

A TWO-STEP THEORY AND TEST OF DEMOCRATIC WAVES*

Christian Houle[†]
Mark Andreas Kayser[‡]
Jun Xiang[§]

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Abstract

Scholars, observing clustering in transitions to democracy, argue that democratization diffuses across borders as citizens in autocracies demand the same reforms they witness in neighboring states. We disagree. The present paper asserts that the diffusion of democracy literature rests on weak theoretical foundations and does not properly test for diffusion. We advance an alternative two-step argument to explain clustering of democratization: (1) economic shocks, which are clustered spatially and temporally, induce the breakdown of authoritarian regimes; then (2) democratic diffusion, in turn, influences whether a fallen dictatorship will be replaced by a democracy or a new autocracy. Diffusion, despite playing an important role, is insufficient to explain the clustering of transitions, notably because it cannot account for the timing of the waves. Using data on 125 autocracies from 1875 to 2004, we show that economic crises trigger authoritarian breakdowns, while diffusion determines whether the new regime is democratic or authoritarian.

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[†]Michigan State University, houlech1@msu.edu

[‡]Hertie School of Governance, Berlin, kayser@hertie-school.org

[§]Rutgers University, junxiang@andromeda.rutgers.edu

“A wave of democratization is a group of transitions from nondemocratic to democratic regimes that occur within a specified period of time and that significantly outnumber transitions in the opposite direction during that period of time.”

– Samuel [Huntington](#) (1991), p. 15.

Introduction

Transitions to democracy occur in clusters and waves. Democratization – the shift from autocratic to democratic rule – is neither randomly distributed in time nor in place but quite often occurs in multiple countries in given regions at specific moments. Since Samuel [Huntington](#) (1991) famously identified three waves of global democratization since 1828, scholars have identified numerous regional and temporal clusters, raising the question of what explains these patterns.

Until now, the dominant explanation has been “diffusion.” Cross-border dependencies between states explain why democratization is more likely to occur once democracy has taken hold in neighboring states. Specifically what constitutes a cross-border dependency varies considerably in the literature, where the literature chooses to define it at all. The research that mentions a mechanism beyond simple “neighbor emulation” has speculated that democratic neighbors create a less threatening regional environment that bolsters domestic reformers, that democracies support democratic opposition abroad, and that democratization among neighbors demonstrates to the local population that their own authoritarian regime is not impervious. Rather puzzlingly, however, empirical tests of the diffusion hypothesis almost uniformly study the effect of democratic neighbors on changes in democracy at home, largely ignoring the mechanism of how such an effect comes about.

Equally, if not more, puzzling as the failure to test mechanisms is that these tests, regardless of their results, do not test their theory. Although waves of democratization motivate the study of diffusion, most of the literature on diffusion ignores the temporal component

of diffusion by only testing whether the presence of democratic neighbors is associated with democratization. Thus, in these models, it does not matter when a neighbor democratized, only that it is a democracy. The democratization of Mexico in 2000, for example, would count as evidence of diffusion of democracy, since it borders the United States, a country that democratized over 200 years earlier. Much convincing research suggests that democratic neighbors increase the probability of transition to democracy at home but these results hardly explain why democratization clusters in time. In short, the democratization attributed to diffusion in the literature does not match the temporal clustering noted by Huntington and others. Nor are empirical tests that would explain diffusion robust.

While we are not the first to observe inconsistencies in the foundation of the diffusion of democracy literature (c.f., [Leeson and Dean, 2009](#)), we are the first, to the best of our knowledge, to offer a credible rival explanation. We advance the following two-step argument to explain the occurrence of waves: (1) economic shocks, which are clustered spatially and temporally, induce the breakdown of authoritarian regimes; then (2) democratic diffusion, in turn, influences whether a fallen dictatorship will be replaced by a democracy or a new autocracy.

Deficits, recessions, and debt and financial crises trigger the transition process by disrupting the patronage networks upon which many autocrats rely for their authority and by reducing their capacity to remain in power through costly coercion. Domestic economic shocks are themselves often clustered because neighboring countries share similar economic profiles, factor endowments and terms of trade, often pursue similar development strategies and are subject to synchronous international economic crises. Yet not all collapsed autocracies are replaced by democracies. Following the breakdown of an autocracy, countries that find themselves in a context where many other countries are democratic will be more likely to establish a democracy as oppose to a new autocracy. Although it is an important contributing factor, diffusion, on its own, is thus insufficient to explain why democratization happens in waves, notably because it cannot account for the temporal dimension of the waves.

Using data on 125 autocracies from 1875 to 2004, we first demonstrate that, given properly specified models, diffusion cannot account for the spatial and temporal clustering in transitions to democracy. We then distinguish between two phases of the transition process: (1) the breakdown of the authoritarian regime; and (2) the choice to establish a democracy, rather than another dictatorship, once the regime has collapsed. Two-stage Heckman probit models then enable us to demonstrate that while democratic diffusion plays a key role during the second step, economic shocks serve as primary driving forces during the first. Our results hold up under a variety of robustness tests. In particular, using rainfall as an exogenous instrument for growth, we show that our findings are not driven by the endogeneity of growth to politics.

Diffusion and Democratization

Table 1 lists all transitions to democracy occurring between 1820 and 2007.¹ The tendency of transitions to occur in temporal clusters is confirmed in Figure 1, which gives the evolution in the proportion of countries in the world that are democracies across time. We observe sharp increases in the proportion of democracies after both World Wars, and especially, between the mid-1970s and the mid-1990s.

Transitions, as evident in Table 1, are not only clustered temporally but also spatially. Indeed, they are more finely clustered in time and space than Huntington’s three long waves would suggest.² Countries from the same regions have tended to be affected by the global waves of democratization around the same time.³ This trend is also apparent in Figure 2,

¹We use the measure of democracy of Boix, Miller and Rosato (2013) (see below).

²1828-1922, 1944-1962, 1974-2007.

³Of course, regions can be defined differently and many of these countries in a given wave differ notably geographically, economically and culturally. This section categorizes regions on a broad (continental) level to illustrate basic relationships as simply as possible. The

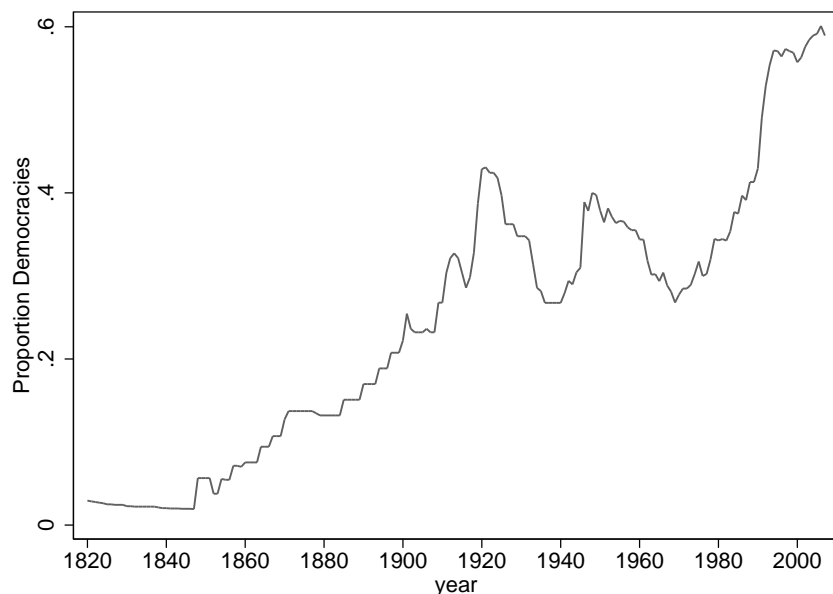
Table 1: Transitions to Democracy by Region

Americas	Africa	Middle East/Asia	Europe
Chile (1909)	Sudan (1965)	Philippines (1946)	France (1848)
Cuba (1909)	Ghana (1970)	Pakistan (1950)	Greece (1864)
Argentina (1912)	Gambia (1972)	Japan (1952)	France (1870)
Uruguay (1919)	Ghana (1979)	Indonesia (1955)	U.K. (1885)
Chile (1934)	Nigeria (1979)	Myanmar (1960)	Luxembourg (1890)
Colombia (1937)	Uganda (1980)	South Korea (1960)	Belgium (1894)
Cuba (1940)	Sudan (1986)	Turkey (1961)	Netherlands (1897)
Uruguay (1942)	Benin (1991)	Lebanon (1971)	Denmark (1901)
Guatemala (1945)	Cape Verde (1991)	Pakistan (1972)	Portugal (1911)
Brazil (1946)	Sao Tome (1991)	Thailand (1975)	Sweden (1911)
Costa Rica (1948)	Mali (1992)	Thailand (1983)	Germany (1919)
Ecuador (1948)	Central Afr. Rep. (1993)	Turkey (1983)	Italy (1919)
Panama (1950)	Niger (1993)	Bangladesh (1986)	Austria (1920)
Panama (1952)	Madagascar (1993)	Philippines (1986)	Ireland (1922)
Peru (1956)	Guinea-Bissau (1994)	Pakistan (1988)	Greece (1926)
Honduras (1957)	Malawi (1994)	South Korea (1988)	Spain (1931)
Argentina (1958)	Mozambique (1994)	Mongolia (1990)	Greece (1944)
Colombia (1958)	South Africa (1994)	Nepal (1991)	Austria (1946)
Guatemala (1958)	Ghana (1997)	Sri Lanka (1991)	France (1946)
Venezuela (1959)	Niger (1999)	Thailand (1992)	Italy (1946)
Argentina (1963)	Senegal (2000)	Taiwan (1996)	Malta (1964)
Peru (1963)	Kenya (2002)	Indonesia (1999)	Greece (1974)
Barbados (1966)	Lesotho (2002)		Portugal (1976)
Dominican Rep. (1966)	Sierra Leone (2002)		Cyprus (1977)
Guatemala (1966)	Burundi (2005)		Spain (1977)
Honduras (1971)	Comoros (2006)		Poland (1989)
Argentina (1973)	Liberia (2006)		Bulgaria (1990)
Bahamas (1973)			Czechoslovakia (1990)
Grenada (1974)			Hungary (1990)
Suriname (1975)			Romania (1991)
Bolivia (1979)			Albania (1992)
Brazil (1979)			Lithuania (1992)
Ecuador (1979)			Russia (1992)
Peru (1980)			Latvia (1993)
Bolivia (1982)			Albania (1997)
Honduras (1982)			Croatia (2000)
Argentina (1983)			Yugoslavia (2000)
El Salvador (1984)			Georgia (2004)
Nicaragua (1984)			
Grenada (1984)			
Uruguay (1985)			
Guatemala (1986)			
Suriname (1988)			
Chile (1990)			
Suriname (1991)			
Panama (1991)			
Guyana (1992)			
Mexico (2000)			
Peru (2001)			
Ecuador (2003)			
Paraguay (2003)			
Antigua & Barbuda (2004)			

which shows the evolution in the proportion of democracies for each continent (except Oceania)

statistical tests in the following section will define regions more precisely by measuring the distance between countries.

