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The American Political Science Review, Volume 89, Issue 4 (Dec., 1995), 882-897.

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ECONOMIC CRISIS AND POLITICAL REGIME CHANGE: AN EVENT HISTORY ANALYSIS

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I examine the effect of economic crises on domestic political regime change. Using a statistical technique known as *event history analysis* and a new data set that identifies all instances of regime change in the 97 largest Third World countries, I develop multivariate models of democratic breakdown and democratic transition. My main findings are that inflationary crises inhibited democratization from the 1950s through the early 1970s but may have facilitated it in the late 1980s and that recessionary crises facilitated democratic breakdown but had no effect on democratic transition throughout this period. The inflation findings—though not the recession findings—support the arguments of Karen Remmer and Samuel Huntington that the processes affecting democratization were very different in the 1980s than in earlier eras. A number of other explanatory variables emerge as significant determinants of regime change, providing support for several other contentions that have appeared in the literature.

One of the most prominent subjects in comparative politics during the past few decades has been the relationship between economic crisis and domestic political regime change. Beginning with the pathbreaking work of Guillermo O'Donnell (1973), many authors have developed complex theoretical models focusing on the role of economic crises in triggering breakdowns of democracy. Some of these authors argue that economic crises trigger democratic breakdown in conjunction with certain background conditions. Others argue that economic crises can also trigger regime change in the opposite direction—transitions to democracy. Some have even suggested that while economic crises triggered democratic breakdown in the past, they no longer do so. Much of the most recent work on regime change—including O'Donnell's—takes a very different analytical approach. Nevertheless, the idea that economic crises can trigger regime change remains widely accepted.

Despite the wide acceptance of this idea, empirical research on this subject has been limited mainly to case studies focusing on a few advanced Latin American countries. These case studies have proven inconclusive, and little effort has been made to examine this subject in a broader sample of countries. As a result, many key questions remain unanswered: Is there a systematic relationship between economic crisis and regime change? Do economic crises trigger both democratic breakdown and democratic transition? Do they trigger breakdown or transition in conjunction with certain background conditions? Have their effects changed over time? Are the determinants of breakdown and transition fundamentally similar or different?

I address these questions here by analyzing a large cross-national data set with statistical methods. Because regime change is an inherently dynamic phenomenon, the analysis uses time series data for 75 Third World countries and a regressionlike statistical

technique known as *event history analysis* that enables me to analyze this data set rigorously. Several important findings emerge, providing interesting insights into these questions and revealing a number of fruitful avenues for further research.

ECONOMIC CRISIS AND REGIME CHANGE

Prior to O'Donnell's (1973) initial work on this subject, most of the literature on the determinants of political regime type and regime change focused on broad structural factors that were thought to be conducive to either authoritarianism or democracy. The most widely studied factors of this sort were a series of *socioeconomic conditions* linked to economic development or "modernization," including the level of per capita income, the extent of literacy and education, the degree of urbanization, and the quality and extent of communications media. According to "modernization theory," low levels of these factors are conducive to authoritarianism and higher levels are conducive to democracy. Because these factors are closely related to the level of economic development, countries undergo a gradual, inexorable transition from authoritarianism to democracy as their economies develop, according to these authors (Deutsch 1961; Lerner 1958; Lipset 1959; see also Burkhart and Lewis-Beck 1994). In a related vein, many authors have argued that capitalist economic development creates growing social pressure for democratization by fostering the emergence of a middle class (Lipset 1959), bourgeoisie (Moore 1966), or working class (Rueschmeyer, Stephens, and Stephens 1992) that seeks access to state power.

In addition to these development-related socioeconomic factors, some authors emphasize the importance of *social-structural conditions* such as societal

homogeneity, low or moderate inequality, a relatively even distribution of power among societal groups, and overarching loyalties or cross-cutting cleavages as factors that facilitate democracy (Dahl 1971; Lijphart 1977; Muller 1988; Vanhanen 1990). Others focus on *political culture*, arguing that traits such as tolerance, trust, egalitarianism, and a willingness to compromise are preconditions for democracy (Almond 1980; Diamond 1993). These traits are said to make Protestantism more conducive to democracy than Catholicism, Islam, Confucianism, or Buddhism (Bollen 1979; Huntington 1984).

Another set of structural factors that can affect political regimes is the *character of political institutions*. Under democratic regimes, institutional features that promote stability and compromise are widely thought to facilitate the persistence of democracy, including the extent of institutionalization (Huntington 1968), consociational arrangements (Lijphart 1977), coherent (nonfragmented) party systems (Mainwaring 1993), and parliamentary rather than presidential systems (Linz 1994). Huntington's (1968) argument about the importance of institutionalization also applies under authoritarian regimes, but consociationalism, party system structure, electoral rules, and the type of executive system are largely irrelevant and therefore presumably have little effect on democratization under these regimes. The most distinctive and most variable institutional feature of authoritarian regimes is the role played by the military in politics. Much of the early literature on military intervention in politics emphasized the exceptional, temporary nature of this intervention (see Rouquié 1986, 108–9), implying that military-led authoritarian regimes are more likely to relinquish power and perhaps also more likely to permit democratization than those led by civilians. More recent literature has challenged this view, arguing that a “new professionalism” (Stepan 1973) or ideosyncratic conditions (Rouquié 1986) have often led the military to play a much more permanent role in politics and therefore presumably to be more resistant than civilians to relinquishing power and permitting democratization to occur.

Finally, some authors have identified *international political and economic conditions* that may affect political regimes, including colonial legacies (Collier 1982; Weiner 1987, 19–21), economic dependence (Bollen 1983; Gasiorowski 1988; Gonick and Rosh 1988), relationships with superpowers (Gasiorowski 1991; Muller 1985), the “demonstration effect” of democracy in neighboring countries (Huntington 1991, 100–106), and other aspects of the international environment (Gourevitch 1978; Jackson and Rosberg 1982; Whitehead 1986).

A large body of empirical research has shown that many of these structural factors significantly affect political regimes (Arat 1991; Cnudde and Neubauer 1969; Hadenius 1992; Vanhanen 1990). However, theories of regime change that focus only on structural factors of this sort are inherently problematic: although they identify factors that may *facilitate* re-

gime change, they do not consider the *processes* that actually bring it about and therefore cannot fully explain its *causes* (Rustow 1970). These processes, typically involving coups d'état that result in military rule or mass protests leading to democracy, consist of “the strategic behavior of political actors embedded in concrete historical situations” (Przeworski 1986, 47). Although much of the recent work on regime change focuses narrowly on this “strategic behavior” (Di Palma 1990; Kitschelt 1992; O'Donnell, Schmitter, and Whitehead 1986), a much larger body of literature examines “concrete historical situations” that affect regime change. This literature emphasizes two types of concrete historical situation: structural factors that affect a society's propensity for regime change and momentous contemporaneous events such as economic crises or war that *trigger* processes of regime change. Some of these studies argue that regime change is especially likely to occur when *both* kinds of concrete historical situation exist—when triggering events occur *in conjunction with* certain structural factors that act as background conditions which *magnify* the effect of these events on regime change.

The most widely cited study of this kind is O'Donnell's (1973) monograph, which argued that the breakdown of democratic or semidemocratic regimes in Brazil and Argentina in the mid-1960s was triggered by economic crises caused by the exhaustion of the “easy” stage of import substitution industrialization (ISI) and the inability of these countries to “deepen” their economies and thus undertake the “hard” stage of ISI under “incorporating” regimes. According to O'Donnell, certain powerful political actors believed these crises could only be resolved by replacing these regimes with “exclusionary” bureaucratic-authoritarian regimes, because incorporating regimes were unable to carry out the painful measures needed to implement the hard stage of ISI. O'Donnell implicitly argued that a necessary background condition for the breakdown of these incorporating regimes was a relatively high level of economic development, which fostered both the exhaustion of the “easy” stage of ISI and the emergence of a politicized working class that demanded high wages. Within this context, economic crises were incompatible with incorporating regimes and therefore triggered the breakdown of these regimes. O'Donnell (1978, 1988) later modified this argument and applied it to other countries.

