# The Democratic Domino Theory: An Empirical Investigation

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*According to the democratic domino theory, increases or decreases in democracy in one country spread and "infect" neighboring countries, increasing or decreasing their democracy in turn. Using spatial econometrics and panel data that cover over 130 countries between 1850 and 2000, this article empirically investigates the democratic domino theory. We find that democratic dominoes do in fact fall as the theory contends. However, these dominoes fall significantly "lighter" than the importance of this model suggests. Countries "catch" only about 11% of the increases or decreases in their average geographic neighbors' increases or decreases in democracy. This finding has potentially important foreign policy implications. The "lightness" with which democratic dominoes fall suggests that even if foreign military intervention aimed at promoting democracy in undemocratic countries succeeds in democratizing these nations, intervention is likely to have only a small effect on democracy in their broader regions.*

In a 1954 press conference, then-U.S. President Dwight Eisenhower famously described what he called "the falling domino principle" behind American foreign policy: "You have a row of dominoes set up, you knock over the first one, and what will happen to the last one is the certainty that it will go over very quickly. So you could have a beginning of a disintegration that would have the most profound influences."[1]

The dominoes Eisenhower described were countries, and the contagious element they carried were the political-economic features of communism. In particular, Eisenhower's falling domino principle referred to countries' alignment with the Soviet Union versus the United States. This idea's important Cold War legacy is well known. From Eisenhower's predecessor, Harry Truman, who intervened in South Korea in 1950, to Ronald Reagan's intervention in Latin America in the 1980s, the domino theory undeniably stood "at the heart of American foreign policy" (Slater 1987, 105). America is not the only country to have rooted important foreign policy decisions in falling domino logic. Foreign policymakers in Germany, Britain, and elsewhere have reasoned according to this model as well (Jervis 1991, 20–21).

Although Eisenhower articulated his falling domino principle specifically in the context of communism, the basic idea of a political "domino effect" is much broader than this. Over the course of the twentieth century the falling domino model has been invoked in a variety of different contexts as a theory of geopolitical determination. Franklin D. Roosevelt, for example, adhered to a proto-domino theory concerned with fascist contagion (Ninkovich 1994). Roosevelt famously feared the spread of fascism not only through Hitler's military conquest, but also through fascism's spread to neighboring countries Hitler did not invade. Stanley K. Hornbeck, Roosevelt's Chief Advisor for Far Eastern Affairs in the State Department, likened the global geopolitical landscape to a gigantic fabric. "Disturb this fabric at any point," he argued, "and you produce disturbances throughout its entirety" (quoted in Ninkovich 1994, 92).

Most recently, a *democratic* domino idea has been used to justify American intervention in Iraq and the

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[1] Presidential News Conference, April 7, 1954.

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Middle East, which the *New Republic* called "the most important foreign policy decision in a generation" (Ackerman 2006). According to George W. Bush, "The establishment of a free Iraq at the heart of the Middle East will be a watershed event in the global democratic revolution."[2] By improving democracy in Iraq, it is argued, American occupation will lead to falling dominoes that democratize the Middle East.

Although the particular political-economic features of concern vary across renditions of the domino theory, the basic logic underlying domino-style reasoning is the same in each case. In this model, changes in one country's political institutions spread to neighboring countries, affecting these countries' political institutions similarly, which spreads to their neighbors, and so on. According to the democratic domino theory, for instance, increases in one nation's democracy lead to increases in its neighbors' democracy, leading to increases in their neighbors' democracy, and so on. The result is greater democracy in the region and world. On the other hand, decreases in democracy in one country may also "infect" neighboring nations, reducing their democracy, which spreads to their neighbors, deteriorating global democracy.

This article investigates evidence for the democratic domino theory. Despite this idea's importance guiding global foreign affairs, relatively little research has investigated whether in fact changes in democracy spread between geographic neighbors as this theory hypothesizes. Indeed, surprisingly few papers directly address the domino theory as a general proposition at all. Several Cold War–era papers offer their judgments about whether domino effects will be important in one country or another and what the broader consequences of falling dominoes might be in particular nations (see, for instance, Murphy 1966; Viksnins 1974). A handful of others argue that the stakes of falling dominoes during the Cold War were exaggerated (see, for instance, Slater 1987; Walt 2000). Several papers that consider how the domino theory metaphor has affected countries' foreign policy also exist (see, for instance, Shimko 1994).

Understandably for the time it was written, much of this research focuses exclusively on Southeast Asia or confines itself to other "specific dominoes" rather than on the question of falling dominoes more generally (see, for instance, Silverman 1975). An important exception to this is the excellent collection of essays compiled by Jervis and Snyder (1991), which taken together more broadly consider the domino idea using case studies to examine a variety of countries and regions.

More recently, a growing literature aims to empirically evaluate the idea of "democratic diffusion." The first author to systematically address this issue was Starr (1991), who used Poisson and hazard analysis to consider whether there may be regional or "neighborhood" effects of political regime transitions between 1974 and 1987. Following Starr, Ray (1995), Jaggers and Gurr (1995), and others considered global trends in democratization with a particular focus on the forces propelling what Huntington (1991) described as "the third wave" of democratization in his classic treatment that considered the growth of global democracy during the late twentieth century. O'Loughlin and colleagues' insightful work marked an important new approach to empirically addressing democratic diffusion based on what the authors called a "spatial-diffusion framework" (1998, 545). The authors used this framework to examine the temporal and spatial features of democratic diffusion in the post-WWII period by "map[ping] and graph[ing] changes in the number and nature of political regimes" (545). Similarly, Gleditsch and Ward (2000) consider the spatial dynamics of democracy to investigate the question of whether democracies are more or less prone to war. More recently, Starr and Lindborg (2003) have extended Starr's (1991) original analysis. Their paper does not use spatial methods like the other recent scholarship in this area, but it does expand the time period under consideration to include data up to 1996. Finally, Gleditsch and Ward (2006) and Franzese and Hays (2008) have highlighted the importance of recognizing and explicitly modeling spatial dependence in empirical analyses concerned with investigating the spread of democracy.

Despite this important research, as Starr and Lindborg point out, there are still "only a handful of studies directed to the . . . possibility of [democratic] diffusion effects" (2003, 491), leaving a number of critical questions at least partially unanswered. To our knowledge, no one, for example, has empirically investigated the democratic domino theory including the nearly full century between 1850 and the end of WWII. Further, although a few of the papers discussed above have considered general geographic and temporal correlations in the rise (and fall) of democracy throughout the world, no one to our knowledge has actually estimated the rate at which democracy spreads between countries, if in fact it does so as the democratic domino theory and some of the initial research discussed above suggest. In particular, still missing from the literature is an investigation of the equilibrium effects of democracy's spread—i.e., an estimate of the percentage of changes in democracy countries "catch" from

[2] "President Bush Discusses Freedom in Iraq and the Middle East." Remarks to the National Endowment for Democracy at the United States Chamber of Commerce, November 6, 2003.

their geographic neighbors once the inflow and outflow of democracy changes to and from their neighbors have been fully accounted for.

Thus, several key questions surrounding the democratic domino theory's validity remain. Does democracy spread, both historically and today? If so, to what extent? Does democracy spread with the same strength (or weakness) going back to 1850, in the post-WWII period, more recently? Could democratizing key countries in undemocratic portions of the world really lead to greater democracy in the region and beyond, as American policy leaders such as George W. Bush have argued?

This article explores these questions by using spatial econometric methods designed specifically to identify and measure spatial interdependences, such as the democratic interdependency postulated by the democratic domino theory. Our analysis differs from much previous research that considers "democratic diffusion" both in its reliance on spatial methods and also because of the kinds of results our methods deliver—namely, estimates of democracy's equilibrium spread rate between neighbors. To investigate the democratic domino theory we estimate both spatial autoregressive (SAR) and spatial error (SEM) models using panel data that span more than 130 countries for the century and a half between 1850 and 2000.