Figure 1: Proportion of Democracies in the World

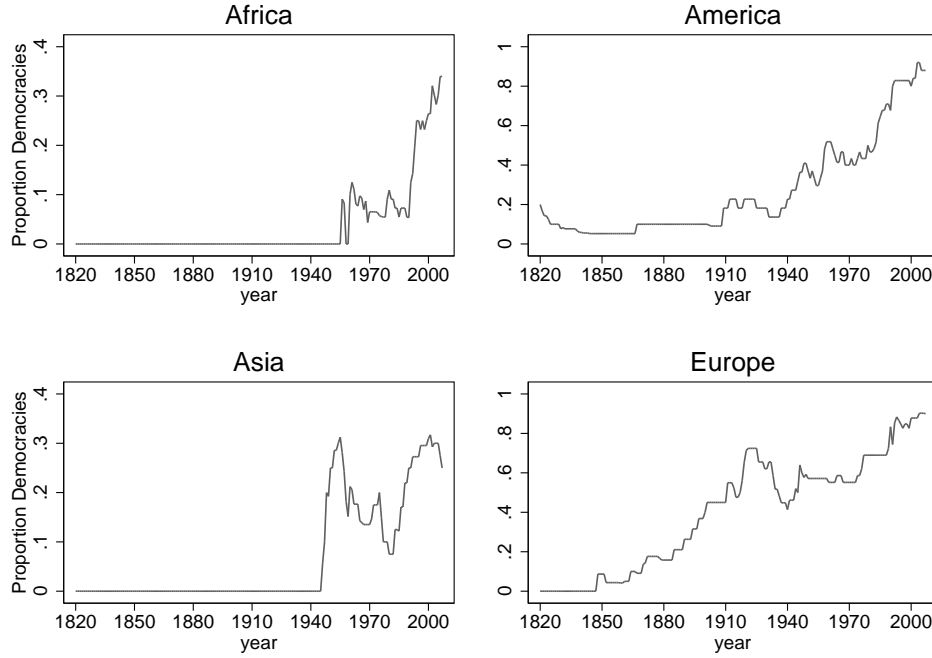


nia).⁴ Several periods emerge that might be considered regional “waves” of democratization: the Americas from 1945 to 1959, and 1979 to 1986; Africa from 1990 to 1994, and 1999 to 2002; Asia from 1988 to 1992; and Europe from 1944 to 1946, 1974 to 1977, and 1989 to 1993. Democratization does occur in waves.

Scholars have explained the temporal and spatial clustering of democratization shown in Table 1, and Figures 1 and 2 with “diffusion” (e.g., [Starr, 1991](#); [Brinks and Coppedge, 2006](#); [Gleditsch and Ward, 2006](#)). According to this view, democratization in one autocracy induces other autocracies also to transition to democracy, such that democracy spreads across countries. The diffusion of democracy literature builds on other related literatures on the diffusion of policies (e.g., [Brooks, 2005](#); [Elkins and Simmons, 2004](#); [Gilardi, 2010](#)), protests and revolutions (e.g., [Hale, 2013](#); [Weyland, 2009](#)), civil wars (e.g., [Salehyan and Gleditsch,](#)

⁴Notice that the proportion of democracies in Africa and Asia is zero until the 1940s because very few countries were independent and those that were had authoritarian regimes (e.g., Ethiopia and Liberia in Africa, and China and Thailand in Asia).

Figure 2: Proportion of Democracies by Region



2006) and human rights (e.g., [Pegram, 2010](#)), for instance.

Table 2 lists some of the most prominent empirical tests of the diffusion of democracy. As shown in the last column of Table 2, all studies, with the partial exceptions of [Leeson and Dean \(2009\)](#) and [Ahlquist and Wibbels \(2012\)](#), find strong evidence in favor of diffusion. The main drawback with these studies is neglecting the dynamics implied by diffusion. As shown in the third column of Table 2, rather than demonstrating temporally proximate transitions – i.e., that democratization abroad induces democratization at home – most authors have shown that countries near democracies are more likely to democratize, no matter how long ago the neighbors democratized. For example, [Brinks and Coppedge \(2006\)](#) show that states converge to the Polity score level of their neighbors. The actual cause of democratization, however, and an explanation for geographic, let alone temporal, clustering are left unaddressed. The central finding of the diffusion of democratization literature – that democratic neighbors are a strong predictor of democratization at home – is indisputably

Table 2: Empirical Studies on Democratic Diffusion

Studies	DV: Transition at home?	IV: Transition abroad?	Multivariate Regressions	Evidence of Democratic Diffusion?
Starr (1991)	Yes	Yes	No	Yes
O'Loughlin et al. (1998)	Yes	Yes	No	Yes
Starr and Lindborg (2003)	Yes	Yes	No	Yes
Doorenspleet (2004)	Yes	No (% democracies)	Yes	Yes
Wejnert (2005)	No (change in the dem. level)	No (AVG dem. level)	Yes	Yes
Brinks and Coppedge (2006)	No (change in the dem. level)	No (diff. b/t AVG dem. level of neigh. and dem. level at home)	Yes	Yes
Gleditsch and Ward (2006)	Yes	Yes	Yes	Yes
Leeson and Dean (2009)	No (change in the dem. level)	No (change in the AVG dem. level)	Yes	Strong statistically, weak substantively
Teorell (2010)	No (change in the dem. level)	No (AVG dem. level)	Yes	Yes
Csordás and Ludwig (2011)	No (change in the dem. level)	No (AVG dem. level)	Yes	Yes
Ahlquist and Wibbels (2012)	Yes	Yes	Yes	Yes, but sensitive to model specification
Strand et al. (2013)	No (change in the dem. level)	No (diff. b/t AVG dem. level of neigh. and dem. level at home)	Yes	Yes
Wejnert (2014)	No (change in the dem. level)	No (AVG dem. level)	Yes	Yes

Note: The variables used by the authors are indicated in parentheses.

important. It, however, neither explains the temporal clustering of democratization nor democratization itself.

The few studies that have looked at the effect of transition abroad on transition at home often suffer from other limitations. For example, as shown in column 4 of Table 2, a number of early studies did not employ multivariate regression analysis (e.g., O’Loughlin et al., 1998; Starr, 1991; Starr and Lindborg, 2003). Others have looked at the effect of change in democracy abroad but have omitted the issue of regime transition. For example, Leeson and Dean (2009) examine how changes in the Polity score abroad affect change in the Polity score at home. However, they do not account for whether variation in the Polity score is caused by the breakdown of democracy, democratization or an increase in the quality of democracy in already democratic states. Differentiating between these possibilities is important because the previous empirical literature has found that the variables that affect the establishment of democratic regimes are different than those that affect their survival (Houle, 2009; Przeworski et al., 2000). In fact, as discussed below, diffusion is likely to play a larger role during the consolidation of democracies than during the transition to democracy itself.

Only two studies listed in Table 2 use regression analysis to test the effect of democratization abroad on democratization at home. Gleditsch and Ward (2006) show that having a neighbor that has democratized increases the likelihood of democratization at home during the same year. Ahlquist and Wibbels (2012) obtain similar results, although their findings are not robust to model specification.

Perhaps even more importantly, the diffusion literature has not developed plausible mechanisms to explain *why* democratization abroad induces democratization at home. Beside neighbor emulation, its main mechanism rests on the “demonstration effect” – when the masses witness that their counterpart in a neighboring country were able to overthrow a regime similar to theirs, they realize that their own authoritarian regime is not impervious and they also learn about the most effective means to bring it down. For example, after the democratization of Serbia in 2000, pro-democratic forces throughout the Balkans and

Central Asia used the same combination of street protests and electoral victories to end dictatorships as initially used in Serbia. More recently, the successful overthrow of authoritarian regimes in Tunisia and Egypt spurred waves of protests throughout the Middle East and North Africa (without, however, resulting in the widespread adoption of democracy). Just as in the cases of Tunisia and Egypt these protests have taken place in town squares and usually on prayers days.

This mechanism, however, remain largely untested and the most visible cases, such as the Arab Spring, employ revolts or regime change in neighbors, not democratization as the cross-border impetus. For most authors, the mere existence of waves is taken as evidence in favor of this mechanism, and diffusion more generally, even though other explanations may account for this wave-like pattern. While the demonstration effect and other diffusion mechanisms, such as emulation, may constitute credible explanations of the contagion of policies, values, and protests across countries, for example, they are much less convincing explanations of the clustering of *transitions* to democracy. This is because the transition from autocracy to democracy is not only conditional on mass behavior or on elite behavior but on both. As [Houle \(2009\)](#) explains, in contrast to democratic breakdown which requires only a decision by the elite to seize power, democratization requires both demand from the masses and an elite decision to accommodate them. Ideas can diffuse internationally among the elite – witness the international spread of pension reforms ([Brooks, 2005](#)), economic liberalization ([Elkins and Simmons, 2004](#)) or cut-backs in unemployment benefits ([Gilardi, 2010](#)) – and even across the masses – consider the spread of revolts against authoritarian governments across multiple countries during the Arab Spring of 2011. Diffusion, however, is much less likely to occur with democratization.

Diffusion is, in fact, double-edged in the case of authoritarian breakdown: it affects not only the ability of the masses to demand democracy but also that of the ruling elite to resist them ([Koesel, Bunce and Wolchik, 2011](#); [Koesel and Bunce, 2013](#)). The population indeed learns from successful regime transitions abroad, but the ruling elite also learn from the

mistakes of fallen dictators. [Koesel, Bunce and Wolchik \(2011\)](#), for example, explain how dictators in Saudi Arabia, Azerbaijan, China and Russia have used the experiences of fallen autocracies during the Color Revolutions and Arab Spring to develop more effective means to retain power at home. The same type of adaptation by the ruling elite can also be seen more widely during the Arab Spring, during which autocrats have learned from the cases of Tunisia, Egypt and Yemen, and adopted more repressive measures, particularly in Libya and Syria.