Another seminal study of this sort is Linz's (1978) monograph, which argued that breakdowns of democracy occur when incumbent governments are unable to solve certain critical problems, producing legitimacy crises that lead actors who are “disloyal” or “semiloyal” to democracy to destroy the democratic regime. Linz identifies a number of background conditions that may facilitate this process, including societal heterogeneity, a presidential system, a fragmented party system, the prevalence of ideological rather than pragmatic leaders, and the exclusion of leaders associated with previous authoritarian re-

gimes. The "unsolvable problems" that trigger these democratic breakdowns include, but are not limited to, economic crises.

These pathbreaking studies led a generation of scholars to study regime change in a similar manner (Bermeo 1990). Although O'Donnell's work has been widely criticized (Collier 1979; Duty 1991; Remmer and Merckx 1982), many scholars have emulated it by examining how tensions rooted in economic development processes may trigger democratic breakdown (Crowther 1986; Im 1987; Kaufman 1979; Kurth 1979). Other scholars, seemingly inspired by O'Donnell, portray democratic breakdown as a consequence of economic crises caused by very different structural economic conditions, such as transitions between stages of capitalism (Poulantzas 1974), economic dependence (Szymanski 1981, 449–50; Thomas 1984), and the Third World debt crisis (Roett 1985). Departing more clearly from O'Donnell's structuralist approach, scholars such as Kaufman (1976), Skidmore (1977), and Wallerstein (1980) have argued that economic crises involving slow or negative growth or high inflation—whatever their causes—may trigger breakdown. Most of these authors imply that breakdown occurs most often in countries in the "dangerous middle" stages of development, where political instability is rife because the lower and middle classes are politicized but still have low living standards (Chirot 1977, 76–77).

Following the establishment of democratic regimes in many Third World countries in the early and mid-1980s, a number of authors developed similar arguments in which economic crises were said to trigger transitions to democracy (Epstein 1984; Richards 1986; Markoff and Baretta 1990). These authors argue that economic crises can undermine the legitimacy not only of democratic regimes but also of authoritarian regimes, thus triggering not only democratic breakdown but more generally *regime change*, regardless of what type of regime currently exists. Many authors who follow a process-oriented approach also cite economic crises as possible catalysts of democratic transition, even if they do not explicitly incorporate these crises into their models (Baloyra 1987; Malloy and Seligson 1987; O'Donnell, Schmitter, and Whitehead 1986).

Although these arguments that economic crises trigger democratic transition superficially resemble the models in which economic crises are said to trigger democratic breakdown, they contradict these models at a deeper level. O'Donnell (1973) and others do not argue that economic crises undermine the legitimacy of democratic regimes and thus trigger breakdown. Rather, they argue that certain political actors who are capable of bringing about regime change believe that democratic and semidemocratic regimes hinder the resolution of these crises because governments under such regimes are more responsive to popular pressure and therefore less capable of carrying out the painful measures needed to resolve these crises; these actors thus conclude that democratic breakdown is necessary. By implication, eco-

nomics crises occurring under nondemocratic or semi-democratic regimes should lead the corresponding actors similarly to oppose democratization efforts, *inhibiting* rather than facilitating democratic transition under these circumstances. Thus while the first line of reasoning holds that economic crises undermine the legitimacy of whatever type of regime currently exists and therefore trigger regime change in either direction, the second implies that economic crises are incompatible with democracy and therefore have different, though *complementary*, effects on regime change in each direction, facilitating democratic breakdown but inhibiting democratic transition. The structural factors that are thought to be conducive to authoritarianism or democracy also presumably have complementary effects on the likelihood of regime change in each direction, facilitating democratic breakdown and inhibiting democratic transition, or vice versa.

Another variation on the relationship between economic crisis and regime change is offered by Remmer (1990), who argues that the foreign debt crises that occurred in Latin America in the 1980s did not trigger democratic breakdown, as earlier economic crises had, because certain background conditions were very different in this period. These different conditions include greater efforts by the United States to promote democracy, other changes in the international political context, new attitudes toward democracy among business and military elites, more pragmatic and inclusive approaches to democratic governance, and the legacy of prior events in certain countries. These different conditions offset the adverse impact of economic crises on democracy and even facilitated democratic transitions, according to Remmer. Huntington expresses similar ideas at a more general level, arguing that a "third wave" of democratization that was very different from the previous waves began in the mid-1970s as a result of the spread of democratic norms, more active efforts by the Western powers and the Catholic Church to promote democracy, economic crises and other performance problems in nondemocratic regimes, changes in socioeconomic conditions, and other factors (1991, 40–108).

This discussion suggests six hypotheses that can be examined empirically:

HYPOTHESIS 1. *Economic crises trigger democratic breakdown.*

HYPOTHESIS 2. *Economic crises trigger democratic transition in a manner that is fundamentally similar to their effect on democratic breakdown.*

HYPOTHESIS 3. *Economic crises facilitate democratic breakdown but inhibit democratic transition in a complementary manner, contradicting hypothesis 2.*

HYPOTHESIS 4. *The role of economic crises in triggering democratic breakdown declined over time and became insignificant in the 1980s, while their role in triggering democratic transition increased and became significant during this decade.*

HYPOTHESIS 5. *Socioeconomic and social-structural conditions, political culture and institutions, and international conditions affect democratic breakdown and democratic transition, in each case facilitating regime change in one direction and inhibiting it in the other, in a complementary manner.*

HYPOTHESIS 6. *Economic crises trigger democratic breakdown, and possibly also democratic transition, in conjunction with a relatively high level of development, the social and political conditions discussed by Linz, and perhaps other structural factors as well.*

The remainder of this study seeks to evaluate these hypotheses.

EMPIRICAL MEASURES AND SAMPLE

To study the role of economic crises as triggers of democratic breakdown and transition, we first need to identify the distinct points in times at which political regimes changed from democratic to non-democratic (or vice versa) in an appropriate sample of countries. Most existing quantitative measures of democracy are based on continuous, ordinal scales that rate countries according to their "degree of democracy." Although measures of this sort have certain advantages (Bollen 1990), their main drawback for our purposes is that they do not clearly distinguish democratic from nondemocratic regimes and therefore do not permit us unambiguously to identify distinct instances of regime change. For example, Bollen's (1980) measure of democracy rates Brazil at 90.5 in 1960 and 60.9 in 1965 on a hundred-point scale—values that do not clearly identify Brazil's 1964 coup as an instance of regime change. With such a measure, regime change can only be identified by assuming that movements along the scale of a certain magnitude (e.g., 20 points) or past a certain value (e.g., 80) denote instances of regime change. Assumptions of this sort are arbitrary and therefore not satisfactory.¹

In order to carry out this study, I developed a data set featuring a categorical measure that distinguishes democratic and nondemocratic regimes fairly clearly and thus permits us to identify distinct instances of regime change.² This measure classifies political regimes as either democratic, semidemocratic, or nondemocratic.³ I chose to use three categories rather than two because it was evident that many countries have regimes that are neither fully democratic nor truly nondemocratic and that distinct changes to and from these "semidemocratic" regimes do indeed occur. I collected data on this measure for the 97 Third World countries with populations of at least one million in 1980 for the periods beginning with their independence or the date at which a "modern" state⁴ first appeared and continuing through 1992. I focused only on Third World countries because almost all regime changes in the post-World War II era (when systematic quantitative data are more widely available) have occurred in these countries. I excluded

small countries because they are often highly anomalous and therefore might distort the analysis.

My definitions of the three regime categories are based largely on Diamond, Linz, and Lipset (1990, 4:xvi–xvii):

Democracy. A regime in which (1) meaningful and extensive competition exists among individuals and organized groups for all effective positions of government power at regular intervals and excluding the use of force, (2) a highly inclusive level of political participation exists in the selection of leaders and policies such that no major (adult) social group is excluded, and (3) a sufficient level of civil and political liberties exists to ensure the integrity of political competition and participation.

