

In this study, the author examines how inflation and economic growth differ in more- and less-democratic regimes and in new and mature democracies. The analysis is based on a panel research design featuring annual data from a large sample of underdeveloped countries and two-way, fixed-effects regression analysis. The author's central finding is that more-democratic countries have higher inflation and slower growth than less-democratic countries. Inflation apparently is higher in more-democratic countries mainly because they have higher fiscal deficits and faster wage growth; this higher inflation marginally reduces economic growth in these countries. The author also finds that new and mature democracies do not have significantly different inflation and growth rates. The findings suggest that unrestrained political participation and the resulting demands placed on state officials undermine democratic performance.

## DEMOCRACY AND MACROECONOMIC PERFORMANCE IN UNDERDEVELOPED COUNTRIES An Empirical Analysis

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**T**wo important debates exist about how democracy affects macroeconomic performance. The first focuses on whether democracies are more or less effective than nondemocracies in carrying out macroeconomic policy. Some scholars argue that democracies are more effective because representative institutions force state officials to take societal interests into account; others argue that democracies are less effective because political pressures prevent officials from taking the difficult steps needed for effective macroeconomic performance. The second debate focuses on the performance of newly established democracies. Some scholars argue that new democracies are more “fragile” and therefore more vulnerable to political

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pressures than are mature democracies; others argue that new democracies enjoy broad popular support, giving them the autonomy necessary for effective policy making. With the rapid spread of democracy throughout the world recently, these debates clearly have important practical implications.

A considerable amount of empirical research has examined these two debates. Most of this research has focused on the comparative performance of more-democratic and less-democratic regimes in promoting economic growth, although a few studies have focused on inflation or the performance of new and mature democracies. Several studies have looked more deeply into how democracy affects growth or inflation by examining how it affects mediating variables such as investment rates, fiscal policy, and governmental instability. These empirical studies have been plagued by methodological problems and have produced generally inconclusive findings. The two debates about democratic performance therefore remain largely unresolved.

In this study, I undertake an empirical analysis of how democracy affects macroeconomic performance. I begin by reviewing these two debates, focusing especially on factors that may mediate democratic performance and on methodological problems that have affected previous empirical studies. I then examine how inflation and economic growth rates differ in more-democratic and less-democratic regimes and new and mature democracies, using a research design that obviates many of these methodological problems. Where significant differences appear, I examine mediating factors that may account for these differences. Several interesting findings emerge, providing important insights into the economic consequences of democratization.

### **THEORETICAL PERSPECTIVES ON DEMOCRATIC PERFORMANCE**

The argument that democracy produces better macroeconomic performance is based on classical liberal ideas about how political competition affects state policy making. According to this argument, state officials in non-democratic regimes are predators, using the state apparatus to extract revenue from society. Producers must surrender some of their output to these predatory officials and thus have little incentive to invest. Nondemocratic leaders with secure tenure and therefore long time horizons promote a limited amount of investment and growth to maximize their revenue, whereas insecure autocrats simply plunder society at will. Consequently, although investment levels and growth rates vary among nondemocratic regimes, they generally remain low (Olson, 1993). Predatory leaders typically maintain

themselves in power with repression and by using public spending and employment to create patronage networks and co-opt popular unrest (Fatton, 1992), further undermining macroeconomic performance. We should therefore expect nondemocratic regimes to produce high inflation and slow growth because of the mediating effects of low investment rates, large fiscal deficits, loose monetary policy (because money is printed to finance public expenditures), chronic trade deficits, and inefficient state bureaucracies and public enterprises.

By contrast, democratic institutions force state officials to serve society's general interests. Free, competitive elections limit predatory behavior. Political parties and a free press keep voters informed and provide useful feedback to decision makers. Representative institutions reduce decision-making costs and curb special interests. Democratic regimes are more legitimate, reducing political instability and making it easier for public officials to carry out painful policies. These mechanisms ensure that macroeconomic policy will be fairly effective under a democratic regime (Feng, 1997; Maravall, 1995; Wittman, 1989). Democratic institutions also enhance personal freedom, strengthening property rights and thus promoting investment (Scully, 1992). We would therefore expect to find low inflation and high growth rates under democratic regimes because investment is plentiful and productive; fiscal, monetary, and trade policy are prudent; wages and employment remain at satisfactory levels; and political instability is low.

This optimistic view of how democracy affects macroeconomic performance was widely held in the late 1950s and early 1960s by scholars and policy makers, who tended to believe that "all good things go together" (Packenham, 1973). Recently, this view has enjoyed something of a renaissance, especially among officials of the U.S. Agency for International Development and the World Bank (Diamond & Plattner, 1995; U.S. Agency for International Development, 1991; World Bank, 1991, pp. 132-134).

A more pessimistic view emerged in the late 1960s as democracies in both developed and underdeveloped countries faced growing economic problems (Huntington, 1987). In the developed countries, scholars warned of the dangers of "interest group liberalism" (Lowi, 1969), the "crisis of democracy" (Crozier, Huntington, & Watanuki, 1975), and "democracy in deficit" (Buchanan & Wagner, 1977). Scholars studying underdeveloped countries warned of "participation crises" (Weiner, 1971) and the difficulty of resolving economic crises under democratic regimes (O'Donnell, 1978; Skidmore, 1977). Effective state policy making seemed to require corporatist controls on participation (Malloy, 1977), "strong" states (Katzenstein, 1978), insulated state agencies (Cukierman, 1992), or repression (Haggard, 1990).

“Economic populism” seemed to produce poor results (Dornbusch & Edwards, 1991).

The basic theme underlying these arguments is that unrestrained political participation enables societal groups to make extensive demands on the state, forcing it to serve particularistic interests and preventing it from pursuing the broader interests of society as a whole. For state policy making to be effective, political institutions must be structured in ways that leave the state autonomous from these demands (Skocpol, 1985). Although a state can achieve some autonomy under a democratic regime (Nordlinger, 1981), the requirement that political competition remain free and open imposes clear limitations. A nondemocratic state is largely free from the pressures of competitive politics and can use repression against its opponents, leaving it more autonomous than a democratic state and therefore able to carry out more effective policies. Nondemocratic states are thus more capable of restricting credit, maintaining an appropriate exchange rate, controlling wages and public spending, raising the level and productivity of investment, attracting foreign investment, and implementing effective trade and development policies (Haggard, 1990; O’Donnell, 1978; Skidmore, 1977). These mediating factors, in turn, produce lower inflation and higher growth.

A related debate focuses on the performance of newly established democratic regimes. In an early study, Haggard and Kaufman (1989) argued that new democracies are “fragile” because political mobilization and conflict are higher, the intentions of authoritarian actors are uncertain, and considerable turnover often occurs in technical personnel. As a result, policy makers are forced to pursue expansionary macroeconomic policies aimed at satisfying popular demands and reducing social conflict, regardless of their long-term impact. Later, Haggard and Webb (1994) argued that new democracies are often very popular, giving governments a “honeymoon period” and the “political space” needed to carry out painful reforms that will improve macroeconomic performance. Consequently, depending on which of these views is correct, we would expect growth and inflation rates in new democracies to be either better or worse than those in mature democracies due to differences in fiscal and monetary policy and perhaps other mediating factors.

The foregoing discussion indicates that a large, diverse group of scholars has lined up on one side or the other of these two debates, either implicitly or explicitly. It should be noted, however, that some scholars have taken a more skeptical view, arguing that many of the prerequisites for effective macroeconomic performance can exist under either democratic or nondemocratic regimes (Haggard & Kaufman, 1995; Przeworski & Limongi, 1993; Remmer, 1990). It is also possible that both sides in these debates are correct—that democratic regimes or new democracies have both strengths *and*

weaknesses. If so, it is useful to study their *net* effects on macroeconomic performance.