Our results suggest that democracy does in fact spread as the democratic domino theory contends. However, democratic dominoes fall significantly "lighter" than foreign policy applications of this principle pretend. Countries "catch" only about 11% of their average geographic neighbors' changes in democracy. This finding has potentially important foreign policy implications. The "lightness" with which democratic dominoes fall suggests that even if foreign military intervention aimed at promoting democracy in undemocratic countries succeeds in democratizing these nations, intervention is likely to have only a small effect on democracy in their broader regions.

This article limits itself to an investigation of the *democratic* domino theory—that is, to democratic contagion, as opposed to other forms of political contagion also based on domino thinking, such as communist contagion, or countries' political alignment with major superpowers, discussed above. Further, our analysis exclusively considers the geographic spread of democracy. In most variations of the domino theory, including the specifically democratic manifestation propounded most recently by the U.S. government with respect to the Middle East that this article explores, geography plays a critical role in this spread. However, nongeographic domino-type theories are also possible, and democracy may spread through other channels unrelated to geography.

## Potential Mechanisms of Democratic Dominoes

Simmons, Dobbin, and Garrett (2006) identify four potential mechanisms, or channels, through which democracy may spread between countries. Although these authors are not specifically concerned with a geography-based domino idea as we are, the mechanisms they identify are all plausible candidates for geographic democratic contagion. The first such channel is simple Tiebout competition. Although the transactions costs of migration are nontrivial between nations and can be very high in countries that strictly limit mobility, competition between governments can create strong incentives for geographic neighbors to increase democratic constraints, leading prodemocracy changes to spread throughout geographic regions. If a country strengthens its democracy, for instance by institutionalizing greater constraints on executive authority, it is likely to attract additional foreign business and direct investment as agents seek the most secure locations to undertake economic activity.[3] The firms and citizens that find this move the least costly are those in neighboring nations that share a border with the democratizing country. Their movement or potential movement can pressure neighboring countries to undertake similar democracy-oriented reforms to avoid losing their tax base. If these nations' neighbors in turn democratize to avoid losing their tax base to their democratizing neighbors, and so on, the resulting competition can lead to a contagion effect that creates greater democracy throughout a region of neighboring countries.

A second potential mechanism of democracy's spread between geographic neighbors is through the diffusion of prodemocracy ideas via a demonstration effect, or what Simmons, Dobbin, and Garrett call "learning." Neighboring countries can observe the activities of the countries around them and import successful ideas at a lower cost than if they had to look further abroad to find them. If one country employs democracy-enhancing ideas, its geographic neighbors may become more likely to adopt them as well. Once these countries have adopted democracy-enhancing ideas, their neighbors become more likely to adopt them, and so on. This process may cause a cascade of more democracy whereby increases in democracy in one country spread to countries around it. This "democracy demonstration effect" could also operate in conjunction

[3]Stronger constraints may have formal sources, such as legal changes, or informal ones, such as improved media monitoring of politicians' behavior. On media's role in this capacity, see, for instance, Coyne and Leeson (2004, 2009), Leeson and Coyne (2007), and Leeson (2008).

with a migration-style mechanism along the lines discussed above. Democracy advocates in one country, for example, may penetrate the borders of neighboring countries that are less democratic, carrying their ideas with them as well as providing the impetus for domestic prodemocratic reform.

A third potential channel of democracy's geographic spread is through economic communities or zones. As Pevehouse (2002a, 2002b) points out, economic communities such as NAFTA and the EU often harmonize not only their members' economic policies, but also their members' political arrangements, in some cases requiring members to satisfy certain institutional requirements as a condition of membership. In many cases admission to these communities confers benefits on members in the form of cross-country subsidization, protection alliances, and so forth. These benefits raise the value of joining economic zones, creating an incentive for nonmember nations to increase their level of democracy if, for example, membership requires institutional constraints that directly or indirectly serve to limit the executive's authority. Since economic communities are often geographically based, their presence may in this way produce spreading democracy throughout a region of neighboring countries.

The final potential mechanism of democratic contagion that Simmons, Dobbin, and Garrett highlight is what they call "emulation." According to this idea, some "big player" countries, such as the United States, lead in terms of political institutions (and policies), which other countries then follow. If the United States strengthens its democracy in some fashion, other countries may do so as well. Like the other channels considered above, this channel need not be a geographic mechanism of spreading democracy. If, for instance, Argentina follows prodemocracy reform in the United States, democracy may spread but not between geographic neighbors. However, within various geographic regions there may be local "big players"—regional leader countries—that neighboring nations tend to look to in guiding their behavior. In this way emulation may also be a geographic channel for democratic dominoes between neighboring countries.

These are only a few of the imaginable mechanisms through which democratic dominoes might be set in motion. Surely others could be proposed. Further, while in principle some of these channels, such as emulation, may be capable of spreading either increases or decreases in democracy geographically, others, such as Tiebout competition, may only be capable of spreading increases in democracy geographically. Although these channels are conceptually distinct, separating them empirically is a different matter. Our interest is in identifying if there is in fact any significant empirical evidence for democratic dominoes regardless of their source and, if there is, establishing how "hard" they fall. It is not our goal, nor does our empirical strategy allow us, to identify which, if any, of the specific potential channels of democracy's geographic spread have or have not been at work at various points in history. Although it does not do so in a spatial econometric framework and is not focused only on democracy, some existing research has found evidence for various kinds of "policy diffusion" via each of the channels pointed to above (see, for instance, Elkins, Guzman, and Simmons 2006; Gleditsch and Ward 2006; Lee and Strang 2006; Swank 2006). Future work should attempt to pinpoint the operation of these and other specific mechanisms explicitly in the context of the spatial framework this article employs.

## Data and Empirical Strategy

Our basic empirical strategy, discussed in detail below, follows Leeson and Sobel (2007), who investigate "capitalist contagion" between neighboring countries. We search for spatial dependence in changes in democracy across geographic neighbors over time. To do this we construct a panel of democracy scores for four different time periods: 1851–2001, 1901–2001, 1951–2001, and 1991–2001. We want to take advantage of the fact that international democracy scores are available going back to the start of the nineteenth century. However, the further back our sample goes the fewer countries it contains. Although democracy data extend back to 1800, they are only available for seven countries we can use and none of these countries are geographic neighbors. This prevents us from constructing a spatial weight matrix to estimate democracy's spread between them. However, the data do permit us to consider a panel that extends back to 1850, which consequently constitutes our longest sample.

Considering four different samples that cover different time periods allows us to maximize the number of years and number of countries our analysis considers. It also allows us to see if the process of democratic contagion described by the democratic domino theory may have been at work during certain periods but not others. Appendix A lists all of the countries in each of our samples. Each sample contains only those countries that exist from the first year of the sample under consideration until the last year in the sample. For example, a country that only came into being in, say, 1920, would not be included in the 1901–2001 sample. This is why our 1901–2001 sample, for instance, has fewer observations than our 1951–2001 sample. To generate spatial estimates, the

spatial weight matrix requires values for all countries in all years in the sample.

Our data on democracy come from the Polity IV project (2004), which measures countries' levels of democracy annually, beginning with 1850. This measure ranges from −10, or "total autocracy," to +10, or "total democracy." To measure the extent of democracy across countries, the Polity IV data consider the presence of political institutions and procedures through which citizens can express effective preferences about alternative policies and leaders and the existence of institutionalized constraints on the executive's exercise of power. The resulting democracy measure captures the competitiveness of political participation, openness and competitiveness of executive recruitment, and constraints on the chief executive in each country. Polity IV has constructed a variable to measure these factors specifically for the purpose of time-series analysis, which makes each country's democracy score comparable over time. We use this measure, called Polity 2, for our analysis.

Our econometric analysis uses spatial methods, which are the most natural and effective way to reliably estimate the spread of democracy between geographic neighbors. Unlike Ordinary Least Squares, which produce biased estimates in the face of spatial correlation, spatial methods are designed specifically to identify and measure spatial dependence. This makes spatial methods ideally suited to investigate the democratic domino theory since, as Danilovic points out, the domino theory is "premised on this understanding of international events as spatially interdependent" (2001, 344). If there is strong spatial dependence between countries' changes in democracy as the democratic domino theory contends, spatial methods will identify it and efficiently estimate this dependence. We use two spatial models for this purpose, a spatial autoregressive model (SAR) and a spatial error model (SEM). Each searches for spatial dependence in a different way.

