional repositories of loyalty. The data come from the official atlas of the GDR.

New Forum Organization

Most students of social movements and collective action—especially resource mobilization theorists—concur that movement organizations constitute a key condition for the emergence of insurgency (McCarthy and Zald 1977; Tilly 1978; Jenkins 1983; McAdam, McCarthy, and Zald 1996). The presence of local political entrepreneurs may have provided the "subset of highly interested and/or highly resourceful people who play a crucial role in the early phases of collective action" (Oliver and Marwell 2001,

[16] Interview with Michael Brie, professor for social philosophy at Humboldt University in Berlin, GDR Oral History Collection, Hoover Institution Archives, Stanford University, pp. 6–7, conducted by Mathew Siena on December 23, 1991.

p. 296) by providing a nucleus around which bandwagons form. The resulting prospect of successful voice could have attracted more residents away from exit toward voice, inducing a spurious relationship between them. To control for this, we measure the presence of prior social movement organizations in a county by reference to New Forum archival materials (Pflugbeil 1999, pp. 529–32). In October 1989, leaders of the largest opposition group, New Forum (Neues Forum), planned nationwide mobilization based on small groups of activists based in cities and towns throughout the GDR. A county is coded "1" if New Forum reported having an organization present locally.

Czechoslovakian Border and FRG Border

In the border areas heightened flight attempts, chaos at the border, and clashes with police all made evident the scale of popular rejection and weakened the hold of both regional and national authorities. Things were particularly chaotic in the counties/municipalities bordering Czechoslovakia (CSR). The CSR border region was located chiefly in the region of Saxony, where the distance from the political center may have facilitated protest. In addition, the expulsion trains that left the GDR also passed along this border along the route from Prague to the West German border town of Hof (Decin-Hof route). This raised public awareness of the exiting crisis, provided opportunities for spontaneous gatherings along the expulsion route, and resulted in public disorder along the route. In contrast, because the cost of exiting went down along with the Wall, the salience of the border with West Germany, which now offered the main legal route to exit, waned significantly. To control for this possibility, we construct two geographical variables: The "CSR border" variable is coded "1" if any part of a county's boundaries were within 40 kilometers (18 miles: the smallest unit measured on the scale of the official atlas) of the GDR-CSR boundary; otherwise, it is coded "0." Likewise, the "FRG border" variable is coded "1" if a county's boundaries were within 40 kilometers of the GDR-FRG boundary, otherwise "0." The data are drawn from the official GDR atlas (Lehmann 1976).

Logged Number of Arrests

Political opportunities theorists have long argued for the central role played by state responses in affecting the emergence and success of protest activities (Tilly 1978; McAdam 1982; Tarrow 1996). Repressive actions by state authorities deter protest activities by raising the cost of partici-

pation and making protest appear unlikely to succeed.[17] In East Berlin, regime elites signaled their readiness to repress the nascent protest movement at all costs. The situation was quite different at the local level. Local officials, particularly in the Saxon districts, were alienated from Honecker and favored reform. Although there was significant police repression in these areas, orders to use deadly force to quell protests were ignored at the local level (Friedheim 1993; Holzweißig 1996; Zwahr 1993; Sarotte 1993). It is clear that while the threat of repression was present uniformly at the national level, its local implementation varied considerably across counties/municipalities. In fact, our records show that police arrest of protesters occurred only in 10 counties/municipalities, mostly in large cities that spearheaded the revolution, such as the municipalities of Berlin (1,000 persons arrested), Dresden (945), Leipzig (562), and Karl-Marx-Stadt (106). To control for the probable protest-repressing effect of state repression, especially where the revolution was initiated, we measure the degree of state repression by the logged number "1" plus the total protest arrests made by state agencies in each county during the whole period from September 1989 to March 1990. The county-level arrest figures are drawn from GDR People's Police reports at the local level (*Kreis* or *Stadtkreis*) to the Interior Ministry in Berlin.

THE FINDINGS

Tables 2 and 3 report the outcomes of regressing protest event rate (PER) and average participation rate (APR), respectively, on selected independent variables across the sample.