[Bratton and van de Walle \(1997\)](#) make a similar argument about the role of diffusion during the regional wave of democratization in sub-Saharan Africa during the early 1990s. In some countries, such as Togo, dictators have adapted their strategy in light of the experiences of countries like Benin and Zambia. In a study of counter-summit protests, [Della Porta and Tarrow \(2012\)](#) demonstrate that both protestors and governments have adapted their protest and anti-protest techniques as a results of past experiences. [Della Porta and Tarrow \(2012\)](#) call this process “interactive diffusion” and “coevolution”.

In some instances protests that spread across countries may be successful at overthrowing autocracies and establishing democracy, but as illustrated by the 1848 revolutions and the Arab Spring, such instances are rare. In the words of [Hale \(2013\)](#), “cascading can occur in protest calling for regime change as well as revolution in the name of regime change, but these rarely lead to actual regime change [toward democracy]” (p. 331). In fact, democratization is rarely the result of the overthrow of authoritarian regimes by the population ([Miller, 2014](#)).

These arguments do not imply that diffusion has no effect. It is possible that cases of successful democratization abroad can demonstrate to the local population that the regime is not infallible as well as show which type of protest techniques are the most likely to destabilize the regime. However, we cannot simply assume – as the literature on the diffusion of democratization has done – that this demonstration effect will straight forwardly lead to waves of democratization. Nor can we conflate diffusion of protest with diffusion of democracy. The latter requires that democratization induces democratization.

In fact, even some recent studies looking at policy convergence – for which, as mentioned above, this explanation is more convincing – have found that previous empirical tests have substantially overestimated the true effect of diffusion because of the failure to properly account for alternative explanations, such as the presence of domestic triggers that independently but synchronously affect similar countries (or states) and common shocks that simultaneously affect neighbors (e.g., [Boehmke, 2009](#); [Hennessy and Steinwand, 2014](#)). [Hale \(2013\)](#) also makes the related point that although waves of protests and revolutions can be caused by diffusion, “common external causes and contemporaneous domestic triggers can cause events outwardly resembling them” (p. 331).

This argument has two important implications. First, diffusion can have different effects on the establishment of democracy and on its survival. While transitions to democracy are the results of a compromise between different groups, transitions away from democracy almost never are ([Houle, 2009](#)); meaning that diffusion does not have two opposite effects for the latter. Therefore, previous studies that have confounded the effect of diffusion on transitions to democracy with its effect on transitions away from democracy (e.g., [Leeson and Dean, 2009](#)) have most likely overestimated the former.

Second, diffusion may have very different effects on the breakdown of an authoritarian regime and on the choice of establishing a democracy (as oppose to another dictatorship) once the regime has broken down. Following the collapse of an autocracy, pro-democracy ideas can more easily influence the form of the new regime. Therefore, while diffusion on its own is unlikely to explain the occurrence of waves – notably because it cannot account for the timing of the breakdown of authoritarian regimes – it does play a key role by fostering democratization after the collapse of the regime. This latter insight is central to the argument we present below.

A Theory of Clustered Democratization

We advance a two-step argument to explain clustering and waves in democratization. Neither step, on its own, is new to the literature or even controversial. Taken together, however, they offer a strong alternative to the dominant diffusion explanation of clustered democratization. First, we theorize that economic crises, which are themselves clustered among neighbors, cause the breakdown of authoritarian regimes; hence triggering the transition process. Second, once the regime has fallen, diffusion influences the form of the new regime. Countries that find themselves in neighborhoods dominated by democracies are more likely to opt for democracy as opposed to a new autocracy.

Economic Shocks Induce Authoritarian Breakdowns

Rather than democratic diffusion, it is economic shocks – either domestic or international in origin – that initiate the transition process by causing the breakdown of authoritarian rule. Authoritarian regimes collapse when they can no longer afford the payments necessary for patronage and co-optation or the upkeep of the forces necessary for repression. Crises, be they debt-driven, currency, financial, trade-driven or simply contractionary, all pose a threat to autocratic governments because they impinge on the government’s ability to pay-off potential rivals and to finance repression. Research on the functioning and stability of autocratic regimes commonly describes them as relying on a combination of patronage and repression to remain in power. Rivals are coopted in a process, to paraphrase [Geddes \(1999\)](#), in which “both mass and elite are better off supporting the ruling party and opponents are trapped investing in the survival of the autocratic status-quo.” When economic crises disrupt patronage networks and weaken the tools of repression, however, the elite’s grip on power can slip, clearing the way for democratization ([Bueno de Mesquita et al., 2003](#)).

Autocratic rulers’ legitimacy might also be especially susceptible to deterioration of material conditions. Lacking the democratic legitimacy conferred by elections, autocrats rely on

what [Huntington \(1991\)](#) dubs “negative legitimacy” – autocracies can only be perceived as legitimate by the population if they perform well economically and politically (for example, by maintaining political order). The vulnerability of autocratic governments to economic performance is reflected in their management of the economy. Many authoritarian regimes, to take an example best documented in Latin America, preferred creating inefficient patronage positions in state owned enterprises to implementing economic reforms necessary to move to more sophisticated stages of import substituting industrialization ([O’Donnell, 1973](#); [Linz and Stepan, 1978](#)). When the debt crises of the 1980s caused the collapse of their economies, their wariness of economic instability proved correct as previously co-opted elites and newly unemployed workers overturned many autocratic regimes ([Richards, 1986](#); [Markoff and Baretta, 1990](#)). Even in large samples of autocratic states from a broad swath of regions, economic crisis is associated with regime change ([Haggard and Kaufman, 1995](#); [Tanneberg, Stefes and Merkel, 2013](#)). Further evidence suggests that droughts (e.g., [Brückner and Ciccone, 2011](#)), earthquakes (e.g., [Rahman et al., 2013](#)), and increasing food prices (e.g., [Hendrix, Haggard and Magaloni, 2009](#)) also destabilize autocracies.

Establishing the economy as the primary trigger of authoritarian reversals, however, is not the same as explaining waves of transitions. Economic performance may best explain authoritarian breakdowns at home but it certainly does not explain breakdowns abroad. Clusters emerge because neighboring economies tend to be interdependent and to share many characteristics. Neighbors are likely to experience similar domestic economic shocks simultaneously and to be affected in a similar way by the same international shocks. National economies, *pace North Korea*, are almost never autarkic. Trading economies are highly dependent on regional and international business cycles and in more recent decades international financial markets have played an increasingly important role. For geographic and historical reasons, economies in given regions have similar natural resource and factor endowments and historically many have followed similar development strategies. As a consequence, a key part of our argument emphasizes that national economic outcomes covary regionally and even inter-

nationally. Domestic economic variables drive domestic regime change but the correlation of domestic economic performance subjects multiple countries to synchronous shocks, enabling similarly synchronous democratization.

Moreover, countries in geographic proximity are likely to experience the same natural catastrophes, such as droughts, which can, in turn, fuel unrest. For example, [Brückner and Ciccone \(2011\)](#) note that most of West Africa experienced an important drought in the early 1990s, just before the third wave of democratization swept through the region. In addition, fluctuations in the international price of commodities also tend to affect all countries of the same region in the same way, because they depend on the importation/exportation of the same goods. For example, the Middle East – the region that is the most dependent on food imports – witnessed numerous food riots after the sharp increase in food prices in 2007-08 ([Hendrix, Haggard and Magaloni, 2009](#)). The deterioration in the terms of trade of commodities like coffee and cacao in the 1980s also contributed to recessions throughout sub-Saharan Africa.

Even a casual consideration of history associates several of the clusters of democratization in [Table 1](#) with common regional economic shocks, such as the 1980s debt crisis in Latin America, or purely domestic economic shocks that affected similar economies synchronously. Economic crises – whether they originate as a currency crisis such as the 1997 East Asian Financial Crisis, debt crisis such as began in Mexico in 1982, or credit crisis such as began in 2008 – can all induce waves of regime reversals. Because geographically clustered states hold similar economic positions and similar economic structures – weakly collateralized lending in East Asia in the late 1990s, petro-dollar fueled debt in Latin America in the early 1980s – waves of democratization are often regionally clustered.

What has often been claimed to be evidence in favor of the role of diffusion during regime transition is in fact evidence of the role of the economy. For example, [Ulfelder \(2009\)](#) finds that diffusion played a key role in instigating only 7 out of 43 recent episodes of liberalization that he examined. In 33 of them, he found that the main immediate cause of the breakdown

of the dictatorship was an economic crisis. Moreover, six of the seven cases where diffusion played an important role are countries previously under Soviet influence in Eastern Europe as well as Mongolia – Mali being the only exception. Yet there is much evidence that what created the wave of democratization in Eastern Europe and Mongolia was not diffusion per se, but the end of the Brezhnev doctrine, which had been abandoned by Gorbachev in 1988 (Thompson, 2001; Janos, 2000). Without the threat of a Soviet invasion, communist regimes throughout Eastern Europe would most likely have fallen before 1989 (Boix and Stokes, 2003). It thus seems that even in these cases, a common (political) shock – the end of the Brezhnev doctrine – rather than diffusion triggered the wave of transitions.⁵

This situation is even clearer in other regional waves. Joseph (1997), for example, argues that the wave of democratization in sub-Saharan Africa in the early 1990s was triggered by the economic crisis of the 1980s, which was itself partially caused by the deterioration of the terms of trade of most African countries. The economic crisis forced the ruling elite to continually increase their debt level, which prevented them from maintaining the patronage networks which formed the basis of the regimes. As argued by Bratton and van de Walle (1997, p.100), “Perversely, the economic crisis undercut the material foundations of neopatrimonial rule: With ever fewer resources to distribute, political elites faced a growing problem of how to maintain control of clientelist networks.” Consequently, African countries became increasingly dependent on international donors. In exchange for further support, international donors imposed structural adjustment programs, aimed at decreasing the size of African governments and at making them more efficient. This further decreased the capacity of these regimes to hold to power, for example, by providing highly paid jobs in the public sector. Notice that this explanation relates to the common economic difficulties

⁵In this paper, we focus on the role of economic shocks to explain the breakdown of authoritarian regimes. However, political shocks, such as the abandonment of the Brezhnev doctrine, may also induce regime reversals (e.g., see Gunitsky, 2014). We account for these types of shocks in Tables A6-A9 of the online appendix.

experienced by similar economies – not diffusion.