For readers unfamiliar with spatial methods it is useful to think of the SAR model as analogous to an autoregressive (AR) time-series model but with lags over geographic distances rather than time. So, for a country *i*, one spatial lag refers to all of *i*'s contiguous geographic neighbors, two spatial lags refers to contiguous geographic neighbors of *i*'s neighbors (*i*'s neighbors that are two countries away), and so on.

The SAR model specifies each country's dependent variable, in our case changes in democracy, as a function of the weighted value of the changes in democracy in its neighbors. It models how explained changes in democracy spill over onto geographic neighbors. The SAR model allows potential democracy spillovers to flow multidirectionally rather than unidirectionally as it would in an AR time-series model. This is important since we are interested in how changes in democracy may flow into and out of multiple countries, influencing the extent of democracy in each nation.

The SEM model is analogous to the moving average (MA) time-series model for contiguous geographic neighbors, which includes a spatially correlated error structure. The SEM model specifies each country's error term, in our case for changes in democracy, as a function of the weighted value of the changes-in-democracy error term of its geographic neighbors. It models how unexplained changes in democracy spill over onto geographic neighbors. Like the SAR model, the SEM model allows for multidirectional flows of influence rather than unidirectional flows as it would in an MA time-series model.

Our SAR model takes the form:

$$\Delta \mathbf{D}_t = \alpha + \rho \mathbf{W} \Delta \mathbf{D}_t + \mathbf{D}_{t-5}\beta + \mathbf{X}_\omega + \boldsymbol{\nu}_t$$

where $\Delta \mathbf{D}_t$ is an N × 1 vector that measures countries' changes in democracy between year $t$ and year $t - 4$. We consider countries' changes in democracy over four-year periods to allow sufficient time for changes in countries' democracy to occur. $\mathbf{D}_{t-5}$ is an N × 1 vector that measures countries' lagged levels of democracy—i.e., the level of democracy that prevailed in each country the year immediately preceding the four-year period over which countries' changes in democracy are calculated. $\mathbf{X}$ is an N × K matrix of exogenous variables, and $\boldsymbol{\nu}_t$ is an N × 1 vector of IID random errors.[4]

We include countries' lagged levels of democracy in order to control for as many factors as possible besides democratic contagion that might affect changes in democracy in its geographic neighbors. This variable accounts for the fact that geographic neighbors often share a similar colonial origin, legal origin, form of government, degree of ethnolinguistic fractionalization, and other such factors that tend to persist over time. It controls for any features of countries that contribute to their changes in democracy which were present the year before the period of tabulated change. The lagged democracy variable is also useful because it allows us to determine whether there is "democratic convergence" across countries. If countries with lower levels of democracy in the previous period grow faster in terms of democracy the following period, β will be negative, suggesting democratic convergence. If countries with lower levels of democracy in the previous

[4]To estimate our SAR model we use the spatial estimation program for MATLAB from Jim LeSage's "Econometrics Toolbox," publicly available at http://www.spatial-econometrics.com/. We use the "sar" command, which implements a maximum likelihood estimation.

period grow slower in terms of democracy the following period, $\beta$ will be positive, suggesting "democratic divergence."

**W** is an N × N spatial weight matrix based on first-degree contiguity (bordering geographic neighbors). For example, since the United States has two contiguous geographic neighbors, Canada and Mexico, each of these countries receives a weight of 1/2 in the spatial weight matrix, **W**, as America's geographic neighbors. This feature of the model makes it ideal to test the democratic domino theory since, as Johnson points out, this theory explicitly "linked geography to politics by assuming that the political fate of . . . a nation would inevitably affect the fate of contiguous nations in a continuous chain fashion" (1985, 39). $\rho$, our parameter of interest in the SAR model, is the spatial autoregressive coefficient. It measures the spread of changes in democracy between geographic neighbors. If democracy spreads as the democratic domino theory suggests, this coefficient should be positive and significant.

Our SEM model takes the form:

$$\Delta \mathbf{D}_t = \alpha + \mathbf{D}_{t-5}\beta + \mathbf{X}\omega + \varepsilon_t;\ \lambda \mathbf{W}\Delta\varepsilon_t + \eta_t$$

where our parameter of interest is $\lambda$, the spatial autocorrelation coefficient, which measures the spread of democracy using the SEM model.

One nice feature of the geography-based democratic domino theory for the purposes of empirical investigation is that, since it is geography-based, we do not need to worry about the potential for endogeneity bias. Geography is exogenous. Countries cannot choose their geographic location and are thus unable to affect who they have as geographic neighbors. This removes reverse causality as a concern for our spatial estimates.

The biggest disadvantage of investigating the spread of democracy geographically is the question of how to deal with islands, which have no contiguous geographic neighbors. Because of this, in the full sample the geographic spatial weight matrix contains values of zero when predicting changes in democracy of islands.[5] We address this issue in two ways. First, we run our regressions on the entire sample treating islands as countries without neighbors and include a binary variable that controls for island status. Second, as a robustness check we estimate both spatial models excluding islands from the sample to ensure that treating islands this way does not affect our estimates.[6] The results of this robustness check are discussed in the sixth section, which performs a sensitivity analysis of our spatial regressions.

## Does Democracy Spread? The Evidence at a Glance

A preliminary look at the data lends support to the democratic domino theory. In Figure 1 we create four maps that display democracy in the world in four time periods that correspond to the first year in each of our four samples: 1850, 1900, 1950, and 1990. We color-code countries according to four democracy/autocracy categories: countries with democracy scores between −10 and −7 (strong autocracies), those with scores between −6 and 0 (weak autocracies), countries with scores between 1 and 6 (weak democracies), and those with scores between 7 and 10 (strong democracies). More democratic countries receive darker shading and less democratic countries receive lighter shading. The white countries are those for which we do not have democracy scores in certain years.

Two features stand out in Figure 1. First, there is substantial geographic dependence in democracy. Consider, for example, democracy in the world in 1990. All of North America is highly democratic. So, too, are the countries of South America. All of the countries in Western Europe are highly democratic, while Central Europe is more weakly democratic, and the countries of Eastern Europe are quite undemocratic. Africa is a bit more mixed, but even here democracy displays strong geographic dependence. The southernmost part of Africa is quite democratic; the northern region is less democratic than these countries; and the vast majority of the rest of the continent is highly undemocratic.

The second feature that stands out in Figure 1 is that changes in democracy over time also display significant geographic dependence. Consider, for example, the pattern in the southern part of South America over time. Figure 1 clearly shows democracy increasing together in the countries in this region as one moves from the map for 1950 to the map for 1990 and creeping throughout the rest of the continent as well. A similar pattern exists among the nations of Central Europe. Between 1950, in the throws of the Cold War, and 1990, when communism

[5]The fact that islands have values of zero in **W** does not pose a problem for performing our estimation because **W** does not enter directly into the regression. **W**, recall, is multiplied by $\Delta \mathbf{D}_t$ in the SAR model, and by $\Delta \boldsymbol{\varepsilon}_t$ in the SEM model. This matrix multiplication results in a column vector of values that enter the regression. In the case of an island, the value in the corresponding row of this column is zero. Of course, all of the nonislands represented in the other rows of this column will have nonzero values.

[6]Because of some missing observations, our sample includes a small number of "data islands"—countries that have contiguous geographic neighbors for which data are not available. Our empirical analysis treats these the same as actual islands.