Note that both PER and APR are left-censored at 0 with 35 counties/municipalities having no protest event. Even for those with no *public* protest event, their residents may vary in the latent propensity to organize and mobilize an event, especially in the *private* sphere. With censoring on the dependent variables, OLS estimates are known to be inconsistent (Long 1997). To correct for it, we estimate maximum-likelihood Tobit models. Thus, we estimate models of the following form:

$$Y_i^* = X_i\beta + e_i, \text{ where } \left\{ \begin{array}{ll} Y_i = Y_i^* & \text{if } Y_i^* > 0 \\ Y_i = 0 & \text{if } Y_i^* \leqslant 0 \end{array} \right\}.$$

[17] In empirical fact the effect of repression on the incidence of protest in the literature is unclear. Some studies suggest that under particular circumstances repression can increase the likelihood by magnifying political grievances and undermining regime legitimacy (Opp 1994; Goldstone and Tilly 2001). Also note that in our case, arrests were made only early on in the revolutionary cycle; after October 9 in Leipzig the incidence of repression quickly vanished. Given this, we view the usual built-in synchronous correlation between arrests and protests as not being a threat to our analyses.

TABLE 2
TOBIT COEFFICIENTS FOR REGRESSION OF PROTEST EVENT RATE ON SELECTED INDEPENDENT VARIABLES[a]

	MODEL 1		MODEL 2		MODEL 3		WITHOUT 4 OUTLIERS	
VARIABLE	β	SE	β	SE	β	SE	β	SE
Intercept	1.40	.13**	1.11	.19**	−1.26	.97	−1.38	.97
Exit rate	.14	.03**	.32	.09**	.34	.10**	.45	.12**
Exit rate^2			−.02	.01*	−.02	.01*	−.03	.01**
CSR border					.16	.25	.10	.25
FRG border					−.07	.17	−.07	.17
% employed in tertiary sector					.04	.01**	.03	.01**
Communist Party density					.07	.05	.07	.05
Research and higher education					.01	.04	.04	.04
Past New Forum dummy					.06	.21	.10	.21
Logged number of arrests					−.15	.11	−.15	.11
σ	1.22	.07**	1.21	.07**	1.17	.06**	1.15	.06**
Likelihood ratio χ^2	17.61**		22.12**		33.83**		34.54**	
Pseudo R^2	.03		.03		.05		.05	
corr$(Y_i,\hat{Y}_i)$[b]	.28		.31		.39		.35	

NOTE.—CSR border is the Czechoslovakian border; FRG border is the West German border.
[a] Identified as potentially influential are the cities of Plauen, Jena, Gera, and Leipzig.
[b] Reported are Pearson's correlation coefficients between observed and predicted protest event rate.
* $P < .05$.
** $P < .01$.

Y_i^* represents a county/municipality's unobserved latent PER (or APR) whereas Y_i represents its observed values. We assume that the residual term is uncorrelated with a vector of covariates X_i and is independently and identically distributed (Long 1997).[18]

Focusing on the full model specification (model 3 in each table), the model fits the data well. The likelihood ratio test for each dependent variable is statistically significant at the 0.01 level. The pseudo R^2 for each of the dependent variables is quite low. But, such a low R^2 is not unusual for limited dependent variables (Long 1997). An alternative measure of model fit, the correlation coefficient between the observed and the predicted dependent variable, reaches 0.39 for PER and 0.37 for APR,

[18] We also estimated models with alternative dependent variables. In place of PER, we estimated a negative binomial regression of the number of protests on the same set of independent variables as in table 2. In place of APR, we also estimated a tobit regression of total participation rate (log of the total cumulative number of participants per 1,000 residents in a county) on the same set of independent variables as in table 3, *plus* the number of protests. With only a few differences on effect of control variables, the outcomes of these alternative models conformed to those reported in tables 2 and 3.

