Dependence Networks and the Diffusion of Domestic Political Institutions

Jay Goodliffe
Brigham Young University
goodliffe@byu.edu

Darren Hawkins
Brigham Young University
dhawkins@byu.edu

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Abstract: How and to what extent do states influence the level of democracy and autocracy in other states? Quantitative studies focusing on international determinants of domestic regime type have demonstrated that both democracies and autocracies tend to cluster in space and time in a pattern that suggests institutional transfer or diffusion. We argue that the diffusion of domestic political institutions is not just geographical. We argue that states exist internationally in dependence networks with each other and that those networks provide pathways for influence on a state's domestic institutions. For any given state, a dependence network is a set of partner states with whom it regularly engages in exchanges of valued goods, where those exchanges would be costly to break. We measure three dependence networks for any given state by examining that state's trade partners, alliance partners, and international organization (IO) partners. We weight partners by their material capabilities (e.g., GDP) in order to capture their differing potential for influence. We find that when a state's network partners become more democratic (autocratic), the state becomes more democratic (autocratic) the following year. This finding is robust to various specifications, control variable (including region), and alternative measures. We thus begin to unpack the mechanism by which states affect each other's domestic institutions.

Introduction

How and to what extent do states influence the level of democracy and autocracy in other states? Quantitative studies focusing on international determinants of domestic regime type have demonstrated, beginning with O'Laughlin et al. (1998), that both democracies and autocracies tend to cluster in space and time in a pattern that suggests institutional transfer or diffusion. Consistent with these observations, prominent recent studies have focused on geographical proximity as an important international factor facilitating the spread of domestic political institutions (Kopstein and Reilly 2000; Brinks and Coppedge 2006; Gleditsch and Ward 2006). Geographic proximity offers a useful first cut, yet even its proponents have recognized that democracy and autocracy may spread among states in other kinds of spatial patterns (Brinks and Coppedge 2006, 471; Beck, Gleditsch and Beardsley 2006).

We argue in this paper that states exist internationally in dependence networks with each other and that those networks provide pathways for influence on a state's domestic political institutions. For any given state, a dependence network is a set of partner states with whom it regularly engages in exchanges of valued goods, where those exchanges would be costly to break. We measure three dependence networks for any given state by examining that state's trade partners, alliance partners, and international organization (IO) partners. We weight partners by their material capabilities (e.g., GDP) in order to capture their differing potential for influence. We thus recognize, for example, that Chile is less likely to influence the United States than the United States is Chile within their respective dependence networks.

We expect that changes in a given state's dependence network will induce changes within that state. In particular, we test the proposition that changes in the nature of domestic political institutions among network partners are likely to trigger changes in a given state's own domestic

institutions. A state's dependence network can change in one of three ways: states can change their network partners (e.g., by creating a new security alliance); network partners may become more or less important to a state (e.g., by increasing or decreasing their military capabilities); and network partners may alter their own domestic political institutions. We expect domestic actors to be responsive to changes in their international dependence networks for three reasons: 1-domestic actors in government seek to gain rewards and avoid punishments offered by network partners for adjusting their domestic institutions appropriately; 2-domestic actors in government and in opposition gain resources useful in domestic power struggles through their interactions with network partners; 3-domestic actors in government learn how to adjust domestic institutions by observing network partners.

International dependence networks offer a relatively untested yet promising approach to analyzing one possible cause of change in domestic political institutions. Studies of geographical diffusion typically suggest that the causal mechanism involves extensive interaction. While maintaining the focus on interactions, our dependence network approach suggests the importance of other kinds of interaction--not based on geographic proximity--in trade, security and IOs. Geographic proximity may facilitate and thus proxy for some of these interactions, but an exclusive focus on geography diverts our attention away from these potentially important functional interactions. Moreover, dependence networks bring power into the picture because we weight trade, security and IO interactions by the significance of a state's partners.

In ways consistent with much of the regime change literature, we recognize the fundamental importance of choices made by domestic actors in shaping domestic political institutions. We do not expect dependence networks to have an overwhelming, short-term influence on fundamental choices by domestic actors, including the nature of domestic political

institutions. We do expect dependence networks to influence a given state's political institutions in gradual ways that occur a step at a time, perhaps over many years. The cumulative effects of such change can be significant.

Our main dependent variable is the nature of domestic political institutions as measured by the widely used Polity IV aggregate scale, which ranges from −10 (full autocracy) to +10 (full democracy). On average, domestic elites are likely to alter their institutions slightly in response to international influences. Yet even small alterations can be important because they can then lead others to similar alterations and because they can create incentives or space for domestic groups seeking further change in the nature of the political institutions. We also emphasize that movement along this scale can occur in either direction. It is not only democracies who can influence others to be more like them; autocracies or states somewhere in the middle might also wield influence. We recognize that not all states are equally interested in altering the nature of domestic political institutions in their partner states, and that domestic actors typically (claim to) resist international influences over their domestic institutions, which dampens the potential effects of dependence networks.

Our findings on the significance of dependence networks are thus especially noteworthy. In an issue area where we might expect relatively limited international influence, we find that as a state's network partners become more democratic (autocratic), that state becomes more democratic (autocratic) as well, even controlling for geographic proximity. This finding is robust to various alternative specifications and measures of political institutions. Furthermore, the effect of network partners is substantively important.

The Diffusion of Domestic Political Institutions: The State of the Art

Scholars in recent years have increasingly documented the spatial and temporal connections in the spread of democracy and autocracy (O'Laughlin et al. 1998; Kopstein and Reilly 2000; Przworski et al. 2000; Gleditsch and Ward 2006; Brinks and Coppedge 2006). This growing body of evidence suggests that regime institutional choices are not completely the result of domestic factors but rather are subjected to important external influences. Gleditsch and Ward (2006) found that a country's proportion of democratic neighbors, regime transitions in a neighboring country, a peaceful regional context and the global proportion of democracies all have positive effects on democracy in a given country, either by decreasing the chances of democratic breakdown, increasing the chances of autocratic breakdown, or both. Brinks and Coppedge (2006) found that a country's proportion of democratic neighbors, the global proportion of democracies and location near the United States all had a positive effect on democracy.

This focus on geography is perhaps somewhat surprising given the relative absence of geography as an important explanatory variable generally in international relations (outside of geopolitics) and the relative paucity of theories of geography. Brinks and Coppedge (2006, 471) explicitly but briefly acknowledged this shortcoming in their article, leaving the problem to future research. Beck, Gleditsch and Beardsley (2006) made the same point in extended fashion, arguing that "space is more than geography"; in other words, scholars should incorporate political and social connections between states into their analyses. The importance of geography is only lightly theorized in these articles. O'Laughlin et al (1998, 563) succinctly captured much of the theoretical argument: "Geographical proximity increases the number of interactions that can promote democracy or authoritarianism between countries; the closer countries are to each

other, the greater the number of possible linkages through which democracy can be promoted or spread." By focusing only on linkages, this argument neglects fundamental forces in international affairs like power resources and relative capabilities. Our approach, in contrast, explicitly incorporates such information.