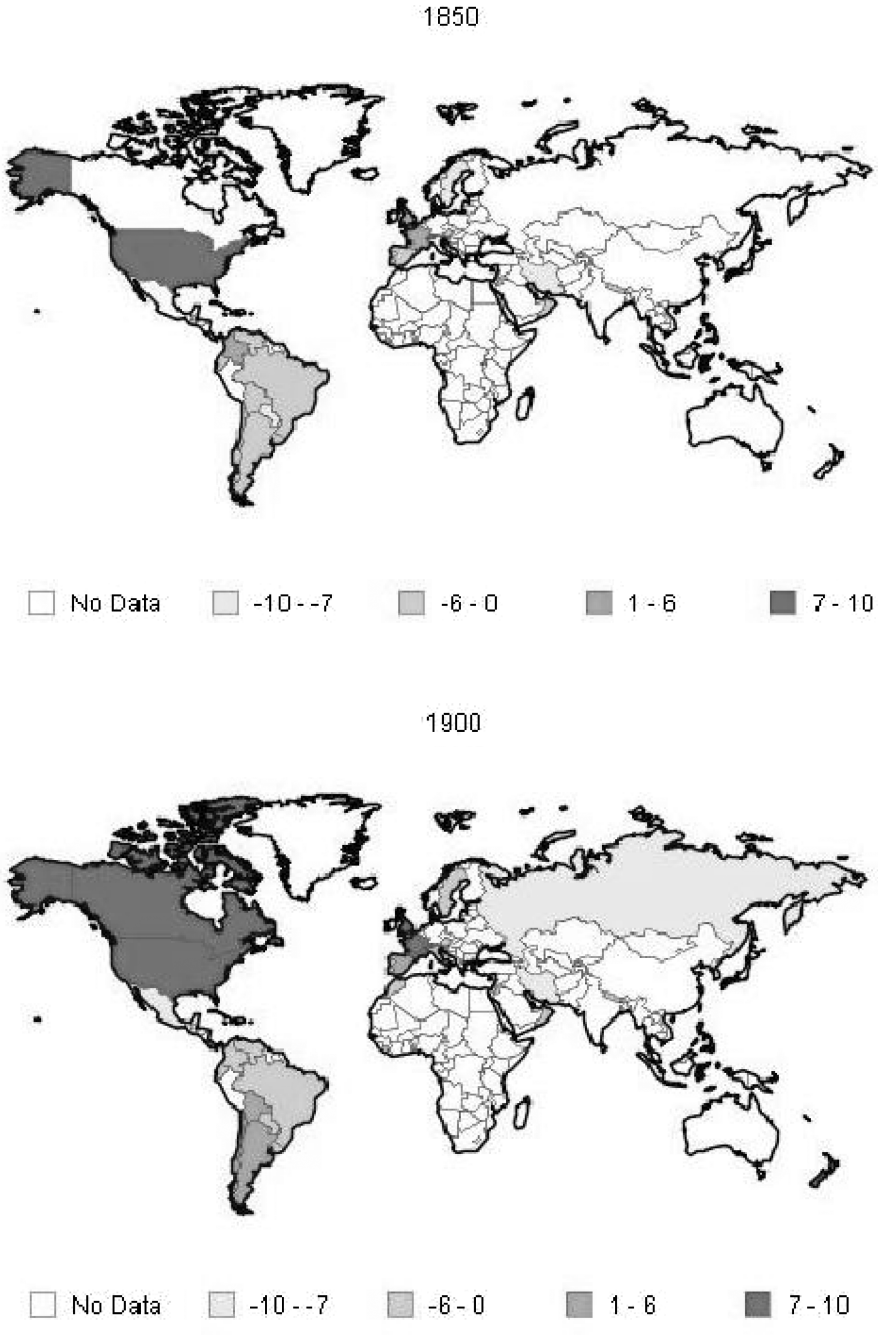
is collapsing, democracy is clearly increasing among neighboring countries in this region together.

In the graphics, at least, there is some support for the democratic domino theory. Regions, rather than isolated countries, are typically democratic, moderately democratic, or undemocratic. Furthermore, the most notable changes in democracy over time appear to occur in bordering countries, which move together as the democratic domino theory suggests.

## Benchmark Results

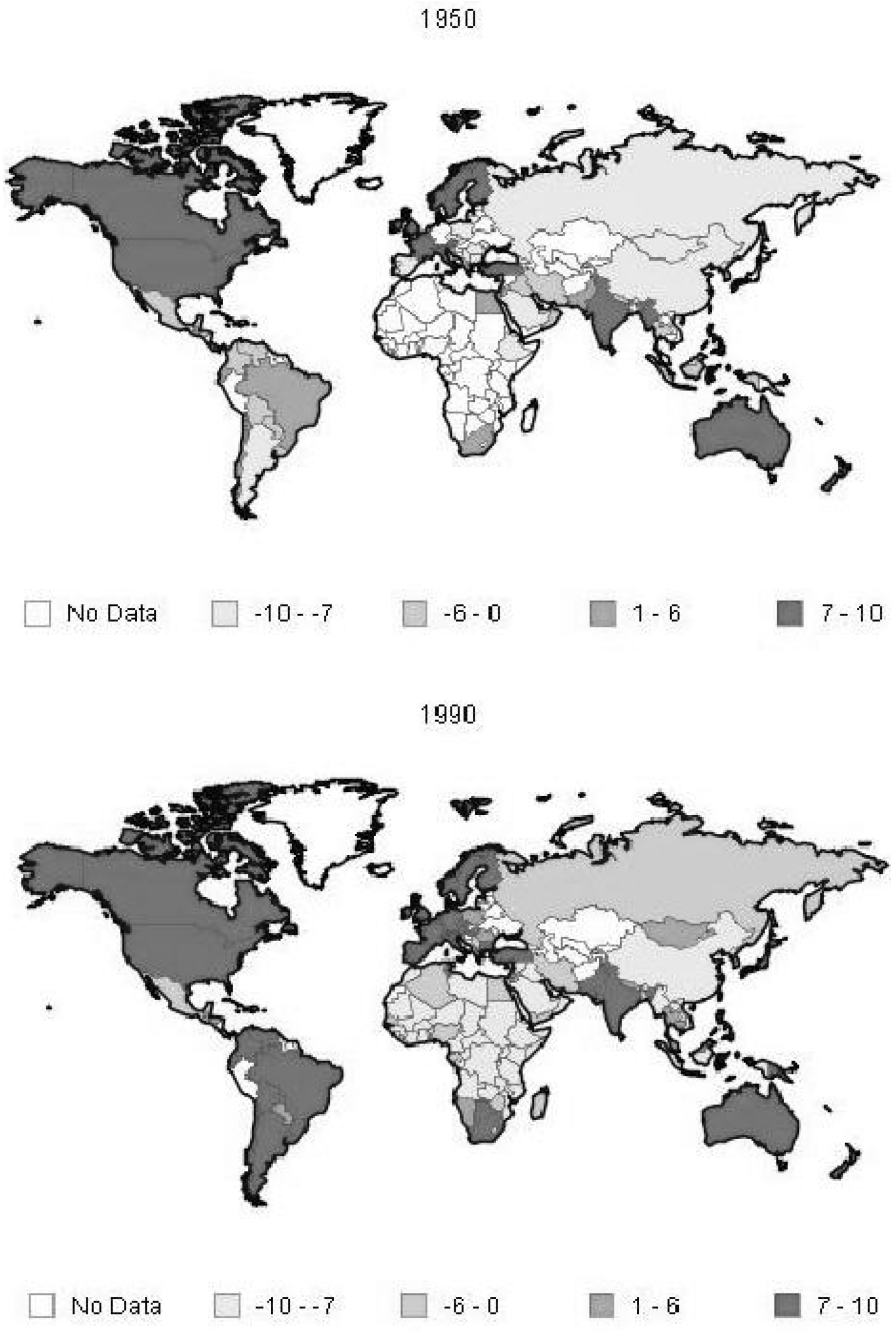
While the visual evidence is intriguing, to determine if democracy spreads as the democratic domino theory contends, we need to isolate the spread of democracy between nations econometrically. We begin this task with our simplest spatial model, which looks for spatial dependence in changes in democracy between geographic

**FIGURE 1 Evidence for the Democratic Domino Theory at a Glance**




*continued*

**FIGURE 1 Continued**




neighbors, controlling only for island status. Table 1 contains our results using our longest sample, which covers the years between 1851 and 2001. The left panel of this table presents our results using the SAR model, and the right panel presents our results using the SEM model. In both panels the first column contains this stripped-down specification.

