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Ethnicity and Leadership Succession in Africa

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This analysis uses cross-national data to test hypotheses from the literature on ethnicity in African politics. The first hypothesis is that, all else being equal, the larger the population share of the leader's ethnic group, the lower the probability that the leader loses power. We reject this hypothesis and show that leaders from larger ethnic groups run relatively greater risks of losing power than those from smaller ethnic groups. Nor do leaders from smaller ethnic groups resort more to nonconstitutional means of leadership change. We also show that African leaders are disproportionately likely to be replaced by leaders from their own ethnic group.

We are interested in exploring the relationship of ethnicity in Africa to leadership succession. We formulate and systematically test hypotheses about ethnicity effects on changes in leadership. We are aware that leadership change is not the same thing as regime change or regime instability. We focus on changes in individual leaders over time. We have no illusion that we are measuring executive reigns which often have been understood as types of government or collective leaderships.

Leadership changes, however, are relatively unambiguous and easy to monitor. Thus, they lend themselves to testable propositions. Moreover, the analysis of the impact of ethnic origin on leadership change should be interesting in and of itself. Studies of leadership and of ethnicity have usually implied, if not stated, that the ethnicity of individual leaders matters for achieving and maintaining power without being very systematic in examining the evidence for the claims or the causal mechanisms governing the relationships (Coleman and Rosberg, 1966; Decalo, 1976; Enloe, 1980; Diamond, Linz, and Lipset, 1988).

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It has been argued, for example, that a leader from a relatively large ethnic group or a particularly powerful ethnic group would have an advantage in achieving and maintaining power and one from a small group would be disadvantaged (Sandbrook, 1985:101). It could also be asserted that leaders from small ethnic groups such as Nyerere in Tanzania or Mobutu in Zaire or Gowon in Nigeria had advantages precisely because they did not come from large or dominant groups and were thus nonthreatening or could act as "balancers" (Young, 1976:470–471). It has been suggested also that a leader like Momoh in Sierra Leone had an advantage in coming from a mixed ethnic background and was, in a sense, "transtribal." (For various arguments see Jackson and Rosberg, 1982; Hughes and May, 1988.)

These kinds of arguments sometimes have been generalized to arguments about whether or not dispersed versus concentrated ethnic groups are more or less likely to lead to political stability. (For a review see Horowitz, 1985:3–54.) Our study is not one that examines directly the relationship between ethnicity and political conflict. Much less does it investigate all the issues that have engaged observers of ethnicity in Africa and elsewhere: group demands; relative statuses and incomes; the numbers of groups in a society; the group definitions; formulas for representation; the claims by groups on members; whether membership in groups is overlapping or exclusive; the degree of autonomy of groups from the state. (Works on these subjects are numerous indeed. See Bell and Freeman, 1974; Rothchild and Olorunsola, 1983; Horowitz, 1985; Esman and Rabinovich, 1988; Montville, 1990; Survival, 1993.)

Nonetheless, if ethnicity is so important for structuring political conflict, we should see an "ethnicity effect" on changes of leadership. After all, observers of African politics have argued that factionalism and political conflict tend to be rooted in kinship, clan, and ethnic relationships. Analyses range from the nuanced study of cultural pluralism with sensitivity to the complex interplay of social, economic, cultural, and demographic changes with shifting ethnic identities (Young, 1976) to simpler and often misleading assertions about the importance of tribalism in Africa. While some have argued that ethnicity is used as a mask for the class interests of elites and represents the false consciousness of masses of people, often manipulated by colonialists or neocolonialists (Rodney, 1972; Amin, 1973), most policy makers and academic analysts believe that interests in Africa are mediated through ethnic prisms.

True, Marxists and those working from "dependency" modes of analysis have stressed the importance of class alignments for the nature of political struggles in Africa as have non-Marxist observers (Melson and Wolpe, 1971; Markovitz, 1987). For such analysts, communal identities are seen as a mask for class power and "tribal movements may be created and instigated to action by new men of power in furtherance of their own special interests" (Sklar, 1967:6). For many observers, communal identities are frequently seen as both cause and effect of political strategies (Jackson and Rosberg, 1982). Bates expresses what is perhaps a leading view when he states: "Given that most constituencies tend to be dominated by members of one ethnic group . . . an ethnic appeal is an attractive and efficacious weapon in the competition for office" (Bates, 1983:161).

Bates was referring to electoral competition. Rarely, however, have votes determined political outcomes in Africa beyond a first vote at independence. The importance of ethnicity as a way of organizing resources in nonelectoral systems has been noted also by students of military regimes (Decalo, 1976). In the most sophisticated explanations of ethnicity as a resource for political elites, it is not that some presumed atavistic affinity for blood relations is suggested as a critical factor

but rather that the rationality of ethnic strategies is emphasized for both political entrepreneurs and broader publics in the context of risky environments (Rabushka and Shepsle, 1972).

If ethnicity is considered to be so important for determining loyalties of individuals and groups and if it is understood to be important in mobilizing resources for and commitments to leaders, we should expect to see that the ethnic identifications of leaders is consequential for leadership duration. It is rather hard to believe that if ethnicity matters so much for political outcomes such as instability and conflict we should not be seeing impacts on leadership change. This should be especially true in Africa where regimes are weakly institutionalized and personal rule is so important. Leaders have been identified with political systems (Apter, 1963; Jackson and Rosberg, 1982). Styles and content of leadership have been seen to be unimportant for economic development, social harmony, and political processes (Herbst, 1993:32–33).

Of course, political outcomes should be measured directly. That is, examining leadership change does not directly tell us about the relationship that holds between ethnicity and political instability or political conflict because these things cannot be captured by leadership change alone. But others will have to construct good measures of conflict and instability and then acquire data to see how ethnicity affects them. Here, we, at best, enter the debate on ethnicity and instability indirectly by trying to understand the impact of ethnicity on leadership durability. We fully grant that a leader may stay in power for a long time, as Mobutu has in Zaire, while levels of violence may be high and significant instability may exist. We also grant that leaders may turn over rapidly as they do in Western European parliamentary systems but a regime may be stable.

Our argument is that the centrality of individual leadership in Africa, a centrality that has been argued by many observers of Africa since the first wave of independent states (Apter, 1963; Huntington, 1968; Cartwright, 1983), together with the postulated centrality of ethnicity in African politics, should allow us both to observe relationships between ethnicity and leadership duration and to suggest that these relationships ought to be significant for broader relationships that we are here not able to measure directly.