Semidemocracy. A regime in which (1) a substantial degree of political competition and freedom exist but where the effective power of elected officials is so limited, or political party competition is so restricted, or the freedom and fairness of elections are so compromised that electoral outcomes, while competitive, still deviate significantly from popular preferences and/or (2) civil and political liberties are so limited that some political orientations and interests are unable to organize and express themselves.

Nondemocracy. A regime in which little or no meaningful political competition or freedom exists.

Using these definitions, I carefully examined a variety of historical sources⁵ to determine when the political regime in each country changed from one of these three categories to another. This process yielded annual time series of varying lengths for the 97 countries, indicating what type of regime existed in each year and when regime changes occurred. In most cases distinct instances of regime change were easy to identify because they occurred through a change of government (typically following a coup d'état or free elections) or through the declared initiation or conclusion of a state of emergency or some nondemocratic policy. In a few cases regime change occurred gradually rather than through a distinct event—typically, as a government became increasingly repressive toward its opponents. While it was therefore difficult to pinpoint the *exact dates* of regime change in these cases, it was never hard to make a judgement about the *years* in which they occurred. Since years are my temporal unit of analysis, I am confident that my judgments were adequate for the purposes of this study. (A complete listing of these data and a more detailed description of the data collection procedure are provided in Gasiorowski n.d. Narrative profiles for each country giving the main historical details that guided my classifications are available upon request.)

The explanatory variables used in the analysis, together with their mnemonic variable names, are as follows:

Economic Crisis Variables: inflation rate (INFLATION), real economic growth rate (REGROWTH)

Socioeconomic and Social Structure Variables: real income per capita (INCOMEPC), ethnolinguistic fractionalization index (ELFI)

Political Culture Variables: Catholic percentage of population (CATHPOP), Moslem percentage of population (MOSLEMPOP)

Political Institution Variables: presidential system (PRESIDENTIAL), military regime (MILREGIME), institutionalization/duration of current regime (REGIMEDURATION), institutionalization/prior years under democratic or semidemocratic regime (DSYEARS)

International Variables: trade dependence (TRADEDEPENDENCE), proportion of countries in the region that are currently democratic (REGIONDEM).

Miscellaneous: calendar year (YEAR)

The two economic crisis variables (INFLATION and REGROWTH) measure the severity of inflationary and recessionary crises, respectively—the main types of economic crisis discussed in the literature reviewed. I constructed these measures by calculating the two-year moving averages of the inflation and real economic growth rates. Thus their values in year y are the averages of these underlying variables in years y and $y - 1$.⁶ I used these two years mainly on the assumption that political actors' behavior is based on their assessments of economic conditions prevailing not only at the current time but also in the recent past and near future. While regime changes obviously occur throughout the current year, these measures, on balance, give the average inflation rate and growth rate in the 18 months preceding a regime change and the 6 months following it—intervals that seem appropriate. Moreover, since the underlying inflation and economic growth data were not available in some cases prior to year $y - 1$, moving averages of longer duration or covering earlier periods would have reduced the sample size. Since these moving averages mainly cover the periods preceding regime change, they have the additional advantage of ensuring that we are studying the causal effects of inflation and economic growth on regime change, not the reverse.

In addition to these two economic crisis variables, I included in the analysis explanatory variables corresponding to all of the discussed structural factors that could be easily measured and would yield a fairly large number of observations. I did this for three reasons: (1) to enhance specification of the multivariate models by providing control variables in the analysis; (2) to provide additional insight into the causal processes affecting regime change; and (3) because the conjunctural models of regime change implicit in the work of O'Donnell, Linz, and others raise the possibility that *any* of the structural factors discussed above might magnify the impact of economic crises on regime change in a similar manner.

Real income per capita (INCOMEPC) is a proxy for the development-related socioeconomic factors. The ethnolinguistic fractionalization index (ELFI) is a measure of societal heterogeneity. The variables giving

the percentage of a country's population that is Catholic (CATHPOP) and Moslem (MOSLEMPOP) are proxies for political cultural factors associated with these religions. PRESIDENTIAL and MILREGIME are dummy variables indicating whether the country has a presidential system and whether the executive branch is controlled by the military. REGIMEDURATION gives the number of years since the current regime was established (a proxy for the age of the regime's political institutions, serving as a rough measure of institutionalization). DSYEARS gives the number of prior years in which a democratic or semidemocratic regime existed in the country and serves as a rough measure of the strength of democratic institutions. TRADEDEPENDENCE is the sum of a country's imports and exports divided by its gross domestic product (the size of a country's foreign-trade sector relative to the size of its economy, widely used to measure the extent to which the economy depends on trade). The proportion of countries in the region that are democratic (REGIONDEM) is a proxy for the "demonstration effect" of democratic neighbors.⁷ I include calendar year (YEAR) to examine whether the conditions affecting democratization changed during the period under study. Because INFLATION, REGROWTH, INCOMEPC, REGIMEDURATION, and DSYEARS are very skewed at the upper ends of their ranges, I use their natural logs in the analysis.⁸

This set of explanatory variables, though fairly large, excludes many structural factors that are thought to affect democracy. Some of these factors, such as cross-cutting cleavages and certain aspects of the international environment, are not readily quantifiable; others, such as inequality and party system fragmentation, have been quantified but are not available for many countries. Moreover, some of the variables used here, including notably the two variables dealing with institutionalization, are rather crude measures of very complex phenomena, while others are undoubtedly subject to measurement error. These data limitations make it difficult or impossible to study the effect of certain structural factors on regime change and raise the question of specification error in the multivariate models. However, the variables that are included in the analysis cover most of the factors that are generally thought to have the greatest effect on regime change, so these limitations are probably not too severe.

The economic crisis variables and some of the other explanatory variables had many missing observations. Therefore, of the 4,351 observations from 97 countries in the post-1945 period for which regime change data were available, only 1953 observations from 75 countries had valid data for all of the explanatory variables.⁹ Table 1 contains a transition matrix showing the number of regime changes that occurred in these 1953 observations from the type of regime listed on the left to the type listed at the top. The entries in the off-diagonal cells of Table 1 indicate that 80 regime changes of the six possible types actually occurred. The countries and years in which these 80 regime changes occurred are listed in the Appendix.

TABLE 1

Transition Matrix of Regime Changes in 75 Third-World Countries, 1950s through 1980s

FROM	NUMBER OF TRANSITIONS TO			TOTAL
	DEMOCRATIC REGIME	SEMIDEMOCRATIC REGIME	NONDEMOCRATIC REGIME	
Democratic regime	(385)	3	20	408
Semidemocratic regime	3	(146)	16	165
Nondemocratic regime	21	17	(1342)	1380
Totals	409	166	1378	1953

Since the number of regime changes of each type is really too small for statistical analysis, I decided to combine the 39 regime changes shown in the upper-right corner of Table 1 that occurred in a less-democratic direction and the 41 in the lower-left corner that occurred in a more-democratic direction, yielding two data sets. The first data set contains a dichotomous dependent variable whose value is 1 for the 39 observations involving less-democratic regime change (*democratic breakdowns*) and 0 for the 534 democratic and semidemocratic observations in which breakdown could have occurred but did not. The second data set contains a similar dichotomous dependent variable whose value is 1 for observations containing the 41 *democratic transitions* that produced more-democratic regimes and 0 for the 1,504 semidemocratic and nondemocratic observations in which democratic transitions could have occurred but did not.