The spatial coefficients in both models are highly significant, confirming the strong presence of spatial dependence in changes in democracy between geographic neighbors suggested by Figure 1. Unadjusted, a country, *i*, whose geographic neighbors on average experience a one-unit larger increase in democracy than the geographic neighbors of some other country, *j*, experiences

**TABLE 1 The Spread of Democracy, 1851–2001**

| | SAR | | | | SEM | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Rho | 0.085*** | 0.078*** | 0.021*** | 0.019*** | | | | |
| | (4.660) | (4.518) | (6.812) | (6.466) | | | | |
| Lambda | | | | | 0.082*** | 0.111*** | 0.008*** | 0.046** |
| | | | | | (4.560) | (15.114) | (3.296) | (2.224) |
| Lagged Democracy | | −0.134*** | | −0.336*** | | −0.142*** | | −0.340*** |
| Level | | (15.090) | | (2.093) | | (15.701) | | (26.074) |
| Constant | 0.325*** | 0.439*** | 0.677 | 1.111** | 0.341*** | 0.460*** | 0.685 | 1.126** |
| | (5.157) | (7.135) | (1.164) | (2.093) | (5.143) | (7.002) | (1.174) | (2.078) |
| Log-likelihood | −7873.617 | −7763.512 | −7766.457 | −7456.674 | −7873.817 | −7756.204 | −7767.091 | −7454.800 |
| R-squared | 0.001 | 0.061 | 0.068 | 0.225 | 0.009 | 0.077 | 0.068 | 0.227 |
| Observations | 3358 | 3358 | 3358 | 3358 | 3358 | 3358 | 3358 | 3358 |

*Notes:* Dependent variable: change in democracy (t-statistics in parentheses). Spatial weight matrix: first-order contiguity. *** = 1%, ** = 5%, * = 10%. Variable included but not reported: island dummy in columns 1 and 2. Columns 3 and 4 include year and country fixed effects.

a 0.085-unit larger increase in democracy than *j*. It does not matter whether we use the SAR or SEM model, which deliver nearly identical estimates. If one cut a hole in a map that contained no countries' names but instead only their changes in democracy, he could predict the missing country's movement in democracy by taking 8.5% of the average change in democracy in its geographic neighbors and adding it to the constant in row four.

In the second column of both panels we control for countries' lagged levels of democracy. The coefficient on lagged democracy is negative and highly significant, suggesting there has been "democratic convergence" globally since 1850. More democratic countries experience smaller increases in democracy over time than less democratic countries. Further, controlling for lagged democracy generates similar spatial coefficients to those above in both models. In the SAR model the spatial coefficient falls slightly, and in the SEM model it rises slightly. Countries "catch" between 8 and 11% of the average change in democracy in their geographic neighbors.

Columns 3 and 4 replicate columns 1 and 2, only here we include a comprehensive set of year and country fixed effects. Our year fixed effects control for any features, such as global business cycles, oil shocks, etc., that are common across countries but vary across time. Our country fixed effects control for any permanent differences across countries that might be important in contributing to their changes in democracy over time.[7] Column 3 contains our stripped-down specification; column 4 controls for lagged levels of democracy. Including two-way fixed effects has an important influence on our estimates of democracy's spread rate. In both specifications in both models this spread rate drops significantly. Using the SAR model, countries "catch" only about 2% of the average change in democracy in their geographic neighbors. Using the SEM model, countries "catch" between 1 and 5% of this change. These results are highly significant but democratic contagion is considerably smaller.

Table 2 considers the same eight specifications for the sample that covers the years between 1901 and 2001. The democratic contagion described by the democratic domino theory is as prominent looking only at the twentieth century as it is considering the period from 1851 to 2001, and in fact is a bit stronger. Without fixed effects democracy spreads at a rate of about 11% between neighbors. When fixed effects are included democracy's spread rate again falls, here to about 5%. However, in the two-way fixed effects specification for the SEM model that also controls for lagged levels of democracy, democracy's spread rate regains its former strength of about 12%. Compared to the estimates from the previous sample, which extended back to the midnineteenth century, the estimates in Table 2 suggest that democratic dominoes have fallen somewhat "harder" in the twentieth century but that their force has remained modest.

Table 3 considers the period between 1951 and 2001, which delivers results very similar to those for the period between 1901 and 2001. In the specifications without

[7] An earlier version of this article used continent dummies to control for potentially important "geographic effects." Here, we take a more comprehensive and informative, albeit admittedly still imperfect, approach to this that controls for country fixed effects, income, income growth, and lagged democracy.

**TABLE 2 The Spread of Democracy, 1901–2001**

| | SAR | | | | SEM | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Rho | 0.107*** | 0.107*** | 0.058*** | 0.050*** | | | | |
| | (14.375) | (14.353) | (10.841) | (10.020) | | | | |
| Lambda | | | | | 0.107*** | 0.109*** | 0.050*** | 0.118*** |
| | | | | | (14.377) | (14.514) | (10.084) | (6.086) |
| Lagged Democracy | | 0.088*** | | −0.395*** | | 0.091*** | | −0.413*** |
| Level | | (9.141) | | (26.454) | | (9.195) | | (26.765) |
| Constant | 0.389*** | 0.210** | 0.647 | 1.452*** | 0.436*** | 0.250** | 0.696 | 1.545*** |
| | (4.460) | (2.378) | (1.062) | (2.650) | (4.457) | (2.538) | (1.119) | (2.687) |
| Log-likelihood | −7046.508 | −7005.320 | −6954.528 | −6640.991 | −7046.507 | −7004.821 | −6955.726 | −6630.105 |
| R-squared | 0.015 | 0.043 | 0.073 | 0.252 | 0.015 | 0.043 | 0.072 | 0.261 |
| Observations | 2910 | 2910 | 2910 | 2910 | 2910 | 2910 | 2910 | 2910 |

*Notes:* Dependent variable: change in democracy (t-statistics in parentheses). Spatial weight matrix: first-order contiguity. *** = 1%, ** = 5%, * = 10%. Variable included but not reported: island dummy in columns 1 and 2. Columns 3 and 4 include year and country fixed effects.

**TABLE 3 The Spread of Democracy, 1951–2001**

| | SAR | | | | SEM | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Rho | 0.115*** | 0.113*** | 0.046** | 0.051*** | | | | |
| | (17.848) | (17.661) | (2.462) | (12.046) | | | | |
| Lambda | | | | | 0.114*** | 0.143*** | 0.045** | 0.096*** |
| | | | | | (17.768) | (19.536) | (2.421) | (16.311) |
| Lagged Democracy | | −0.115*** | | −0.451*** | | −0.127*** | | −0.461*** |
| Level | | (14.145) | | (29.404) | | (15.006) | | (29.931) |
| Constant | 0.566*** | 0.648*** | 0.396 | −0.475 | 0.639*** | 0.729*** | 0.470 | −0.399 |
| | (7.967) | (9.364) | (0.593) | (0.792) | (7.963) | (9.068) | (0.694) | (0.643) |
| Log-likelihood | −7883.809 | −7786.702 | −7697.653 | −7313.806 | −7883.806 | −7776.659 | −7697.823 | −7305.073 |
| R-squared | 0.018 | 0.074 | 0.119 | 0.302 | 0.018 | 0.083 | 0.119 | 0.308 |
| Observations | 3290 | 3290 | 3290 | 3290 | 3290 | 3290 | 3290 | 3290 |

*Notes:* Dependent variable: change in democracy (t-statistics in parentheses). Spatial weight matrix: first-order contiguity. *** = 1%, ** = 5%, * = 10%. Variable included but not reported: island dummy in columns 1 and 2. Columns 3 and 4 include year and country fixed effects.

fixed effects democracy's spread rate hovers around 11–14%. When fixed effects are included democracy's spread rate again falls to about 5%. Similarly, as in Table 2, here also the SEM model that includes fixed effects and controls for lagged levels of democracy produces a larger estimate consistent with the specifications that do not include fixed effects.

Table 4 presents our results using our most recent sample, which covers the years between 1991 and 2001. Depending upon the model and specification one looks at, democracy's spread rate is between 10 and 17%. Including year and country fixed effects again reduces this significantly, here to between 1.4 and 3.5%. When we control for lagged levels of democracy in column 4 we get similar, though slightly smaller, results to those above. Democracy spreads at a rate of between 3 and 4%. In column 3, however, which includes two-way fixed effects but does not control for lagged levels of democracy, for the first time our spatial coefficient loses its significance.