TABLE 3
TOBIT REGRESSION OF AVERAGE PARTICIPATION RATE ON SELECTED INDEPENDENT VARIABLES[a]

	MODEL 1		MODEL 2		MODEL 3		WITHOUT 4 OUTLIERS	
VARIABLE	β	SE	β	SE	β	SE	β	SE
Intercept	2.08	.18**	1.79	.26**	.49	1.30	.51	1.32
Exit rate	.19	.04**	.37	.12**	.46	.13**	.62	.16**
Exit rate^2			−.02	.01	−.02	.01*	−.05	.02**
CSR border					−.26	.33	−.26	.34
FRG border					−.22	.22	−.25	.23
% employed in tertiary sector					.02	.02	.02	.02
Communist Party density					.03	.06	.02	.06
Research and higher education					.07	.05	.11	.06
Past New Forum dummy					.08	.28	.14	.28
Logged number of arrests					−.29	.15	−.29	.15
σ	1.62	.09**	1.61	.09**	1.57	.09**	1.57	.09**
Likelihood ratio χ^2	20.34**		22.77**		31.67**		31.64**	
Pseudo R^2	.03		.03		.04		.04	
corr$(Y_i, \hat{Y}_i)$[b]	.31		.32		.37		.37	

NOTE:.—CSR border is the Czechslovakian border; FRG border is the West German border.

[a] Identified as potentially influential are the cities of Plauen, Jena, and Gera. The inverted-U-shaped effect of exit rate holds true even if Leipzig and Berlin are further removed.

[b] Reported are Pearson's correlation coefficients between observed and predicted APR.

* $P < .05$

** $P < .01$

indicating that about 14%–15% of the variance in the dependent variables is explained by the model. We ascribe the still relatively low explanatory power of the model to the apparently unstructured and spontaneous nature of the revolution and higher level of measurement error in measuring the size of protest participants. It has often been observed that the East German revolution evolved spontaneously without much organizational dynamics—either insurgent or reactive ones—imprinted in the process. Furthermore, exact estimates of the number of protest participants are more difficult to assess. The East German police gave estimates often in the unit of hundreds or thousands and sometimes provided range estimates. Given these conditions, we find the model does a surprisingly good job in accounting for cross-county variations in protest.

The Voice Effects of Exit

To examine how robust the voice effects of exit are and what functional forms they had, we first regressed protest event rate on exit rate, then its squared term, and then all the control variables, inclusively. Models 1

and 2 suggest that the exit rate had a nonlinear effect on the number of protests, which is statistically significant at least at 0.05 level. This pattern holds even when we entered all the control variables, one of which is statistically significant at 0.01 level (model 3).

In the case of average participation rate, model 2 of table 3 shows that if we focus on the bivariate relationship between exit and voice alone, they would appear to have formulated a linear positive relationship. This is what earlier accounts suggested of the East German revolution (Hirschman 1993). A different picture emerges, however, once we control for the effects of other factors that might have affected the East German revolution. With all the control variables in model 3, the previously insignificant squared exit rate attains statistical significance at 0.05 level. It appears that its statistical insignificance at the bivariate level is spurious, especially to the voice-depressing effects of state repression: the logged-number-of-arrests variable had a large negative effect on APR, although it misses the target statistical significance level. Once we control for the voice effects of these covariates, the negative coefficient of squared exit rate turns statistically significant, revealing its nonlinear effect on voice.

The positive regression coefficients for exit rate and the negative ones for squared exit rate indicate that the predicted regression lines follow at least a concave form. Nonlinearity, however, does not necessarily imply nonmonotonicity. Our research hypothesis is more specific concerning functional forms: given the salient signaling effect of exit at the lower level of exit, which is to be overshadowed by its network erosion effect at the higher level of exit, we expect exit to have an inverted-U-curve effect on voice. A key point here is whether an inflection point occurs in each of the predicted relationships within the empirically observed range of exit rate. Indeed, an inflection point occurred at about 9 emigrants per 1,000 residents for protest event rate and at about 10 emigrants per 1,000 residents for average participation rate. In other words, when exit remained at relatively low levels below these inflection points, the marginal effect of exit on voice was positive, of course, with decreasing marginal return as exit approaches the inflection points. Once these inflection points were reached, however, the marginal effects of exit on voice became *negative* in localities where exit rate surpassed that point. This nonmonotonic inverted-U effect of exit on voice is graphically represented in figure 2. Figure 2 superimposes predicted regression lines (without control variables for the sake of simplicity) on the bivariate scatterplot of observed exit rate and on both PER and APR. Focusing on the full sample, the regression lines clearly follow our predicted inverted-U pattern, although the dip toward the high end of exit rate in part B is not as conspicuous as would be the case when all the control variables are included. There were a total of eight localities whose exit rate was beyond these inflection