Both data sets consist of multiple time series of varying lengths from the cross-sectional sample of 75 countries. Some of these time series culminate in democratic breakdowns or transitions; others are "censored" when data become unavailable before the next breakdown or transition occurs. Both data sets are fairly well distributed over the major regions of the Third World and over time: 10 breakdowns in Latin America, 17 in Subsaharan Africa, 4 in the Middle East and North Africa, 5 in South Asia, and 3 in East Asia; 4 in the 1950s, 16 in the 1960s, 13 in the 1970s, and 6 in the 1980s. The corresponding numbers of democratic transitions are 18 transitions in Latin America, 9 in Subsaharan Africa, 5 in the Middle East and North Africa, 3 in South Asia, and 6 in East Asia; 4 in the 1950s, 8 in the 1960s, 12 in the 1970s, and 17 in the 1980s.

STATISTICAL METHODOLOGY

The time-series cross-section data set and dichotomous dependent variables employed here rule out the use of standard multivariate regression techniques. Fortunately, a family of statistical techniques known as event history analysis has been developed that enables researchers to carry out multivariate analysis in a research design of this sort (Allison 1984; Blossfeld, Hamerle, and Mayer 1989; Tuma and Han-

non 1984). Event history analysis is used to study the occurrence of distinct events (e.g., marriages, changes in occupation, political change of some kind) within observed historical periods for a group of subjects. The occurrence and nonoccurrence of the event is treated as a dichotomous dependent variable, which is observed over contiguous time periods of varying lengths for each subject in the cross-sectional group. Explanatory variables thought to affect the likelihood, or *odds*,¹⁰ of the event occurring are also observed for each subject in these time periods and serve as independent variables in regressionlike multivariate models. When observations are measured in discrete units such as years, multivariate logit (or logistical regression) analysis can be used to estimate the coefficients, standard errors, and covariances of such a model (Allison 1984, 14–22). In logit analysis, the hypothetical dependent variable is the natural logarithm of the odds—the log(odds)—that the event actually occurs. Since odds cannot be observed, we use in their place the dichotomous variable indicating whether or not the event occurred.

In this study, the event in question is either democratic breakdown or democratic transition and the explanatory variables are those listed earlier. As in regression analysis, t-tests indicate whether each explanatory variable significantly affects the dependent variable. To examine whether economic crises trigger regime change in conjunction with certain background conditions, we can multiply the appropriate pairs of explanatory variables and include the product terms (generally known as interaction terms) and the two component variables in the logit model. If an interaction term coefficient is significant, the corresponding explanatory variables affect the dependent variable *conjuncturally* in the sense that the presence of one magnifies the effect of the other. If the interaction term is not significant but the coefficients of the two component variables are, these variables affect the dependent variable independently of one another. To reduce multicollinearity, the two component variables are usually centered by subtracting out their means before the interaction term is calculated. This does not affect the coefficient estimates, standard errors, or covariance estimates of the logit model (Aiken and West 1991, 9–47).

To evaluate hypothesis 2, we can test whether the

coefficients of the economic crisis variables in a logit model of democratic breakdown are significantly different from the corresponding coefficients in a logit model of democratic transition; if they are not, we can conclude that economic crises have similar effects on the two types of regime change. When multivariate models with identical sets of explanatory variables are estimated on different samples, we can test whether their coefficients differ by pooling the two samples together and estimating on the pooled sample a model that contains (1) an intercept term, (2) each of the explanatory variables, (3) a dummy variable whose value is 0 for observations in the first sample and 1 for those in the second, and (4) each of the explanatory variables multiplied by this dummy variable. The coefficients of this last group of variables will have values equal to the differences between the corresponding coefficients in the two separate models. The t-statistics of these coefficients therefore test whether these differences are significantly different from zero, that is, whether the two coefficients differ significantly from each other.

We can use a similar technique to evaluate hypotheses 3 and 5. If an economic crisis variable or structural variable facilitates democratic breakdown and inhibits democratic transition, it should have a significantly positive coefficient in a logit model of transition. We can test whether this is so simply by examining the signs and significance levels of the appropriate coefficients in the two logit models. To examine whether a given variable has a facilitating effect on regime change in one direction that is more, less, or comparable in magnitude to its inhibiting effect on regime change in the other direction, we can compare the size of one coefficient with the inverse of the size of the other. We can do this by following the procedure discussed in the previous paragraph but (1) replacing the intercept term with a variable equal to -1 for observations in the first sample and 1 for those in the second and (2) reversing the signs of the explanatory variables for observations in the first sample. The coefficients of the group 4 variables will then have values equal to the sums of the corresponding coefficients in the two models. The t-statistics of these coefficients test whether these sums differ significantly from zero, that is, whether one coefficient differs in size from the inverse of the other.

EMPIRICAL ANALYSIS

Table 2 presents event history logit models of the likelihood of democratic breakdown and democratic transition. Each column gives coefficient estimates corresponding to the explanatory variables listed on the left, together with their standard errors (beneath them in parentheses) and superscripts indicating their level of statistical significance. Positive signs on the coefficients imply that the corresponding variables *increase* the likelihood of breakdown or transition; negative signs imply that they *reduce* it. N_1 and N_0 give the number of 1 and 0 values of the depen-

dent variable in each model. The -2 log likelihood and percentages of concordant and discordant predictions are measures of the explanatory power of each model.¹¹

We can infer from the literature reviewed above that all the explanatory variables except MILREGIME should affect the viability of democratic and semi-democratic regimes. Moreover, except for the possibility that the economic crisis variables act in conjunction with some of the other variables, there is no reason to assume that a hierarchical causal structure of some sort exists among these variables. I therefore began my analysis of democratic breakdown by estimating a logit model that includes all of these variables except MILREGIME. As shown in model 1 of Table 2, the coefficient of $\log(\text{INFLATION})$ in this model is not significant at even the .10 level, implying that high inflation does not independently affect the likelihood of breakdown. However, the coefficient of $\log(\text{REGGROWTH})$ is negative and significant at better than .01, indicating that slow or negative economic growth increases the likelihood of breakdown.

To examine whether high inflation and slow or negative growth affect breakdown in conjunction with any of the nine structural variables or YEAR, I added the 20 corresponding interaction terms separately to model 1. The only one that was significant was $\log(\text{INFLATION}) \cdot \text{YEAR}$. As shown in model 2, this interaction term had a significantly negative coefficient, implying that high inflation increased the likelihood of breakdown in the early part of the period covered by the sample (1950–89) but not in the latter part of this period. This indicates that the insignificant coefficient of $\log(\text{INFLATION})$ in model 1 misrepresented the effect of inflation on breakdown because it did not pick up the time-varying character of this effect. $\log(\text{REGGROWTH})$ remains significant in model 2, indicating that slow or negative growth increases the likelihood of breakdown even after the time-varying effect of inflation is taken into account. The significantly negative coefficient of REGIONDEM in model 2 indicates that democratic breakdown is less likely to occur when many countries in the surrounding region are democratic, presumably as a result of the “demonstration effect.” The coefficient of $\log(\text{INCOMEPC})$ in model 2 is negative but significant only at the .11 level, indicating that high income per capita has only a very marginally negative effect, at best, on the likelihood of breakdown.