The results in Tables 1–4 find significant spatial dependence in changes in democracy between neighboring nations. The basic principle described by the democratic domino theory appears to be valid. However, our estimates also indicate that the strength with which

**TABLE 4 The Spread of Democracy, 1991–2001**

| | SAR | | | | SEM | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Rho | 0.135*** | 0.097*** | 0.014 | 0.028*** | | | | |
| | (3.602) | (7.864) | (0.288) | (4.329) | | | | |
| Lambda | | | | | 0.132*** | 0.169*** | −0.018 | 0.036*** |
| | | | | | (3.559) | (4.636) | (0.255) | (5.051) |
| Lagged Democracy | | −0.187*** | | −0.153*** | | −0.207*** | | −0.152*** |
| Level | | (11.927) | | (5.490) | | (12.139) | | (8.612) |
| Constant | 0.839*** | 1.186*** | −5.348*** | −6.058*** | 0.970*** | 1.320*** | −5.441*** | −6.243*** |
| | (6.413) | (9.942) | (7.047) | (7.677) | (6.713) | (9.247) | (5.482) | (8.612) |
| Log-likelihood | −2232.099 | −2166.390 | −1477.112 | −1458.236 | −2232.099 | −2160.803 | −1477.065 | −1458.096 |
| R-squared | 0.023 | 0.145 | 0.940 | 0.943 | 0.022 | 0.163 | 0.940 | 0.943 |
| Observations | 945 | 945 | 945 | 945 | 945 | 945 | 945 | 945 |

*Notes:* Dependent variable: change in democracy (t-statistics in parentheses). Spatial weight matrix: first-order contiguity. *** = 1%, ** = 5%, * = 10%. Variable included but not reported: island dummy in columns 1 and 2. Columns 3 and 4 include year and country fixed effects.

democratic dominoes fall has been overstated by those who have reasoned according to domino effect logic. Although his comments referred specifically to communist as opposed to democratic dominoes, President Eisenhower, for example, argued that dominoes "go over very quickly" and, when falling in an undesirable direction, create a "disintegration that would have the most profound influences."[8] A spread rate of approximately 11% (and only about half this size or smaller if we use the estimates that include two-way fixed effects) is hardly one that could be described as leading political dominoes to "go over very quickly" and is not one capable of producing "the most profound influences." Perhaps communist dominoes fall far "harder" than democratic ones. But democratic dominoes, at least, do not generate impressive spillover effects.

To see this, consider a simple example, such as the United States, which has only two first-order contiguous geographic neighbors, Canada and Mexico. Between 1996 and 2000 democracy in the United States and Canada did not measurably change and in Mexico increased from 4 to 8, a positive four-unit democracy score change. The average change in democracy in North America was therefore 1.33. Using the estimates from Tables 1–4 we can predict what the change in democracy would be in these countries and for North America as a whole if instead the United States became dramatically less democratic, falling to, say, the level of democracy in Iran over this four-year period, which was 3.

[8]Presidential News Conference, April 7, 1954.

The equation for calculating the difference between Canada and Mexico's current changes in democracy and their changes in democracy under this scenario is simply: $\partial \Delta F_i = \rho\, w_{i,j} \cdot \partial \Delta F_j$. Using a democracy spread rate of 0.11 from Tables 1–4, for Canada, this means its change in democracy would fall by: $(0.11 \times 1) \times (3 - 10) = -0.77$, making its new change in democracy: $0 - 0.77 = -0.77$. For Mexico this operation is slightly more difficult because unlike Canada, which has only the United States as a neighbor, Mexico has three neighbors: the United States, Guatemala, and Belize. The presence of these additional neighbors softens the fall in Mexico's democracy increase that would occur if American democracy fell to the level in Iran because having more neighbors dilutes the democracy contagion effect coming from any one neighbor. It is easy to see this when we calculate the change in Mexico's democracy increase: $(0.11 \times (1/3)) \times (3 - 10) = -0.257$, which would make Mexico's new change in democracy: $4 - 0.257 = 3.74$. If the United States had a decrease in democracy sufficient to make it as undemocratic as Iran, the average change in North American democracy would therefore be: $(-7 - 0.77 + 3.47)/3 \approx -1.43$. This amounts to a $(1.33 - -1.43 =)$ 2.76-unit overall reduction in North America's average democracy score change over the period. To put the size of this effect in perspective, this democracy change decrease is slightly larger than the current difference in democracy between Mexico and the United States; slightly smaller than the current difference in democracy between Russia and the United States; and 2.76 times larger than the current difference in democracy between France and the United States.

This effect is not negligible. But given the rather dramatic fall in democracy associated with the United States going from one of the most democratic countries in the world to as undemocratic as Iran, it is quite small. So, while our estimates indicate that there is a statistically significant democratic domino effect, its influence on overall regional democracy is modest. In large part this modesty stems from the fact that most countries have multiple neighbors. The more neighbors a country has, the more diluted is the positive or negative "wave" of democratic change spreading to it from any one neighbor, muting the "heft" with which democratic dominoes fall.

Our calculation above is computed using a common spatial coefficient in Tables 1–4 based on the specifications that did not include year and country fixed effects, about 0.11. If we use the estimates from the two-way fixed effects specifications, the relevant spatial coefficient is about 0.5 (and even smaller in some specifications), which would reduce the already modest impact on North America's average democracy score change to a 2.49-unit reduction. Indeed, even if we use the largest spatial coefficient from any specification in Tables 1–4 (0.17), the democratic domino effect remains small. In this case, if the United States fell in terms of democracy to the status of Iran, North America's average democracy score change would fall by 2.86 units.

## Sensitivity Analysis

In addition to estimating both SAR and SEM models for multiple samples covering different years, we take several further steps to ensure the robustness of our core result, which finds evidence for the democratic domino theory but suggests that the domino effect is not large. First, we try controlling for some potentially important domestic variables that may have an effect on countries' changes in democracy. In particular we want to control for countries' income levels and income growth rates, since these may be important contributors to countries' changes in democracy. In our benchmark regressions in Tables 1–4 we use a specification that controls for countries' lagged levels of democracy to capture any slowly changing factors that contributed to countries' previous levels of democracy and might impact their subsequent changes in democracy. However, both income and income growth can change more rapidly. Thus it may be important to control for these independently.

Tables 5–7 report our results when we do this. Our GDP per capita (in 1990 Geary-Khamis dollars) and GDP per capita growth rate data are from Maddison's dataset. Data limitations prevent us from estimating the sample that goes back to 1851. However, we are able to estimate our 1901–2001, 1951–2001, and 1991–2001 samples. We try estimating regressions that control only for countries' GDP per capita, only their GDP per capita growth rate, and both at the same time. The estimates presented in Tables 5–7 include year and country fixed effects. However, we also reran each of these regressions excluding fixed effects and found virtually identical results. In the 1901–2001 sample our spatial estimates remain significant but drop to 0.01 regardless of the specification one looks at. In the 1951–2001 sample democracy's spread rate rises to about 11%, again regardless of the specification one considers. Finally, in the 1991–2001 sample democracy's estimated spread rate is between 10 and 13%, depending on the specification. The results in Tables 5–7 suggest that controlling for income and income growth rates does not matter much for our estimates. The estimated spread rate of democracy in these tables falls within the range of spread rates estimated in our benchmark regression in Tables 1–4. It should be emphasized that the modesty of the contagion effect even after controlling for these domestic covariates does not imply that the covariates' effect on countries' changes in democracy is large or relatively important. Given the smallness of the coefficient on GDP per capita, for instance, our results suggest that even a very large change in income would not have a large influence on a country's change in democracy.[9]

Second, to address the issue of islands raised above, which do not have contiguous geographic neighbors, we rerun all of our benchmark regressions for each of our four samples on a subsample that excludes islands. Since they are generally similar to those we find when we do not exclude islands from the sample, we do not report these results separately. In some specifications the spatial coefficient loses significance. But democracy's spread rate tends to fall within the range of estimates generated in Tables 1–4. The exception to this is the sample that considers the period from 1951 to 2001, which is more sensitive to the exclusion of islands. In this sample, without islands, the spatial coefficient in the regressions without fixed effects rises to about 0.33. Notably, however, when fixed effects are included the spatial coefficient returns to a level consistent with the "normal" range of estimates

[9]This is true even after taking into account GDP per capita's equilibrium effect. The precise size of this effect in a particular case will of course depend on the number of neighbors a country has. But roughly speaking, the spatial multiplier is $(1 - 0.10)^{-1} = 1/0.9 = 1.11$. The approximate equilibrium effect of GDP per capita, then, is only $-0.001 * 1.11 = -0.0011$, which is very small.