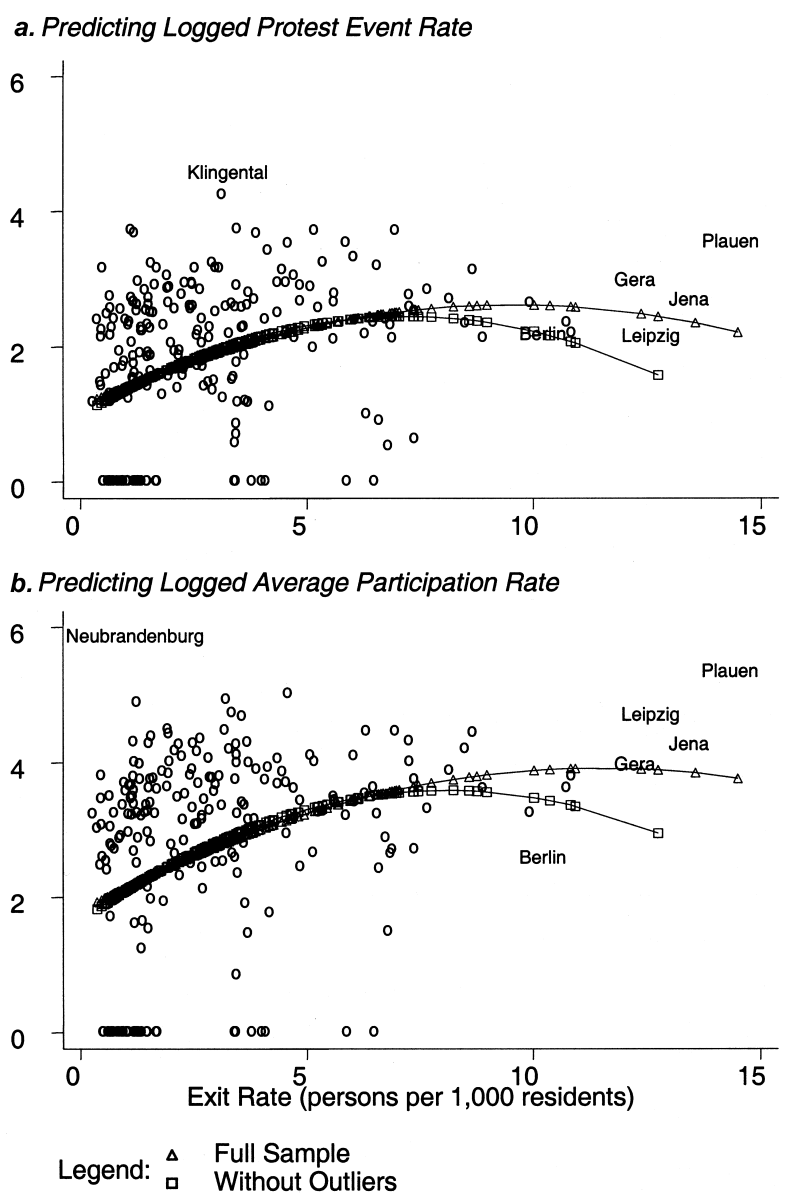

FIG. 2.—Predicted regression lines against empirical observations

points (in descending order of exit rate): the cities of Plauen, Jena, Leipzig, Gera, Dresden, and Berlin and the counties of Zittau and Freiberg. Apparently, the network erosion effect of exit overtook its signaling effect in these municipalities.