In contrast, recent theoretical work on the international diffusion of ideas and practices does not centralize geography. Simmons, Dobbin and Garrett (2006) identify four causal mechanisms by which diffusion occurs. In coercion, resource-rich states and ideological hegemons influence others to adopt their preferred policies. The competition mechanism suggests that states must adapt to each other's innovations in order to remain competitive in a global marketplace. The third causal mechanism, learning, involves exposure to new ideas, evidence, or behaviors that alter the ways in which actors think about their methods or goals. Fourth, actors adopt the behavior of others in an emulative process that relies on shared understandings of problems, solutions, and appropriate behaviors. None of these processes clearly signals that geographically proximate actors should be the most important external influences on a state. States might be coerced, compete with, learn from, and emulate either geographically close or distant neighbors.

Likewise, the qualitative literature on the spread of democracy does not suggest that geographically proximate states are the most important influences on democratizers. Jacoby's (2006) review of the literature on postcommunist transformations focuses on both international organizations and states with substantial resources and prestige. He argues that external influences are unlikely to make much difference unless they can interact productively with domestic actors and processes. While geographic proximity might facilitate such interaction, so might a variety of other factors, including power, prestige, trade ties, shared alliances and shared

values. A summary of nine Latin American case studies combined with quantitative work found some definite regional effects at work, but identified them as communications networks, nongovernmental organizations, political parties, the Catholic Church, the US government, and the Organization of American States (Mainwaring and Pérez-Liñán 2005, 39-43). Geographical proximity may facilitate but does not determine the influence of these forces.

In short, a substantial disconnect exists between diffusion theories and qualitative studies of international effects on democracy, on the one hand, and quantitative studies of the diffusion of domestic political institutions on the other. To their credit, scholars examining geographical proximity as a predictor of democracy have critiqued their own work and have urged others to focus on other types of ties among states (Brinks and Coppedge 2006, 470; Beck, Gleditsch and Beardsley 2006). Various scholars have taken up this task. A fairly robust literature exists on the connection between foreign aid and democracy (Wright 2009; Knack 2004; Kono and Montinola 2009; Finkel et al. 2007). These scholars have found very mixed results, with some finding that aid props up authoritarian governments, others that aid has no effect, and others that U.S. aid increases levels of democracy. The connection between trade openness and democracy has also produced a number of studies, yet Milner and Mukherjee (2009) found little evidence in their extensive literature review for the proposition that trade openness fosters democracy. Finally, some scholars have focused on intergovernmental organizations (IOs) as an important source of democratic diffusion (Pevehouse 2002; Torfason and Ingram 2010).

Our work builds on these advances but goes beyond them. We develop our argument fully in the next section, but here we mention some chief differences with existing work. While foreign aid may (or may not) influence political institutions abroad, only a few countries give enough foreign aid to make a difference. In contrast, we are interested in the ways in which all

countries might influence each other. Studies of trade have focused mostly on the openness of a given country to international trade generally. We focus instead on the nature of a country's trade partners and the domestic institutions in those partner countries. And while others have analyzed network connections created by IOs, we examine such networks in comparison with security and trade networks to determine their relative importance.

Dependence Networks

Theorizing Dependence Networks

From one perspective, we should not expect foreign states to have much influence on domestic political institutions. Government officials seeking to hold on to power are likely to have strong preferences over the nature of their country's political institutions and hence to be resistant to outside influences. Changing domestic institutions can be a costly, cumbersome process fraught with uncertainty. In practice, domestic actors and forces are of course the proximate causes of most regime changes, as revealed by a vast case study literature (see Geddes 1999 for a review).

Nevertheless, most governments do not rely solely on domestic social groups for support, resources and power. They are also at least partly dependent on foreign states for aid, trade, recognition, foreign policy goals, and security. Moreover, some domestic nongovernmental groups also depend on foreign states to achieve their goals, as when businesses need access to foreign markets or military leaders need foreign training and information. These dependencies create the possibility of influence from foreign states, a fact that states subject to such influence routinely recognize and typically fear because such dependence reduces their ability to make choices unilaterally. Most of the literature on the topic suggests that economic interdependence constrains a state's ability or willingness to go to war, for example (Mansfield and Pollins 2001).

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If dependence can alter security choices, it seems likely it can potentially influence domestic political institutions.

We define dependence as the value that actors place on the goods they can obtain through an exchange relation, taking into account their alternative sources of those goods (Emerson 1962, 1972; Molm 1997; Keohane and Nye 1989). This definition of dependence is quite similar to the notion of "interdependence" in international relations, as long as that term is defined in classic terms as "need fulfillment that would be costly to forgo" (Baldwin 1980, 476). States are likely to be influenced by others on whom they depend because they value access to the goods held by those partners (Baldwin 1980; Keohane and Nye 1989). Experimental research has shown that dependence among individuals significantly increases the likelihood that those individuals will engage in behavior that is personally costly if they believe they will be rewarded by their network partners for that behavior (or punished for failing to change their behavior) (Horne 2004, 2007). Note that for dependence to have an effect, those rewards and punishments do not need to be either clearly contingent on or of equivalent value to the sanctioning behavior being rewarded or punished. Partners need not make any explicit rewards or punishments or even any promises or threats for others who depend on them to behave in similar ways. Network partners need only anticipate possible rewards or punishments. Indeed, Horne's experiments were designed so that subjects could not make explicit agreements to punish or reward each other (in actual fact they could not even communicate).

In common with other recent network approaches (Maoz 2009, 2010), our central refinement of the scholarly work on interdependence is to conceptualize dependence as existing within a network. *Dependence network* refers to the set of partners on whom a given actor relies for exchange. Thus, when exchange partners control access to a good that an individual values,

the individual will try to maintain good relations with those partners and behave in ways that produce positive rather than neutral or negative reactions. Most existing studies either measure interdependence dyadically or omnidirectionally. Examples of the dyadic approach abound in the literature on international conflict, where common measures of interdependence include the ratio of bilateral trade to GDP and the real value of bilateral trade (Russett and Oneal 2001, 140-141; Mansfield and Pevehouse 2000, 784-795). Others conceptualize dependence omnidirectionally (recalling the dependency approach to development in the 1970s), as when Domke (1988) measured the overall dependence of each state by examining exports as a proportion of GNP, the change in exports as a proportion of GNP, and exports as a proportion of GNP corrected by economic size.

Dyadic and omnidirectional approaches to dependence are sensible for some issues, but they also obscure a key question: On which set of states is a state most dependent? States assessing whether to go to war with another may be chiefly interested in their dependence on their prospective opponent. But states assessing the need to alter their domestic political institutions are likely to be interested in the preferences and practices of a range of states rather than on a single state or on all states. Some states are likely to matter more than others, a reality best captured by the concept of a network.