Of course, we may not have a good purchase on ethnicity itself in Africa. What ethnicity is and how to measure it are very significant if not charged issues in the study of African politics. We return to this crucial concern below. Here we want to state our first hypothesis and to suggest an argument for the presumption that ethnicity has an effect on leadership change, an effect we can directly measure.

Our first hypothesis is that leaders from majority ethnic groups are more likely to stay in power than comparable leaders from minority ethnic groups. This stems from our belief that in the African context of strong ethnic attachments and patronage-based politics, leaders' ethnic identities are likely to constitute a resource to be used for power consolidation and maintenance. We want to test whether leaders from relatively large ethnic groups are more likely to survive in power longer, *ceteris paribus*, than other leaders.

While few scholars systematically test for the ways that ethnicity determines political outcomes, a number have theorized about the relationship between ethnic diversity and regime stability. The findings from this literature are inconsistent and contradictory. Rabushka and Shepsle (1972) and Jenkins and Kposowa (1990) argue that ethnic diversity is a destabilizing force, but for different reasons. Rabushka and Shepsle argue that cultural pluralism structures political competition among groups. They see ethnic mobilization as a mass social phenomenon that is likely in plural societies and that threatens the stability of regimes. Jenkins

and Kposowa suggest, on the other hand, that mass-based ethnic mobilization brought about by cultural pluralism only rarely brings about regime instability. They argue that political instability is likely in plural political systems because elites in these systems are likelier to compete over political spoils and patronage, and that this competition is structured ethnically.

Jackman (1978) argues that ethnic diversity is actually a stabilizing factor. He suggests that "by providing a system of countervailing power centers, cultural pluralism may contribute to political stability" (Jackman, 1978:1263). In his study of African coups, Jackman finds evidence that the presence of "dominant" ethnic groups actually increases political instability. Bienen and van de Walle (1989) tentatively suggest that the national level of ethnic conflict in Africa has no impact on leader longevity. They focus on leaders' durability, not on regime stability or coups (Bienen and van de Walle, 1989, 1991). This is an important distinction: the longevity of leaders and regimes can coexist with considerable political instability.

These inconsistent findings suggest that in order to make headway on the general issue of ethnic conflict and political stability, it is useful to ask whether or not ethnicity matters to the careers of individual politicians, particularly as they struggle for power. We know that African political parties in the immediate post-independence years were often ethnically based parties (see Collier, 1982). There is also much anecdotal evidence that individual African leaders have staked their fortunes on support from their own ethnic group. But there is little systematic evidence that ethnic identity is a crucial determinant of a leader's duration in power. In this article we test whether or not leaders from large ethnic groups remain in power longer, on average, than other leaders.

Alternative hypotheses can be devised for investigating the significance of ethnicity as a political resource. The argument can be made that often there is no real advantage for a leader who belongs to a large ethnic group because smaller groups are more cohesive and easier to mobilize, while larger groups are more likely to be divided by internal strife. Indeed, our knowledge of certain countries in our sample provides us with evidence of such dynamics. In Mauritania, for example, it appears that the Moors (82 percent of the national population) are riven with a clan-based factionalism that is much less strong in the smaller and more unified Tukulor (13 percent of the population). The Yoruba in Nigeria have been divided by loyalties to cities or regions of origin, and by religion. That large size *per se* makes for less cohesion may be true or not in many countries, but surely ethnic groups of roughly similar percentages within an African country vary greatly with respect to cohesiveness of political institutions and with respect to their claims on individuals' loyalties.

African leaders who are military men may be able to overcome the liabilities of minority ethnic status better than civilians because they can employ coercion more easily than civilians can in order to stay in power. African militaries, especially officer corps, have been recruited in many countries disproportionately from ethnic minorities (Lee, 1969; Mazrui, 1975; Enloe, 1980).

A second hypothesis serves to address this issue. Perhaps ethnic minorities use military rule, and more generally nonconstitutional rule, as a shield against ethnic majorities. This would result from minorities' apprehension about their fate should executive power fall into the hands of "outsiders." This greater apprehension would lead to greater willingness to subvert constitutional procedures to remain in power. Thus we hypothesize that ethnic minority rulers are more likely to lose power nonconstitutionally than their counterparts from larger ethnic groups. In calculating the probability of nonconstitutional exit, care must be taken to distinguish between the success with which minority members cling to power and the likelihood that when they lose power they do so nonconstitutionally.

To focus on the means by which power is lost, rather than the likelihood of exit, we test this second hypothesis using the set of exiting leaders in our sample. We expect nonconstitutional exit to be more common among exiting rulers with relatively small ethnic population shares.

Our discussion further refines this hypothesis by noting the importance of the broad ethnic context. In nations with one dominant ethnic group, we may expect minorities to perceive a greater threat from that group than would minorities in a country that is more ethnically diffuse. We develop measures of ethnic minority status that account for the relationship of minority status with the level of ethnic diffusion in a country.

Our third hypothesis also focuses on the salience of ethnic identity during the transition between leaders. While we might expect that individual leaders will strive harder to remain in power when the ethnic stakes are high, we hypothesize that leaders are disproportionately likely to be replaced by members of their own ethnic group. This third hypothesis can be tested by considering the impact of the size of a leader's ethnic group on the probability that when leadership change occurs, executive authority passes to another member of the leader's own ethnic cohort.

We thus are testing for an elevated probability of intra-ethnic leadership succession. One might think of this as a kind of "incumbency advantage" for ethnic groups. In keeping with the general idea of ethnic polarization and mistrust, we expect that members of an ethnic group will unite in order to preserve political power in the hands of a member of their own group. This suggests political alignment along ethnic lines so that intra-ethnic leadership changes would take on some of the dimensions of intra-party leadership transitions in liberal democracies. Although the leader steps down, he is replaced by another member of his political support group.

Our third hypothesis is appropriately compared with the alternative view that ethnicity is irrelevant to leadership change. In this view, a leader's ethnicity has as much political impact as his blood type or shoe size. If this hypothesis is true, the size of a leader's ethnic group affects the probability of intra-ethnic leadership transition as a matter of accounting: leaders from large ethnic groups are more likely to be replaced by successors from the same ethnic group simply because there are more people from that ethnic group. In this view of "ethnicity as blood-type," the probability of intra-ethnic leadership succession is strictly proportional to the size of the exiting leader's ethnic group.