### PREVIOUS RESEARCH ON DEMOCRATIC PERFORMANCE

A large number of empirical studies have examined how democracy affects economic growth. Most of these studies find no clear effect, although a few find either a positive or a negative effect (Brunetti & Weder, 1995; Przeworski & Limongi, 1993; Sirowy & Inkeles, 1991). Haggard, Kaufman, and Webb (1992) and Lindenberg and Devarajan (1993) examined how democracy affects inflation, concluding that it has no effect. Several comparative case study analyses also have examined these issues (Haggard & Kaufman, 1995; Haggard & Webb, 1994; Remmer, 1990), providing useful insight into the processes involved but little clarification of their general trends.

Sirowy and Inkeles (1991) have reviewed most of the empirical studies focusing on growth and have criticized them in several ways. Their most important criticism concerns the research design used in most of these studies. With one exception (Sloan & Tedin, 1987), which focuses only on Latin American countries, the studies they review use a cross-national research design, comparing the level of democracy in a group of countries during a single year or averaged over a period of time with their average growth rates during some time period. This research design fails to reflect the dramatic changes that can occur in political regimes over time and thus may be very misleading in cases where substantial regime change has occurred. For example, if the level of democracy in 1960 or averaged over 1960-1965 or 1960-1970 is compared with the average growth rate in 1960-1970, the data for Brazil would not adequately reflect the fact that a harsh authoritarian regime was established there in 1964, producing misleading results. Sirowy and Inkeles (1991) also find that most of the studies they review are based on data from narrow samples of countries or narrow time periods. In addition, they argue that most of these studies are based on poorly specified regression models, failing to control for per capita income or other factors that causally affect both democracy and growth, thus creating spurious correlations between these two variables. They conclude that these studies "suffer from one or another serious shortcoming" (p. 149) and that no firm conclusions can be drawn from them.

Another methodological problem that may affect many of these studies is simultaneity bias (Przeworski & Limongi, 1993). Cross-national analyses that examine the relationship between democracy and economic growth in a

given time period cannot easily distinguish whether their findings reflect the causal effects of democracy on growth, those of growth on democracy, or both. Gasiorowski (1995) and Przeworski, Alvarez, Cheibub, and Limongi (1996) found that growth and inflation both affect the likelihood of regime change in certain ways; therefore, studies of regime performance that do not somehow control or test for these effects might be contaminated by reverse causation, producing misleading results. Pourgerami (1991), Helliwell (1994), Feng (1997), and Barro (1996) used instrumental-variable methods to control for reverse causation, but these methods have serious drawbacks (Greene, 1993, pp. 284-286). None of the other studies of democratic performance control or test for reverse causation.

Finally, most of these studies are based on samples that include both developed and underdeveloped countries. Because political and economic conditions differ substantially in these two groups of countries, pooling them together into a single sample poses two serious problems. First, the error terms in regression models based on such pooled samples are likely to be heteroskedastic, making ordinary least squares (OLS) regression analysis inefficient. Second, the coefficients of the regression model may be very different in the two subsamples, rendering the pooled model very dubious. For example, democracy may have a less adverse effect on macroeconomic performance in developed countries than in underdeveloped countries because they are more institutionalized, property rights are more secure, and different social and cultural conditions enhance democratic legitimacy and political stability. The coefficients of democracy would therefore be very different in the two subsamples. Regressions estimated on the pooled sample would confound these effects, producing erroneous results. Although it is easy enough to test whether regression coefficients differ in two subsamples, none of the studies that pool these countries together do so.<sup>1</sup>

All of the studies of which I am aware that examine how democracy affects growth or inflation suffer from one or more of these methodological problems. Although this does not necessarily invalidate these studies, it raises doubts about their findings and suggests that greater care must be taken in designing analyses of democratic performance. In the following section, I

1. It is also possible that different groups of underdeveloped countries differ in ways that affect democratic performance and should therefore be analyzed separately. The most important such countries are the major oil exporters. Although more-developed or more-industrialized countries also might be distinguished, no clear criteria exist for doing so. Regional distinctions (e.g., Latin American vs. non-Latin countries) seem dubious in this context. In the analysis below, I focus only on underdeveloped countries. None of the major oil exporters appear in my main sample (see Note 12), and I control for per capita income in all of my analyses.

explain how I have tried to obviate these problems in the analysis that follows.

Several of these studies have tried to determine how democracy affects macroeconomic performance by examining how it affects mediating variables such as the levels of investment and education (Helliwell, 1994; Kormendi & Meguire, 1985), the productivity of investment (Scully, 1992), the fiscal balance (Haggard et al., 1992), union membership and welfare spending (Pourgerami, 1988), and governmental instability (Feng, 1997). Most of these studies do not use rigorous causal modeling techniques, and none examine a broad range of mediating variables. These studies therefore do not provide a clear picture of the factors that mediate the effects of democracy on inflation and growth. In my analysis, I examine a large number of potential mediating variables suggested in the literature reviewed above.

## RESEARCH DESIGN

My analysis is based on a panel research design in which annual time series from a cross-section of countries are stacked on top of one another in a single data set and analyzed jointly. The most common statistical technique for analyzing panel data sets is the fixed-effects regression model (Greene, 1993, pp. 466-469; Hsiao, 1986). Fixed-effects regression usually involves including a dummy variable identifying each cross-sectional unit (in this case, each country) in a regression model and estimating the model with OLS analysis. These dummy variables act as proxies for omitted variables that are unique to each cross-sectional unit; therefore, including them reduces specification error. For example, countries with plentiful oil resources generally have higher growth rates. Country-specific dummy variables would pick up this effect, reducing specification error. During the period examined here (1968-1991), time-specific factors such as global cycles of recession and recovery also strongly affected macroeconomic performance. I therefore use two-way, fixed-effects models in all of the analyses reported below, including dummy variables for each country and each year in my regressions.<sup>2</sup>

My dependent variables are measures of each country's annual economic growth and inflation rates. The economic growth measure is the annual percentage increase in real gross domestic product (GDP). Because annual

2. I used LIMDEP to estimate these regressions (see Greene, 1991, pp. 313-319). This package is suitable for unbalanced panel data sets, where the time series vary in length. Note that my data set is not temporally dominated, so Beck and Katz's (1995, pp. 635-636) panel corrected standard error model is not applicable.

inflation data are highly skewed, I use the natural logarithm of one plus the annual percentage of change in the consumer price index (CPI) as my inflation measure.<sup>3</sup> The real GDP and CPI data are from World Bank (1994).

My main explanatory variables are measures that indicate how democratic each country is and whether a democratic regime is new or mature in each year. I use Jagers and Gurr's (1995) democracy measure to examine how democracy affects macroeconomic performance. This measure covers almost all countries in the world from 1946 through 1994, rating each country annually on an 11-point scale in which high values signify more-democratic regimes and low values signify less-democratic regimes. Because it explicitly measures how democratic each regime is in each year, this measure is more suitable than the well-known Freedom House measures (Gastil, 1991), which focus on the extent of political rights and civil liberties rather than democracy itself. It is also available for longer time periods than the Freedom House measures.<sup>4</sup>

The Jagers-Gurr measure is ordinal rather than categorical and therefore does not explicitly identify regimes as either democratic or nondemocratic. As a result, it does not clearly indicate when democratic regimes are established and thus cannot readily be used to distinguish between new and mature democracies. Gasiorowski's (1996) Political Regime Change Dataset classifies countries as democratic, semidemocratic, or authoritarian and indicates when new regimes of each type are established, so it is suitable for this purpose. This dataset covers the 97 underdeveloped countries that had populations of at least one million in 1980 for the periods starting when each country became independent or established a modern state and continuing through 1992. Because the literature on new democracies does not provide clear criteria for judging when a democracy is new or mature (Power & Gasiorowski, 1997), I use a series of chronological age measures below to distinguish them. Using the dates in the Political Regime Change Dataset indicating when each democracy was established, I classify democratic regimes as new democracies in each full calendar year from their inception until they reached the age of  $y$  years and mature democracies in each subsequent calendar year during which they remained democratic.<sup>5</sup> I then let the age index  $y$  vary from 1 to 15 years to provide a robust analysis.