Some network partners are clearly more important than others and so we weight a country's partners accordingly. We weight by bilateral exports and imports in the case of trade networks, by military capabilities in the case of alliances, and by the dues paid to maintain the United Nations for international organizations networks. For a given country's security network, an alliance with Greece, for example, is less important than an alliance with the United States and we weight those countries appropriately. The same is true of IO networks. For trade

networks, each partner's share of a state's total trade volume provides the weights. Thus, more globally powerful states may matter less for given countries' trade networks than less powerful partners with which they trade a lot.

Dependence networks therefore vary across countries and over time. To illustrate the importance of weights in our measurement, we provide graphic representations of weighted trade partners for Chile and Australia in the year 2000 (see Figures 1 and 2). The maps illustrate not only how conventional powers like the United States or Germany are influential, but also how other countries like Argentina or New Zealand may matter for given countries.

Having conceptualized important terms, we state our main hypothesis: *changes in the political institutions of dependence network partners, weighted by the importance of those partners, are likely to lead to changes in a given state's own political institutions.* We expect that changes in network partners could occur either toward more democracy or toward more autocracy and that a given state dependent on those partners would be pulled in that direction. Changes in dependence networks occur when a given state begins new partnerships, ends old ones, or alters the magnitude of those interactions, when network partners alter their own capabilities, and when network partners alter their own domestic institutions.

We identify three possible pathways by which foreign states in a dependence network are likely to influence domestic political institutions in a given state. We do not test these pathways empirically but rather describe them to identify possible causal linkages between network influences and domestic outcomes and to note similar causal linkages and evidence in other research. First, states, especially powerful states, link valued goods like aid, trade, security guarantees or cooperation on foreign policy initiatives to the nature of domestic political institutions, and domestic governments who value those goods act rationally to ensure their

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continued access to them by altering domestic political institutions. Schimmelfennig (2005) has labeled this pathway "intergovernmental reinforcement" because it treats governments as relatively unified, rational actors. Western democracies especially have engaged in this practice since the end of the Cold War (Hyde 2011; Carothers 1999; Burnell 2000; Pevehouse 2005).

Yet it would be a mistake to think that only democracies attempt to influence domestic institutions in other countries or that state efforts are a post-Cold War phenomenon. As realists have long recognized, states routinely attempt to project their own political systems and values on others (Carr 1964, 80-88). Such behavior, after all, was at the heart of the Cold War. Of course, states sometimes satisfice, as the United States did during the Cold War, accepting less-than-democratic states as long as they were not Communist or utterly authoritarian (sometimes having only a thin veneer of more democratic practices). We do not expect states to desire others to adopt their own institutions in wholesale fashion. Rather, we expect most states to try to nudge others toward their own preferences.

Rewards and punishments may be explicit, implicit (intended but not specifically stated) or anticipated (by the dependent state). The EU's insistence on democracy in Eastern Europe as a condition of membership is a clear example of explicit rewards. Other times, the preferences and consequences are more implicit but widely understood, as in the case of the United States easing Mexico toward democracy in the 1990s through trade deals and financial backing. In still other cases, the links between behavior and rewards or punishment may be even more tenuous, but dependent states still reasonably believe they could materialize. Sociological research has shown that actors alter their behavior when they believe their partners want them to, and they use their partners' behavior as clues to what they should do (Centola, Willer and Macy 2005; Posner 2000). Change occurs through a process of anticipation. Observing other states' rewards for

democratic behavior or punishment for nondemocratic actions, states might reasonably infer that they could also benefit by altering their institutions in the right direction (Hyde 2011).

Second, states that possess valued goods can influence other governments by strengthening domestic actors in foreign countries already committed to their approach, by winning new domestic adherents for their priorities and by preventing antagonistic or agnostic domestic actors from obstructing change (Jacoby 2006). In this causal pathway, labeled "intermestic influence," governments are conceptualized not as unitary actors responding to external incentives but rather as competing and cooperative coalitions influenced by the interests and efforts of various domestic groups. Foreign states have a variety of tools to strengthen their favored domestic actors abroad and weaken opponents, including funding, information, advice and training, and rhetorical strategies that justify friends and delegitimize enemies. Where existing ties facilitate the exchange of these goods and relative capabilities make the foreign states important, external actors are likely to find their task of building insider-outsider coalitions much easier. In the wake of the 1973 coup in Chile, for example, the first opposition movements formed around churches with well-established transnational ties (Hawkins 2002). Later, political parties benefitted immensely from their ties to European and US governments and parties, eventually mounting a campaign, with significant aid from foreign states, that restored democracy.

While powerful states are the most important players in intergovernmental reinforcement, a wide variety of states and social groups can and do try their hand at intermestic influence. Much of the democracy-building literature has focused on the efforts of the United States, since it is has the most resources and has often made the greatest effort, especially since 1990. Finkel et al. (2007) found that USAID's efforts to promote democracy by funding domestic groups in

other countries have had a substantial positive impact on the level of democracy in those countries. Qualitative case studies of US efforts to promote democracy have stressed the importance of adapting successfully to different domestic political situations and finding the appropriate domestic allies (Carothers 1999). At the same time, the United States is scarcely the only player here and in fact comes with significant disadvantages due to deep suspicion about its agenda and motives. In post-Communist states from 2000-06, democratic revolutions that hopped from one country to the next were fostered by civil society groups who had successfully promoted democratic change within their own countries. Optor, a student group in Serbia, has become a "'modern type of mercenary,' traveling around the world" to "train local groups in how to organize a democratic revolution" (Beissenger 2007, 261). It is important to note that even transnational ties like these often have a significant governmental presence; Optor, for example, receives significant funding and encouragement from the United States. While these intermestic ties can occur anywhere, we expect dependence networks to both facilitate those ties and magnify their importance. Government officials can more easily come to know domestic groups abroad through trade, security, and IO ties and are likely to attach increased importance to altering domestic institutions in countries where those ties are prominent. Domestic groups and governments in the targeted state, in turn, are more likely to take note of the preferences and activities of foreign governments if they depend on them.

Third, governments facing domestic political problems are likely to look abroad to learn from others who have faced and resolved similar problems. Where do they look? Cognitive approaches to learning suggest the importance of an "availability heuristic," which refers to people's tendencies to place excessive importance on information that is especially immediate and striking (Kahneman, Slovic and Tversky 1982; Weyland 2005). Once they have focused on

that information, its relevance tends to be reinforced by the "representative heuristic" in which people to draw "excessively clear, confident, and firm inferences from a precarious base of data" (Weyland 2005, 284). Finally, an "anchoring heuristic" gives excessive importance to the first information that people learn with respect to a particular problem, thereby further reinforcing the most immediately available information. The number of connections in a dependence network facilitates the passage of information from one government and society to another, making that information more immediately available. The fact that those connections are significant to the dependent state is likely to make that information more striking and worthy of note. Unlike the first two mechanisms, learning does not require any effort from the states on whom others are dependent. Thus, Guatemala might learn from Honduras, for example, how to adjust political institutions in the face of domestic pressures and US demands without Honduras proselytizing on behalf of its solution.