Measurement Issues and the Politics of Ethnicity

We are well aware of the complexities in taking account of the multi-layered bases of group identification, including language, lineage, clan, territory, religion, and common cultural heritage. This complexity makes the boundaries among African ethnic groups difficult to draw in theory and in practice (Morrison, Mitchell, and Paden, 1989:25–37). Indeed, the boundaries may shift as new issue areas rise and fall in salience (Lemarchand, 1970; Melson and Wolpe, 1971; Bienen, 1985:64–115). Even when we make boundary distinctions, we may not be certain that the groups we demarcate share common values and preferences (Morrison et al., 1989:295–314). The very difficulties in measuring ethnic affiliations may account for the widespread use of ethnicity as an explanatory variable for political outcomes in Africa.

We largely chose to accept the classifications used by Morrison and his colleagues. Their operationalization of ethnic pluralism seems carefully drawn. Moreover, they provide ethnic affiliations for most African leaders since the inde-

pendence of African countries, and they provide the distribution of populations by ethnic group.[1]

We also used some specific ethnic classifications that Morrison did not demarcate because they were under 5 percent of the population. When we knew that a leader was affiliated with a small group that was under 5 percent of the population, we specified the group. Finally, in a number of countries, we differ from the ethnic label Morrison attaches to a leader. For example, in Chad, Morrison has designated Hissan Habre as an Arab, whereas we designate him as Tubu which would put him in the "Saharan Cluster."[2]

It is also possible that a leader's own "ethnicity" is more complicated than we have allowed. We know that leaders may have multiple affiliations and identities. They may have married outside their original ethnic-language or cultural group, or they may be the children of parents who themselves came from different communities. For example, Thomas Sankara in Burkina Faso was said to be the son of a Mossi chief and a Fulani woman. Macias Nguema in Equatorial Guinea was said to be a Fang from the Mongomo clan but his father was said to be Gabonese. Mengistu Haile Mariam in Ethiopia was said to be the son of a woman descended from Galla (Oromo) slaves and yet he has been identified as an Amhara.

Often, it is not easy to code for a leader's ethnicity just as it is difficult to code for the structure of ethnicity in the country. Again, we usually accepted Morrison's identification of a leader's ethnicity and chose not to complicate that identification by adding in multiple ethnic or religious affiliations. Moreover, we did not have good information on all leaders with respect to multiple ethnic or religious affiliations.

To test hypotheses about the importance of ethnicity to leadership transition, we have assembled data on leaders, on their ethnic affiliations, and on the ethnic mix of the countries they rule.

Our biographical data emerge from Bienen and van de Walle (1991). Of particular interest to us are the entry and exit dates of leaders. These we use to match each annual observation with the leader who ruled a country at the beginning of the year. The leadership dataset we use (Bienen and van de Walle, 1991) reports the leader's order, the calendar year the leader came to power, and the integer number of years the leader was in power. The Bienen and van de Walle dataset does not include the exact dates leaders gained or lost power, so that imputing intervals of less than one year is not an option. In most cases, the matching process is straightforward. For example, Gambia's Jawara assumed power in 1965 and still ruled Gambia in 1987, the end of our sample period. Thus, we code him as ruler for 1966, 1967, . . . and so on through 1987. Each leader, each year, is an obser-

[1]We supplemented Morrison's country population breakdowns with data from Bruk and Apenchenko (1964) for small island countries such as Mauritius which do not appear in Morrison's book. Morrison et al. use various sources for population distributions by ethnic groups within a country. For Senegal, these were 1964 and 1974 sources, among others, while for Benin the source was published in 1964. There are few reliable censuses in Africa. Thus we are forced to hold constant the proportions among ethnic groups in a given country over the years our sample covers. It may be that those proportions in fact change over time. This obviously would be the case if ethnic groups grow at differential rates or if there is significant in- or out-country migration by an ethnic group. However, there is no reason to believe that any bias is created by our decision to hold constant the relative size of ethnic groups within a country.

[2]While Morrison does not distinguish Somali leaders by clan, we do. For Somalia, Morrison subdivides Somalis into Samaale and Sab dialect groups. These groups are also broken down into clans, but no numbers are given for clan size and all of Somalia's leaders are identified as Somalis and not by clan. Prior to 1991, Africanists might well have thought that in Somalia clan was the most important ethnic distinction. But in the bloodletting that occurred in 1991–1992, subclan differentiation became the basis for factional fighting. We could get rough clan sizes, but not subclan sizes. We coded Somali leaders by clan membership. In Mauritania, where clan membership is also important, while we had some information on leaders' clan membership we had no good data on clan size. Thus we did not use clan distinctions but used the much rougher distinction between Moor and Tukulor-Fulani given in Morrison.

vation. We do not code Jawara as ruler for 1965 because he did not hold power as that year began.

A somewhat more ambiguous case is that of Guinea in 1984. Touré, who came to power in 1958, was succeeded by Beauvogui in 1984. Beauvogui was himself replaced by Conte during the same year. Thus, we code Touré as the 1984 leader for Guinea, while Conte is the 1985 leader. This omits the short rule of Beauvogui. Alternatively, we could have coded 1984 three times, once for each leader who held power that year. However, this would accord artificially high weight to short reigns in our sample and it would generate biased estimates of the probability of leadership transition. Another alternative would be to code the leader holding power the longest as the ruler for the entire year. However, if it turned out that Conte had held power longest in 1984, this would lead us to treat 1984 as a year in which the leader did not lose power, a serious misrepresentation of the data. Thus, mindful of the short-term leaders who "fall through the cracks" in this approach, we adopt our rule of matching country level data with the first ruler to hold power for that year. This generates an unambiguous coding rule and always records a political transition for years in which one occurred.