3. I add one to the percentage change in consumer price index (CPI) because the log of numbers between one and zero approaches negative infinity. When the inflation rate is negative, I use the inverse of the log of one plus the absolute value of the percentage change in CPI.

4. The Jagers-Gurr measure has correlation coefficients of .92 and .87 with the two Freedom House measures (Jagers & Gurr, 1995, p. 475).

5. I classify all country-years in which democratic regimes were established or broke down as nondemocratic regimes rather than new or mature democracies because democracy does not exist for the entire year in these cases.



Most of the variables discussed above that may mediate between democracy and inflation or growth can be quantified and are available in time-series form for many underdeveloped countries. The mediating variables I was able to incorporate into my analysis are shown in the center columns of Figures 1a and 1b, which show my main models of how democracy affects inflation and growth. The fiscal deficit, money supply, wage growth, employment growth, foreign investment, trade deficit, and school enrollment data are from World Bank (1994), supplemented in a few cases with comparable data from International Monetary Fund (1988) and World Bank (1990).<sup>6</sup> I divided fiscal deficit by GDP and foreign investment and trade deficit by gross national product (GNP) to make them comparable across countries.<sup>7</sup> I calculated the domestic investment variable by subtracting (foreign investment)/GNP from (gross domestic investment)/GDP, creating a measure of the rate of investment originating from domestic sources only.<sup>8</sup> My violent unrest and peaceful unrest measures are indices created with factor analysis from Banks's (1979) data on the number of riots, demonstrations, general strikes, assassinations, guerrilla actions, and revolutionary actions.<sup>9</sup> I included economic growth as a mediating variable in the inflation model and inflation as a mediating variable in the growth model because these two variables are generally assumed to affect each other.<sup>10</sup>

Each of these potential mediating variables is drawn from the theoretical literature discussed above. If democracy affects any of these variables, and if any of them, in turn, affect inflation or growth, we would expect the corresponding  $a_i$  and  $b_i$  coefficients (shown in Figures 1a and 1b) to be nonzero,

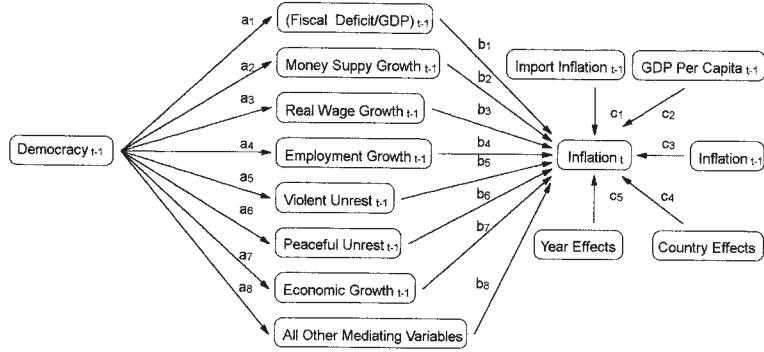
6. The money supply growth, wage growth, and employment growth measures are the annual percentage change in M2, the real manufacturing wage index, and the manufacturing employment index. School enrollment is the secondary school enrollment rate. World Bank (1994) does not include pre-1970 data for the fiscal deficit, wage, and employment variables, even though earlier data for these variables are published in International Monetary Fund (1988) and World Bank (1990). Because the post-1969 data for these variables in World Bank (1994) are identical to those given in subsequent editions of these two sources, I used these sources to calculate pre-1970 data for these measures.

7. In World Bank (1994), fiscal deficit and gross domestic product (GDP) are in local currency units, whereas foreign investment, trade deficit, and gross national product (GNP) are in U.S. dollars.

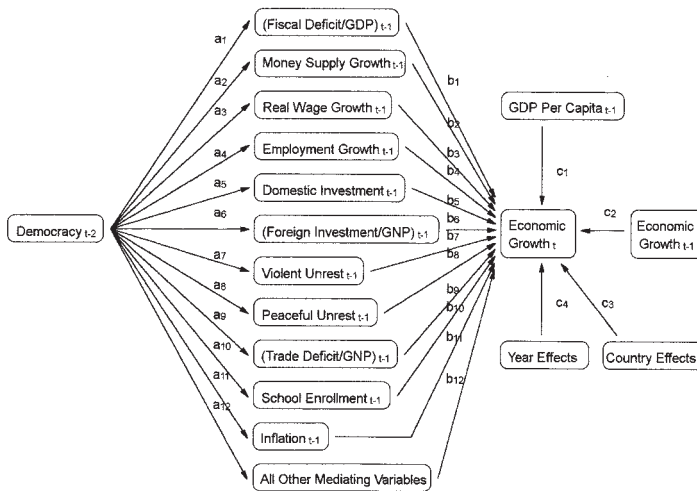
8. The gross domestic investment data are from World Bank (1994).

9. When I ran a factor analysis on these six variables, two factors emerged. Their standardized scoring coefficients were .40, .38, .28, .22, .21, .16, and -.29, -.32, -.04, .28, .49, .52, respectively, for these six variables. I used these sets of coefficients to construct the peaceful unrest and violent unrest indices. Banks's (1979) data set is currently updated through 1994.

10. These models, taken together, are "cross-lagged effects models" and thus can be estimated with ordinary least squares (OLS) regression, despite the reciprocal causation between inflation and growth that is embodied in them (see Finkel, 1995, pp. 24-32).



1a. Inflation Model



1b. Economic Growth Model

Figure 1. Models of the effect of democracy on inflation and economic growth.

Note: GDP = gross domestic product, GNP = gross national product.

with the appropriate signs. Because all of these variables are widely thought to affect inflation or growth, they also serve here as control variables and therefore must remain in the respective models even if empirical analysis reveals that they are not significantly affected by democracy (i.e., if the corresponding  $a_i$  coefficients are not significant). It is certainly possible that some of the other variables discussed above for which adequate data were not

available—such as the effectiveness of state agencies, the productivity of investment, exchange rate premiums, unionization, governmental instability, and social spending—may mediate the effect of democracy on inflation or growth. If so, then  $a_8$  and  $b_8$  in Figure 1a or  $a_{12}$  and  $b_{12}$  in Figure 1b would have nonzero values with the appropriate signs.

As shown on the right-hand side of Figures 1a and 1b, I included several additional control variables that do not mediate the effects of democracy on inflation or growth. The import inflation measure is the annual percentage of change in the import price index, given in World Bank (1994). I included this measure to control for the effects of import price changes on changes in the CPI. GDP per capita is positively correlated with democracy (Burkhart & Lewis-Beck, 1994) and inversely correlated with growth and inflation (Cukierman, Edwards, & Tabellini, 1992; Mankiw, Romer, & Weil, 1992). I therefore included Summers and Heston's (1991) GDP per capita measure in both models to prevent spurious correlations. To purge autocorrelation and control for inertial and related effects (Finkel, 1995, pp. 7-11), I included lagged dependent variables in both models. Finally, the dummy variables identifying countries and years associated with the two-way, fixed-effects regression technique control for unmeasured country-specific and year-specific effects bearing on inflation and growth.