We can get a clearer understanding of how the effect of inflation on democratic breakdown varied over time by rewriting model 2 as follows:

$$\begin{aligned} \log(\text{odds}) &= -3.295 + .917 \cdot \log(\text{INFLATION}) \\ &\quad - .066 \cdot \text{YEAR} - .092 \cdot \log(\text{INFLATION}) \\ &\quad \cdot \text{YEAR} + \text{everything else} \quad (1) \\ &= -3.295 + (.917 - .092 \cdot \text{YEAR}) \\ &\quad \cdot \log(\text{INFLATION}) - .066 \cdot \text{YEAR} \\ &\quad + \text{everything else.} \quad (2) \end{aligned}$$

TABLE 2

Logit Models of Democratic Breakdown and Democratic Transition

EXPLANATORY VARIABLE	DEMOCRATIC BREAKDOWN		DEMOCRATIC TRANSITION	
	MODEL 1	MODEL 2	MODEL 3	MODEL 4
Intercept	-3.531*** (.307)	-3.295*** (.317)	-2.951*** (.320)	-4.443*** (.276)
Log(INFLATION)	.392 (.399)	.917* (.525)	-.036 (.347)	-.475 (.463)
Log(REGGROWTH)	-5.154** (1.964)	-4.520* (1.988)	-.288 (1.199)	-.292 (1.220)
Log(INCOMEPC)	-.346 (.302)	-.497 (.315)	.675** (.277)	.694** (.280)
ELFI	.001 (.008)	.003 (.008)	.005 (.007)	.004 (.007)
CATHPOP	-.004 (.011)	.001 (.012)	-.014* (.008)	-.013 (.008)
MOSLEMPOP	.002 (.008)	.003 (.008)	-.003 (.007)	-.003 (.007)
PRESIDENTIAL	.817 (.598)	.775 (.592)	—	—
MILREGIME	—	—	1.548*** (.359)	1.621*** (.368)
Log(REGIMEDURATION)	.253 (.355)	.221 (.361)	-.282 (.213)	-.296 (.220)
Log(DSYEARS)	-.399 (.398)	-.518 (.403)	.087 (.190)	.118 (.189)
TRADEDEPENDENCE	-.016* (.009)	-.014 (.009)	-.018* (.009)	-.016* (.010)
REGIONDEM	-5.014** (1.977)	-4.229* (2.014)	4.514** (1.628)	3.846* (1.643)
YEAR	-.058* (.027)	-.066** (.026)	.013 (.023)	.024 (.025)
Log(INFLATION)*YEAR	—	-.092* (.046)	—	.108* (.047)
N ₁ , N ₀	39,534	39,534	41,1504	41,1504
-2 log likelihood	225.646	220.664	322.583	317.493
Concordant/discordant predictions (%)	83.7/15.8	85.4/14.2	79.4/18.7	80.4/17.8

* $p \leq .10$.* $p \leq .05$.** $p \leq .01$.*** $p \leq .001$.

Equation 2 shows that the coefficient of $\log(\text{INFLATION})$ in model 2 is really $.917 - .092 * \text{YEAR}$. Evaluating this expression at different values of YEAR gives the "simple slope" coefficient of $\log(\text{INFLATION})$ at each value. These simple slopes decrease as YEAR increases, indicating that the positive effect of high inflation on the likelihood of breakdown decreased over time. The standard errors of these simple slopes are given by:

$$SE_{\text{YEAR}} = \sqrt{C_1 + 2 * \text{YEAR} * C_2 + \text{YEAR}^2 * C_3}, \quad (3)$$

where C_1 and C_3 are the variances of the coefficients of $\log(\text{INFLATION})$ and $\log(\text{INFLATION}) * \text{YEAR}$ in model 2 and C_2 is their covariance (Aiken and West 1991, 14–16). The t -statistics calculated from the simple slopes and their standard errors indicate that these simple slopes are significant at the .05 level for values of YEAR from 1950 through 1972 and at the .10 level in 1973 and 1974. High inflation therefore had a significantly positive effect on the likelihood of breakdown until 1972, a marginally positive effect during the next two years, and no effect thereafter.

We can infer from the literature reviewed that democratic transition is affected by all of the variables listed except *PRESIDENTIAL*, because executive-system type presumably has little effect on democratization under nondemocratic and semidemocratic regimes. As in the analysis of breakdown, there is no reason to assume that a hierarchical causal structure exists among these variables, except for the possibility that the economic crisis variables interact with some of the other variables. I therefore began my analysis of democratic transition with model 3 of Table 2, which includes all variables listed except *PRESIDENTIAL*. The coefficients of $\log(\text{INFLATION})$ and $\log(\text{REGROWTH})$ are both insignificant in model 3, indicating that high inflation and slow or negative growth do not independently affect democratic transition.

I again examined the interactions of $\log(\text{INFLATION})$ and $\log(\text{REGROWTH})$ with the structural variables and *YEAR* by adding the corresponding interaction terms separately to model 3. The only ones that were significant were $\log(\text{INFLATION}) \cdot \text{REGIONDEM}$ and $\log(\text{INFLATION}) \cdot \text{YEAR}$. When I added both of these interaction terms to model 3, the significance of the first fell sharply; I therefore dropped it from the model, producing model 4. The significantly positive coefficient of $\log(\text{INFLATION}) \cdot \text{YEAR}$ in model 4 indicates that high inflation reduced the likelihood of democratic transition in the early part of the period under study but not the latter part of this period.

Several structural variables are also significant in model 4. The coefficients of $\log(\text{INCOMEPC})$, *MILREGIME*, and *REGIONDEM* are all positive and significant, indicating that democratic transition is more likely to occur in Third World countries that are relatively developed, have a high proportion of democratic neighbors, and have military rather than civilian regimes. The coefficient of *TRADEDEPENDENCE* is negative and significant only at the .09 level, indicating that high trade dependence may perhaps reduce the likelihood of democratic transition.

I also applied simple slope analysis to model 4. The coefficient of $\log(\text{INFLATION})$ here is $-.475 + .103 \cdot \text{YEAR}$. The simple slopes derived from this expression are negative in the early part of the period under study but increase as *YEAR* increases, becoming positive after 1974. The *t*-statistics for these simple slopes are significant at the .05 level for years before 1960 and significant at the .10 level before 1969 and after 1986, indicating that high inflation had a negative effect on the likelihood of democratic transition in the 1950s, a marginally negative effect throughout the early and mid-1960s, and a marginally positive effect on the likelihood of transition in the late 1980s.

Except for the intercept term, each coefficient appearing in both models that is significant in model 2 has the opposite sign or is not significant in model 4, and vice versa. This suggests that the causal model of democratic breakdown embodied in model 2 is fundamentally different from the causal model of democratic transition embodied in model 4. Moreover, four of the five variables that appear in both models and have significant coefficients in one model have coef-

ficients with the opposite sign in the other. This suggests that these four variables may each increase the likelihood of regime change in one direction and reduce it in the other, in a complementary manner.

We can examine these findings more precisely by using the described procedures to test whether the coefficients in model 2 differ significantly from the corresponding coefficients in model 4 and their inverses. Because *MILREGIME* does not appear in model 2 and is equal to 0 for all observations in the data set used to estimate this model, and because *PRESIDENTIAL* does not appear in model 4, I modified these procedures in two minor ways to carry out these tests. First, since the two models must have identical sets of explanatory variables, I included both *MILREGIME* and *PRESIDENTIAL* in the pooled models. Second, since *MILREGIME* is equal to 0 in the sample used to estimate model 2, it is perfectly correlated with the product of itself and the dummy variable that distinguishes the two samples. I therefore dropped the intercept term and this dummy variable and switched the 0 and 1 values of *MILREGIME* before estimating the pooled models. These models are shown in Table 3.

Models 2m and 4m in Table 3 are the modified versions of models 2 and 4 that are compared in these pooled models. Model 2m contains no intercept term and includes *MILREGIME*. Since the values of *MILREGIME* have all been switched from 0 to 1, its coefficient in model 2m is identical to that of the intercept term in model 2. All other coefficients in model 2m are identical to the corresponding coefficients in model 2. In model 4m I have added *PRESIDENTIAL* to model 4. The coefficient of *PRESIDENTIAL* is not significant in model 4m. The coefficient of *CATHPOP* changed signs and became marginally significant at the .09 level. (Its significance level in model 4 was .11.) All other coefficients in model 4m are similar to the corresponding coefficients in model 4, implying that the addition of *PRESIDENTIAL* did not substantially affect this model.