Another variable incorporated in our analysis is an indicator for the leader's means of gaining power. Those who come to power by nonconstitutional means are treated throughout their rule as nonconstitutional. In our dataset, no legitimizing plebiscite or democratic reform program will wash away the "original sin" of nonconstitutional entry. This is not meant to assert that all nonconstitutional rulers are equally objectionable, nor that the constitutional ones are a homogeneously benign collection of public servants. We know that many constitutional regimes in Africa, and elsewhere, have been repressive and authoritarian. Rather, we use this variable because it can be coded reliably and with relatively little ambiguity while still conveying important information about a regime's legitimacy. Other options are highly sensitive to the political outlook and subjective judgments of those assigning codes. In Africa, we are also aware that nonconstitutional rule is highly correlated with military rule.

We also keep track of "political exits," which we define as all exits except those in which the leader died of patently nonpolitical causes. "Political exits" include assassinations, coups, electoral defeats, and retirements, voluntary and otherwise. We also keep track of "nonconstitutional" exits, defined as assassinations and coups. Data are also available on leaders' ages and military backgrounds and the number of leaders who preceded them in power, though these variables do not play an important role in our analysis.

In light of findings suggesting a role for economic variables in leadership transition (Londregan and Poole, 1990, 1992), we have also drawn on economic data. Our economic variables come from the most recent version of the Penn World Tables (Summers and Heston, 1991). We include information on growth, the level of income, and international trade. Our growth variable is the proportional change in real per capita GDP between the previous year and the current one, both measured in 1985 U.S. dollars. Our variable for the income level is the previous year's per capita income. This is also measured in 1985 U.S. dollars. In other research, the natural logarithm of lagged per capita income has been found to perform better as a predictor of current growth, and to be a better predictor of coups and nonconstitutional rule (Londregan and Poole, 1992). Thus, we use the natural log of lagged income rather than the level itself.

We construct a measure we refer to as "openness," defined by the sum of imports and exports divided by GDP, in order to calibrate the impact of international trade. This value ranges from a theoretical minimum of 0 for a country that engages in no trade, to a value of 2 for a country that exports everything it produces and that

imports an equal value of goods and services. Higher values of the openness measure correspond to countries whose economies are more responsive to fluctuations in the international business cycle.

To measure the importance of fluctuations in the international economy, we construct a world business cycle variable based on the GDP-weighted average growth rate for the G7 countries.[3] For each country this growth rate is weighted by the country's openness to international trade. The G7 income growth rates are calculated using Summers and Heston's real per capita GDP measures.

Merging these variables results in a dataset of 836 observations, each matching a country/year of political and economic data with the relevant leader. Our sample period runs from 1962 or the date of independence, if it is after 1962, until 1987. Our data encompass 39 separate countries. The 1962 date was chosen to take advantage of economic data that report a country's involvement in international trade, as measured by the value of exports, plus the value of imports, both divided by GDP. Because of the late advent of independence for African states, little data were lost by discarding pre-1962 observations for our other variables. Table 1 lists the countries we used in our analysis and the years for which we have data for each country. For leaders who came to power prior to 1962, like Kwame Nkrumah or Sekou Touré, we still pick up their coming to power constitutionally and their time in power.

The set of variables likely to play an important role in leadership transition includes some that are not readily measured. For example, we believe that differences among ethnic groups' control over resources are important, yet we lack systematic measures of these differences for the totality of our sample. Regional distribution of resources, if they could be quantified, might provide a measure of some ethnic groups' control of resources in some, but not all, countries. Some states of the Nigerian federation are homogeneous by ethnic language group; others are not. In other countries, a region, such as Kenya's Rift Valley, may be very mixed by ethnic group.

Likewise, details of the culture and history of our countries may be thought to play an important role in determining the pace of leadership transition. These details might include features of the pre-independence period, such as traditional inter-ethnic rivalries or alliances between the colonizing power and various ethnic groups. We know very well that the colonial regimes favored some ethnic groups at the expense of others via recruitment to armed forces and civilian bureaucracies. New transport arteries, the development of settler towns, or the establishment of new crops all changed ethnic relationships, sometimes leading to status and power reversals.

The preceding discussion suggests that other variables, for which systematic data are unavailable, such as the geographic distribution of ethnic groups, may shape ethnic politics in important ways. For example, it would be very useful to know whether ethnic groups coexist in the same cities and towns; or whether instead they are geographically segregated. Lacking systematic data on these other variables poses a serious problem because estimating a model of exit that excludes these variables raises the possibility of "omitted variables bias." This problem is by no means unique to the African context: a researcher can almost always think of a list of variables that it would be useful to include in a political model, if only the data were available. But we cannot provide systematic data to take account of these factors across all countries and we doubt whether anyone else can, either.

Similarly, the reactions of ethnic groups to leadership changes may be affected, not just by the ethnicity of a particular leader but by the strength of ethnic

[3]The G7 countries are Canada, France, Germany, Italy, Japan, the U.K., and the U.S.

TABLE 1. Composition of the Sample

Country	*First Year*	*Last Year*
Benin	1962	1987
Botswana	1967	1986
Burkina Faso	1967	1987
Burundi	1963	1987
Cameroon	1967	1987
Cape Verde Islands	1976	1985
Central African Republic	1962	1987
Chad	1962	1985
Congo	1962	1986
Ethiopia	1962	1986
Gabon	1962	1985
Gambia	1966	1985
Ghana	1962	1987
Guinea-Bissau	1975	1987
Côte d'Ivoire	1962	1987
Kenya	1964	1987
Lesotho	1967	1985
Liberia	1962	1986
Madagascar	1962	1987
Malawi	1965	1987
Mali	1969	1987
Mauritania	1962	1987
Mauritius	1969	1987
Mozambique	1982	1987
Niger	1962	1987
Nigeria	1962	1987
Rwanda	1963	1987
Senegal	1962	1987
Seychelles	1978	1986
Sierra Leone	1966	1987
Somalia	1962	1987
Sudan	1962	1987
Swaziland	1969	1985
Tanzania	1962	1987
Togo	1962	1987
Uganda	1963	1985
Zaire	1966	1987
Zambia	1965	1987
Zimbabwe	1981	1987

coalitions that might be represented by the ethnic composition of governments, by the ethnic backgrounds of all ministers or of key ministerial portfolios. More likely, it would be necessary to have a good breakdown of the ethnicity of senior military and police officers and of the ethnic background of the permanent secretaries in the civil service. While such data may be available for some countries, they are not available for many, and certainly not available year by year.