I initially ran all of the analyses presented below on a pooled sample containing both developed and underdeveloped countries. I then used statistical methods (Greene, 1993, pp. 211-212) to test whether the coefficients in my models differ in the two subsamples. I found that many of these coefficients *do* differ significantly in the two subsamples—often by very large amounts—even though GDP per capita is included as a control variable in each of the models. For example, I found that fiscal deficits significantly affect inflation in underdeveloped countries but not in developed countries; foreign investment significantly increases growth in underdeveloped countries but not in developed countries; and more-democratic countries have significantly faster wage growth than less-democratic countries in the underdeveloped sample but significantly slower wage growth in the developed sample. The coefficients estimated on the pooled sample conflate these differences, producing invalid and misleading results. Thus, I found that democracy does not significantly affect wage growth in the pooled sample, even though it has a positive effect in the underdeveloped-country sample and a negative effect in the developed-country sample. Clearly, there is no point in reporting results from the pooled sample.

I tried to examine systematically how the effect of democracy on macroeconomic performance differs in the developed- and underdeveloped-country samples. However, this proved to be impossible because almost all of

the countries in the developed-country sample were democracies and therefore had very high values on the Jagers-Gurr democracy measure.<sup>11</sup> With almost no variation on this measure, it was impossible to assess how democracy affects macroeconomic performance in this sample and thus compare its effect in the two samples. I therefore decided to drop the developed countries from my sample. The analyses presented below focus only on underdeveloped countries.

The explanatory variables in the models shown in Figures 1a and 1b have many missing observations. To maintain consistency, I decided to run all of my major analyses on identical samples, dropping any observation that had missing values for any variable appearing in either of these models. The sample used in most of my analyses therefore has 572 country-year observations, covering 49 underdeveloped countries in the period 1968-1991.<sup>12</sup> Although a larger number of countries would have been preferable, this sample includes a broad range of industrialized and nonindustrialized countries, middle-income and poor countries, large and small countries, and countries representing all continents and religions in the underdeveloped world.<sup>13</sup> Although the years included in the sample vary somewhat from country to country, the dummy variables identifying each year embodied in the two-way, fixed-

11. In the developed-country sample, 85% of the 356 observations had democracy values of 10, 11% had values of 7 to 9, 4% had 0s, and none had values between 0 and 7. The underdeveloped-country sample was not skewed in this way: 37% of the 572 observations used in most of the analyses reported below had values greater than 5, whereas 61% had values less than 5.

12. The countries and years covered in this sample are as follows: Argentina (1982-1990), Bolivia (1979-1991), Brazil (1982-1986), Central African Republic (1984), Chile (1974-1991), Columbia (1969-1986), Congo (1984-1989), Costa Rica (1987-1991), Cote d'Ivoire (1981-1984), Dominican Republic (1970-1985), Ecuador (1969-1972, 1975-1991), Egypt (1977-1990), El Salvador (1973-1975, 1986), Ethiopia (1969-1973, 1977-1978), Ghana (1973-1977, 1981-1984), Guatemala (1974-1984, 1988-1990), Haiti (1971-1985), Honduras (1974-1976, 1986-1989), India (1969-1977), Indonesia (1973-1991), Israel (1974-1991), Jamaica (1969-1972, 1977-1989), Jordan (1987-1991), Kenya (1977-1991), Madagascar (1974-1975), Malaysia (1971-1989), Mexico (1974-1991), Morocco (1979-1988), Nicaragua (1975-1978), Niger (1980-1981, 1985-1986), Nigeria (1969-1977, 1983-1985), Pakistan (1969-1989), Panama (1978-1986), Papua New Guinea (1979-1983), Peru (1982-1989), Philippines (1968-1969, 1972-1985, 1989-1991), Senegal (1977-1985), Singapore (1969-1991), South Africa (1975-1991), South Korea (1972-1991), Sri Lanka (1983-1990), Thailand (1980-1990), Trinidad (1978-1979, 1984-1988), Tunisia (1974-1982), Turkey (1973-1991), Uruguay (1979-1982, 1985, 1988-1989), Venezuela (1972-1991), Zambia (1974-1988), and Zimbabwe (1987-1991).

13. The only underdeveloped countries that I systematically excluded from this sample are (a) oil-based rentier states, such as Saudi Arabia and Kuwait, and (b) countries with populations of less than one million in 1980. I excluded these groups of countries because they are atypical in many ways and therefore might have distorted my findings.

effects, regression model partial out any time-specific effects that this variation might introduce. Consequently, there is no compelling reason to think that this sample is unrepresentative.

This research design obviates most of the methodological problems discussed above that affected previous studies of democratic performance. By using a panel data set with annual observations, I can examine how a country's level of democracy affects its macroeconomic performance in any given year, enabling me to take into account regime changes such as the one that occurred in Brazil in 1964. With annual data, I can also use Granger causality tests (explained below) to examine whether my results are subject to simultaneity bias, eliminating the need for instrumental-variable methods. The large number of control variables in my models (including country-specific and year-specific dummy variables) enhance the specificity of these models, reducing the chance of spurious correlation. By examining only underdeveloped countries, I avoid the problems that emerge when very different samples are pooled together and analyzed jointly. Finally, by using causal modeling techniques and examining many potential mediating variables, I can obtain a fairly clear picture of how democracy affects macroeconomic performance.

### SIMULTANEITY BIAS

The first empirical issue I address is the question of simultaneity bias, which can be examined with Granger causality tests. If adequate time-series data are available for two variables,  $X$  and  $Y$ , we can test whether  $X$  causes  $Y$  by estimating the following regression equation:

$$Y_t = a_0 + a_1 * Y_{t-1} + \dots + a_k * Y_{t-k} + b_1 * X_{t-1} + \dots + b_k * X_{t-k} + e, \quad (1)$$

where  $a_0$  is a constant term,  $a_1$  through  $a_k$  and  $b_1$  through  $b_k$  are coefficients,  $Y_{t-i}$  and  $X_{t-i}$  are the  $i$ th-year lags of  $Y_t$  and  $X_t$ , and  $e$  is an error term. We can then use Wald tests (Greene, 1991, pp. 156-159) to test the joint hypothesis that  $b_1 = 0 \dots b_k = 0$ . If this hypothesis is accepted, past values of  $X$  do not significantly affect the current value of  $Y$  when past values of  $Y$  are controlled. If so, occurrences of  $Y$  are not systematically preceded in time by occurrences of  $X$  and we can infer that  $X$  does not cause  $Y$  in this specific sense (Granger & Newbold, 1986, pp. 259-262). If  $X$  does not cause  $Y$  in this sense, we can infer that  $Y$  is exogenous to  $X$  and that a regression of  $X$  on  $Y$  is not affected by reverse causation or simultaneity bias (Sargent, 1979). If  $X$  and  $Y$  are correlated, we can make inferences about the direction of causality between them

by using Equation 1 to test whether  $X$  causes  $Y$  in Granger's sense and using a similar equation to test whether  $Y$  causes  $X$ .

Panels a and b of Table 1 present the results of a series of Granger causality tests that examine the direction of causality between the Jagers-Gurr democracy measure and the inflation and economic growth measures. The tests shown in panel a are based on all of the underdeveloped-country data available for these three variables in the data set described above; those shown in panel b are based on the smaller sample of 572 observations. Columns 2 and 3 of each panel give the significance levels of the joint hypothesis tests that examine whether democracy causally affects inflation and whether inflation causally affects democracy, respectively, using lag lengths (corresponding to  $k$  in Equation 1) of 1, 2, and 3 years.<sup>14</sup> Column 1 shows the number of observations these tests are based on. Columns 4 through 6 give similar information for tests of causality between democracy and economic growth. All of the results reported in Table 1 are based on two-way, fixed-effects, regression models.