A common economic shock also seems to have triggered another celebrated cluster of democratization, that in Latin America in the 1980s. Following independence, many Latin American countries turned to the policies of import substitution (ISI) in an attempt to industrialize. They systematically overvalued their currencies in order to make the import of machine tools and industrial materials more affordable. This had the unintended consequence of making their own mostly agricultural commodity exports more expensive on world markets which, in turn, reduced inflows of foreign currency, depleted reserves and stoked inflation. Unsound fiscal and monetary positions, however, were not an impediment for lending from Western banks flushed with petrodollars from the 1973 and 1979 oil embargoes.

This pattern of cheap petrodollar loans to cover the hard currency needs of Latin American countries running trade deficits from ISI policies came to an abrupt halt, however, in 1979 when Paul Volcker, the chairman of the US Federal Reserve Board, worried about US inflation and raised interest rates. Suddenly, multiple developing countries in Latin America (and elsewhere) could not afford to refinance their debts leading to the debt crisis and the beginning of what is sometimes called the “lost decade” in Latin America ([Oatley, 2006](#); [Frieden, 2006](#), ch.14 & 16, respectively). Interestingly, it was also this period that saw democratization arrive 12 times in the region, beginning with Bolivia, Brazil and Ecuador in 1979 and continuing to Guatemala in 1986. As with Africa in the 1990s, it was a common economic shock imposed on countries in similar economic positions that provided the impetus for geographically and temporally clustered democratization. Diffusion of policy ideas might explain the regional adoption of ISI policies that eventually placed most countries in the region in a similar economic position. But the most direct cause for the wave of democratization was most likely simultaneous debt crises in multiple countries that damaged autocrats’ patronage networks and undermined their ability to buy off and repress the opposition.

Diffusion Promotes Democratization After the Breakdown

Not all authoritarian reversals, however, result in the establishment of democracies. Countries have experienced economic crises throughout history but democracy is a relatively new phenomenon. Countries facing economic difficulties before the first democracies were established often suffered political instability and/or regime reversals but, in the end, remained authoritarian. It is only once democracy becomes available as a model that could be emulated that economic crises could plausibly induce democratization. As shown in Figure 1, there is a clear temporal trend in the proportion of democracies in the world; suggesting that whether an economic crisis eventually leads to democracy or not depends on other factors.

The second part of our argument is that fallen autocracies become more likely to be replaced by democracies rather than other autocracies when they find themselves in environments dominated by democracies. As discussed above, this is essentially what the previous diffusion of democracy authors that ignore the temporal component of waves have actually demonstrated. It is much easier for the population to prevent new autocracies from taking hold or, after the regime has broken down, to tilt the balance of power toward factions of the elite that support democracy, than to topple an already consolidated autocracy and install democracy. As argued above, the effect of diffusion on democratization is double-edged because both the masses and the elite learn from the experiences of other countries. Once the regime has collapsed, however, the effect of diffusion is no longer double-edged, since the old ruling elite has lost the capacity to use the state's coercive apparatus to remain in power.

The same argument also holds for foreign actors. For example, regional organizations with many democratic members have been shown to promote democracy among non-democratic members, notably through sanctions (Pevehouse, 2005). Again, it is easier for regional organizations to prevent the emergence of new autocracies than to depose the authoritarian ruling elite – which has access to the full resources the state – through the use of sanctions. These arguments are consistent with the findings of Marinov and Goemans (2013) according to which coups often lead to democratization in periods dominated by democratic super

powers.⁶ To use the examples above, although economic crises caused the breakdowns of autocracies throughout Latin America and Africa in the 1980s and 1990s respectively, it is the context at the time that explains why they eventually transitioned to democracy rather than new forms of autocracies.

Data

Our unit of analysis is the country-year. Our main sample covers around 5,500 observations on 125 autocracies between 1875 and 2004. Contrary to most previous studies that focus on very short periods, ours covers the vast majority of transitions. Our sample is restricted to non-democracies. We rely on the binary indicator of [Boix, Miller and Rosato \(2013\)](#) to classify regimes. Regimes are defined as democratic if office holders are selected through free and fair elections and at least 50 percent of the male adult population has the right to vote. Summary statistics for all variables included in the analysis are available in Table A1 of the online appendix.

Testing Strategy and Dependent Variables

We divide our empirical section into two main parts. First, we test the effect of democratic diffusion and economic shocks on transition from autocracy to democracy. A transition in year t occurs if a regime that was classified by [Boix, Miller and Rosato \(2013\)](#) as authoritarian at the end of year $t - 1$ becomes democratic in year t . Following [Przeworski et al. \(2000\)](#), [Boix \(2003\)](#) and [Dunning \(2008a\)](#), among others, we use dynamic probit models. These estimate the likelihood that a country that starts the year as authoritarian will democratize before the end of the year.

⁶[Marinov and Goemans \(2013\)](#) find that coups foster democratization only during the post-Cold War period. However, their analysis is limited to the 1945-2005 period. Therefore, their argument could be extended to other periods dominated by democracies.

In the second part of the analysis, we follow [Kennedy \(2010\)](#) and [Miller \(2012\)](#) and decompose the transition process into two sequences: (1) the breakdown of the authoritarian regime; and (2) the establishment of a democracy following the breakdown. We estimate the effect of diffusion and economic shocks on the two sequences using Heckman probit models ([de Ven and Praag, 1981](#)). In the first stage, we run a probit model in which the dependent variable is a dummy variable for whether an autocracy has collapsed or not. The second stage runs a probit model with only cases in which an authoritarian breakdown has occurred. The dependent variable takes the value one if the regime is replaced by a democracy and zero if it is replaced by another autocracy.

We measure authoritarian breakdowns as cases in which an irregular leader turnover occurred. To identify irregular turnovers, we use the data set of [Miller \(2012\)](#), who himself relies on the *Archigos* data set ([Goemans, Gleditsch and Chiozza, 2009](#)). However, while transitions from an autocracy to another autocracy almost inevitably involve the use of violence, transitions from autocracy to democracy can occur without violence. Whereas the former are (almost) always covered by *Archigos*, some transitions to democracy are not. Consequently, our variable *Authoritarian Breakdown* takes the value one if during a given year an autocracy has (1) experienced an irregular leader turnover (as defined by the *Archigos*) and/or (2) has transitioned to democracy (as defined by [Boix, Miller and Rosato, 2013](#)). In the second stage, our dependent variable *Transition to Democracy* is once again based on the definition of regimes of [Boix, Miller and Rosato \(2013\)](#).

Independent Variables

Diffusion: This paper adopts two strategies to capture diffusion. First, as most previous authors, we use the proportion of an autocracy’s neighbors that are democratic (% democracies). A neighbor is defined as any country that shares a border or that is within 400 miles by water. However, as discussed above, this measure is problematic because it does not capture the temporal dimension of diffusion. As illustrated by the example of Mexico and

the United States, if an autocracy democratizes after it had a democratic neighbor for an extended period of time, then it cannot be considered as evidence that democratic diffusion drives waves of *transitions* to democracy. Diffusion must take place within a reasonable period.

Therefore, we define a second set of diffusion variables. These capture the change within a given period in the proportion of neighbors that are democratic. We calculate three diffusion variables that cover between one and three years, with each variable scaled from -1 to 1. For example, the *Change % democracies last 2 years* variable measures the proportion of neighbors that are democratic today minus the proportion that were democratic two years ago. It thus gives the change in the proportion of neighbors that are democratic over the last two years. A value of one signifies that while none of a country’s neighbors were democracies two years ago, they are now all democracies.

Economic Shocks: We use a number of variables to capture economic shocks. Our main variable is the average growth rate of GDP per capita that a country has experienced over the last three years. We use moving averages instead of simply the lagged value of growth for two reasons. First, moving averages are less sensitive to outliers. Second, we should not expect only growth during the last year to affect the legitimacy of a regime as well as its capacity to finance patronage and repression. As discussed below, results are unchanged when we use the average growth rate over the last 1-5 years. Data on growth, and GDP per capita (see below), are taken from the data set of [Boix \(2011\)](#).

We also use rainfall both as an exogenous instrument for growth (see Table 6) and as an independent variable. We employ the precipitation data set of [Matsuura and Willmott \(2007\)](#), which covers, among other states, 113 autocracies from 1960 to 2006. Since a large proportion of the dictatorships during that period are found in warm weather countries with economies dependent on agriculture, we expect low rainfall levels to lower growth and induce authoritarian breakdowns (see [Brückner and Ciccone, 2011](#), on how droughts promote

democratization in sub-Saharan Africa).

In order to make sure that we do not simply capture differences in rainfall levels across countries, we use a variable (*Rain deviation*) which captures the deviation, in percentage, in precipitations between that within a given year and the average annual precipitation that a country has received between 1960 and 2006. The use of rainfall as an instrument and independent variable enables us to be confident that our results are not driven by endogeneity.

Different types of economic crises (not only growth crises) can induce waves of democratization. For example, as discussed above the debt crisis of the 1980s played a significant role during the wave of democratization in Latin America. High debt levels are likely to prevent authoritarian rulers from having access to resource enabling them maintain their patronage networks and to fund repression. Other types of crises, such as inflation and banking crises, can also have similar effects.

Consequently, we also include variables capturing other types of crises. Our variables (*RR crises* and *LV crises*) indicate whether a country is experiencing a crisis, according to [Reinhart and Rogoff \(2011\)](#) or [Laeven and Valencia \(2013\)](#) respectively. [Reinhart and Rogoff \(2011\)](#) include external debt, banking, stock market and inflation crises, and cover 59 autocracies from 1875 to 2004. The data set of [Laeven and Valencia \(2013\)](#), for its part, includes external debt and banking crises in 108 autocracies from 1971 to 2004. The variable *RR/LV crises* merges both data sets and indicates whether a country is experiencing a crisis according to either definition. Since these alternative economic crises often happen concurrently to growth crisis, we cannot include a separate control for growth rate. Therefore, the variables *RR crises*, *LV crises* and *RR/LV crises* also take the value one if a country is experiencing a growth crisis (defined as a growth rate below -2% in the last three years).