We grant that there may well be omitted variables in our analysis. Analyses can be modified and improved when others have specified, measured, and tested variables that we may have omitted. Still, so much of the literature on Africa argues for the importance of ethnicity and of the ethnic background of leaders that we

should see leaders from majority ethnic groups demonstrating lower risks of falling from power than those who are from minority ethnic groups. True, it is rare that systematic statements, much less tests, are made that leaders from larger ethnic groups should be more likely to stay in power longer than those from smaller ones. Yet a significant literature in African political analysis suggests the advantages of majority ethnic status for leaders staying in power either directly or by implication either through discussion of individual cases or through deduction and generalizations (Bates, 1983:165; Sandbrook, 1985:101).

For some of our most important omitted variables all (or almost all) of the sample variance is between-country variation. This means that by using fixed-effect estimators, we can protect our parameter estimates of the importance of ethnicity from omitted variables bias.[4] Accordingly, fixed-effect estimators play an important role in the analysis of the following sections.

Ethnic Group Size in Context: A First Look at the Data

Some descriptive statistics for our data appear in Tables 2 and 3. Table 2 reports means, standard deviations, medians, and extreme values for each variable. The last column, labeled "% Within," lists the percentage of the total variance of each variable accounted for by within-country variance. The remainder is between-country variation. Table 3 reports correlations among our variables.

A quick glance at Table 2 reveals that for the countries in our sample the pace of leadership turnover is very slow. The average rate of leadership turnover in our sample is 8.01% per year, corresponding to an average reign of about 12 years. The probability of losing power is much lower for the leaders in our sample than for their counterparts in Europe and in the Western Hemisphere. (See Bienen and van de Walle, 1991.)

The ethnic share for leaders in our sample ranges from a minimum of 1% for President Alley of Benin to a maximum of 99% for President Jonathan of Lesotho. The average leader in our dataset came from an ethnic group with just over one-third (36.2%) of the national population. Contrary to the belief that leaders from majority ethnic groups have a firmer grasp on the reins of power, Table 3 reports the insignificant correlation in our sample between leaders' ethnic shares and their exit risk ($\rho = -0.049$, $t = -1.374$). This insignificant correlation coefficient may be an artifact of our not having corrected for the influence of intervening

TABLE 2. Descriptive Statistics

Variable	*Mean*	*Std. Dev.*	*Min.*	*Median*	*Maximum*	*% Within*
Annual growth rate	0.01	0.07	−0.40	0.01	0.44	92.27
ln(income)	6.76	0.56	5.40	6.79	8.40	10.28
Openness to trade	0.34	0.22	0.04	0.28	1.42	28.33
Leader's ethnic share	0.36	0.27	0.01	0.29	0.99	10.21
ESD_1	0.59	0.30	0.02	0.63	0.99	27.42
ESD_2	0.29	0.29	0.00	0.18	0.99	8.43
Political exit	0.08	0.27	0.00	0.00	1.00	91.94
Nonconstitutional exit	0.07	0.25	0.00	0.00	1.00	91.63
Nonconstitutional entrant	0.40	0.49	0.00	0.00	1.00	40.82
Inter-ethnic leadership transition	0.05	0.21	0.00	0.00	1.00	93.40

[4]Discussion of fixed-effects models and their usefulness in reducing omitted variables bias can be found in Chamberlain (1984) and Hsiao (1986).

TABLE 3. Sample Correlations

	Log of Lagged Income	*Openness to Trade*	*Ethnic Herf. Index*	*Leader's Ethnic Share*	*ESD_1*	*ESD_2*	*Political Exit*
Income growth rate	−0.06	−0.01	−0.06	0.10	0.06	0.11	−0.14
	(−1.64)[a]	(−0.19)	(−1.53)	(2.99)	(1.67)	(3.19)	(−3.87)
Log of lagged income		0.37	−0.20	0.26	0.22	0.27	0.00[b]
		(13.59)	(−5.21)	(8.52)	(7.10)	(8.99)	(−0.12)
Openness to trade			−0.02	0.11	0.06	0.14	−0.08
			(−0.44)	(3.34)	(1.82)	(4.31)	(−2.27)
Ethnic Herfindahl index				−0.72	−0.43	−0.70	0.02
				(−15.76)	(−10.44)	(−15.47)	(0.45)
Leader's ethnic share					0.89	0.99	−0.05
					(78.70)	(372.52)	(−1.37)
ESD_1						0.88	−0.03
						(71.43)	(−0.71)
ESD_2							−0.05
							(−1.33)

[a]T–ratios in parentheses.

[b]The estimated correlation between the log of lagged real per capita income and our political exit variable is −0.004, which is 0.00 to two decimal places.

variables, such as the rate of economic growth, that may mediate the effects of ethnicity. The insignificant correlation may also stem from our approach to measuring the size of the leader's ethnic group.

We need to be able to take a nuanced view of size variables by constructing a measure of the relative size of the leader's ethnic group. For example, a Yoruba leader in Nigeria, an Ndebele leader in Zimbabwe, and a Teke leader in the Congo each come from ethnic groups with population shares of about 20%. However, the Yoruba leader in Nigeria, as a member of that country's second largest ethnic group, draws on a stronger ethnic base than the other two do. The ethnic mix of Nigeria is diffuse. There are two other ethnic groups of roughly comparable size to the Yoruba: the Ibo (17%) and the Hausa Fulani (29%), along with many small ethnic groups. Contrast this with the Congo, where the population share of the Teke is decidedly smaller than that of the Kongo, who account for 47% of the population, or with Zimbabwe, where the 20% share of the Ndebeles is dwarfed by the 80% share for the Shona. We contend that an ethnic group constitutes a stronger base of political power when the ethnic composition of the remainder of the population is relatively diffuse than when it is concentrated in one or a few ethnic groups.

Thus we create a measure which adjusts the ethnic share of the leader's group for the degree of diffusion among the country's ethnic groups. We call this measure "ESD_1" (ethnic size dominance). This measure accounts for both size and dispersion of ethnic groups, and is derived from what is called a Herfindahl index. (See Herfindahl, 1950; Stigler, 1968; Hart, 1971.) Our ESD_1 measure for leader L is defined as follows:

$$ESD_1 = \frac{S_L}{\sqrt{S_1^2 + S_2^2 + \ldots + S_N^2}}$$

Where there are N substantial or significant ethnic groups, S_L is the population share of the leader's ethnic group, and S_1, $i \in \{1, 2, \ldots, N\}$, is the share of ethnic

group i. We can thus calculate a value of ESD_1 for every leader in our sample. The ESD_1 variable must take on a value between 0 and 1. The closer ESD_1 is to 1 the greater the relative share of the ethnic group. In addition, this ethnic size dominance index has the advantage of being sensitive to the number of ethnic groups in a given country. Thus, the more diffuse a country's ethnic structure, the larger the value it attributes to a fixed population share. To return to our example involving Nigeria and the Congo, we calculate a value of .484 for the Yoruba, but a value of only .371 for the Teke.