Given the equifinality that often exists in world politics, these different causal mechanisms may be at play in different cases; given the complexity of the social world, it is possible that all three are at play in some cases. None of these three pathways suggests that governments will adopt a particular regime type just because their network partners want them to. States engage in exchange all the time while holding different views, especially on such fundamental questions of regime type. Nevertheless, all three causal pathways suggest that state interaction with network partners can provide incentives for change and information about change. Again, that change could be toward either democracy or autocracy.

To be clear, we are not suggesting that dependence networks exert determinative or even very large influence on domestic political institutions. In fact, given the stakes in play with core domestic political institutions and the many forces exerting pressure on them, we expect the

influence of dependence networks to be rather limited, in three ways. First, we expect that a number of other forces identified by the regime change literature will be at work; we include many of those factors as control variables. Second, we expect that the magnitude of changes induced by dependence networks will be relatively small. Changes in domestic political institutions, according to much of the literature, is the result of elite choices in the face of dramatic events such as economic crisis, the defection of powerful allies like military leaders, or mass demonstrations. Yet the regime change literature has also focused on smaller changes in domestic institutions that precede or follow dramatic shifts in regime type; these changes go by labels such as liberalization and consolidation. Although these changes are less dramatic than wholesale transitions, they can still have profound impacts on people and political events.

Third, not all states care equally about the nature of domestic political institutions elsewhere. Heterogeneity of state interest in promoting political change in other countries weakens the potential for network effects as domestic elites weigh the probability that they will be rewarded or punished for making changes. Yet even where states do not reward or punish change, domestic elites can still learn from changes in network partners and gain resources from those partners that enable effective political action. We expect dependence networks to contribute directly to small changes in the nature of political institutions as elites adjust to international efforts and examples. Hence, we focus on the level of democracy or autocracy rather than on transitions.

Measuring Dependence Networks

We attempt to capture different dimensions of what states value by examining a variety of possible dependence networks or their close proxies: security alliances, trade relations, and shared memberships in international organizations. States value alliance and trade partners for

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obvious reasons. We argue that they value IO partners because states have foreign policy goals that require international cooperation to achieve and in practice are often achieved through IOs (see also Abbott and Snidal 1998; Pevehouse 2006). States seeking to improve education and health care in developing countries, for example, often work through regional and functional organizations and rely on other states in those organizations to support their priorities through budget contributions and political backing for their preferred rules, mandates, and staffing decisions.

We measure *Security Networks* by examining formal alliances (Leeds et al. 2002), weighted by the relative importance of alliance partners. We emphasize that each state's security network can change over time as it adds or subtracts alliance partners or those partners become more or less powerful relative to each other. The values for the variable also change as alliance partners alter their domestic institutions. Where State A is in an alliance to come to the defense of State B, we call this a security partnership that creates mutual dependence. The material capabilities of security partners are measured by the Composite Index of National Capabilities from the Correlates of War project (Singer, Bremer, and Stuckey 1972). The index includes "total population, urban population, iron and steel production, energy consumption, military personnel, and military expenditures," and is meant to pick up features of state power beyond GDP that are more relevant to security issues. We calculate the weighted average of the Polity scores of each partner, where the weight is a partner's capabilities. The average of all partners' weighted Polity scores gives the value of the state's security network.

A potential example of security network partners influencing domestic institutions occurred when Guyana joined the Organization of American States (OAS) in 1991. Previously, Guyana had no security ties, and thus its security network score was 0. As OAS is considered a

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defense pact,[1] when Guyana joined, its security network score became the weighted average of the OAS member states. The United States is the strongest OAS member, and the weighted average of all OAS states (except Guyana) is about 9. In 1992, Guyana held free elections (for the first time since 1964) and its Polity score changed from −7 to +6.

For *Trade Networks*, we calculate the proportion of a given country's total trade (imports and exports) that occurs with each trade partner,[2] and then use that weight to calculate the weighted average of partners' Polity scores. A possible of example of trade network partners influencing occurred with Armenia in 1998. In 1997, Armenia decreased its trade with more autocratic partners (e.g. Iran and Turkmenistan), and increased its trade with European partners (e.g. Germany and Turkey). As a result, its trade network score moved from about 3 to 5. In 1998, Armenia's Polity score changed from −6 to +5. Again, we do not expect all changes in the dependent variable to be as large as in these two examples.

For *IO Networks* we examine IOs with a significant bureaucratic apparatus whose functions are either multi-purpose, security provision, or oriented to general economic welfare (Ingram, Robinson, and Busch 2005), weighted by the relative importance of those IO partners. This excludes less institutionalized IOs that are little more than arenas for state meetings and IOs that deal with issues of lesser importance to states such as industry-specific agreements, education and research institutions, or standard-setting organizations. In other words, we include only the most important IOs where dependence is likely to occur. For each state, we total the

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[1] From OAS, Article 28: "Every act of aggression by a State against the territorial integrity or the inviolability of the territory or against the sovereignty or political independence of an American State shall be considered an act of aggression against the other American States." (http://www.oas.org/juridico/english/charter.html.)

[2] We use Gleditsch's (2002) data set, augmented and extended by Scott Cooper using IMF Direction of Trade Statistics and other sources.

number of memberships it shares with every other state in all of these IOs (where the same dyad could be counted multiple times for shared memberships in multiple IOs), weighted by the proportion of the UN's general budget contributed by each IO partner. In the absence of data on financial contributions of all states to all IOs, this weight provides a measure of the state's importance and influence in IOs generally and hence other states' dependence on them.[3] As the over-arching IO, the United Nations enjoys the largest number of member states and thus provides a better baseline for the universe of possible state partners than alternative IOs. As with other measures, we then calculate the weighted average of partner states' Polity scores, where the weight is the number of IO partnerships held with that state. The weighted average of all partners' Polity scores gives the value of the IO network variable.

In addition to our separate dependence measures, we also create a *Network Index* which is the average of the *Security, Trade,* and *IO Networks*. Including all three variables separately will estimate the independent effect of each network on the level of democracy. But we also expect the networks to operate jointly. Using an index allows us to incorporate the independent and joint effects into one measure.[4]

For all of the dependence measures, we do not expect that a state will be able to react instantaneously to the actions of its network partners. Hence, we lag network variables by one year. Because we expect institutional changes to be small, a one-year lag seems adequate. It seems reasonable to assume that states are not caught off guard by changes in their partners. They are likely to be paying close attention to political institutions in prominent partner countries

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[3] We obtained data from various UN resolutions. UN dues are highly–though not perfectly—correlated with GDP.