**TABLE 5 Controlling for GDP p/c and GDP p/c Growth Rate, 1901–2001**

| | SAR | | | | SEM | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Rho | 0.011*** | 0.011*** | 0.011*** | 0.010*** | | | | |
| | (5.002) | (5.011) | (5.003) | (5.011) | | | | |
| Lambda | | | | | 0.010*** | 0.011*** | 0.010*** | 0.010*** |
| | | | | | (4.799) | (4.813) | (4.797) | (4.812) |
| GDP p/c | | −0.001 | | −0.001 | | −0.001 | | −0.001 |
| | | (0.140) | | (0.143) | | (0.139) | | (0.140) |
| GDP p/c Growth Rate | | | −0.304 | −0.306 | | | −0.288 | −0.289 |
| | | | (0.099) | (0.100) | | | (0.092) | (0.094) |
| Constant | 0.814 | 0.808 | 0.812 | 0.810 | 0.816 | 0.809 | 0.815 | 0.810 |
| | (0.991) | (0.985) | (0.990) | (0.989) | (0.992) | (0.988) | (0.991) | (0.990) |
| Log-likelihood | −5810.298 | −5810.003 | −5810.286 | 5810.001 | −5810.298 | −5810.004 | −5810.285 | −5810.002 |
| R-squared | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Observations | 1843 | 1843 | 1843 | 1843 | 1843 | 1843 | 1843 | 1843 |

*Notes:* Dependent variable: change in democracy (t-statistics in parentheses). Spatial weight matrix: first-order contiguity. *** = 1%, ** = 5%, * = 10%. Columns 1–4 include year and country fixed effects.

**TABLE 6 Controlling for GDP p/c and GDP p/c Growth Rate, 1951–2001**

| | SAR | | | | SEM | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Rho | 0.116*** | 0.113*** | 0.113*** | 0.107*** | | | | |
| | (6.682) | (17.672) | (17.674) | (15.892) | | | | |
| Lambda | | | | | 0.114*** | 0.109*** | 0.108*** | 0.104*** |
| | | | | | (15.842) | (17.583) | (17.586) | (15.998) |
| GDP p/c | | −0.001 | | −0.001 | | −0.001 | | −0.001 |
| | | (0.370) | | (0.382) | | (0.369) | | (0.385) |
| GDP p/c Growth Rate | | | −4.385*** | −4.386*** | | | −4.395*** | −4.397*** |
| | | | (4.103) | (4.103) | | | (4.056) | (4.057) |
| Constant | 0.825*** | 0.827*** | 0.859*** | 0.861*** | 0.826*** | 0.827*** | 0.860*** | 0.861*** |
| | (8.578) | (7.781) | (9.398) | (7.884) | (8.580) | (7.784) | (9.400) | (7.885) |
| Log-likelihood | −7429.732 | −7429.597 | −7428.752 | −7428.635 | −7429.733 | −7429.596 | −7428.753 | −7428.635 |
| R-squared | 0.019 | 0.018 | 0.023 | 0.023 | 0.018 | 0.018 | 0.022 | 0.023 |
| Observations | 3082 | 3082 | 3082 | 3082 | 3082 | 3082 | 3082 | 3082 |

*Notes:* Dependent variable: change in democracy (t-statistics in parentheses). Spatial weight matrix: first-order contiguity. *** = 1%, ** = 5%, * = 10%. Columns 1–4 include year and country fixed effects.

in Tables 1–4, between 0.12 and 0.18, depending on the model and specification one considers.

Third, we rerun all of our benchmark regressions for both models in each of our samples looking at countries' levels of democracy instead of their changes in democracy. Although the traditional rendering of the democratic domino theory clearly suggests that it is changes in democracy that spread between neighbors, considering levels is another way to evaluate the theory's basic claim. We again do not report these results separately since they do not shed any new light on our question of interest and simply confirm our finding from above. In some of the fixed-effects specifications our coefficient of interest remains small and positive but loses significance. In our stripped-down specification that does not control for lagged levels of democracy the spatial coefficient is larger.

**TABLE 7 Controlling for GDP p/c and GDP p/c Growth Rate, 1991–2001**

| | SAR | | | | SEM | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Rho | 0.126*** | 0.110*** | 0.125*** | 0.098*** | | | | |
| | (3.153) | (8.035) | (3.092) | (7.917) | | | | |
| Lambda | | | | | 0.126*** | 0.108*** | 0.125*** | 0.098*** |
| | | | | | (3.155) | (8.112) | (3.089) | (8.003) |
| GDP p/c | | −0.001*** | | −0.001*** | | −0.001*** | | −0.001*** |
| | | (2.582) | | (2.385) | | (2.599) | | (2.356) |
| GDP p/c Growth Rate | | | −3.891** | −3.277* | | | −3.883** | −3.246* |
| | | | (2.183) | (1.892) | | | (2.115) | (1.735) |
| Constant | 0.786*** | 0.991*** | 0.791*** | 1.014*** | 0.893*** | 1.124*** | 0.915*** | 1.127*** |
| | (5.971) | (6.176) | (6.106) | (6.211) | (6.002) | (6.224) | (6.183) | (6.483) |
| Log-likelihood | −2029.782 | −2029.284 | −2029.825 | −2028.124 | −2029.572 | −2029.381 | −2029.471 | −2028.314 |
| R-squared | 0.020 | 0.030 | 0.025 | 0.035 | 0.020 | 0.031 | 0.026 | 0.035 |
| Observations | 882 | 882 | 882 | 882 | 882 | 882 | 882 | 882 |

*Notes:* Dependent variable: change in democracy (t-statistics in parentheses). Spatial weight matrix: first-order contiguity. *** = 1%, ** = 5%, * = 10%. Columns 1–4 include year and country fixed effects.

However, in the fully specified regressions we get similar results to those in our benchmark regressions. Democracy does in fact spread between neighbors but the contagion effect tends to be small.

Fourth, we try rerunning our regressions using a different method of weighting countries in the spatial weight matrix, **W**. As discussed above, since we consider the democratic domino theory based on the spread of democracy through geographic neighbors, our main regressions use first-order contiguity to determine the weight received by each country in **W**. However, not all countries' geographic neighbors may be equal. In particular, those with more inhabitants may be more influential than others on their changes in democracy. For instance, a more populous country, such as the United States, might have more effect on Mexico's changes in democracy than one of Mexico's other contiguous neighbors, such as Belize, which is considerably smaller than the United States. To address this possibility we also try weighting contiguous neighbors in the spatial weight matrix according to population size. As it turns out, this does not matter for the geographic spread of democracy. We find similar estimates when we use simple first-order contiguity for the spatial weight matrix and so do not report the results with population weighting separately. In the population-weighted regressions without fixed effects democracy's spread rate is about 8 or 9%. When we include two-way fixed effects this falls to about 7 or 8%.

As a final robustness check we try excluding observations with "unusual" Polity scores. All of our regressions use the Polity 2 variable, discussed above, which is simply the Polity variable modified for the purpose of time-series analysis. If a country was going through a political transition in a particular year, the Polity variable would code this country in a way that does not correspond to the −10 to +10 democracy/autocracy scale used to measure a country's political regime in a "normal" year. For example, if in year *y*, country *i* was going through a political regime transition, it would be coded with a −88 in the Polity variable. The Polity 2 variable transforms this coding into a usable Polity score corresponding to the −10 to +10 scale so that researchers can use this data. To make sure these "unusual" observations are not influencing our estimates we rerun our benchmark regressions excluding them. Once we remove these observations we are only left with two usable samples, the 1951–2001 sample and the 1991–2001 sample. Our results are similar to those that do not exclude these observations.