The difference between these two scores is not that large. Yet it may be that the relative size of the Yoruba group, which generates a value of ESD_1 about a third larger than that for the Tekes, confers more than a third more ethnically based political power. A measure that accords disproportionately more weight to membership in large ethnic groups is ESD_2. For a leader drawn from group L, our second index of ethnic size dominance, ESD_2, is defined as:

$$ESD_2 = \frac{S_L^2}{\sqrt{S_1^2 + S_2^2 + \ldots + S_N^2}}$$

When we substitute our more contextually sensitive measures of ethnic size, ESD_1 and ESD_2, the results are no more favorable to the hypothesis that leaders from large ethnic groups are more deeply entrenched in power. In neither case is the correlation between our ethnic measure and the exit rate statistically significant. For ESD_1 the correlation is only -0.03 ($t = -0.71$), while for ESD_2 it is -0.05 ($t = -1.33$).

Our first look at the data suggests little connection between leader's exit rates and the size of the leader's ethnic group. This regularity in the data remains even when we account for the ethnic context with our more nuanced ESD_1 and ESD_2 measures. If ethnic politics took place in the vacuum of a social science laboratory, we could confidently conclude on the basis of this evidence that ethnicity and leader's exit rates were unrelated. Of course, the politics of leadership succession in Africa take place within a complex and varied political environment. To put our claims about ethnicity and political exit to the test we must control for these other influences.

Fixed-Effect Estimators

A serious concern in our finding of no correlation between the leader's ethnic base and political exit is that it may confound a significant ethnicity effect with counterbalancing variation in other variables. Some of these variables, such as income growth and nonconstitutional rule, vary significantly over time within each country in our sample. We control for income growth and for whether leaders came to power by nonconstitutional means by including these variables in the statistical model of exit which we estimate in the next section. This inclusion comes at some cost in statistical degrees of freedom. Intuitively, we must "expend" some of the information contained in our data to estimate the effects of these other variables. The return on this "investment" of the information contained in the data comes in the form of our being able to disentangle the effects of ethnicity on political exit from the perhaps confounding effects of the other variables in our data.

Some variables which may affect the interaction of ethnic politics with leadership transition change relatively slowly, or are essentially predetermined by geography and colonial history. Our previous discussion touched on the potential importance

of numerous variables of this nature, such as the differences among ethnic groups' control over resources, traditional inter-ethnic rivalries, and the tendency of the former colonial bureaucracy to recruit from some ethnic groups in preference to others.

For example, it may be that countries in our sample with dominant ethnic groups were harder to control because of having inherited inter-regional inequalities in the occurrence of natural resources. In this case the measured correlation between the size of the leader's ethnic group and his exit risk would embody *two* separate effects: (1) the direct effect of ethnic size, making exit *less* likely for leaders from large ethnic groups; and (2) a spurious effect arising from countries that are hard to govern which have larger ethnic groups, making exit *appear more likely* for leaders from large ethnic groups.

Fortunately, so-called fixed-effect estimators enable us to cope with spurious effects of this sort.[5] These estimators use the country's own history to control for the historical and cultural influences on the pace of leadership transition discussed above. Thus the rule of President Gowon from the small Anga tribe, who remained in power in Nigeria for 9 years, is assessed relative to the Nigerian norm of 6 presidents in 29 years, rather than the sample average of a new president every 12 years.

The fixed-effects approach permits each country's individual historical and cultural context to have a unique effect on the exit rate. It is equivalent to including a "Nigeria" variable, a "Ghana" variable, and a variable for each other country in our analysis. This inclusion permits us to disentangle the influence of ethnic group size from the various country effects. This benefit comes at the cost of degrees of freedom: we must "expend" information to estimate the country-specific effects.

In the context of our first hypothesis about the pace of leadership transfer the cost of applying the fixed-effects estimator is particularly high. This is because of the presence of countries such as Côte d'Ivoire in our dataset. In these cases, the estimates that fit the data best attribute the lack of exits for these countries *entirely* to country-specific attributes of the cultural and historical background. Our second and third hypotheses focus on the *nature* of leadership transition when it occurs. Our countries without exits obviously provide no information on this score, regardless of the choice of statistical technique! However, for these cases as well, fixed-effect estimates still impose a cost in degrees of freedom.

To avoid the unnecessary use of fixed-effect estimators, we *test* for the importance of country-specific effects in our analysis below. Where these effects are found to be critical, as they are in the case of our first and third hypotheses, we must pay the price of accounting for them. In the case of the second hypothesis, we find below that country-specific fixed effects do not generate bias in our estimates of the effect of ethnicity on the constitutionality of political exit, and so we test that hypothesis in the context of a model without fixed effects.

Exit Risk and Ethnic Group Size

To test the hypothesis that leaders from large ethnic groups are less likely to leave power than leaders from relatively smaller ethnic groups we must place leadership changes within political and economic contexts. To do so, we construct a model of the nonethnic factors associated with leadership transitions. We adopt a logit specification because our dependent variable, which codes for whether a country's leader exits politically in a given year, is dichotomous. As a check on the robustness

[5]See, for example, Anderson and Hsiao (1982) and Chamberlain (1984).

of our findings from this method, we replicate our results using both the linear probability model and a probit specification.[6]

We include two measures of economic growth in our model: the current annual rate of growth in real per capita income and the previous year's real per capita income growth rate, calculated using the Summers and Heston data (Summers and Heston, 1991). We also include our world business cycle variable to allow for a separate role for economic fluctuations originating in the international economy. The rationale for this is that a leader's supporters might be less disaffected by poor economic performance if it corresponded to a downturn in the world business cycle than if it was attributed to the domestic economy. In countries that are heavily involved in international trade, external influences on the pace of leadership turnover may be more important. For this reason, we include a trade openness measure among our explanatory variables.