The coefficients in the "difference model" and "sum model" in Table 3 are equal to the differences and sums, respectively, of the corresponding coefficients in models 2m and 4m. Their significance levels test whether one coefficient in each pair differs from the other and the inverse of the other, respectively. The difference model indicates that the coefficients of $\log(\text{INCOMEPC})$ and *REGIONDEM* in models 2m and 4m differ significantly from one another and those of $\log(\text{REGROWTH})$ and *MILREGIME* differ marginally from one another. However, since *MILREGIME* is really the intercept term in model 2m, its coefficient in the difference model is meaningless. Using the methods described, we can calculate the simple slopes, standard errors, and *t*-statistics of $\log(\text{INFLATION})$ for different values of *YEAR* in the difference model. Doing so reveals that the simple slopes of $\log(\text{INFLATION})$ in models 2m and 4m differ significantly at the .05 level before 1975 and at the .10 level before 1977. Thus all variables except $\log(\text{REGROWTH})$ that appear in both models and are significant in one or the other have coefficients that differ significantly from one

TABLE 3

Tests of Coefficient Differences and Sums

EXPLANATORY VARIABLE	MODEL 2M	MODEL 4M	DIFFERENCE MODEL	SUM MODEL
Intercept	—	-2.763*** (.576)	—	—
Log(INFLATION)	.917* (.525)	-.486 (.466)	1.403* (.702)	.431 (.702)
Log(REGGROWTH)	-4.530* (1.988)	-.295 (1.206)	-4.235* (2.325)	-4.825* (2.325)
Log(INCOMEPC)	-.497 (.315)	.760** (.300)	-1.258** (.435)	.263 (.435)
ELFI	.003 (.008)	.005 (.007)	-.002 (.011)	.008 (.011)
CATHPOP	.001 (.012)	-.016* (.009)	.017 (.015)	-.015 (.015)
MOSLEMPOP	.003 (.008)	-.004 (.007)	.007 (.011)	-.001 (.011)
PRESIDENTIAL	.775 (.592)	.421 (.659)	.354 (.886)	-.354 (.886)
MILREGIME	-3.295*** (.314)	-1.989** (.689)	-1.305* (.758)	-5.284*** (.758)
Log(REGIMEDURATION)	.221 (.361)	-.264 (.226)	.489 (.425)	-.048 (.425)
Log(DSYEARS)	-.518 (.403)	.119 (.189)	-.636 (.445)	-.399 (.445)
TRADEDEPENDENCE	-.014 (.009)	-.016* (.010)	.002 (.014)	-.031* (.014)
REGIONDEM	-4.227* (2.014)	3.989* (1.650)	-8.198** (2.604)	-.260 (2.604)
YEAR	-.066** (.026)	.027 (.026)	-.089* (.037)	-.046 (.037)
Log(INFLATION)*YEAR	-.092* (.046)	.100* (.047)	-.192** (.066)	.008 (.066)
N ₁ , N ₀	39,534	41,1504	80,2038	80,2038
-2 log likelihood	220.664	317.066	537.730	537.730
Concordant/discordant predictions (%)	85.4/14.2	80.5/17.6	84.4/14.5	84.4/14.5

* $p \leq .10$.* $p \leq .05$.** $p \leq .01$.*** $p \leq .001$.

another in the two models, and the coefficients of log(REGGROWTH) differ marginally from one another. The only variables that are marginally significant in either model (CATHPOP and TRADEDEPENDENCE, which are both significant only at the .09 level in model 4m) have coefficients that are not significantly different in the two models.

The sum model indicates that the coefficients of log(REGGROWTH), MILREGIME, and TRADEDEPENDENCE in model 2m differ significantly from the inverses of their coefficients in model 4m. The negative coefficient of log(REGGROWTH) in the sum model indicates that slow or negative economic growth does not reduce the likelihood of democratic transition by an

amount comparable to its positive effect on the likelihood of breakdown. As in the difference model, the coefficient of MILREGIME in the sum model is not meaningful. The negative coefficient of TRADEDEPENDENCE in the sum model indicates that trade dependence does not have a positive effect on the likelihood of breakdown that is comparable to its marginally negative effect on the likelihood of transition.

None of the other coefficients in the sum model are significant. Thus, for all other variables that are significant in either model 2m or model 4m, the positive effect on regime change in one direction is not significantly different in magnitude from its negative effect on regime change in the other direction. For example,

if $\log(\text{INCOMEPC})$ increases by one unit and the other variables remain constant, the $\log(\text{odds})$ of a democratic breakdown occurring will decrease by .497 and that of a democratic transition occurring will increase by .760, according to models 2m and 4m; the sum model indicates that these amounts are not significantly different from one another. Thus an increase in per capita income at any given level has *complementary* effects on democratization in the two contexts embodied in models 2m and 4m: it reduces the likelihood of breakdown in contexts where this can occur by roughly the same amount that it increases the likelihood of democratic transition in contexts where this can occur. The same is true of REGIONDEM ; and simple slope analysis indicates that it is also true of $\log(\text{INFLATION})$ for all values of YEAR from 1950 through 1989.

The difference and sum models therefore indicate that the causal processes affecting breakdown and transition are fundamentally different yet also quite complementary, in three important ways: (1) high inflation in the early part of the period under study increased the likelihood of breakdown and reduced the likelihood of transition by comparable amounts, while in the late 1980s it marginally increased the likelihood of transition by an amount comparable to its (insignificantly) negative effect on breakdown; (2) high levels of wealth and democratic neighbors both increased the likelihood of breakdown by amounts comparable to their (marginally or significantly) negative effects on transition; and (3) Catholicism marginally reduced the likelihood of transition by an amount comparable to its (insignificantly) positive effect on breakdown. However, these two causal processes are only marginally different in another way: slow or negative economic growth increased the likelihood of breakdown by an amount that was only marginally greater than its (insignificantly) positive effect on transition. Finally, these two processes were very similar in a rather trivial way: the marginally negative effect of trade dependence on the likelihood of transition (which was significant at only .09) was comparable in magnitude to its (insignificantly) negative effect on breakdown.

SUMMARY AND DISCUSSION

The foregoing empirical analysis enables us to evaluate the six hypotheses. Hypothesis 1 stated that economic crises trigger democratic breakdown. The empirical analysis provides strong support for this hypothesis: high inflation increased the likelihood of breakdown from 1950 until the mid-1970s (though not thereafter), and slow or negative economic growth increased the likelihood of breakdown throughout the period under study (1950–89).

Hypothesis 2 stated that economic crises trigger democratic transition in a manner that is similar to their effect on breakdown, while hypothesis 3 stated that they inhibit transition in a manner that complements their effect on breakdown. The empirical evi-

dence does not really support either of these hypotheses. High inflation significantly or marginally reduced the likelihood of transition in the 1950s and 1960s, and the sum model in Table 3 indicates that this effect was complementary to the positive effect of inflation on breakdown in this period in the sense that the corresponding coefficients were comparable in magnitude. This finding contradicts hypothesis 2 and conforms with hypothesis 3. However, high inflation marginally *increased* the likelihood of transition in the late 1980s, and the sum model indicates that this marginally positive effect was comparable in magnitude to the (insignificantly) negative effect of inflation on breakdown in this period. This finding contradicts both hypotheses. Slow or negative economic growth did not significantly affect the likelihood of transition during 1950–89, and the difference and sum models in Table 3 indicate that it had neither complementary nor clearly similar effects on the two types of regime change. This finding also contradicts both hypotheses.

We can conclude from these findings that economic crises do not simply undermine the legitimacy of whatever type of regime currently exists in a country, thus triggering regime change in either direction, as argued by several authors. However, we must also conclude that while inflationary crises inhibited democratization in both contexts in a complementary manner in the 1950s and 1960s—the period about which O'Donnell (1973) and others who made this argument were writing—they may actually have *facilitated* democratic transition in the late 1980s; and recessionary crises did not have this kind of complementary effect throughout 1950–89. Thus economic crises are not necessarily incompatible with democracy, as implied by these writers.