This nonmonotonic effect of exit on voice is robust to a few seemingly influential cases. Given the spectacular events that occurred in Leipzig and Berlin, which experienced extraordinary magnitude of exit and voice, one may well suspect that the outcomes would be sensitive to their influences. Influential case diagnostics (conducted on OLS regression analyses of model 3) suggested that the cities of Plauen, Jena, and Gera (for both dependent variables) and Leipzig (only for protest event rate) may be influential.[19] Interestingly, these cities also had highest levels of exit rate. With their removal, however, the inverted-U relationship between exit rate and each of the dependent variables only becomes more conspicuous (see tables 2 and 3, "Without 4 Outliers"). Furthermore, the inflection points in figure 2 occur at a much lower level of exit rate: about 6.5 emigrants per 1,000 residents for protest event rate and about 6.6 emigrants per 1,000 residents for APR. In fact, a total of 26 counties/municipalities had more than 6.5 emigrants per 1,000 residents. Figure 2 ("Without Outliers") graphically illustrates the bivariate relationship between exit and voice. This is especially true for average participation rate: Without the outliers, the bivariate relationship between exit rate and average participation rate is unambiguously reflective of an inverted-U curve. Clearly, a substantial number of counties/municipalities experienced salient network erosion effect of exit in addition to its signaling effect. The handful of outliers we identified actually *obscured* the gravity of the network erosion effect exit had on voice potentials.

The message that can be drawn from the findings is clear and robust: Exit, below a certain level, facilitates voice by sending out unambiguous signals of widespread discontent, thereby triggering collective action. As the size of exit approaches a certain point, however, this protest-facilitating signaling effect of exit starts to give way to the protest-impeding network erosion effect of mass exit. At this stage, as more and more people have walked out of the game, the exodus erodes social capital among the residents of a county, thereby undermining the movement potential of the population. These findings support the dynamic exit-voice model we proposed.

The available microlevel data confirm that the reversal in the positive effect of exit on voice beyond the thresholds in figure 2 was ascribable

[19] Berlin (and Leipzig for table 2) did not turn out to be an outlying case. To be certain, we further removed Berlin (for table 2), and Berlin and Leipzig (for table 3). The outcomes hold.

to the network erosion effect of exit. The key issue is whether the emigrants came from the same group of people who were most likely to engage in protest. It appears that they did. Karl-Dieter Opp points out that although the cost of exit fell in 1989, it still entailed breaking off social ties and forfeiting property and possessions, making it too costly an option for many people (Opp et al. 1995, p. 41). Accordingly, we contend that exit must have clearly been a more viable option for younger individuals and families in the GDR that had fewer possessions, lacked homes of their own, and had smaller investments in socialist society. Descriptive statistics on GDR exiters from 1989 to 1990 confirm this: about 60% were men, and 80% were less than 40 years old (Grundmann, Müller-Hartmann, and Schmidt 1992, p. 1593; *SJDDR* 1990). Likewise, data on the migrants of 1989 reveal that about 44% were skilled workers with advanced training (Mitter and Wolle 1990, pp. 82–92; Ammer 1995, pp. 443–40). In the crisis of 1989–90, many younger, ambitious East Germans might have seen their best hope in emigrating westward while university-trained professionals might have been more invested in reform. Survey data indicate professionals disproportionately participated in protests (Mühler and Wilsdorf 1991). The underrepresentation of skilled workers in the protests may have been the result of this group's disproportionate contribution to the exit wave. Exit may be an important signaling mechanism, but if the degree of exit is too great it will run the risk of robbing insurgent networks of crucial support.

Voice Effects of Control Variables

Tables 2 and 3 also provide some illuminating insights into the East German revolution. The most conspicuous is that while exit exerted a systematic impact on both the frequency and magnitude of protest in East Germany, the protest dynamics therein evolved largely in an unstructured and spontaneous manner. Besides the percentage of labor force in the tertiary sector, none of the control variables had a statistically significant effect on voice.[20] Although the magnitude of mobilization per protest event

[20] The outcomes of the analyses of alternative measures of the dependent variables call for caution in interpreting these outcomes (see n. 18 for brief descriptions of these alternative models). In a negative binomial regression analysis of the number of protests, the CSR border had a negative and statistically significant effect whereas Communist Party density had a positive one. In a tobit analysis of total participation rate, logged number of arrests turned out to have had a negative and statistically significant effect. This suggests that the statistical behaviors of these control variables are sensitive to how the dependent variables are measured. However, we view our reported measures of the dependent variables and resultant model specifications as superior to these alternatives because our preferred model enables us to control for the effects of pop-