The pace of leadership turnover is much higher in Western Europe, North America, and Latin America than it is in Africa. This higher rate of leadership change may be linked to the higher incomes of those regions, as compared with sub-Saharan Africa. To account for this possibility we also include a measure of the natural log of the lagged *level* of income.

We also incorporate an indicator for a leader's means of gaining power. This variable codes "1" for nonconstitutional leaders and "0" for all other leaders. Our nonconstitutional ruler variable is closely related to a variable coding for military rulers. Because of the high collinearity between these variables, we include only one, the nonconstitutional rule measure, in our model of leadership exit.

Given our discussion above about the potential importance of the colonial heritage, and other aspects of the historical and cultural setting, we test for the presence of country-specific fixed effects. However, in a logit setting in which each country has its own intercept term, estimation is complicated by the presence of countries with no observed exits. For these countries, the best fitting statistical estimator attributes the absence of political exits for the country *entirely* to the country-specific effect. In a logit setting this implies that the maximum likelihood estimates of the intercept terms for countries with no observed exits are not defined: the likelihood function could always be increased by making the country-specific intercept more negative, hence no maximum exists. Thus fixed-effect estimators must be calculated using data from the subset of countries for which there is at least one exit.[7] Our sample includes 14 such countries, and most of these report data for only part of the sample period. Among the 27 countries for which we have more than 20 observations, only three report no leadership changes during our sample. In two of these cases, the original post-independence ruler remained in power throughout our sample: Houphouet-Boigny in Côte d'Ivoire and Kaunda in Zambia. In a third case, Zaire, we discard data from the ambiguous civil war period during which multiple leaders simultaneously laid claim to national leadership. Thus our Zairian data begin with the 1965 accession to power of Mobutu, who remained in power throughout the remaining 22 years of our sample.

We have fairly long data series for most countries for which we observe at least one exit: the shortest of these covers Guinea-Bissau, for which we have 13 annual observations. Mauritius provides us with 19 observations, and we have over 20 annual observations on the remaining 23 countries for which we observe at least one exit. While logit estimates calculated using short panels can result in serious

[6]Alt and King (1992) provide a thorough and cogent discussion of the close links between qualitative response models, such as logit, and hazard rate models of duration data.

[7]For analogous reasons, data from a country that experienced an exit in every year of the sample would also be unusable. However, this problem does not arise here.

biases (Chamberlain, 1984), for series with 12 or more observations the magnitude of these biases becomes so small that they are conventionally ignored.

In order to measure the effects of the leader's ethnic share on the probability that the leader loses power, we add the log of the leader's ethnic share and the square of the log of the leader's ethnic share. Estimates of our exit model appear in column (1) of Table 4. These estimates are calculated in conjunction with country-specific intercept terms (not reported here to save space). To assess the validity of including our country-specific intercepts we conduct a likelihood ratio test for replacing the 24 country-specific intercept terms with a constant. The test statistic is distributed as χ^2 with 23 degrees of freedom. It assumes a value of 91.79, indicating rejection at all standard significance levels.[8] This finding implies that estimates that ignore country-specific fixed effects will be biased. To avoid confounding country-specific aspects of culture and history with the effects of ethnic group size we must attribute the slow pace of leadership change in these countries (most of which report short leadership spells) entirely to country-specific effects. This is a conservative strategy which preserves the integrity of the results.

The most striking feature of our parameter estimates for this model is the sig-

TABLE 4. Ethnicity and Political Exit

	Dependent Variable: Political Exit		
Variable	*(1)*	*(2)*	*(3)*
Current growth in real per capita income	−7.69	−7.81	−7.74
	(2.19)[a]	(2.13)	(2.21)
Previous year's log of per capita income	1.25		1.23
	(1.03)		(1.03)
Previous year's growth in real per capita income	−3.78		−3.49
	(2.34)		(2.34)
Openness to trade	−0.70		−0.88
	(1.29)		(1.30)
Nonconstitutional ruler	−0.80	−0.75	−0.70
	(0.35)	(0.35)	(0.35)
World business cycle	−28.57		−28.36
	(24.93)		(25.09)
ln(leader's ethnic share)	5.70	5.41	
	(1.43)	(1.39)	
ln(leader's ethnic share)^2	1.52	1.45	
	(0.38)	(0.38)	
ln(ESD_1)			3.78
			(0.99)
ln(ESD_1)^2			1.55
			(0.43)
Log of the likelihood function[b]	−172.04	−174.88	−171.42
Sample size	836	836	836

[a]Standard errors in parentheses.
[b]Logit specification.

[8]As a further check on the importance of not excluding the country-specific intercepts, we conduct a Hausman test (Hausman, 1978) for bias in the remaining parameters of interest. This statistic is asymptotically distributed as χ^2 with 8 degrees of freedom. The realized value of the Hausman statistic of 35.04 indicates rejection of the hypothesis of no parameter bias at all standard significance levels, providing further confirmation of the importance of controlling for the country-specific fixed effects.

nificance of both terms involving the ethnic share. Both the log of the ethnic share and its square are individually significant,[9] corresponding to t-ratios of nearly 4. The likelihood ratio test statistic for the joint significance of these variables is asymptotically distributed as χ^2 with 2 degrees of freedom. The value in our sample of 19.95 is significance at all standard confidence levels.