## Concluding Remarks

This article empirically investigated the democratic domino theory using spatial econometrics to estimate a panel covering more than 130 countries over the last one-and-a-half centuries. Our results suggest that a democratic domino effect does in fact exist. However, they also find that this effect is more modest than the emphasis on domino reasoning in global foreign affairs would suggest. Countries "catch" only about 11% of their

average geographic neighbors' changes in democracy. The idea that enhancing democracy in a few strategic nations could substantially alter the extent of democracy in the rest of the region, for instance, does not appear to be correct.

Our results point to several conclusions. First, foreign policy should not pretend that democratic increases in one country will lead, in the words of President Bush, to a "democratic revolution" in the larger region it is situated in. The democratic domino effect is modest, and even in the presence of only a few geographic neighbors, provided these neighbors are not also independently increasing in their democracy, minimally affects changes in democracy in neighboring countries. In the presence of many geographic neighbors the vast majority of the spread of any increase (or decrease) in democracy in one country to its neighbors is overwhelmed by the independent democracy changes in these countries' neighbors. In particular, the "lightness" with which democratic dominoes fall suggests that even if foreign military intervention aimed at promoting democracy in undemocratic countries succeeds in democratizing these nations, intervention is likely to have only a small effect on democracy in their broader regions.

Two questions this article does not explore but are important for evaluating the efficacy of using foreign military intervention to promote democracy abroad are as follows: (1) Is military intervention in fact capable of democratizing foreign countries the intervener occupies? (2) If yes, do intervention-created democracy increases spread to neighboring countries, or do they stop at the occupied country's borders? If the answers to questions one and two are positive, a third question also emerges: (3) Do intervention-created democracy increases spread to geographic neighbors at the same rate, a stronger rate, or a weaker rate than internally created democracy increases?

Existing research has investigated the first question for the United States as occupier and finds sobering results. Although there are a handful of intervention successes that succeeded in promoting democracy in these countries, notably American occupations of Austria, Germany, and Japan following WWII, important work by Peceny (1999, 2000), Lawson and Thacker (2003), Edelstein (2004), Enterline and Greig (2005), Bueno de Mesquita and Downs (2005), Coyne (2007), and others suggests that most U.S. attempts at imposing liberal democracy abroad have failed. The handful of foreign intervention success stories that do exist, however, point to the need for an investigation of the second and third questions posed above. Some preliminary work suggests the answer to the second question may be negative, rendering question three moot (see, for example, Boettke, Coyne, and Leeson 2008). However, this research does not evaluate these questions using spatial methods, which will help to supply firmer answers. The analysis this article develops provides a framework for doing so, which future research should explore.

## Appendix A: Sample Countries

| Country | 1851–2001 | 1901–2001 | 1951–2001 | 1991–2001 |
|---|---|---|---|---|
| Albania | | | X | X |
| Algeria | | | | X |
| Angola | | | | X |
| Argentina | X | X | X | X |
| Australia | | | X* | X* |
| Austria | X | X | X | X |
| Bahrain | | | | X* |
| Belgium | | | X | X |
| Benin | | | | X |
| Bhutan | | | X | X |
| Bolivia | X | X | X | X |
| Brazil | X | | X | X |
| Bulgaria | | X* | X | X |
| Burkina Faso | | | | X |
| Burundi | | | | X |
| Cambodia | | | | X |

*continued*

## APPENDIX A: Continued

| Country | 1851–2001 | 1901–2001 | 1951–2001 | 1991–2001 |
|---|---|---|---|---|
| Cameroon | | | | X |
| Canada | | X | X | X |
| Cen. Afr. Rep. | | | | X |
| Chad | | | | X |
| Chile | X | X | X | X |
| China | | | X | X |
| Colombia | X | X | X | X |
| Comoros | | | | X* |
| Congo, Dem. R. | | | | X |
| Congo, Rep. of | | | | X |
| Costa Rica | X* | X* | X | X |
| Cuba | | | X* | X* |
| Cyprus | | | | X* |
| Czech Republic | | | X | X |
| Denmark | | | X* | X |
| Djibouti | | | | X |
| Dom. Republic | | | X | X |
| Ecuador | X | X | X | X |
| Egypt | | | X | X |
| El Salvador | | X | X | X |
| Eq. Guinea | | | | X |
| Ethiopia | | | X* | X |
| Fiji | | | | X* |
| Finland | | | X | X |
| France | X | X | X | X |
| Gabon | | | | X |
| Gambia | | | | X |
| Germany | | | | X |
| Ghana | | | | X |
| Greece | | | X | X |
| Guatemala | X | X | X | X |
| Guinea | | | | X |
| Guinea-Bissau | | | | X |
| Guyana | | | | X |
| Haiti | | | X | X |
| Honduras | | | X | X |
| Hungary | | | | X |
| India | | | X | X |
| Indonesia | | | X* | X |
| Iran | X* | X* | X | X |
| Iraq | | | X | X |
| Ireland | | | X | X |
| Israel | | | X | X |
| Italy | | X | X | X |
| Ivory Coast | | | | X |
| Jamaica | | | | X* |
| Japan | | | | X* |
| Jordan | | | X | X |

*continued*

## APPENDIX A: Continued

| Country | 1851–2001 | 1901–2001 | 1951–2001 | 1991–2001 |
|---|---|---|---|---|
| Kenya | | | | X |
| Korea, North | | | X | X |
| Korea, South | | | X | X |
| Laos | | | | X |
| Lesotho | | | | X |
| Liberia | X* | X* | X* | X |
| Libya | | | | X |
| Madagascar | | | | X* |
| Malawi | | | | X |
| Malaysia | | | | X |
| Mali | | | | X |
| Mauritania | | | | X |
| Mauritius | | | | X* |
| Mexico | | X | X | X |
| Mongolia | | | X | X |
| Morocco | | | | X |
| Mozambique | | | | X |
| Myanmar | | | X | X |
| Namibia | | | | X |
| Nepal | X* | X* | X | X |
| Netherlands | | | X | X |
| New Zealand | | X* | X* | X* |
| Nicaragua | | | X | X |
| Niger | | | | X |
| Nigeria | | | | X |
| Norway | | | X | X |
| Oman | X* | X* | X | X |
| Pakistan | | | X | X |
| Panama | | | X | X |
| Papua N. Guinea | | | | X |
| Paraguay | X | X | X | X |
| Philippines | | | X* | X* |
| Poland | | | X | X |
| Portugal | X | X | X | X |
| Qatar | | | | X |
| Romania | | | X | X |
| Russia | | X* | X | X |
| Rwanda | | | | X |
| Saudi Arabia | | | X | X |
| Senegal | | | | X |
| Sierra Leone | | | | X |
| Singapore | | | | X* |
| Somalia | | | | X |
| South Africa | | | X* | X |
| Spain | X | X | X | X |
| Sri Lanka | | | X* | X* |
| Sudan | | | | X |
| Swaziland | | | | X |

*continued*

**APPENDIX A: Continued**

| Country | 1851–2001 | 1901–2001 | 1951–2001 | 1991–2001 |
|---|---|---|---|---|
| Sweden | X* | X* | X | X |
| Switzerland | X | X | X | X |
| Taiwan | | | X* | X* |
| Tanzania | | | | X |
| Thailand | | | X | X |
| Togo | | | | X |
| Trin. & Tob. | | | | X* |
| Tunisia | | | | X |
| Turkey | | | X | X |
| U. Arab Emir. | | | | X |
| Uganda | | | | X |
| UK | X* | X* | X | X |
| USA | X* | X | X | X |
| Uruguay | X | X | X | X |
| Venezuela | | X | X | X |
| Vietnam | | | | X |
| Yemen | | | | X |
| Yugoslavia | | | X | |
| Zambia | | | | X |
| Zimbabwe | | | | X |

* Indicates island status including "data island."

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