[4] We also conducted a factor analysis on the three network variables, which shows that there is one factor in those three variables, and each variable loads strongly on it. When we use an index generated from the factor analysis, that index produces qualitatively similar results to our additive index.

and to be thinking about their own political institutions. States are capable of anticipating changes in their partners because they observe their partners' political process and asking themselves whether such changes make sense for themselves. Hence, time lags between changes in partners and changes in a given country need not be long.

This lag also helps deal with the problem of endogeneity; in this case, the concern that democracy levels influence state decisions on security partnerships, trade, and joint IO memberships. While we cannot fully resolve these concerns (Beck, Gleditsch, and Beardsley 2006), by lagging the main independent variables we decrease the probability that the correlations are picking up reverse causality.[5] Where the lagged independent variables are significant, reverse causality could only occur if states anticipated a change in their domestic political institutions then increased their dependence on their partners in the direction of that anticipated change in the year before the change took place. That level of successful planning and strategy seems unlikely. It is of course possible that partner dependence and domestic institutions influence each other in a sequential process, where an increase in democracy, for example, leads states to depend more on other democracies, which in turn helps trigger further changes toward democracy. If so, our models are picking up part of that sequence. Future work will explore this possibility.

Dependent and Control Variables

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[5] Hays, Kachi, and Franzese (2010) specify the conditions in which our estimation strategy is "valid and effective": a long time period; interdependence occurs with a time lag, not instantaneously; and the interdependence dynamics are modeled adequately. We believe our model fulfills these conditions.

Our dependent variable is the *Polity Score* (Marshall and Jaggers 2006, modified by Gleditsch 2008). Consistent with the theoretical logic above, we are not measuring regime transition (sudden, large changes in domestic institutions), but rather the level of democracy or autocracy and predicted changes in those levels. We expect it is difficult for Polity to pick up small changes in the nature of domestic institutions and that such changes are underreported, creating a difficult test for our argument. Of our 7153 country-year observations, only 10 percent involve a change in Polity Score. The average absolute change for all observations is 0.4. The average change in level among the 10 percent who do change is 4.0, the median is 3, and the mode is 1. We are not examining either democratic or autocratic states in isolation, but rather both because our theoretical reasoning suggests that any kind of state (autocratic, democratic or in between) may exert influence on others. Democracies might learn from quasi-democratic states, for example, about how to be less democratic. Examining the level of democracy (as opposed to change in level, or regime transition) is most similar to the approach of Finkel et al. (2007). However, the fixed effects model used below generally estimates changes of the dependent variable within a country.

Our most important control variable is geographical proximity, a factor that been a significant predictor in every study of democratic diffusion that we have identified and is one of the most important variables to influence changes in democracy scores in the most complete model utilized by Finkel et al. (2007, 422). For *Regional Diffusion*, we use a "gravity model" where states we take the average Polity Score of states in the region, weighted (inversely) by distance.[6] For *Global Diffusion*, we use the average Polity Score of all other states. Similar to the network variables, we do not expect that a state will be able to react instantaneously to the

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[6] We use states that are within 950 km. We use data from Weidmann, Kuse, and Gleditsch (2010).

positions of its regional and global peers. And if they could, we would be worried about reverse causality. Thus, we lag the diffusion measures by one year.[7]

By focusing on variables that are well-grounded in existing theory and have been statistically significant in previous studies, we identify a middle-range set of three domestic control variables (see Mainwaring and Pérez-Liñán 2005 for a similar approach). We exclude variables such as economic shocks and widespread political violence that predict change without predicting the direction of change because our dependent variable involves predicting direction. Perhaps the most common and widely debated variable is economic development, measured as per capita GDP (logged).[8] Since Lipset (1959) first advanced his seminal thesis that economic development leads to democracy, scholars have produced substantial evidence to support this claim while others have challenged and qualified the argument, but without vanquishing it entirely. In their influential study, Przeworski and Limongi (1997, 177) concluded the "emergence of democracy is not a by-product of economic development," but that "the chances for the survival of democracy are greater when the country is richer." We examine the hypothesis that as levels of development increase, the more likely a country is to become more democratic.

Economic performance (at various levels of development) is also commonly associated with changes in domestic political institutions (Diamond and Linz 1989, 46-48; Haggard and Kaufmann 1995). Economic growth is likely to have similar effects as higher levels of wealth because it provides both incentives and resources for social groups outside the state to demand

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[7] Both *Regional Diffusion* and *Global Diffusion* could be conceptualized as measures of network dependence. However, the mechanism of influence is less clear.

[8] We use GDP from the Penn World Table (Heston, Summers, and Aten 2011), augmented by Gleditsch (2002).

greater access to state institutions and decision-making. We use the GDP per capita growth of the previous year.

Finally, state failure may influence political institutions. We incorporate three data sets within the "state failure" project that measure civil war and internal unrest: ethnic war, revolutionary war, and genocide/politicide (Goldstone et al. 2010).[9] This provides a measure of the extent of the domestic security threat facing states.

As a result of data availability, our dataset consists of 175 countries from 1952 to 2004.

Method

We need to take into account the structure of the time-series–cross-sectional data we are using. In our data, we expect countries to change slowly over time (temporal autocorrelation) and countries to be affected by (unmodeled) external influences similarly (cross-sectional correlation). In addition, some countries may have a larger range of Polity scores than other countries (panel heteroskedasticity). Econometrically, residuals (or errors) are correlated within a state and within a year (across states). It is now standard to use "clustered" standard errors to control for these characteristics, as observations within a cluster are assumed to not be independent. However, standard clustering generally controls for panel heteroskedasticity and temporal autocorrelation, but not cross-sectional correlation. (In contrast, Beck and Katz's (1995) panel-corrected standard errors correct for panel heteroskedasticity and cross-sectional correlation, but not temporal autocorrelation, for which they use a lagged dependent variable.)

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[9] We exclude adverse regime change, which is generally measured as a six point drop in the Polity score over three years or less. We recorded the maximum score across the three data sets (limiting genocide/politicide to 4, like the other two data sets) for each state and year..

We apply Cameron, Gelmach, and Miller's (2011) multiway clustering, which allows us to cluster over both states and years.[10]

In addition, we expect that there will be significant cultural differences (e.g. colonial status) across countries that may affect political institutions. Therefore, we include fixed effects for each country. These fixed effects will control for any influences that do not change over time (such as average inequality and ethnic fragmentation).[11]

Findings

In Table 1, we present the results of several specifications. We first examine the influence of the control variables without the network variables in Column 1. Interestingly, the economic variables (*GDP per capita* and *GDP/capita Growth*) and *State Failure* are not significant. In contrast, both *Regional Diffusion* and *Global Diffusion* affect Polity scores. An increase in one country's Polity score will increase its neighbors' (*Region*) and all countries' (*Global*) Polity scores the next year. Similarly, a decrease in one country will lead to a decrease in others.