Control Variables

Many economic variables, that are not directly related to international shocks, such as economic development (e.g. [Lipset, 1959](#)) and natural resources (e.g. [Ross, 2001](#)), have been

claimed to affect democracy. The analysis thus controls for GDP per capita (Boix, 2011) and oil income (Haber and Menaldo, 2011). Other scholars associate the social and cultural context with democracy and democratization. Islam and Catholicism are thought to be harmful and Protestantism conducive to democracy (e.g. Huntington, 1991). In addition, some scholars suggest that divided societies are less likely to establish and maintain democratic institutions (e.g. Dahl, 2000). Variables measuring the proportion of the population that is Muslim, Catholic and Protestant are included, as well as variables measuring ethnic and religious fractionization (Przeworski et al., 2000).

In addition, previous studies find that countries that have experienced many transitions in the past are more likely to experience transitions in the future (e.g. Epstein et al., 2006). We add a variable measuring the number of democratic breakdowns that a country has experienced. We also include a dummy variable for former British colonies (Przeworski et al., 2000). Finally, in the Heckman probit models, the first stage, in which the dependent variable is whether an autocracy breaks down, we include the age of the regime, its square and its cube.⁷

Empirical Analysis

Are Economic Shocks Clustered?

Before estimating the determinants of democratization, we show that countries from the same regions indeed tend to experience economic shocks simultaneously. Table 3 reports the proportion of autocracies experiencing diverse types of crises classified depending on whether none, some, or all of their neighbors are in the midst of a crisis. The variable *Droughts* indicates whether a country has a yearly rainfall below the 20th percentile of its country specific distribution between 1960 and 2006, and *Growth crises* indicates whether a

⁷Heckman probit models require the inclusion of additional variables in the first stage regression.

country has experienced a growth rate below -2 percent in the last three years. Autocracies are clearly more likely to experience shocks when their neighbors also do. In addition to this analysis, we ran multiple regressions that suggest that crises in neighbors are associated with crises at home. For all types of shocks shown in Table 3, the effect of the proportion of crises in neighbors is significant at the one percent level in all regressions, irrespectively of the control variables we include (among the list used in the paper) and whether country fixed-effects are included are not (available upon request). Shocks, indeed, do occur in clusters.

Table 3: Proportion of Autocracies that Experience an Economic Crisis

	Are Neighbors in the Midst of a Crisis?		
	None	Some	All
Growth crises	8.02%	40.85%	67.61%
Droughts	8.31%	29.64%	71.74%
RR crises	29.96%	36.26%	60.17%
LV crises	6.56%	31.76%	43.12%

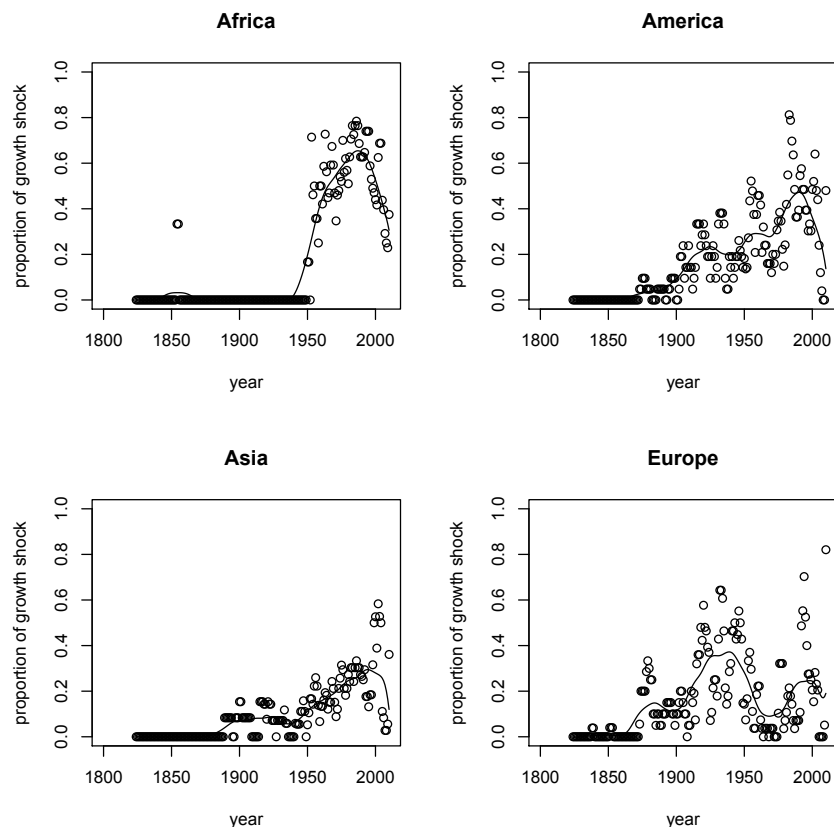
Note: The proportion of autocracies that experience an economic crisis when none, some or all of their neighbors experience a crisis, tabulated by type of economic crisis. The variable *Growth crises* indicates whether a country has experienced a growth rate below -2 percent in the last three years. The variable *Droughts* indicates whether a country has a yearly rainfall below the 20th percentile of its country specific distribution between 1960 and 2006. The variable *RR crises* indicates whether a country is experiencing a crisis as defined by [Reinhart and Rogoff \(2011\)](#). The variable *LV crises* indicates whether a country is experiencing a crisis as defined by [Laeven and Valencia \(2013\)](#).

Figure 3 presents the proportion of countries in a given continent in a given year that are experiencing a growth crisis, defined as a growth rate of GDP per capita below -2 percent. As shown in the figure, many of the regional waves identified in Figure 2 correspond to periods of crisis. For example, as the first panel in the figure shows, the economies in about 80 percent of the countries in Africa were experiencing severe economic crises during the late 1980s and early 1990s. The Latin American debt crisis of the early 1980s is also apparent.

Does Diffusion Cause Democratization Waves?

Table 4 tests whether diffusion can account for the clustering of democratization. We use dynamic probit models to estimate the effect of each explanatory variable on the probability

Figure 3: Proportion of Countries Experiencing a Growth Shock by Region



Note: The vertical axis indicates the proportion of countries in each continent that are experiencing a growth rate below -2% . The solid line in each plot depicts lowess smoother, bandwidth=.2.

that a country that starts the year as an autocracy will transition to democracy within that same year. In all tables, standard errors are clustered by country and explanatory variables are lagged. Column 1 shows that, consistent with the findings of previous authors, autocracies that have many democratic neighbors (*% democracies*) are much more likely to democratize.

However, as argued above, this variable does not capture the temporal dimension of waves. In column 2-4, we instead use variables that capture transitions among neighbors. *Change % democracies last x years* gives the difference between the proportion of a country's neighbors that are democratic today and x years ago, where x varies between one and three.⁸

⁸We also ran analyzes looking at the effect of change in the proportion of democratic

Table 4: Effect of Diffusion on Democratization

	(1)	(2)	(3)	(4)
% Dem.	.504 (.149)***			
Ch. % dem. last year		.645 (.340)*		
Ch. % dem. last 2 years			.447 (.247)*	
Ch. % dem. last 3 years				.196 (.221)
Growth	-.030 (.009)***	-.030 (.010)***	-.030 (.010)***	-.031 (.010)***
GDP pc	.227 (.070)***	.299 (.066)***	.299 (.066)***	.300 (.066)***
Oil	-.0003 (.0002)	-.0004 (.0002)*	-.0004 (.0002)*	-.0004 (.0002)*
Muslim	-.002 (.002)	-.002 (.002)	-.002 (.002)	-.002 (.002)
Catholic	-.0006 (.002)	-.0004 (.002)	-.0004 (.002)	-.0004 (.002)
Protestant	.002 (.002)	.002 (.002)	.002 (.002)	.002 (.002)
Ethnic frac.	.003 (.002)	.002 (.002)	.002 (.002)	.002 (.002)
Rel. frac.	-.003 (.003)	-.003 (.003)	-.003 (.003)	-.003 (.003)
Brit. col.	.023 (.128)	.043 (.128)	.046 (.129)	.050 (.129)
# Past trans.	.255 (.047)***	.275 (.041)***	.271 (.041)***	.272 (.041)***
N	5652	5606	5555	5496
Pseudolog-lik.	-487.828	-487.638	-486.967	-486.801

Note: Dynamic probit estimations. Robust standard errors clustered by country in parentheses. All explanatory variables are lagged. *** $p < .01$, ** $p < .05$ and * $p < .1$.

Results show that the effect of diffusion is actually weak and short-lived. It is only statistically significant at the ten percent level in two of the three specifications. Moreover, the size of its coefficient diminishes rapidly. These findings illustrate the importance of using the appropriate measure of diffusion. The previous literature, by focusing on the effect of the *level* of democracy abroad on change in democracy at home – instead of on the effect of *change* in democracy abroad on change in democracy at home – has overestimated the effect of diffusion.⁹ This is consistent with the previous literature which, with the exception of neighbors over the last four and five years. The effect of diffusion is insignificant (available upon request).

⁹More specifically, diffusion measures using levels rather than change have underestimated the uncertainty associated with their point estimates. Although coefficients sizes are similar

Gleditsch and Ward (2006), has found that the effect of diffusion is weaker once one looks at change in democracy abroad (e.g. Leeson and Dean, 2009). Section 2 of the online appendix shows that these results are robust to the use of spatial probit models.

As implied by our argument, the coefficient on *Growth rate* is negative and statistically significant at the one percent level in all regressions; meaning that autocracies are more likely to transition to democracy when they experience low or negative growth. Given that, as discussed above, economic conditions are correlated across neighbors, economic crises are likely to explain, at least partially, why transitions occur in waves.

What, If Not Diffusion, Causes Democratization Waves?

The previous section has shown that diffusion cannot, on its own, account for existence of waves. In this section we show that diffusion can contribute to the formation of waves but only in an indirect manner. In order to understand the effect of diffusion on democratization, we divide the transition process into two periods: (1) the breakdown of the authoritarian regime; and (2) the choice to replace the collapsed autocracy by a democracy rather than a new authoritarian regime. We show that while democratic diffusion plays an important role during the second stage, it has very little effect on the first one. Instead, economic shocks, which often affect neighbors simultaneously, trigger the breakdown of authoritarian regimes. It is the combination of economic shocks and democratic diffusion that explain why transitions occur in waves.