All of the Granger causality tests shown in Column 2 and none of those shown in Column 3 of panel a are significant at the .10 level, implying that democracy causally affects inflation but inflation does not causally affect democracy. The 1-year lag test in Column 2 of panel b is significant at the .06 level, and none of the tests in Column 3 of panel b are significant at .10, implying again that democracy causally affects inflation but inflation does not causally affect democracy. All of the tests shown in Column 5 and none of those shown in Column 6 of panels a and b are significant at .10 or better, implying that democracy causally affects economic growth but growth does not causally affect democracy. We can conclude from these findings that democracy is exogenous to inflation and growth in both of the samples examined here and that regression analyses based on these samples that examine the effects of democracy on inflation and growth do not embody simultaneity bias.<sup>15</sup>

14. No reliable criteria exist for choosing the appropriate lag length of Granger causality tests in panel models. I therefore report tests with lags of 1, 2, and 3 years here. I do not use tests with lag lengths greater than 3 years because each additional lag excludes many observations from the sample, making it impossible to determine whether any significant findings that emerge are due to differences in sample composition or to the additional lags themselves. Furthermore, it seems entirely implausible that any of the effects embodied in these models could occur only after 3 years.

15. My finding that inflation and growth do not causally affect democracy may seem to conflict with the findings of Gasiorowski (1995) and Przeworski, Alvarez, Cheibub, and Limongi (1996) that growth and inflation both affect regime change. This is not so, for three reasons. First, regime change, which these two studies examine, is essentially the first difference of regime type, which is what I study here. If one variable affects the first difference of another variable,

Table 1  
Granger Causality Tests

Panel a: Democracy, Inflation, and Growth (large sample)						
Lag Period ( <i>k</i> )	<i>n</i> (1)	Democracy ⇒ Inflation (2)	Inflation ⇒ Democracy (3)	<i>n</i> (4)	Democracy ⇒ Growth (5)	Growth ⇒ Democracy (6)
1	2002	.0009	.9745	2291	.0183	.2414
2	1896	.0010	.7733	2174	.0120	.3682
3	1794	.0179	.2163	2064	.0280	.2075

Panel b: Democracy, Inflation, and Growth (small sample)						
Lag Period ( <i>k</i> )	<i>n</i> (1)	Democracy ⇒ Inflation (2)	Inflation ⇒ Democracy (3)	<i>n</i> (4)	Democracy ⇒ Growth (5)	Growth ⇒ Democracy (6)
1	572	.0562	.2745	572	.0220	.1062
2	572	.1160	.5549	572	.0335	.3228
3	562	.2889	.5038	562	.0526	.3900

Panel c: Inflation, Fiscal Deficits, and Wage Growth						
Lag Period ( <i>k</i> )	<i>n</i> (1)	Inflation ⇒ Deficit (2)	Deficit ⇒ Inflation (3)	<i>n</i> (4)	Inflation ⇒ Wage Growth (5)	Wage Growth ⇒ Inflation (6)
1	572	.2473	.0000	572	.5946	.0005
2	527	.6448	.0001	527	.2206	.0000
3	481	.5775	.0001	481	.5270	.0000

Panel d: Democracy, Fiscal Deficits, and Wage Growth						
Lag Period ( <i>k</i> )	<i>n</i> (1)	Democracy ⇒ Deficit (2)	Deficit ⇒ Democracy (3)	<i>n</i> (4)	Democracy ⇒ Wage Growth (5)	Wage Growth ⇒ Democracy (6)
1	572	.5022	.4767	572	.4554	.9984
2	527	.9517	.8776	527	.1031	.9565
3	481	.0281	.8376	481	.0180	.9878

Panel e: Inflation and Growth			
Lag Period ( <i>k</i> )	<i>n</i> (1)	Inflation ⇒ Growth (2)	Growth ⇒ Inflation (3)
1	572	.0000	.5720
2	572	.0077	.6852
3	569	.0207	.8543

### DEMOCRACY AND INFLATION

Tables 2 and 3 present my analyses of how democracy affects inflation (Table 2) and economic growth (Table 3). Columns 1 through 3 of each table give two-way, fixed-effects, regression models of the determinants of inflation or growth, with the standard error of each coefficient shown in parentheses and the  $R^2$ , panel autocorrelation coefficient, and sample size shown at the bottom of each column. Columns 4 and 5 will be explained below.

Columns 1 and 2 of Table 2 present two-way, fixed-effects regressions of the inflation measure on the 1-year lagged values of the Jagers-Gurr democracy measure, import inflation, GDP per capita, and the inflation measure itself. I ran the regression shown in Column 1 on the 1,671 observations in the entire data set that did not have missing values for the variables appearing in this particular model. I ran the regression in Column 2 on the smaller sample of 572 observations. I used the 1-year lags of each explanatory variable in these regressions (and in those shown in Column 3) under the assumption that their effects on inflation are manifested after approximately 1 year. Because none of the potential mediating variables shown in the center column of Figure 1a are included in these models, the coefficients of the democracy measure here give the total effect of democracy on inflation, combining together the effects of all mediating variables.

The democracy coefficients in both regressions are significantly positive, implying that more-democratic regimes produce higher inflation rates than less-democratic regimes in underdeveloped countries. The democracy coefficient in Column 2 is somewhat smaller than the one shown in Column 1, suggesting that the relationship between democracy and inflation that exists in the smaller sample is somewhat weaker than the one in the larger sample.

To examine the effects of the seven potential mediating variables shown in Figure 1a, I first added these variables to the model shown in Column 2. The resulting model appears in Column 3. The coefficients of these seven variables are the coefficients  $b_1$  through  $b_7$  of Figure 1a. The democracy coefficient now gives the total effect of all other mediating variables not included in

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there is no reason to think it necessarily affects this variable itself. Second, Gasiorowski (1995) found that inflation affects regime change only before the mid-1970s and that growth affects democratic breakdown but not democratic transition, whereas Przeworski et al. (1996) report that growth and inflation both have nonlinear effects on democratic survival and say nothing about their effects on democratic transition. My Granger tests assume time-invariant, bidirectional, linear effects. Third, both of these studies use dichotomous measures of democracy, whereas the analyses reported here use an 11-point democracy measure that can be expected to produce different results.



Table 2  
Democracy and Inflation

	1	2	3	4	5
Democracy <sub>t-1</sub> (fiscal deficit/gross domestic product) <sub>t-1</sub>	.0528*** (.0118)	.0315* (.0163)	.0171 (.0162)		
Money supply growth <sub>t-1</sub>			4.0394*** (.8509)	.0072* (.0038)	.0022** (.0009)
Real wage growth <sub>t-1</sub>			-.0153 (.0112)	-.0005 (.0011)	.1352† (.0747)
Employment growth <sub>t-1</sub>			.0091*** (.0028)	.0071* (.0032)	.6920** (.2652)
Violent unrest <sub>t-1</sub>			.0041 (.0034)	-.0003 (.0009)	-.2052 (.2204)
Peaceful unrest <sub>t-1</sub>			-.0004 (.0305)	.0000 (.0004)	-.0030 (.0228)
Economic growth <sub>t-1</sub>			.0352 (.0325)	-.0004 (.0009)	-.0130 (.0211)
Import inflation <sub>t-1</sub>			-.0048 (.0074)	.0002 (.0006)	-.0763 (.1044)
Gross domestic product per capita <sub>t-1</sub>	-.0018 (.0028)	.0012 (.0042)	.0026 (.0041)		
Inflation <sub>t-1</sub>	-.0000 (.0000)	-.0000 (.0000)	.0000 (.0000)		
Intercept	.4950*** (.0221)	.5622*** (.0370)	.5471*** (.0411)		
R <sup>2</sup>	1.2258*** (.1013)	1.0993*** (.1701)	.9531*** (.1781)		
Autocorrelation coefficient	.6609	.7479	.7654		
n	1,671	572	572		

Note: The standard error of each coefficient is shown in parentheses.