In Columns 2-4, we add each network variable separately to the control variables model. As expected, as a country's trading partners, security partners, and IO partners become more democratic (autocratic), that country will become more democratic (autocratic). This effect is statistically significant for *Trade* and *Security* and approaches statistical significance for *IO Networks*.

In Columns 5 and 6, we add all three network variables and the *Network Index*, respectively. Similar to models with only one network, the model with all three networks shows

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[10] Including only one-way clustering on states or years, or using PCSEs produces smaller standard errors. Thus, our results are conservative compared to previous studies.

[11] Monte Carlo results by Wawro, Samii, and Kristensen (2011, Table 8) support this approach for our data.

that these networks all affect outcomes, though only the *Trade Network* is statistically significant ($p = .031$). However, the three networks are jointly more statistically significant ($p = .023$). Thus, the networks must have some collinearity. We favor our *Network Index* model, which picks up the joint effects of network dependence ($p = .003$).[12] As in our control variables model, *Regional* and *Global Diffusion* are both statistically significant in our network models, and the economic variables and state failure are not statistically significant.

To compare the substantive effects of the independent variables, we use the estimates from the *Network Index* model to predict the change in the Polity Score for changes in the independent variable. These are presented in Table 2. We increase each independent variable by two standard deviations, holding all other variables constant (Gelman 2008). We also report the confidence interval of the predicted changes. We emphasize that this is a short-term effect, and does not include the feedback effects that would occur long term. Suppose three countries traded with each other: A, B, and C. Suppose A became more democratic, then B and C would become more democratic the following year. But B becoming more democratic would induce C (and A) to become more democratic the following year (and vice versa). Thus, the long-term effects would be larger.

Our primary interest is in the *Network Index* variable: as this variable increases two standard deviations—that is, as a state's network partners become more democratic—a state's Polity score increases by 2.6 points, on average. In contrast, increasing the *Regional Diffusion* and *Global Diffusion* variables by two standard deviations increases a state's Polity score by 4.3 and 1.4 points, respectively. Thus, *Regional Diffusion* has the strongest effect, though the

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[12] The fit of the all networks model and network index model are practically the same, using the Bayesian Information Criterion.

Network Index is still substantively large.[13] These effects also work in reverse: as a state's network partners become more autocratic, that state's Polity score decreases. The substantive effects of the economic variables and state failure are substantively small (and as noted above, statistically insignificant). Finding statistically and substantively significant results in our *Network Index* is especially impressive given that we have included fixed effects and we are controlling for regional and global diffusion.

We are aware that there is disagreement as to how to model time-series–cross-sectional data such as ours. In Table 3, we present several alternative specifications of our model. Including fixed effects or including a lagged dependent variable are both specifications which have been criticized for absorbing "too much" of the substantive effect of interest (Beck and Katz 2001; and Achen 2000, respectively).

We first present our network index model without fixed effects in Column 1. Our primary finding is the same: a country's network partners influences its level of democracy. Substantively, the *Network Index* becomes as strong as *Regional Diffusion* (not shown). Two variables change in statistical significance: *Global Diffusion* is no longer significant, and *GDP per capita* becomes significant. Although not as substantively strong as *Network Index* (and *Regional Diffusion*), as a country becomes economically richer, it becomes more democratic (not controlling for fixed country effects).

Column 2 is the specification we presented earlier (Table 1, Column 6) with fixed country effects. Column 3 includes a lagged dependent variable (but not fixed effects), and

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[13] The coefficients on *Network Index* and *Regional Diffusion* are very similar, and the variables have the same range. But the standard deviation on *Regional Diffusion* is larger.

Column 4 includes both a lagged dependent variable and fixed effects.[14] The coefficients of both

lagged dependent variable models are qualitatively similar.[15] The coefficients on the *Network*

Index and diffusion variables become smaller (which is not surprising given those variables are

specific spatio-temporal lags of the dependent variable). We leave aside the debate over whether

these specifications absorb too much (the lagged dependent variable is statistically significant

and close to one), and point out that even in this specification, the *Network Index* (and *Regional*

Diffusion) remain statistically significant. *Global Diffusion* is no longer statistically significant,

and *State Failure* is now statistically significant: As a country experiences civil war or internal

unrest, it becomes less democratic. In Column 3, *GDP/capita Growth* is statistically significant,

but not the expected sign. Finally, in Column 5, we present our network index specification with

Backslides, the cumulative sum of negative movements of a country's Polity score in the

previous twenty years (Epstein et al. 2006). It is statistically significant (previous backslides lead

to negative changes in the Polity score), but the rest of our results of our network index model

(Column 2) remain qualitatively the same.

There is also some debate as to whether Polity scores measure the dependent variable

adequately. We assess this by using an alternative measure to the Polity score, and examining

specific components of the Polity score. As an alternative to the Polity score, we use Unified

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[14] Including both fixed effects and a lagged dependent variable yields biased coefficients (Nickell 1981). However,
since we have a large number of countries and years, the bias would be small. We also estimated the model using
Bruno's (2005) bias correction and found qualitatively similar results.

[15] Durbin's h-test shows that there is remaining autocorrelation in the residuals when including a lagged dependent
variable. As this means the other coefficients are biased toward zero, it is not clear that including a lagged dependent
variable is preferred. We present multiple specifications to show the results are robust, but are agnostic as to which
is best.

Democracy Scores (Pemstein, Meserve, and Melton 2010), which are generated by a Bayesian

latent variable approach synthesizing twelve different democracy indices. In Table 4, Column 1,

we present the network index model using Unified Democracy Scores (including fixed effects).

(We recalculate the *Network Index* and diffusion variables using the Unified Democracy Scores

as well and include country fixed effects.) The results are qualitatively similar to the Polity score

results: the *Network Index* is statistically significant as well as the two diffusion variables, and

their coefficients are of similar magnitude.

We examine two components of the Polity score: xrcomp and parcomp. These represent

the competitiveness of executive recruitment and competitiveness of participation, respectively.

We expect that these two components to be more amenable to influence by network partners

because they are easier to change. We recalculate the network and diffusion measures using

these variables separately. As before, we include fixed country effects. The results for executive

recruitment competitiveness are in Column 2 of Table 4. Like our results for Polity score,

Network Index and the diffusion variables are statistically significant. In this case, *Global

Diffusion* is substantively stronger. The results for participation competitiveness are in Column

3. In contrast to our other dependent variables, *Network Index* is not statistically significant

(while the other diffusion variables are significant). *State Failure* negatively impacts political

participation. Our substantive conclusion is that network partners can influence the

competitiveness of elections, but not the degree of participation in political institutions.

Conclusions

We have argued that the level of democracy in domestic political institutions in a given

state are influenced by trade, security, and IO partner states that comprise that state's dependence

networks. Power is an important feature of those networks. Partner states that provide more

trade, security, or IO funding for a given state are more likely to be more influential in that state's choices and political dynamics.