Table 5 tests the effect of diffusion and economic growth using Heckman probit models. The first stage runs a probit estimation of the likelihood that an autocracy breaks down. The second stage runs a probit estimation of the likelihood that an autocracy that has just collapsed, transitions to democracy as opposed to another authoritarian regime. Model 1 employs the proportion of neighbors that are democratic to measure diffusion. It shows that

for level and (short-run) change diffusion variables, the former cannot be distinguished from random sampling error at standard levels of significance.

Table 5: Effect of Diffusion and Growth on Authoritarian Breakdowns and Transitions to Democracy

	(1)		(2)		(3)		(4)	
	Auth. Break.	Tr. to Dem.	Auth. Break.	Tr. to Dem.	Auth. Break.	Tr. to Dem.	Auth. Break.	Tr. to Dem.
% Dem.	.117 (.104)	.881 (.259)***						
Ch. % dem. last year			-.139 (.248)	1.772 (.593)***				
Ch. % dem. last 2 years					-.009 (.189)	.442 (.498)		
Ch. % dem. last 3 years							.102 (.205)	.032 (.372)
Growth	-.019 (.006)***	-.036 (.019)*	-.020 (.006)***	-.032 (.020)	-.021 (.006)***	-.034 (.020)*	-.020 (.006)***	-.034 (.020)*
GDP pc	-.079 (.051)	.584 (.197)***	-.069 (.050)	.815 (.214)***	-.068 (.050)	.815 (.214)***	-.070 (.050)	.833 (.216)***
Oil	-1.28e-06 (8.70e-06)	-.0004 (.0002)***	-9.84e-06 (1.00e-05)	-.0005 (.0002)***	-1.00e-05 (1.00e-05)	-.0005 (.0002)***	-8.50e-06 (1.00e-05)	-.0005 (.0002)***
Muslim	-.001 (.001)	-.003 (.003)	-.0008 (.001)	-.002 (.003)	-.0008 (.001)	-.002 (.003)	-.001 (.001)	-.002 (.003)
Catholic	.002 (.001)*	-.004 (.003)	.003 (.001)**	-.004 (.003)	.003 (.001)**	-.004 (.003)	.003 (.001)**	-.004 (.003)
Protestant	-.001 (.002)	.001 (.005)	-.001 (.002)	.005 (.006)	-.001 (.002)	.005 (.005)	-.001 (.002)	.006 (.006)
Ethnic frac.	.0003 (.001)	.006 (.003)**	.0002 (.001)	.006 (.003)*	.0002 (.001)	.006 (.003)**	.0004 (.001)	.006 (.003)*
Rel. frac.	-.003 (.002)**	.0008 (.004)	-.003 (.002)*	.002 (.005)	-.003 (.002)*	.002 (.005)	-.003 (.002)*	.001 (.005)
Brit. col.	-.097 (.093)	.302 (.239)	-.091 (.093)	.325 (.241)	-.083 (.093)	.323 (.241)	-.065 (.092)	.320 (.243)
# Past trans.	.149 (.047)***	.193 (.077)**	.154 (.047)***	.174 (.090)*	.148 (.047)***	.163 (.087)*	.146 (.046)***	.163 (.093)*
N	5513	428	5471	422	5422	422	5366	417
Pseudolog-lik.	-1423.763	-1614.092	-1403.126	-1591.743	-1398.298	-1588.547	-1381.181	-1570.822

Note: Heckman probit estimations. The first stage runs a probit estimation of the likelihood that an autocracy breaks down. The second stage runs a probit estimation of the likelihood that an autocracy that has just broken down transitions to democracy as opposed to another authoritarian regime. Models on authoritarian breakdown include the age of the regime, its square and its cube. Robust standard errors clustered by country in parentheses. All explanatory variables are lagged. *** $p < .01$, ** $p < .05$ and * $p < .1$.

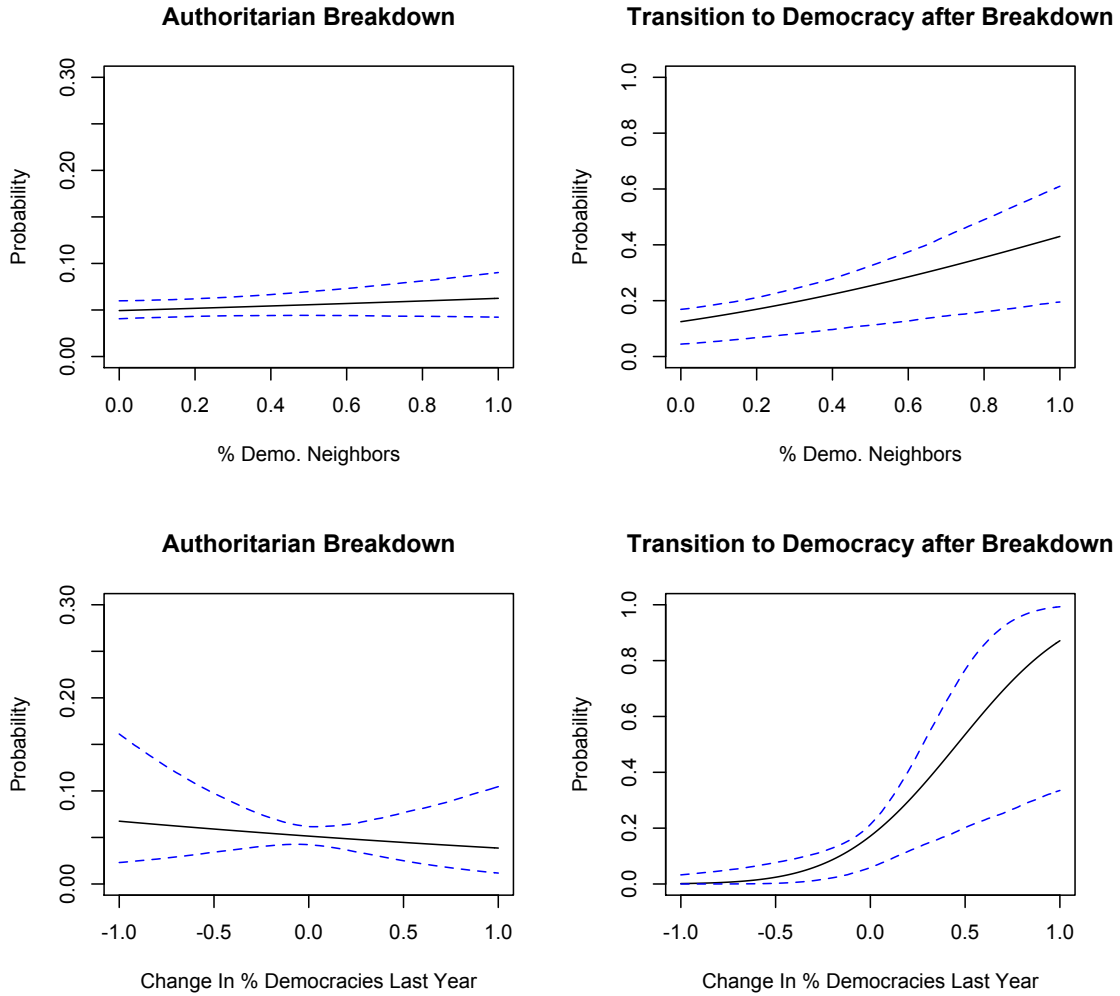
autocracies that have many democracies as neighbors are not more likely to fall than those that are encircled by other autocracies. However, once they have collapsed they are much more likely to establish democracies. The top two panels of Figure 4 plot out the substantive magnitude of the effects. The proportion of an autocracy’s neighbors that are democratic exhibits no relationship with the probability that it will break down (top left panel) but does substantially increase the probability that it subsequently adopts democracy (top right panel).¹⁰

Models 2-4 redo the analysis with the variables capturing transitions to democracy among neighbors. Again, diffusion affects the choice to establish a democracy after an authoritarian breakdown, but not whether an autocracy collapses in the first place. Moreover, as also found in Table 4, the effect of diffusion is short-lived. The bottom two panels of Figure 4 show the effect of democratization among neighbors on the probability of authoritarian breakdown (bottom left) and democratization at home following an autocratic breakdown (bottom right) computed based on model 2 of Table 5. Again, diffusion has no substantive effect on authoritarian breakdown. In contrast, its effect on democratization after the collapse of an authoritarian regime is large. Democratization by half of a country’s neighbors in the last year is associated with a 50 percent probability of democratization domestically.

Economic growth, in contrast, demonstrates very different effects. While diffusion only

¹⁰For the first stage, the predicted probabilities are calculated based on a probit model using the entire sample. The predicted probabilities for the second stage are calculated as a ratio of a bivariate normal over a univariate normal. The calculations use the select sample. In addition, the 95 percent confidence intervals in both stages are computed based on the Clarify method (King, Tomz and Wittenberg 2000). We draw 5,000 simulations. The panels looking at authoritarian breakdowns and subsequent transitions to democracy use different scales because the former are much rarer than the latter. While the likelihood that an autocracy collapses within a year is 7.8 percent, the likelihood that a fallen autocracy democratizes is nearly 25 percent (see Table A1).