† p = .10. \* p = .05. \*\* p = .01. \*\*\* p = .001. \*\*\*\* p = .0001.

the model, shown as the combined effect of coefficients  $a_8$  and  $b_8$  in Figure 1a. This coefficient fell almost by half when I added these seven variables, implying that a substantial portion of the total effect of democracy on inflation shown in Column 2 is due to the confounding effects of these variables. The democracy coefficient is no longer significant, indicating that the total effect of all other mediating variables not explicitly included in this model is insignificant. The fiscal deficit and wage growth variables each have significant coefficients with the expected signs in Column 3.

To determine which of the seven potential mediating variables confounded the democracy coefficient, I first dropped each of them separately from the model shown in Column 3, essentially including each separately in the "all other mediating variables" category shown in Figure 1a. I then reestimated the model and subtracted the democracy coefficient shown in Column 3 from the democracy coefficients estimated with these seven models, producing the coefficient differences shown in Column 4. Using a technique developed by Allison (1995, p. 1301), I then calculated the standard errors of the coefficient differences, which are shown in parentheses. These coefficient differences indicate how the total effect of "all other mediating variables" increased when each variable was included separately in this category, enabling us to identify the separate confounding effect each variable had on the democracy coefficient. If these confounding effects are mediating effects—which will be determined below—these coefficient differences and their significance levels give the strength and significance of the corresponding  $a_i$ - $b_i$  paths shown in Figure 1a.

The coefficient differences in Column 4 corresponding to the fiscal deficit and wage growth variables are both significantly positive, indicating that these two variables had positive confounding effects on the relationship between democracy and inflation. None of the other potential mediating variables had significant confounding effects. When I dropped fiscal deficit and wage growth both from the model, the democracy coefficient increased to .0322, slightly higher than its value in Column 2. This indicates that the democracy coefficient's loss of significance in Column 3 was caused entirely by the confounding effects of the fiscal deficit and wage growth variables.

These confounding effects can be of two basic types. First, either variable may mediate the effect of democracy on inflation in the sense that democracy causally affects it and it, in turn, causally affects inflation. If so, including this variable in a regression with the democracy measure will change the value and significance of the democracy coefficient because part of democracy's effect on inflation will then be reflected in the  $a_i$  and  $b_i$  coefficients of Figure 1a corresponding to this variable rather than in the  $a_8$  and  $b_8$  coefficients. Second, either variable may be correlated with the democracy and inflation

measures in some way that does not entail mediating effects but creates a spurious correlation between these two variables. If so, the value and significance of the democracy coefficient again will change, but not because of the causal effects embodied in  $a_i$  and  $b_i$ .

To determine whether the confounding effects of fiscal deficit and wage growth are mediating effects or spurious effects, we must determine (a) whether democracy causally affects these two variables and (b) whether they causally affect inflation. Although fiscal deficit and wage growth both have significant coefficients in Column 3, this does not necessarily mean that they causally affect inflation. To examine this more rigorously, I ran the Granger causality tests shown in panel c of Table 1. These tests imply that fiscal deficits and wage growth causally affect inflation and inflation does not causally affect these two variables. Therefore, causality does, indeed, seem to run in the direction implied by coefficients  $b_1$  and  $b_3$  of Figure 1a.

To examine whether democracy causally affects the fiscal deficit and wage growth variables (i.e., whether causality runs in the direction implied by coefficients  $a_1$  and  $a_3$  of Figure 1a), I first ran two-way, fixed-effects regressions of the following form for these two variables:

$$\begin{aligned} \text{VARIABLE}_{t-1} = & a * \text{VARIABLE}_{t-2} + & (2) \\ & b * \text{GDP Per Capita}_{t-1} + c * \text{Democracy}_{t-1} + e, \end{aligned}$$

where VARIABLE is one of these two variables;  $a$ ,  $b$ , and  $c$  are coefficients; Democracy is the Jagers-Gurr democracy measure; and  $e$  is an error term. These models show how the 1-year lag of democracy affects the 1-year lag of VARIABLE when the 2-year lag of VARIABLE and the 1-year lag of GDP per capita are included to purge autocorrelation and control for inertial and development-related effects. The democracy coefficients ( $c$ ) in these regressions therefore correspond to  $a_1$  and  $a_3$  of Figure 1a.<sup>16</sup> Although these models do not establish whether democracy causally affects these variables, they do indicate whether it has a contemporaneous relationship of some sort with them and whether these relationships are positive or negative.

The democracy coefficients of these two variables ( $a_1$  and  $a_3$ ) are shown in the corresponding rows of Column 5 of Table 2, along with their standard errors. For completeness, I have included similar  $a_i$  coefficients for each of the other potential mediating variables shown in Figure 1a. The democracy

16. Note that Figure 1a does not show that the 1-year lagged variables in the center column are affected by the two control variables included in Equation 2 and by the country-specific and year-specific dummy variables associated with the two-way, fixed-effects regression model.

coefficients of fiscal deficit and wage growth are both significantly positive, indicating that fiscal deficits and wage growth are both larger in more-democratic regimes than in less-democratic regimes. The democracy coefficient of the money supply variable is positive and significant at .07, indicating that money supply growth is marginally larger in more-democratic regimes, although this does not affect inflation in this sample (see Column 3). Column 5 indicates that none of the other potential mediating variables are significantly affected by democracy.

The finding in Column 5 that fiscal deficits and wage growth are larger in more-democratic regimes is consistent with the theoretical argument presented above that democracy causally produces larger deficits and faster wage growth. An alternative interpretation of this finding might be that it reflects reverse causation or a spurious correlation of some sort. The idea that fiscal deficits or wage growth might causally affect democracy seems quite implausible, especially in light of the finding reported in Table 1 that neither inflation nor growth causally affect democracy, and I am not aware of any theoretical literature that makes these arguments. Of the many factors that are thought to affect democracy (see Gasiorowski, 1995, pp. 882-884), the only one that might also covary with fiscal deficits or wage growth and thus produce spurious correlations here is the level of wealth or development, usually measured with GDP per capita. Because this variable is included as a control variable in the regressions reported in Column 5, it could not have caused such spurious correlations. Thus, the only theoretically plausible explanation for the larger fiscal deficits and wage growth that evidently occur in democracies is that democracy causally produces them.

Nevertheless, I ran the Granger causality tests shown in panel d of Table 1 to examine these possibilities. None of the causality tests shown in Columns 3 and 6 are significant even at the .10 level, implying that fiscal deficits and wage growth do not causally affect democracy. Reverse causation therefore almost certainly did not produce the significant coefficients shown in Column 5 of Table 2. Although the 1-year lag tests shown in Columns 2 and 5 of Table 1 and the 2-year lag test shown in Column 2 are not significant, both of the 3-year lag tests shown in these columns are significant, and the 2-year lag test shown in Column 5 is very marginally significant. These findings suggest that democracy does causally affect fiscal deficits and wage growth, although only after a lag of 1 or 2 years. However, because the 2-year and 3-year lag tests are based on a somewhat different sample from those reported in Column 5 of Table 2 (see Columns 1 and 4), we cannot regard these results as conclusive. In other words, although we can almost certainly rule out reverse causation, we cannot conclusively establish with past values of the

democracy, fiscal deficit, and wage growth variables that the significant contemporaneous relationships among these variables shown in Column 5 of Table 2 are not spurious. Thus, although the only plausible theoretical explanation for these findings is that democracy causes larger fiscal deficits and faster wage growth, as implied by coefficients  $a_1$  and  $a_3$  of Figure 1a, we cannot say this with complete certainty.