Hypothesis 4 provides a better explanation of these findings, though one that is also not entirely satisfactory. This hypothesis stated that economic crises no longer triggered breakdown but began to trigger democratic transition in the 1980s. The two sets of inflation findings not only conform with this hypothesis but take it a step further: inflationary crises inhibited democratization in *both contexts* in the 1950s and 1960s, and they marginally increased the likelihood of transition in the late 1980s by an amount comparable to their (insignificantly) negative effect on breakdown. Thus inflationary crises have neither similar nor uniformly complementary effects on the two types of regime change. Rather, their effects have changed dramatically over time: they inhibited democratization in the 1950s and 1960s but seem to have facilitated democratization in the late 1980s. Recessionary crises, however, did not have time-varying effects of this sort and therefore contradict hypothesis 4.

The findings regarding inflation clearly support the arguments of Remmer and Huntington that the processes affecting democratization were very different in the 1980s than in earlier eras.¹² Several cautionary points should be made, however. First, Remmer and Huntington do not provide any clues that might

explain why recessionary crises did not have time-varying effects like those observed for inflationary crises. Second, this finding does not address the underlying factors cited by Remmer as causes of the time-varying effects of economic crises, and it certainly does not address the much more general arguments about the third wave of democratization made by Huntington. Finally, while the time-varying effects of inflation observed above hold through 1989, there is no particular reason to believe they hold in subsequent years. This finding therefore does not allow us to judge whether the changing effects of economic conditions on democratization discussed by Remmer and Huntington are *permanent* (as might be inferred from their work) or *cyclical*, as argued by Malloy (1987).

Hypothesis 5 stated that the structural factors discussed in the literature reviewed affect democratic breakdown and transition in the ways indicated, each in a complementary manner. Of the factors I could incorporate into the analysis, several affected breakdown and transition in the expected ways: both high income per capita and military regimes increased the likelihood of democratic transition; countries with many democratic neighbors were less likely to experience breakdown and more likely to experience transition; and very weak evidence emerged that Catholic countries and those with trade-dependent economies might perhaps be less likely to experience transition. The sum model indicates that income per capita and democratic neighbors have complementary effects on democratization in both contexts, increasing the likelihood of transition by amounts not significantly different from their negative effects on breakdown. Catholicism also seems to have complementary effects, very weakly reducing the likelihood of transition by an amount comparable to its (insignificantly) positive effect on breakdown. Trade dependence, however, does not have complementary effects in the two contexts, and its very weak, negative effect on transition is similar in magnitude to its (insignificantly) negative effect on breakdown. Since military regimes cannot experience democratic breakdown, their effect on democratization is also necessarily noncomplementary.

Although not the main focus of this study, several of these findings are noteworthy. The income per capita finding confirms once again the importance of development-related socioeconomic conditions of the sort emphasized by modernization theorists in facilitating democracy. The strong positive effect of military regimes on democratic transition indicates that there are important differences in the durability of military-led and civilian-led nondemocratic regimes, implying that military rule generally has an exceptional, temporary character. This is a novel finding, inasmuch as the literature on democratic transition has paid little attention to these differences. The finding that a high proportion of democratic neighbors facilitates democratization in both contexts indicates that the emphasis placed on "demonstration effects" in much of the recent literature is well

founded and suggests that other international political factors (e.g., pressure from the developed countries and human rights organizations) may also facilitate democratization.

It is also noteworthy that several widely discussed structural factors had little or no apparent effect on breakdown and transition. Most surprisingly, the presidential-system variable and the two measures of institutionalization had no effect in either direction, suggesting that the recent emphasis on the role of political institutions in democratization may have been misguided. The two religion-based political culture measures also had little or no effect, suggesting that the religious denomination (although not necessarily political culture in general) may have been overemphasized in the democracy literature as well.

Finally, hypothesis 6 stated that economic crises trigger breakdown and possibly also transition in conjunction with some of the structural factors previously discussed. The only interaction terms representing conjunctural effects that were significant were those embodying the time-varying effects of inflation. These findings imply that inflation acts in conjunction with time-varying factors of some sort—perhaps those discussed by Remmer and Huntington—but they do not indicate what these time-varying conjunctural factors are. No evidence emerged that economic crises trigger regime change in conjunction with the examined structural factors that tended to increase during the period under study: per capita income, institutionalization, prior democratic experience, and the prevalence of democratic neighbors. Also, no evidence emerged that economic crises are especially likely to trigger breakdown in countries with a relatively high level of development (as argued by O'Donnell and others) or in countries that are ethnically heterogeneous or have presidential systems (as implied by Linz).

CONCLUSION

Although these findings are intriguing, we must bear in mind that several of the factors discussed that are widely thought to affect regime change were not included as explanatory variables in the analysis, and some of the factors that were included may not have been adequately measured. The most glaring omission is the process-oriented factors discussed in much of the recent literature on democratic transition, which cannot easily be incorporated into a research design of the type used here. The determinants of regime change identified in this study therefore should not be considered an exhaustive list. Moreover, despite my efforts to include a large number of control variables in the models of regime change, the omission of important explanatory variables raises the problem of specification error in these models, implying that the causal relationships they depict may not have been accurately estimated.

It is also important to emphasize that a time-series cross-national study of this sort necessarily focuses

on broad, systematic causal processes that hold across time and space rather than more idiosyncratic causal processes that hold only at certain times or in certain countries or regions—processes that can be equally momentous for the societies affected. In particular, the presented evidence that economic crises significantly affected regime change in certain ways at certain times does not imply that these crises never affected regime change in other ways or at other times; it simply implies that they did not do so systematically.

This study has a number of important implications for further research on regime change. First, the finding that economic crises systematically affect regime change raises some intriguing questions: Why did the effect of inflationary crises change over time while that of recessionary crises did not? Do underlying structural conditions that cause economic crises (e.g., the need to “deepen” the economy during ISI) also systematically affect regime change? Second, the finding that inflation had time-varying effects raises the question of whether other factors also have time-varying effects, as implied by Huntington (1991). Third, the findings that military regimes and democratic neighbors facilitate democratization are quite novel and warrant further study: Why do military regimes have such a strong impact? Do other kinds of “demonstration effect” also affect regime change?

Finally, this study has several broader research implications. Together with other studies that use similar statistical methods (Berry and Berry 1990; Bienen and Van de Walle 1989; Hanneman and Steinback 1990; Hannon and Carroll 1981; Londregan and Poole 1990), this study demonstrates that event history analysis can be a very useful approach for studying processes of discrete political change. This implies not only that the statistical techniques employed in these studies can be very useful but also that research designs and data sets focusing on the occurrence of discrete events within their historical contexts can be valuable in studying political change. This study also demonstrates that time-varying, synchronic factors such as economic crises and interaction-effect models that enable us to examine the changing impact of these factors can be very useful in studying political change.

APPENDIX

Democratic-to-Semidemocratic Regime Changes. Turkey, 1957; Sierra Leone, 1968; Sri Lanka, 1983.

Democratic-to-Nondemocratic Regime Changes. Guatemala, 1954; Ghana, 1960; South Korea, 1961; Burma, 1962; Dominican Republic, 1963; Congo, 1963; Kenya, 1966; Togo, 1967; Sierra Leone, 1967; Turkey 1971; Madagascar, 1971; Ghana, 1972; Philippines, 1972; Chile, 1973; Uruguay, 1973; India, 1975; Thailand, 1976; Turkey, 1980; Upper Volta, 1980; Ghana, 1982.

Semidemocratic-to-Democratic Regime Changes. Philippines, 1953; Ecuador, 1984; Turkey, 1987.

Semidemocratic-to-Nondemocratic Regime Changes. Honduras, 1954; Pakistan, 1958; Turkey, 1960; Peru, 1962; Honduras, 1963; Ecuador, 1963; Nigeria, 1966; Peru, 1968; Gabon, 1968; Ecuador, 1970;

Zambia, 1971; Sierra Leone, 1973; Upper Volta, 1974; Pakistan, 1977; Kenya, 1982; Nigeria, 1983.