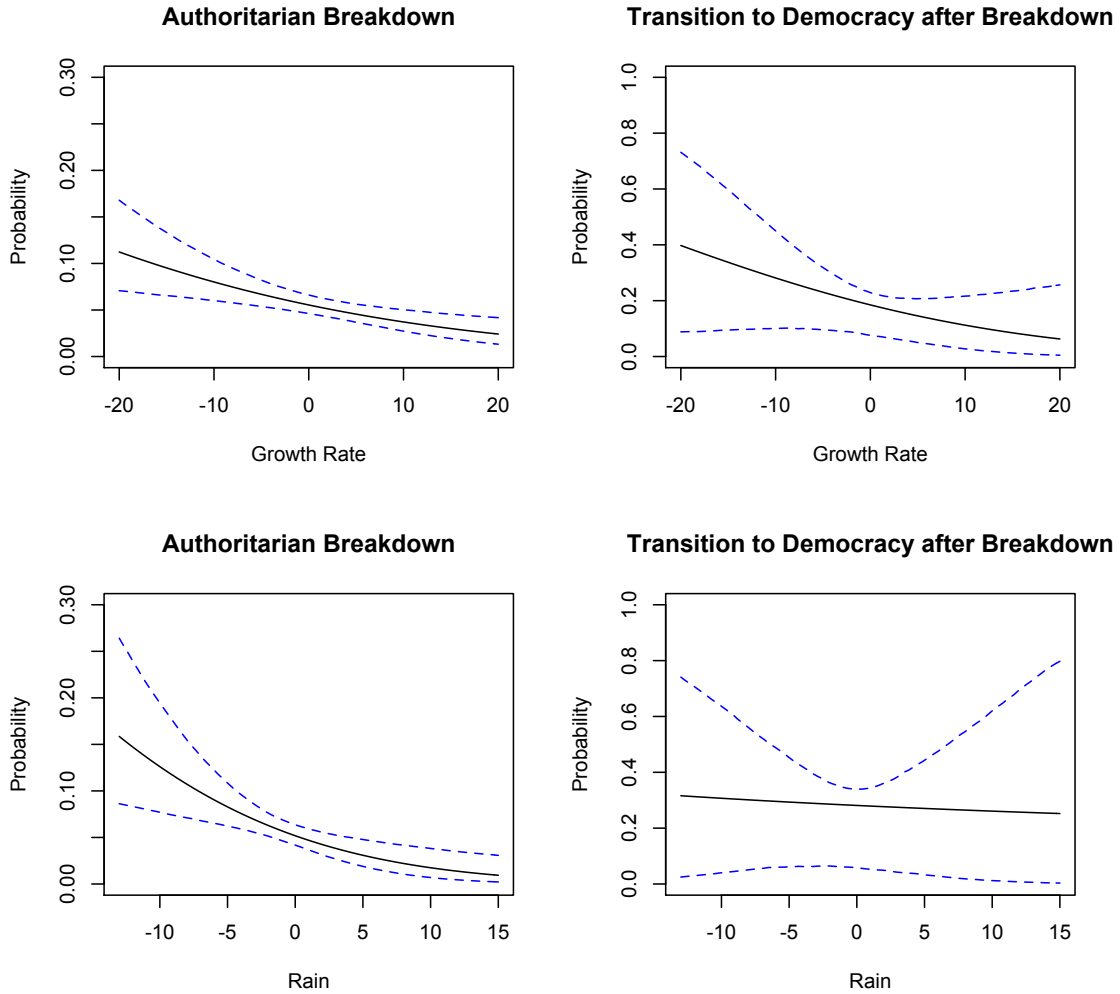
Figure 4: Effect of Diffusion on the Probability of Authoritarian Breakdown and Transition to Democracy



Note: Dashed lines give 95 percent confidence intervals. Top panels based on model 1 of Table 5. Bottom panels based on model 2 of Table 5.

exhibits an effect on the choice of regime type after an authoritarian breakdown, growth influences whether such a breakdown occurs. In all specifications in Table 5 that predict breakdown, *Growth rate* is negative and statistically significant at the one percent level. The top two panels of Figure 5 show the effect of economic growth on the predicted probabilities of authoritarian breakdowns and democratic transitions post-breakdown, calculated based on model 1 of Table 5. As shown in the figure, growth has a much more variable effect

Figure 5: Effect of Economic Crises on the Probability of Authoritarian Breakdown and Transition to Democracy



Note: Dashed lines give 95 percent confidence intervals. Top panels based on model 1 of Table 5. Bottom panels based on model 1 of Table 7. *Rain* gives the difference, in percentage, between the total amount of rain a country received in a given year and the average yearly amount of rain that country has received between 1950 and 2006.

on the second phase of the transition process and the standard errors are so wide that one cannot make clear inferences. Growth does significantly lower the probability of authoritarian breakdown in the first phase, however. A severe economic contraction is associated with about a ten percent probability of authoritarian breakdown in each year. The main analysis uses the average growth rate in the last three years. In addition, we have experimented with moving averages of the growth rates over the last 1 to 5 years. Results are unchanged

(available upon request).

One potential problem with the estimation of the effect of growth on regime change is endogeneity. It must be noted, however, that our main measure of growth gives the average growth rate during the previous three years, which reduces the possibility of reverse causation. We also introduce two instruments to show that our results are not driven by the effect of transitions on growth.

First, we use the average growth rate in the world excluding that of the domestic country as an instrument for growth. This instrument should satisfy the exclusion restriction, i.e. world growth only affects transitions via the given countries growth. Moreover, the first-stage regression suggests that this is a reasonably strong instrument (see Table A4 of the online appendix). The F-statistics of the instrument are well-above 10, which is the threshold that is usually used (Sovey and Green, 2011; Staiger and Stock, 1997).¹¹ We then compute a Wald test of exogeneity. The test suggests that growth is not endogenous (p-value 0.41).¹²

Second, we follow Miguel, Satyanath and Sergenti (2004) and Brückner and Ciccone (2011), among others, and instrument for growth using rainfall data from Matsuura and Willmott (2007).¹³ The data set covers 113 autocracies between 1960 and 2006. We expect low rainfall levels to be associated with low growth rates. As explained above, our variable (*Rain deviation*) captures the deviation, in percentage, between precipitations within a given

¹¹It must be noted that more recent work has suggested to increase the threshold somewhat, but the F-statistics reported here are above these revised thresholds.

¹²We have also computed a Smith-Blundell test of exogeneity and the results are unchanged (Smith and Blundell, 1986; Rivers and Vuong, 1988). For information on the Wald tests of exogeneity, see Wooldridge (2002), pp. 472-477.

¹³It must be noted, however, that rainfall is a better instrument of agricultural growth than industrial growth, and that each type of growth may affect regime breakdown differently (Dunning, 2008b).

year and its average over the 1960-2006 period.¹⁴ As shown in Table 6, rainfall is not a weak instrument of growth.¹⁵ Moreover, rainfall is unaffected by regime change and is unlikely to impact regime change other than through its effect on growth. As before, we compute a Wald test of exogeneity. It now suggests that growth is endogenous (p-values 0.023).

Table 6 reestimates models 1 and 2 of Table 5 using rainfall as an instrument for growth. As before, we find that growth increases the likelihood that an autocracy collapses. Diffusion again matters only for whether a democracy is established after the downfall of a dictatorship.

Column 1 of Table 7 uses rainfall as an independent variable rather than an instrument for growth.¹⁶ Low precipitation levels are found to increase the likelihood of democratization and the relationship is highly significant. Using data from sub-Saharan Africa between 1980 and 2000, Brückner and Ciccone (2011) have already reported that low rainfall fosters democratization. In this paper, we extend this analysis beyond sub-Saharan Africa, and show that rainfall (like growth) is most relevant to the breakdown of authoritarian regimes rather than the subsequent transition to democracy. The bottom two panels of Figure 5 show the effect of rainfall on the predicted probabilities of authoritarian breakdown and transition to democracy. These findings provide further evidence that our results are not driven by the endogeneity of growth.

Low growth is not the only economic factor that can prompt the breakdown of authoritarian regimes. For example, as argued above, the wave of democratization in Latin America in the 1980s was, at least partially, triggered by the debt crisis of the 1980s. Models 2-4 thus consider the effects of alternative types of crises: banking crises, external debt crises,

¹⁴Since our growth variable is a three year moving average, we also use the three year moving average of the rainfall variable in the instrumental variable estimations.

¹⁵The F-statistics of the instrument are above 10.

¹⁶Table 7 uses % *democracies* to capture diffusion. Results are robust to the use of the other measures used in Table 5. Table A5 of the online appendix redoes Table 7 with *Change % democracies last year*.

Table 6: Instrumental Variable Estimations of the Effect of Growth on Authoritarian Breakdowns and Transitions to Democracy

	(1)		(2)	
	Auth. Break.	Tr. to Dem.	Auth. Break.	Tr. to Dem.
% dem.	-.201 (.144)	.827 (.388)**		
Ch. % dem. last year			-.136 (.342)	1.739 (.739)**
Growth	-.323 (.109)***	-.115 (.284)	-.291 (.105)***	-.132 (.255)
GDP pc	.256 (.143)*	.546 (.356)	.187 (.133)	.739 (.337)**
Oil	.00002 (1.00e-05)*	-.0003 (.0002)*	1.00e-05 (1.00e-05)	-.0005 (.0002)**
Muslim	-.004 (.002)*	-.003 (.005)	-.003 (.002)	-.002 (.005)
Catholic	.0006 (.002)	-.002 (.005)	.001 (.002)	-.001 (.005)
Protestant	-.011 (.004)**	-.008 (.010)	-.011 (.004)***	-.006 (.010)
Ethnic frac.	-.006 (.002)**	.006 (.006)	-.005 (.002)**	.005 (.005)
Rel. frac.	.002 (.002)	.002 (.006)	.002 (.002)	.003 (.006)
Brit. col.	.024 (.118)	.426 (.299)	.004 (.111)	.434 (.292)
# Past trans.	.196 (.055)***	.160 (.100)	.185 (.056)***	.132 (.104)
Growth as Dependent Variable				
Rain dev.		.242 (.054)***		.254 (.054)***
% dem.		-.565 (.315)*		
Ch. % dem. last year			-.875 (.911)	
GDP pc		1.076 (.111)***		1.042 (.109)***
Oil		.00006 (.00002)**		.00006 (.00002)***
Muslim		-.013 (.003)***		-.013 (.003)***
Catholic		-.012 (.003)***		-.013 (.003)***
Protestant		-.027 (.006)***		-.025 (.006)***
Ethnic frac.		-.020 (.003)***		-.019 (.003)***
Rel. frac.		.004 (.004)		.004 (.004)
Brit. col.		.574 (.190)***		.529 (.190)***
# Past trans.		.178 (.126)		.169 (.126)
F-stat. instr.		16.47***		18.91***
N	3244	241	3221	238
Pseudolog-lik.	-806.787	-939.788	-794.309	-927.276

Note: The first stage regressions use rainfall to instrument for growth. The second stage regressions use Heckman probit models. We run a probit estimation of the likelihood that an autocracy breaks down. We then run a probit estimation of the likelihood that an autocracy that has just broken down transitions to democracy as opposed to another authoritarian regime. Models on authoritarian breakdown include the age of the regime, its square and its cube. Robust standard errors clustered by country in parentheses. All explanatory variables are lagged. *** $p < .01$, ** $p < .05$ and * $p < .1$.