We find robust evidence for this proposition. An index comprised of these three dependence networks is a statistically significant predictor of changes in the levels of democracy even when other strong predictors are included in the models. In particular, previous studies have shown regional and global changes in the level of democracy to be strong predictors of the level of democracy in a given country. We confirm those findings, but find our network index is still a significant predictor of change even with regional and global levels of democracy in the model. Where dependence network partners have more democratic institutions than a given state, that state is pulled toward higher levels of democracy. The reverse is also true: where dependence network partners have less democratic institutions than a given state, they pull that state toward lower levels of democracy. Moreover, the domestic political changes associated with changes in a state's dependence networks are substantively large, comparable to changes associated with regional and global levels of democracy. Our findings are robust to a number of different models, control variables, and an alternative measure of the dependent variable.

Our research contributes to significant theoretical debates about influences on democracy and autocracy. Scholars have long called for greater understanding of the international influences on domestic political change (Whitehead 1986). Analysts have made important advances in our understanding of international influences, but much of the focus has been on geographical contiguity, foreign aid, and IOs. Curiously, power has been relatively absent from these discussions, other than the literature on foreign aid where the role of power is implicit. In studies emphasizing geography and IOs, more powerful states do not receive any special weighting

(Pevehouse 2002; Gleditsch and Ward 2006). Moreover, most of these analyses focus only on change in one direction, toward democracy.

In contrast, we suggest in this paper that a broader array of factors may influence state domestic political institutions and that relative power is central to the ways in which those factors operate. Moreover, we suggest that states may influence each other both toward and away from democracy.

The lively debate on whether and how per capita GDP influences democracy has taken note of the importance of international influences (Epstein et al. 2006; Boix and Stokes 2003). International variables typically include proportion of democracies in the world, a variable denoting colonial status, and trade openness. Our research suggests that these variables are too limited in nature; other international forces influence states and should be incorporated in future models.

Our findings also shed light on policy debates in the United States and elsewhere about the best means of promoting democracy abroad. Carothers, one of the most prominent and influential voices on democracy promotion, recently identified two types of strategies (2009). In the "political" approach, most closely identified with the United States, states seek to build democracy by funding and providing training for the actors and mechanisms most closely associated with democracy: political parties, NGOs, judges, electoral commissions, the media, etc. In the "developmental" approach, supported more intensively by European countries, states seek to build a strong economic and social base in which democracy can flourish by aiding local civil society organizations and by working on state capacity and good governance issues.

Our findings suggest an additional way to promote democracy (outside of military intervention) that can complement both these methods. Democratic states should seek to interact

and build ties with less-democratic states in multiple ways and across multiple issue areas. They should create security alliances, engage in trade, and build and join IGOs designed to tackle common foreign policy problems. They must of course do so from a position of strength (robust economies, strong militaries) or else they may find themselves subject to influence rather than influencing others. Likewise, it seems important for democratic countries to make clear that they prefer others to be democracies and perhaps to offer rewards to those who become more democratic and penalties to those who fail to do so. This method of democracy promotion focuses at the macro level and is less directly involved with the nuts and bolts of influencing other countries, but it can be equally strategic and intentional. In the context of Western relations with China, the strategy has been labeled "constructive engagement" and "strategic partnership," a deeper form of constructive engagement that also includes security issues. (Casarini 2006). Our research suggests that policymakers are on the right track with these sorts of approaches to China, and that they might be applied fruitfully more broadly. Sustained interaction with others on a wide range of issues can move others, subtly and gradually, toward one's own preferences.

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Table 1: Democracy Scores—Initial Models

Independent Variables	No Networks	Trade Only	Security Only	IO Only	All Networks	Network Index
Trade Network		0.247*			0.194[a]*	
(1-year lag)		(0.097)			(0.090)	
Security Network			0.134*		0.109[a]	
(1-year lag)			(0.068)		(0.062)	
IO Network				0.369	0.303[a]	
(1-year lag)				(0.20)	(0.19)	
Network Index						0.471**
(1-year lag)						(0.16)
Regional Diffusion	0.499**	0.460**	0.482**	0.484**	0.442**	0.448**
(1-year lag)	(0.095)	(0.090)	(0.093)	(0.093)	(0.089)	(0.089)
Global Diffusion	0.499**	0.430**	0.487**	0.327*	0.293*	0.367**
(1-year lag)	(0.12)	(0.13)	(0.12)	(0.15)	(0.15)	(0.13)
GDP per capita (logged)	0.132	0.0208	0.274	-0.188	-0.102	0.0922
(1-year lag)	(0.53)	(0.56)	(0.53)	(0.57)	(0.57)	(0.55)
GDP/capita Growth	-0.00385	-0.00520	-0.00514	-0.00259	-0.00493	-0.00568
(1-year lag)	(0.0075)	(0.0093)	(0.0084)	(0.0077)	(0.0081)	(0.0081)
State Failure	-0.0250	-0.0256	-0.0163	-0.0438	-0.0338	-0.0232
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
# of observations	7153	7153	7153	7153	7153	7153
# of countries	175	175	175	175	175	175
# of years	56	56	56	56	56	56
R^2 net of fixed effects	0.24	0.25	0.24	0.24	0.26	0.25
R^2 including fixed effects	0.78	0.78	0.78	0.78	0.78	0.78
BIC	38708	38598	38659	38661	38548	38550

Notes: Dependent Variable is Polity Score, 1952-2004. Coefficients are OLS estimates with standard errors clustered by country and year in parentheses. Country fixed effects are included but not reported (and are always statistically significant at $p < 0.0001$). A constant is also included and not reported.
* $p < 0.05$, ** $p < 0.01$ (two tails)
[a]Three network variables jointly significant, $p = 0.02$

Table 2: Substantive Effects of Network Index Model

Independent Variable	Change in Independent Variable	Change in Polity Score	95% Confidence Interval
Network Index	+5.4	+2.6	(0.9, 4.2)
Regional Diffusion	+9.5	+4.3	(2.6, 5.9)
Global Diffusion	+3.8	+1.4	(0.5, 2.4)
GDP per capita (logged)	+2.5	+0.2	(–2.5, 3.0)
GDP/capita Growth	+19.9	–0.1	(–0.4, 0.2)
State Failure	+2.0	–0.0	(–0.6, 0.5)

Notes: Calculated from the Network Index column of Table 1.
The change in the independent variable adds 2 standard deviations.
Where the confidence interval includes zero, the variable is not
statistically significant at a 0.05 level.
Example: Increasing the Network Index by 5.4 increases the Polity
Score by 2.6, with a 95% confidence interval of the increase of
(0.9, 4.2).