was not much affected by the structural factors we explicitly examined, incidence of protest events in a locality was further affected by varying degrees of economically inspired *loyalty*. Our findings render support to Hirschman's argument that loyalty promotes, not deters, voice (see table 2). The variable of percentage of labor force in the tertiary sector captures the "economic" loyalty to socialism and the GDR that recipients of benefits provided by the central government might have developed to the state.[21] But the variable dose not have the expected positive effect on the APR (table 3).[22] This finding calls for a broadened conception of loyalty vis-à-vis protest activities. In social movement research loyalty is ordinarily seen only as depressing protest, yet loyalty can have diverse sources and consequences. In most cases loyalists are unlikely to initiate protests, but if we broaden our conception of loyalty then it need not mean silent assent to the status quo or mute toleration of worsening conditions. Loyalty reflects commitment to a collectivity, which can deter exit and inspire voice behind its preservation and reform (Hirschman 1970).

Of particular interest is that the Czechoslovakia border region did not have a significant effect on PER or APR ("CSR border" in tables 2 and 3). This was contrary to our expectations. As noted earlier, the border region with Czechoslovakia was a site where the "exiting crisis" was most evident because the famous expulsion trains ceremonially crossed this area. And it was in this region that state repression first gave way (Friedheim 1993). It appears that, whatever its initial importance, there was not a strong regional dimension to the exit-voice dynamic in the East German revolution. The signaling effect of exit was determined by its local magnitude, not by regional factors. It appears that repressive measures taken by local authorities (logged number of arrests) were not suc-

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ulation size (in the case of PER) or the frequency of protest events (in the case of APR) without inducing multicollinearity.

[21] The reader may note a seeming paradox in the positive correlation coefficient between PER and percentage of labor force in tertiary sector (table 2) and wonder whether tertiary employment encouraged both exit and voice. Since white-collar workers in this sector are expected to be among the most *alert, best-informed*, and *resourceful* citizens of the GDR, we presume that was probably the case. Citizens in this sector not only had economic privileges worth protecting, but also had the advantage of education and skills. Our finding here shows only that tertiary employment promotes voice after its indirect negative effect for voice via exit is controlled.

[22] Percentage of tertiary fails to affect the APR (table 3). Probably this mixed outcome suggests that loyalists were more interested in promoting reform than in toppling the regime through crushing displays of popular disapproval. It may also indicate that loyalists were divided on whether or not voice would improve the state's prospects or undermine them. Either way, economic loyalty appears to foment protest incidents.

cessful in preventing events.[23] Despite all the threats from regime leaders in Berlin, local police agents reacted to their citizens' protest activities more reactively than proactively. Still, to the extent it was carried out, reactive repression might have effectively deterred some of the populace from joining protests. Records show that local authorities resorted to repressive measures largely during the earlier phase of the revolution, whereas our dependent variables, especially protest magnitude, are averaging out throughout the period, thus thinning out its deterrent effect.[24] Had police repression been more aggressive and local security forces followed the instructions of the central government to make good on threats of a "Chinese solution," mass mobilization might have been contained by hard-liners.

As often noted, institutional repositories of the opposition movement (the New Forum organization dummy) or its potential countermovement (research and higher education) failed to influence the course of the East German revolution. The research and higher education variable might be taken as an indicator of political loyalty because most of the members of the higher education community had been recruited from party members and their families. The lack of impact—negative or positive—of these two variables suggests that on average highly educated citizens might have played an opportunist's game during the revolutionary protests, committing neither to the revolution nor to the old order.

CONCLUSION

It is clear that the theory of collective action can benefit from analysis of exit. In a variety of settings we see a strong coincidence between collective action and emigration (see Mueller 1999; Zhao 1996; Herbst 1990; Adas 1986; Pedraza 1985), of which the East German revolution is only a particularly vivid example. But why and how the two forms of action intersect has remained generally obscure. Our systematic analysis of the East German case helps specify the nexus between exit and voice. Moving beyond Hirschman's microeconomic model, we theorize exit as a *social phenomenon* with dual implications for protest activities because of in-

[23] One may argue for a nonmonotonous relationship (such as an inverted U; see Gurr 1970) between state coercion and political rebellion. A squared logged number of arrests, however, had no statistically significant effects on either the number of protests or logged average participation rate. Nor did its inclusion affect the inverted-U relationship between each of the dependent variables and exit rate.