Table 7: Effect of Alternative Economic Shocks on Authoritarian Breakdowns and Transitions to Democracy

	(1)		(2)		(3)		(4)	
	Auth. Break.	Tr. to Dem.	Auth. Break.	Tr. to Dem.	Auth. Break.	Tr. to Dem.	Auth. Break.	Tr. to Dem.
% Dem.	.050 (.112)	.828 (.339)**	-.005 (.149)	.638 (.354)*	-.017 (.148)	.885 (.348)**	-.083 (.118)	.834 (.258)***
Rain dev.	-.047 (.015)***	-.037 (.041)						
RR crises			.179 (.068)***	.164 (.208)				
LV crises								
RR/LV crises					.301 (.085)***	.325 (.189)*		
GDP pc	-.113 (.051)**	.382 (.246)	.042 (.070)	.864 (.195)***	-.136 (.067)**	.403 (.250)	.244 (.057)***	.132 (.150)
Oil	-2.16e-06 (8.95e-06)	-.0003 (.0002)*	.00004 (.0002)	-.0003 (.0002)*	-.00002 (.00003)	-.0008 (.0004)**	-.00002 (.00003)	.554 (.191)***
Muslim	.0002 (.002)	-.002 (.003)	-.004 (.002)**	-.007 (.006)	-.002 (.002)	-.004 (.004)	-.001 (.001)	-.003 (.003)
Catholic	.004 (.002)**	-.001 (.004)	-.0003 (.001)	-.008 (.002)***	.003 (.002)	-.003 (.004)	.002 (.001)	-.005 (.003)**
Protestant	-.002 (.003)	-.005 (.006)	-.002 (.002)	.013 (.008)*	-.006 (.003)*	-.012 (.008)	-.002 (.002)	.0001 (.005)
Ethnic frac.	-.0004 (.002)	.007 (.004)*	.004 (.002)*	.003 (.005)	-.002 (.002)	.008 (.005)	.0005 (.002)	.006 (.003)*
Rel. frac.	-.0005 (.002)	.002 (.005)	-.009 (.003)***	-.003 (.007)	-.0004 (.003)	.0005 (.006)	-.003 (.002)*	.003 (.005)
Brit. col.	-.101 (.092)	.303 (.270)	-.183 (.164)	.669 (.433)	-.058 (.105)	.321 (.286)	-.083 (.102)	.224 (.260)
# Past trans.	.169 (.055)***	.171 (.085)**	.164 (.053)***	.037 (.159)	.233 (.067)***	.158 (.086)*	.155 (.049)***	.181 (.077)**
N	3419	253	3250	287	2331	166	4698	378
Pseudolog-lik.	-854.587	-994.102	-908.796	-1041.119	-555.659	-648.595	-1245.764	-1425.68

Note: Heckman probit estimations. The first stage runs a probit estimation of the likelihood that an authoritarian breaks down. The second stage runs a probit estimation of the likelihood that an autocracy that has just broken down transitions to democracy as opposed to another authoritarian regime. The variable *RR crises* indicates whether a country is experiencing a crisis as defined by Rogoff and Reinhart (2010). The variable *LV crises* indicates whether a country is experiencing a crisis as defined by Laeven and Valencia (2013). The variable *RR/LV crises* indicates whether a country is experiencing a crisis as defined by either Rogoff and Reinhart (2010) or Laeven and Valencia (2013). *Rain deviation* gives the difference, in percentage, between the total amount of rain a country received in a given year and the average yearly amount of rain that country has received between 1950 and 2006. Models on authoritarian breakdown include the age of the regime, its square and its cube. Robust standard errors clustered by country in parentheses. All explanatory variables are lagged. *** $p < .01$, ** $p < .05$ and * $p < .1$.

inflation crises and stock market crises. Column 2 uses the variable *RR crisis* which takes the value one if a country is experiencing a crisis as defined by [Reinhart and Rogoff \(2011\)](#) – who cover banking, external debt, inflation and stock market crises – or a growth crisis (a growth rate below -2% at least once over the last three years).

Model 3 reproduces model 2 but using the crises dataset of [Laeven and Valencia \(2013\)](#) rather than that of [Reinhart and Rogoff \(2011\)](#). The dataset of [Laeven and Valencia \(2013\)](#) covers only external debt and banking crises. Column 4 reruns the analysis but with a dummy variable indicating whether a country is experiencing a crisis as defined by either [Reinhart and Rogoff \(2011\)](#) or [Laeven and Valencia \(2013\)](#), or a growth crisis.¹⁷ In all three cases, crises are found to substantially increase the likelihood that an autocracy breaks down, but have only a negligible effect on the subsequent transition to democracy.

Stepping away from our main findings for a moment, the control variables in most instances affect democratization in the same manner as found by the previous literature. For example, like [Miller \(2012\)](#) and [Kennedy \(2010\)](#), we find that richer autocracies are less likely to collapse, but that once they do, they are more likely to transition to democracy. Our analysis also yields novel findings. Oil income, for instance, is found to have an ambiguous effect on authoritarian breakdown but to substantially decrease the probability of transition to democracy. This could be explained by the fact that oil increases both the incentives of outsiders to take power and the capacity of the ruling elite to maintain power through repression and co-option. However, once the regime is overthrown, the new ruling elite has more incentives to hold on power and prevent elections, in order to retain control over rents.

¹⁷Results from model 4 should be interpreted with caution, however, since the data sets of [Laeven and Valencia \(2013\)](#) covers fewer types of crises than that of [Reinhart and Rogoff \(2011\)](#).

Robustness Tests

The online appendix presents several additional robustness tests. First, the analysis presented in Table 5 starts in 1875, at a time where there were very few democracies. The fact that we capture a large proportion of the transitions to democracy is an important advantage of our analysis. Nonetheless, to make sure that our results are not driven by the fact that very few democracies existed before the end of the 19th century, we rerun models 1 and 2 of Table 5 with samples covering the periods 1900-2004 (Table A2) and 1945-2004 (Table A3). Results are unaltered.

The result that diffusion increases the likelihood that an autocracy transitions to democracy after a breakdown could be driven exclusively by the post-Cold War period. Moreover, as discussed in the theory section, in some instances common political shocks may drive authoritarian breakdowns, such as in the case of the abandonment of the Brezhnev doctrine (see Gunitsky, 2014). Therefore, Tables A6 and A7 redo models 1 and 2 of Table 4 and Table 5, respectively, with a dummy variable for the post-Cold War period. We also construct a variable (*Political Shocks*) that takes the value one during years of pro-democracy hegemonic shocks (1917-22, 1939-47, and 1989-95) as defined by Gunitsky (2014) (see Tables A8 and A9). In all instances, the results are unchanged.

Furthermore, one problem with looking at the implications of growth is that there are observations with very high or very low growth rates. We have reduced this problem in the main analysis by using three year moving averages of the growth rates. Still, while growth varies between -33.291 and 158.606 percent within the sample, 99 percent of the observations have growth rates between -20 and 20 percent. In Table A10 we thus redo models 1 and 2 of Table 5 with only observations with growth rates between -20 and 20 percent. In addition, Table A11 replicates models 1 and 2 of Table 5 with a dummy variable indicating whether a country has experienced a growth shock (a growth rate below -2%) at least once over the last three years rather than with the continuous growth rate variable. Results are robust.

This paper defines neighbors as countries that share a border or are separated by 400

miles of water or less. However, diffusion may not be restricted to direct neighbors. In Table A12 we reproduce models 1 and 2 of Table 5 while defining neighbors as countries from the same region.¹⁸ Moreover, when assessing the performance of its leaders, the population does not necessarily only consider how its country performs in isolation but also how it performs compared to other economies (see Kayser and Peress, 2012). An economic crisis may not harm the legitimacy of a leader to the same extent if many other countries are also experiencing economic crises. Therefore, Table A13 reproduces the first two columns of Table 5 but with a new variable (*Benchmarked growth rate*) that gives the difference between the growth rate of a country and the average growth rate in the world in a given year. Our results are robust.

The recent literature on democracy has insisted on the importance of including country fixed effects in order to control for country-specific unobserved factors (e.g. Acemoglu et al., 2008). Table A14 replicates models 1 and 2 of Table 4 with country fixed effects.¹⁹ Results are again unaltered.

Finally, it is possible that the effect of growth on authoritarian breakdown and subsequent transition to democracy is contingent on whether a large proportion of a country’s neighbors are democratic or not. Tables A15 and A16 reproduce models 1 and 2 of Tables 4 and 5 with an interaction term between growth and diffusion. Results do not support this alternative hypothesis. Rather growth and diffusion affect distinct moments of the transition process.

¹⁸We use the following regions: Latin America, sub-Saharan Africa, Middle East, Asia, Eastern Europe and Western countries (Western Europe, Canada, the United States, Australia and New Zealand).

¹⁹Heckman probit models could not be run with country fixed effects.

Conclusion

This paper has contributed to the literature by providing a novel explanation for one of the most important observations of the democratization literature, namely that transitions to democracy happen in spatial and temporal clusters. Our explanation moves away from the diffusion explanation that has dominated the literature. Rather, we advance a more nuanced two-stage argument. Economic shocks, that are themselves clustered, trigger the transition process by causing the breakdown of authoritarian regimes. Democratic diffusion, in turn, increases the likelihood that democracy will be adopted once the previous regime has collapsed.

We test our hypothesis using a sample of 125 autocracies between 1875 and 2004. After demonstrating that economic shocks are indeed clustered regionally, we show that diffusion, on its own, cannot explain the occurrence of waves of democratization, notably because it cannot account for the temporal dimension of the waves. We then use Heckman probit models to show that the economic crises are the primary driving forces of authoritarian reversals, while the choice of adopting democratic institutions is mainly influenced by diffusion.

These findings suggest that the factors that cause the breakdown of authoritarian regimes and the choice of installing democracy may be very different. Democratization occurs in waves because economic shocks, which are themselves clustered in time and space, play a key role in authoritarian breakdown. Diffusion alone cannot account for democratic waves but democratization in neighbors does influence democratization at home once autocratic regimes have collapsed. Both factors contribute to democratic waves, just at different steps.

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