Table 3: Democracy Scores—Alternative Specifications

Independent Variables	No FE, No LDV	FE Only	LDV Only	FE and LDV	FE plus Backslides
Network Index	0.939**	0.471**	0.0581**	0.0753*	0.448**
(1-year lag)	(0.13)	(0.16)	(0.011)	(0.031)	(0.16)
Polity Score lagged			0.952**	0.894**	
(1-year lag)			(0.0059)	(0.012)	
Backslides					-0.0960**
					(0.031)
Regional Diffusion	0.533**	0.448**	0.0210*	0.0541**	0.447**
(1-year lag)	(0.086)	(0.089)	(0.0085)	(0.020)	(0.088)
Global Diffusion	-0.00528	0.367**	0.0294	0.0531	0.316*
(1-year lag)	(0.13)	(0.13)	(0.019)	(0.035)	(0.13)
GDP per capita (logged)	1.195**	0.0922	-0.00459	0.0688	-0.0203
(1-year lag)	(0.32)	(0.55)	(0.025)	(0.11)	(0.55)
GDP/capita Growth	-0.0000980	-0.00568	-0.00549*	-0.00682	-0.00546
(1-year lag)	(0.0092)	(0.0081)	(0.0022)	(0.0039)	(0.0076)
State Failure	0.0775	-0.0232	-0.336**	-0.429**	0.000513
	(0.16)	(0.14)	(0.059)	(0.078)	(0.13)
# of observations	7153	7153	7153	7153	7153
# of countries	175	175	175	175	175
# of years	56	56	56	56	56
R^2 net of fixed effects	-	0.25	-	0.84	0.28
R^2 including fixed effects	0.46	0.78	0.95	0.95	0.79
BIC	44995	38550	27827	27476	38325

Notes: Dependent Variable is Polity Score, 1952-2004. Coefficients are OLS estimates with standard errors clustered by country and year in parentheses. FE = fixed effects; LDV = lagged dependent variable. For columns including labeled FE, country fixed effects are included but not reported (and are always statistically significant at $p < 0.0001$). A constant is also included and not reported.
* $p < 0.05$, ** $p < 0.01$ (two tails)

Table 4: Democracy Scores—Alternative Dependent Variables

Independent Variables	Unified Democracy Scores	Executive Competitiveness	Participation Competitiveness
Network Index	0.389**	0.233*	0.176
(1-year lag)	(0.12)	(0.11)	(0.15)
Regional Diffusion	0.418**	0.200*	0.415**
(1-year lag)	(0.087)	(0.100)	(0.11)
Global Diffusion	0.342**	0.723**	0.536**
(1-year lag)	(0.12)	(0.15)	(0.13)
GDP per capita (logged)	0.0837	0.0500	0.215
(1-year lag)	(0.060)	(0.071)	(0.13)
GDP/capita Growth	-0.000687	-0.000773	-0.00222
(1-year lag)	(0.00086)	(0.0012)	(0.0026)
State Failure	-0.0280	-0.0127	-0.0653*
	(0.015)	(0.030)	(0.031)
# of observations	7674	4804	5452
# of countries	196	158	160
# of years	53	53	53
R^2 net of fixed effects	0.29	0.16	0.26
R^2 including fixed effects	0.85	0.78	0.80

Notes: Dependent Variable is Unified Democracy Scores, Executive Competitiveness, and Participation Competitiveness in 1952-2004. Coefficients are OLS estimates with standard errors clustered by country and year in parentheses. Country fixed effects are included but not reported (and are always statistically significant at $p < 0.0001$). A constant is also included and not reported.

Figure 1: Chile's Trade Network, 2000

United States

Sweden

Belgium

Italy

China

South Korea

Japan

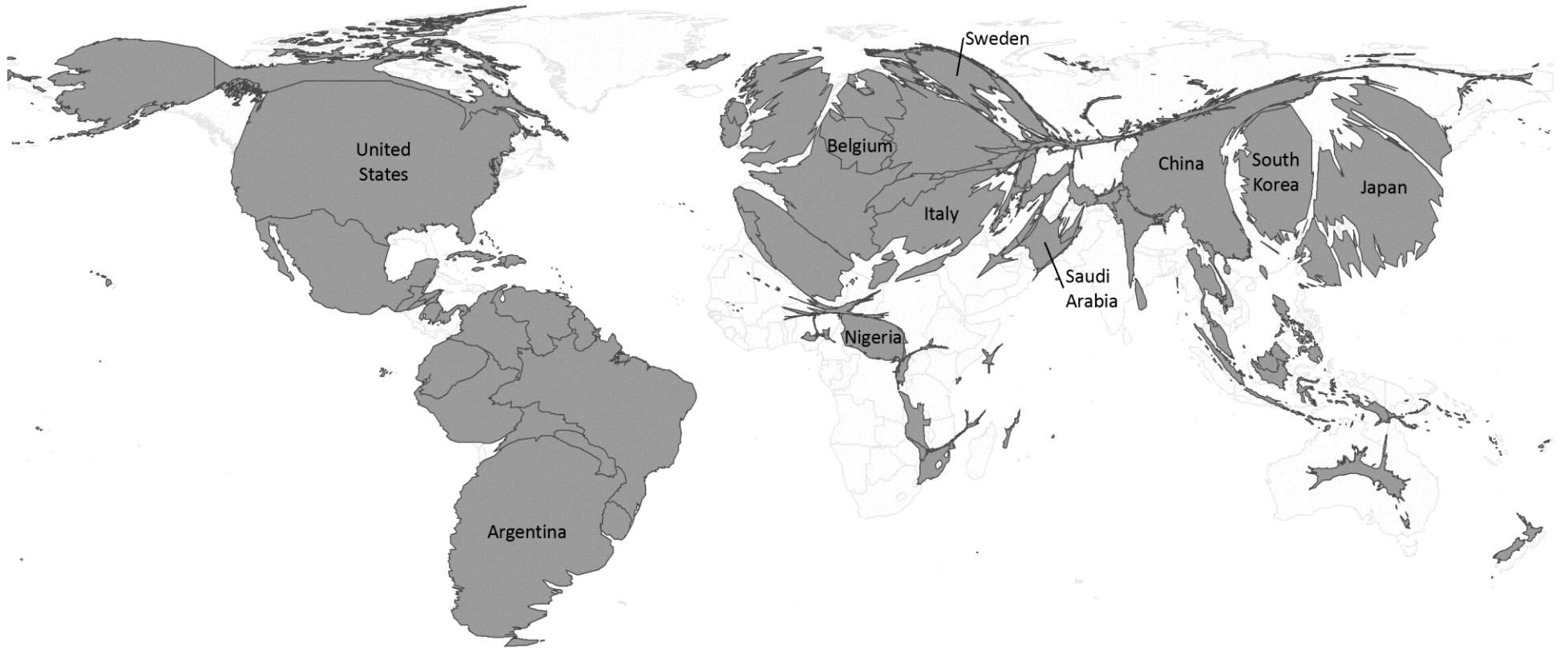Saudi Arabia

Nigeria

Argentina

BYU Geospatial Services Center 2010

Figure 2: Australia's Trade Network, 2000

United States

Germany

China

South Korea

Japan

Saudi Arabia

South Africa

New Zealand

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