In sum, because fiscal deficits and wage growth causally affect inflation, and because democracy seems to causally affect these two variables, the confounding effects of these two variables shown in Column 4 of Table 2 are almost certainly mediating effects. Because none of the other coefficient differences shown in Column 4 are significant, we can conclude that only these two of the seven potential mediating variables shown in Figure 1a actually mediate the effect of democracy on inflation in a significant manner. The democracy coefficient in Column 3 of Table 2 is not significant, implying that the total effect of any other mediating variables not included in the model is insignificant. Although it is possible that one or more variables not included in this model have a positive mediating effect and one or more others have a negative mediating effect that just offsets this positive effect, this seems quite unlikely. We can therefore conclude with a high degree of confidence that democracy causes higher inflation in underdeveloped countries for two reasons: it produces larger fiscal deficits and faster wage growth.

### DEMOCRACY AND ECONOMIC GROWTH

I carried out a similar series of analyses to examine how democracy affects economic growth using the 1-year lag of the Jagers-Gurr democracy measure and the mediating variables and control variables shown in Figure 1b. The democracy coefficient in these analyses corresponding to the one shown in Column 2 of Table 2 was negative but had a significance level of only .06. To examine whether a longer lag period might produce stronger results, I repeated these analyses using the 2-year lag of the Jagers-Gurr democracy measure. These analyses did, indeed, produce stronger results. Because there is no a priori reason to prefer a 1-year lag to a 2-year lag period here, I use the latter in my analysis, which is shown in Table 3.

Columns 1 and 2 of Table 3 present two-way, fixed-effects regressions of the growth measure on the 2-year lag of the democracy measure and the 1-year lags of GDP per capita and the growth measure itself. I ran the regression shown in Column 1 on the 2,162 observations in the entire data set that did not have missing values for the variables in this model and the one in



Column 2 on the sample of 572 observations. The democracy coefficients in Columns 1 and 2 are both significantly negative, implying that underdeveloped countries with more-democratic regimes have slower growth than those with less-democratic regimes. These coefficients have similar values, indicating that the relationship between democracy and growth is very similar in the two samples.

In Column 3, I added the 11 potential mediating variables shown in Figure 1b to the model. Their coefficients here correspond to  $b_1$  through  $b_{11}$  in Figure 1b. The magnitude of the democracy coefficient fell by almost half when I added these variables, implying that a substantial portion of the total effect of democracy on growth shown in Column 2 is due to the confounding effects of these variables. The democracy coefficient in Column 3 (corresponding to the  $a_{12}$ — $b_{12}$  path in Figure 1b) is not significant, indicating that the total effect of all other mediating variables not included in this model is insignificant. Employment growth, foreign investment, and inflation each have significant coefficients with the expected signs in Column 3.

As in Table 2, Column 4 shows the differences between the democracy coefficients estimated when I dropped each of the 11 potential mediating variables separately from the model in Column 3 and the democracy coefficient appearing in this model. These coefficient differences indicate that only the inflation variable had even a marginal confounding effect ( $p = .07$ ) on the democracy coefficient in Column 3. When I dropped this variable from the model, the democracy coefficient fell only to  $-.1534$  and remained insignificant ( $p = .12$ ). This implies that a considerable portion of the adverse effect of democracy on growth shown in Column 2 is due to the combined confounding effects of the 10 other potential mediating variables included in the model. However, Column 4 shows that none of these other variables by themselves significantly confounded the democracy coefficient. Consequently, whereas the 11 potential mediating variables examined in Table 3 together confounded the effect of democracy on growth, only the inflation variable had a confounding effect by itself that was even marginally significant.

Column 5 shows the democracy coefficients from a series of regressions based on the following equation:

$$\text{VARIABLE}_{t-1} = a * \text{VARIABLE}_{t-2} + b * \text{GDP Per Capita}_{t-1} + c * \text{Democracy}_{t-2} + e,$$

which is identical to Equation 2, above, except that it features the 2-year lag of the democracy measure rather than the 1-year lag. These democracy coefficients correspond to  $a_1$  through  $a_{11}$  in Figure 1b. The democracy coefficients

corresponding to the money supply and inflation measures ( $a_2$  and  $a_{11}$ ) are both positive and marginally significant ( $p = .09$  and  $.06$ , respectively). None of the other coefficients in Column 5 are significant.

To determine whether the marginally significant confounding effect of inflation shown in Column 4 is a mediating or spurious effect, I first ran the Granger causality tests shown in panel e of Table 1. These tests imply that inflation causally affects economic growth but growth does not causally affect inflation. Because the Granger causality tests in panels a and b imply that democracy causally affects inflation but inflation does not causally affect democracy, the marginal confounding effect of inflation shown in Column 4 of Table 3 is a mediating effect. We can therefore conclude that more-democratic regimes have slower growth than less-democratic regimes in underdeveloped countries and that a marginally significant part of this effect is due to their higher inflation rates. None of the other variables shown in Figure 1b significantly mediate the relationship between democracy and growth, and the total effect of all other mediating variables not included in the model is also not significant.

My finding that democracy produces higher inflation and slower growth in underdeveloped countries conflicts with the findings of most previous studies of these issues, which generally found that democracy has no effect on inflation and growth. As discussed above, almost all of these studies used a cross-national research design, comparing the average level of democracy with the average rate of inflation or growth during certain time periods in certain countries. To determine whether my panel research design was responsible for my very different findings, I reestimated the models shown in Columns 1 and 2 of Tables 2 and 3 using the same data and a cross-national research design such as the one used in these previous studies. I first averaged the time-series data for each variable across each country appearing in each sample. I then reestimated the models on these cross-sectional data sets, using OLS regression and dropping the lagged dependent variables (because autocorrelation was no longer present). The democracy coefficients in these cross-sectional analyses corresponding to those in Column 2 of Table 2 and Columns 1 and 2 of Table 3 were no longer significant, implying that the panel research design is largely responsible for my different findings. By using annual data rather than averages over long time periods, this research design provides a more precise framework for evaluating the macroeconomic effects of democracy. My findings therefore appear to be more valid than these cross-national studies.



### INFLATION AND GROWTH IN NEW AND MATURE DEMOCRACIES

To examine how the macroeconomic performance of new democracies differs from that of mature democracies, I used a variant of interrupted time-series analysis (Lewis-Beck, 1986). This technique uses dummy variables to compare the levels of a given dependent variable in different time periods, controlling for other variables with an appropriate multivariate regression procedure. In our case, the dependent variables are the inflation and growth measures and the time periods of interest are those in which democracies are considered new and mature. If we classify democracies as new or mature according to the criteria discussed above, we can compare their inflation and growth rates by regressing the inflation and growth measures on two dummy variables:  $New\ Democracy_y$ , which has a value of 1 in country-years when new democracies aged  $y$  years or less exist and 0 otherwise, and  $Nondemocracy$ , which has a value of 0 in country-years when new or mature democracies exist and 1 otherwise. The coefficient of  $New\ Democracy_y$  in this regression indicates how the mean value of the dependent variable in new democracies aged  $y$  years or less differs from that in older, mature democracies. We can examine how these means differ when other variables are controlled by adding additional explanatory variables to the regression.

Table 4 shows the  $New\ Democracy_y$  coefficients in six sets of regressions of this sort, with values of  $y$  ranging from 1 to 15 and the standard error of each coefficient given in parentheses. The coefficients in Columns 1 through 3 are from regressions in which I substituted  $New\ Democracy_y$  and  $Nondemocracy$  for  $Democracy_{t-1}$  in the models shown in Columns 1 through 3 of Table 2. The coefficients in Columns 1 and 2 therefore show how inflation in new democracies differs from that in mature democracies in the large and small samples (respectively) used in Table 2 when the lagged values of import inflation, GDP per capita, and inflation are controlled. The coefficients in Column 3 show how inflation in new and mature democracies differs when all of the control variables and potential mediating variables used in Table 2 are controlled. Columns 4 through 6 give the  $New\ Democracy_y$  coefficients produced when I substituted  $New\ Democracy_y$  and  $Nondemocracy$  for  $Democracy_{t-2}$  in the models shown in Columns 1 through 3 of Table 3. These coefficients therefore show how economic growth in new and mature democracies differs in the respective samples when the corresponding variables are controlled.