Nondemocratic-to-Democratic Regime Changes. Colombia, 1958; Venezuela, 1959; South Korea, 1960; Turkey, 1961; Dominican Republic, 1963; Sierra Leone, 1968; Ghana, 1969; Turkey, 1974; Thailand, 1975; India, 1977; Dominican Republic, 1978; Upper Volta, 1978; Ghana, 1979; Peru, 1980; Bolivia, 1982; Argentina, 1983; Brazil, 1985; Uruguay, 1985; Philippines, 1986; Pakistan, 1988; South Korea, 1988.

Nondemocratic-to-Semidemocratic Regime Changes. Honduras, 1957; Peru, 1963; Gabon, 1964; Ecuador, 1968; Upper Volta, 1971; Pakistan, 1972; Senegal, 1978; Ecuador, 1979; Nigeria, 1979; Kenya, 1979; Honduras, 1982; Turkey, 1983; Guatemala, 1986; Sudan, 1986; Thailand, 1986; Panama, 1989; Paraguay, 1989.

Notes

I would like to thank Charles Brockett, Paul Geroski, Yoshinori Kamo, Kit Kenney, Tim Power, Ed Shihadeh, and Roger Wojtkiewicz for their generous assistance and advice.

1. An important cross-national, time-series data set containing measures of regime type and regime change is Gurr's (1990) *Polity II* data set, which includes 10-point, ordinal measures of democracy and autocracy and a variable called *polity change*, which does identify distinct instances of political change. Like Bollen's measure, Gurr's democracy and autocracy measures do not permit us unambiguously to identify distinct instances of regime change. Gurr's polity change measure does not focus only on democratic/autocratic changes; indeed, in many cases his democracy and autocracy measures do not change when polity change occurs. Consequently, this data set is not suitable for my purposes.

2. The data set described here is a simplified version of the one discussed in Gasiorowski (1990), which I never completed.

3. The data set also contains a fourth regime category, transitional regimes, defined as those in which deliberate and ultimately successful efforts are being made by, or with the clear acquiescence of, top government officials to engineer a change from one of these three regime types to another. To keep the analysis from becoming too complex I have ignored transitional regimes here, treating them merely as continuations of the regimes that preceded them.

4. The countries and years in which “modern” states were established are Afghanistan, 1747; Bhutan, 1907; China, 1911; Ethiopia, 1871; Iran, 1906; Liberia, 1847; Nepal, 1767; Thailand, 1932; and Turkey, 1921. None of these countries were formally colonized. My judgments about the establishment of “modern” states are based on my reading of the historical record.

5. The most important sources I used were the case studies contained in Diamond, Linz, and Lipset (1990, vols. 2–4). I also relied heavily on Europa Publications' *Political Handbook of the World* and *Keesing's Record of World Events*. I occasionally made use of *Africa Contemporary Record*, Wiarda and Kline (1985), Long and Reich (1986), Wiseman (1990), and monographs for certain countries.

6. For most countries I constructed these measures from the consumer price index (CPI) and real gross domestic product (GDP), obtained from a tape version of International Monetary Fund (1988), updated wherever possible with data from International Monetary Fund (1993). Because adequate CPI data were not available for Nicaragua, Bolivia, Chile, Argentina, Uruguay, Uganda, Botswana, Libya, and Indonesia, I used the GDP deflator as my inflation measure for these countries. Similarly, for Senegal, Niger, Ivory Coast, Burkina Faso, Togo, Cameroon, Gabon, Congo, Kenya, Rwanda, South Africa, Lesotho, Madagascar, Algeria, Sudan, Turkey, Egypt, and the Philippines I used current-value GDP deflated with the CPI as my real economic growth measure.

7. INCOMEPC is real GDP per capita adjusted with a Chain index to reflect international prices, from Summers and Heston (1991). ELFI, CATHPOP, and MOSLEMPOP are from

Taylor and Hudson (1972). This source reports data for only a single year for these three variables. Since these variables change very slowly, I use these values for all years covered by the dataset (1950–1989). PRESIDENTIAL and MILREGIME are from the “effective executive” variable in a tape version of Banks (1979), which contains data through 1988. Since Banks apparently reports the year-end value of this variable, I use its one-year lag, giving me the values of these variables for the first day of the current year. REGIMEDURATION is the number of years since the last regime change, calculated from my regime change data. DYEARS is the number of prior years during which the country had a democratic or semidemocratic regime, also calculated from my data set. TRADEDEPENDENCE is the variable OPEN, from Summers and Heston (1991). REGIONDEM is the average proportion of months in the current year in which countries in the region were democratic, calculated from my data set. The regions covered are Latin America, the Middle East and North Africa, Sub-Saharan Africa, South Asia (which runs from Pakistan and Afghanistan through Myanmar), and East Asia.

8. The smallest values of these five variables appearing in the data set were –18.2, –35.6, 212, 0, and 0, respectively. Since the natural logs of zero and negative numbers do not exist and the logs of numbers between zero and one are highly skewed in comparison with those of larger numbers, I added 20, 37, –211, 1, and 1, respectively, to these variables before taking their logs. For a discussion of this practice in a related context, see Dixon, Muller, and Seligson (1993, 985).

9. The countries and time periods included are Algeria, 1971–88; Argentina, 1977–89; Benin, 1972–86; Bolivia, 1966–89; Brazil, 1966–89; Burkina Faso, 1961–86; Burundi, 1972–89; Cameroon, 1972–89; Central African Republic, 1967–89; Chile, 1963–89; China, 1968–89; Colombia, 1952–89; Congo, 1961–89; Costa Rica, 1962–89; Dominican Republic, 1952–89; Ecuador, 1953–89; Egypt, 1954–89; El Salvador, 1953–89; Ethiopia, 1967–86; Gabon, 1964–89; Ghana, 1958–89; Guatemala, 1952–89; Haiti, 1960–89; Honduras, 1952–89; India, 1962–89; Indonesia, 1962–89; Iran, 1961–89; Israel, 1953–89; Ivory Coast, 1962–86; Jamaica, 1963–89; Jordan, 1971–89; Kenya, 1964–89; Kuwait, 1985–88; Lesotho, 1975–89; Liberia, 1967–86; Madagascar, 1966–89; Malawi, 1970–89; Malaysia, 1972–89; Mauritania, 1972–89; Mexico, 1950–89; Morocco, 1959–89; Myanmar, 1952–89; Nepal, 1966–86; Nicaragua, 1962–87; Niger, 1965–89; Nigeria, 1961–89; Pakistan, 1955–89; Panama, 1952–89; Papua New Guinea, 1976–89; Paraguay, 1952–89; Peru, 1962–89; Philippines, 1951–89; Rwanda, 1968–89; Saudi Arabia, 1985–89; Senegal, 1969–89; Sierra Leone, 1965–89; Singapore, 1966–89; South Africa, 1950–89; South Korea, 1955–89; Sri Lanka, 1952–89; Sudan, 1971–89; Syria, 1961–89; Tanzania, 1967–88; Thailand, 1955–89; Togo, 1965–87; Trinidad, 1963–89; Tunisia, 1962–89; Turkey, 1955–89; Uganda, 1983–89; Uruguay, 1967–89; Venezuela, 1952–89; Yemen Arab Republic, 1974–84; Zaire, 1965–89; Zambia, 1965–89; Zimbabwe 1981–89.

10. The likelihood or odds of an event occurring is equal to the probability of the event (P) divided by one minus this probability, that is, $\text{odds} = P/(1 - P)$.

11. I estimated all of the logit models reported here with PROC LOGISTIC in SAS release 6.08. SAS inexplicably treats 0 values as events and 1 values as nonevents, so I have reversed the signs of all coefficients reported here. Note that the percentages of concordant and discordant predictions do not add to 100 because some observations usually predict “ties.”

12. It is worth noting that the years when high inflation ceased to have a marginally positive effect on breakdown (1974) and a marginally negative effect on transition (1968) correspond closely to the date Huntington identifies as the beginning of the “third wave”: 25 April 1974, when a democratic transition was initiated in Portugal (1991: 3).

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