[24] An analysis of an alternative dependent variable—total participation rate (see n. 20 for details)—shows that the repressive measures taken by local authorities did deter some prospective protesters.

tervening social mechanisms—signaling and network erosion—in exit-voice dynamics. Exit as crisis signals the extent of grievances against the state, reveals publicly falsified preferences enabling mutual recognition of discontent, and increases the pressure for voice. Yet exit is also capable of undermining the relational foundation of protest movements by siphoning away prospective movement participants. Because of their differential sensitivity to the level of exit, we further theorize that the protest-facilitating effect of exit will be maximized where the degree of exit is constrained. At larger levels, the activist network-eroding effect becomes conspicuous if exit takes the form of mass exodus.

Our analysis of the historical case of the GDR, where out-migration played such an apparent role in the demise of the regime, renders clear empirical support for the signaling interpretation of exit that takes into account the network erosion effect of migration. The incidence of protest activities was much lower in GDR counties/municipalities where emigration was rare, highest in those with a moderate degree of emigration, and lower where massive emigration occurred.

In an authoritarian regime, some sort of triggering mechanism is necessary if spontaneous mobilization is to occur. Our analysis suggests that spontaneous revolt in a repressive regime may be initiated by an incident that provides an unmistakable signal of regime vulnerability and widespread discontent (Schelling 1960; Macy 1991; Kuran 1995). Exit—in the form of an emigration crisis—can provide such a signal. The degree of emigration need not be so great as to dissolve the state on its own. It functions as a focal point that unites dispersed actors and grievances around a single issue. Given local sources of solidarity and cooperation, loosely coordinated responses can take shape. In the GDR the exiting crisis gave the silent act of emigration "voice" and revealed the limits of the regime's power. It made the consequences of exit apparent to a wider audience, thereby stimulating protest among citizens trapped behind or committed to the idea of reforming the socialist GDR.

Our findings reinforce the impression that formal social movement organization played a minor role in popular protest in the GDR, as studies of spontaneous mobilization dynamics have reported (Opp and Gern 1993; Braun 1994, 1995; Lohmann 1994). New Forum, the first and largest of the opposition organizations, sought official recognition and initially distanced itself from "anti-socialist" demonstrations of popular discontent (Pollack 1994, p. 449). Indeed, throughout the protest cycle East Germany's opposition remained weak, divided, and out of step with popular demands (Rucht 1996). Apparently, the East German revolution was a product of spontaneous mobilization triggered by exiting. Once actors recognized the extent of shared preferences (Kuran 1991, 1995), appeals to solidarity became effective and protest expanded without much co-

ordination by social movement organizations or extensive framing efforts by activists. As threshold models indicate, the expansion of collective action under these circumstances can be expected to respond to opportunity and thus be vulnerable both to the level of exit and concerted regime repression. Had the regime acted more decisively and more forcefully, it might have suppressed the protest movement.

In sum, the exit-voice dynamic we developed in this article offers a mechanism through which exit as a social phenomenon triggers voice. The exit-voice dynamics we theorize are of the greatest importance for political change under specific circumstances: where (1) a repressive regime imposes coercive restraint on the exercise of exit and voice, (2) economic and political grievances are widespread without the population's having the capacity to coordinate a response or communicate the extent of the discontent, and (3) neighboring states can disturb the resulting equilibrium by lowering the costs of exit.

Some combination of these conditions can be found in many historical instances, as well as in contemporary societies such as Cuba and North Korea. In societies like these the increased viability of an exit option could undermine repressive stability and help to initiate a cycle of protest. This does not mean that revolution will occur, only that protest will be affected by the possibility and magnitude of exit. Authoritarian regimes are vulnerable when the exit option becomes a viable opportunity, especially for valued citizens such as professionals and skilled workers. If neighboring or nearby states lower the costs of exit, they may activate the exit-voice dynamic we have demonstrated in this article. The repressive stability of such authoritarian regimes may thus be highly vulnerable to *exogenous* events that trigger an exiting crisis. The case of the GDR, where the decay of the Soviet bloc created opportunities for flight that triggered a popular rebellion the state could not contain, is an extraordinary example of the combustive potential of exit-voice dynamics.

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