Table 4  
*Inflation and Growth in New and Mature Democracies*

Age (y)	Inflation Models						Growth Models					
	1	2	3	4	5	6	1	2	3	4	5	6
1	-.1092 (.2122)	-.0443 (.2364)	-.1795 (.2314)	2.5133 <sup>†</sup> (1.402)	2.1560 (1.453)	1.8174 (1.427)	-.0361 (.1638)	.1082 (.1921)	-.0178 (.1895)	2.5503 <sup>**</sup> (1.002)	1.3191 (1.182)	1.1478 (1.172)
2	.0195 (.1481)	.1267 (.1788)	-.0527 (.1780)	1.1922 (.8529)	.9789 (1.101)	.7543 (1.103)	.0021 (.1412)	.0257 (.1793)	-.1722 (.1781)	1.1541 (.7774)	1.5891 (1.101)	1.6649 (1.100)
3	.0080 (.1349)	-.1463 (.1913)	-.3467 <sup>†</sup> (.1886)	.7172 (.7388)	.8130 (1.177)	.9467 (1.168)	.0455 (.1319)	-.0979 (.2100)	-.2518 (.2056)	.9674 (1.291)	.9419 (1.269)	
4	.0455 (.1319)	-.0979 (.2100)	-.2518 (.2056)	.8736 (.7160)	.9674 (1.291)	.9419 (1.269)	-.0310 (.1317)	-.1833 (.2411)	-.2721 (.2350)	1.9372 (1.476)	1.6988 (1.453)	
5	-.0678 (.1318)	-.0582 (.2619)	-.1290 (.2553)	.9557 (.7078)	1.9372 (1.476)	1.6988 (1.453)	-.0227 (.1301)	.0464 (.2851)	.0934 (.2775)	2.2151 (1.610)	1.8574 (1.587)	
6	.0507 (.1285)	.0454 (.2712)	.1149 (.2642)	.8658 (.7083)	1.3039 (1.752)	-.1063 (1.777)	.0090 (.1275)	.0530 (.2531)	.1213 (.2464)	2.2271 (1.669)	-.1145 (1.758)	
7	.0090 (.1275)	.0530 (.2531)	.1213 (.2464)	1.0213 (.7101)	2.2271 (1.669)	-.1145 (1.758)	.0069 (.1256)	-.0616 (.2422)	.0142 (.2360)	1.7970 (1.558)	-.0532 (1.618)	
8	.0114 (.1250)	-.0784 (.2227)	-.0270 (.2170)	.8713 (.7147)	1.1993 (1.492)	-.5668 (1.538)	-.0249 (.1256)	-.1211 (.2090)	-.0818 (.2035)	.9092 (1.372)	-.7059 (1.399)	
9	-.0249 (.1256)	-.1211 (.2090)	-.0818 (.2035)	.6877 (.7112)	1.3018 (1.286)	.1601 (1.298)	-.0338 (.1270)	-.2001 (.1947)	-.1923 (.1894)	1.3018 (1.286)	.7873 (1.198)	
10	-.0338 (.1270)	-.2001 (.1947)	-.1923 (.1894)	.5065 (.7131)	.7873 (1.198)	-.0818 (1.193)						

Note: The standard error of each coefficient is shown in parentheses.

<sup>†</sup>  $p = .10$ , <sup>\*\*</sup>  $p = .01$ .

None of the coefficients in Columns 1 through 3 of Table 4 are significant at the .05 level. These findings indicate that inflation rates are no different in new democracies than in mature democracies. The New Democracy<sub>1</sub> and New Democracy<sub>2</sub> coefficients in Column 4 are both positive and at least marginally significant, implying that 1- and 2-year-old democracies have higher growth rates than older democracies. However, a cut-off point of 2 years seems much too low to distinguish meaningfully between new and mature democracies; therefore, I am inclined to discount this finding. Moreover, the corresponding coefficients in Column 5 are not significant, implying that this finding is not robust. None of the other coefficients in Columns 4 through 6 are significant. Thus, economic growth rates also seem to be no different in new democracies than in mature democracies. We can therefore conclude from Table 4 that macroeconomic performance in new democracies is not significantly different from that in mature democracies.

## CONCLUSIONS

The foregoing analysis found that democracy produces higher inflation and slower economic growth in underdeveloped countries. More-democratic regimes appear to have higher inflation than less-democratic regimes mainly because they have larger fiscal deficits and faster wage growth; this higher inflation, in turn, marginally reduces their growth rates. None of the other potential mediating variables I examined (see Figures 1a and 1b) affect the relationship between democracy and inflation or growth. I also found that new democracies do not have significantly different inflation or growth rates than older, mature democracies. My main findings held both in a large sample and in a smaller sample that I examined more intensively, so they are very robust. These findings differ from the generally inconclusive findings of previous studies because they are based on a panel research design that provides a more precise framework for evaluating regime performance.

My findings have important implications for the theoretical debates reviewed above. Most important, they provide empirical support for the pessimistic argument that democracy undermines macroeconomic performance because of the adverse effects of unrestrained political participation. This does not necessarily invalidate the optimistic argument emphasizing the predatory character of nondemocratic leaders and the beneficial effects of political competition, representative institutions, democratic legitimation, and political freedom. Rather, these findings imply that the adverse effects of unrestrained participation substantially *outweigh* these beneficial effects, producing poorer *net* macroeconomic performance. My finding that this

poorer performance seems to be due mainly to larger fiscal deficits and faster wage growth in more-democratic regimes reinforces this conclusion because demands for higher net public spending and wage increases are perhaps the most common economic outcome of increased political participation. The finding that macroeconomic performance does not differ significantly in new and mature democracies suggests that any fragility that may exist in new democracies is offset by the widespread support and political space new democratic leaders enjoy.

My findings also have important practical implications. They imply that the dramatic spread of democracy that has occurred in underdeveloped countries in recent years—and the dogged efforts of policy makers and political activists to promote democracy—has generally undermined macroeconomic conditions in the affected countries. Moreover, because macroeconomic performance is no better in mature democracies than in new democracies, these conditions are not likely to improve in the future unless corrective steps are taken. All good things do not go together, as many scholars and public officials seem to assume.

If this inferior macroeconomic performance is caused by unrestrained political participation and the resulting demands placed on state officials, then these findings highlight the importance of structuring democratic institutions in ways that will enhance state officials' autonomy from these demands. My analysis of the factors that mediate regime performance has interesting implications along these lines. Because higher inflation and thus slower growth in more-democratic regimes seem to be due partly to larger fiscal deficits, institutional measures that enhance the autonomy of fiscal policy should improve democratic performance. Such measures might include balanced-budget requirements, politically insulated budget agencies, line-item veto power, and other devices that weaken legislative and societal input into fiscal policy. Similarly, if faster wage growth is partly responsible, civil service reform, privatization, changes in labor regulations, and corporatist arrangements could enhance democratic performance. By contrast, enhancing the autonomy of monetary and trade policy, reducing political unrest, and promoting investment do not seem to be especially urgent priorities because the corresponding mediating variables were not significant in my analysis.

Thus, whereas democratization in underdeveloped countries seems to have occurred at the expense of macroeconomic performance in recent years, there is no reason to think this is inevitable. Scholars and practitioners who focus on democracy should be concerned not only with how democratic institutions can be established and consolidated but also with how these institutions perform, especially in economic affairs. The livelihoods of the societies

involved—and perhaps even the viability of the democratic regimes themselves—may hang in the balance.

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