The estimated net impact of the leader's ethnic share on the probability of political exit is statistically significant and negative for ethnic shares below 0.11.[10] For ethnic shares above 0.19 the net impact of an increase in the leader's ethnic share is positive. This corresponds to about the 30th percentile of our data, so that for most of the leaders in our sample an increase in the leader's ethnic share would

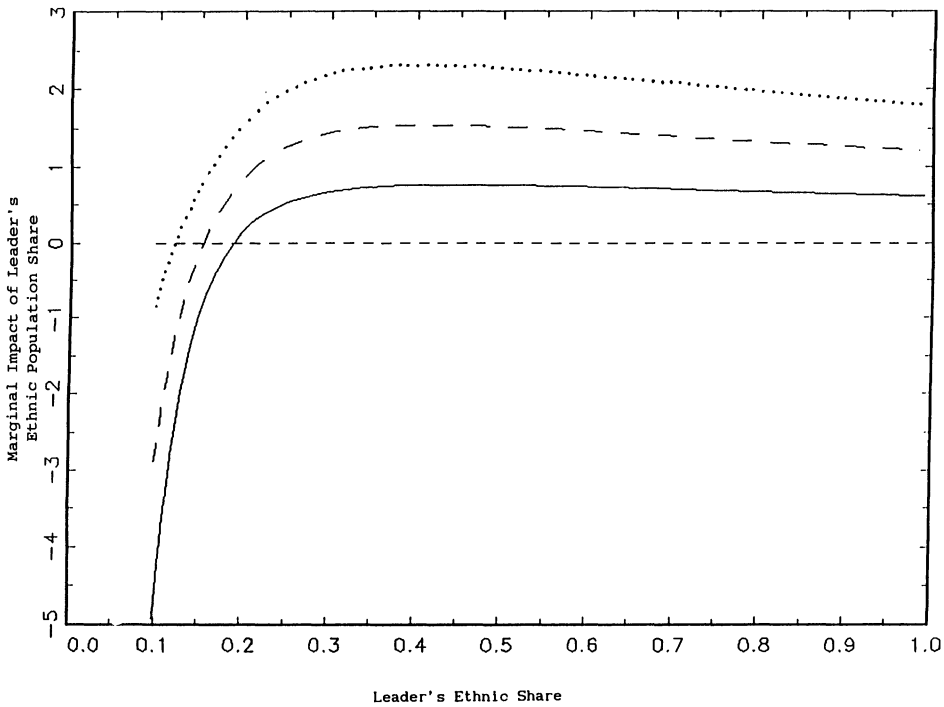

FIG. 1. Leader's ethnic share vs. the marginal impact of the population share of the leader's ethnic group on the probability of political exit.

..... upper confidence bound on the impact of the leader's ethnic share on the probability the leader loses power

— — — predicted impact of the leader's ethnic share on the probability the leader loses power

——— lower confidence bound on the impact of the leader's ethnic share on the probability the leader loses power

- - - - - - - impact = 0

[9]We can easily accept the hypothesis that the cube of the log of the leader's ethnic share does not belong in our model: the likelihood ratio test statistic for this hypothesis has a χ^2 distribution with 1 degree of freedom. The realized value for this statistic in our sample is 0.61, indicating acceptance at all standard significance levels.

[10]This impact is estimated as $\partial p(x'\hat{\boldsymbol{\beta}})/\partial s = p'(x'\hat{\boldsymbol{\beta}})[\hat{\beta}_1 - 2\hat{\beta}_2 \ln(s)]/s$ where s is the leader's ethnic share, $\hat{\beta}_1$ is the estimated coefficient of the natural log of the leader's ethnic share, and $\hat{\beta}_2$ is the estimated coefficient of the square of the natural log of the leader's ethnic share. We evaluate $p'(x'\hat{\boldsymbol{\beta}})$ at the sample mean exit probability. The standard errors are calculated by the "δ-method" as:

$$Se(\partial p(x'\hat{\boldsymbol{\beta}})/\partial s) = \{p'(x'\hat{\boldsymbol{\beta}})/s\}^2[1,-2\ln(s)]V(\hat{\beta}_1, \hat{\beta}_2)[1,-2\ln(s)]'.$$

actually *increase* the leader's chances of losing power (see Figure 1). For example, for a leader at the sample median ethnic share of 0.29, facing the sample mean exit probability of 11.6%, a 1 percentage point increase in the population share of the leader's ethnic group, from 0.29 to 0.30, will increase the leader's exit probability by about 1.4 percentage points, from 11.6% to about 13.0%. The 95% confidence interval for this effect runs from a minimum estimated increase of two thirds of a percentage point to a maximum of about 2 and 1/5th percentage points.

Thus the hypothesis that leaders coming from large ethnic groups have an advantage at retaining power is refuted. Instead we observe the opposite tendency, with increases in the size of the leader's ethnic group increasing the probability that the leader loses power. Only among the leaders from very small ethnic groups with population shares below 11% is the hypothesis confirmed that increases in the size of the leader's ethnic group strengthens his grip on power. However, this group only accounts for about one-seventh of our sample.

Our findings are robust to the choice of measures for the leader's ethnicity and for the functional form of our model. We obtain qualitatively similar results using our ESD_1 measure instead of the leader's ethnic share. Our results continue to hold when we replace the logit with a probit specification and with the linear probability model. When we exclude several of the explanatory variables which receive insignificant coefficients: lagged income, lagged income growth, and the world business cycle, our estimates remain quantitatively unchanged (see Table 4, column (2)).

In addition to our findings on the effects of ethnicity, our parameter estimates reveal that nonconstitutional leaders face reduced risks of losing power. Rapid economic growth (a rare event in our sample of African countries) also reduces risks for the national leader. The finding on nonconstitutional leaders is what we might expect if leaders who seized power were virtually never willing to allow themselves to be replaced by legal means, thereby removing any electoral risk of losing power. The effects of economic growth resemble the effects of economic performance on elections in Western Europe and North America (see, for example, Fair, 1978; Erikson, 1989; Alesina, Cohen, and Roubini, 1992), and on the survival chances of regimes in Latin America (Ames, 1987).

Our findings on the effect of the size of the leader's ethnic group on his chances of losing power are surprising. Our findings cast doubt on the hypothesis that a large population of ethnic affines is a resource leaders can draw on to remain in office. Instead the data indicate that leaders coming from ethnic groups with population shares of about one-seventh are most likely to remain in power.

The nonlinear relationship between population share and the leader's exit probability may be a product of two countervailing forces. It may be that a large ethnic support base does increase the ability of the leader's political support coalition to prevent power from passing into the hands of nonethnic affines, but that as the ability of the leader's support group to control the process of succession increases, that group's allegiance to a particular leader weakens. A large ethnic majority may be confident enough of its political control to risk an intra-ethnic change of leaders, while a smaller group would not dare risk a change of individual leaders. Thus, the greater *capacity* of large ethnic groups to control the process of leadership change, and the greater *security* these groups correspondingly feel, may affect the political fortunes of the leader in opposite directions, with the capacity effect reducing the leader's probability of losing power, while the security effect raises the leader's exit risk. If this were so, the observed pattern of exit risks would emerge if the capacity effect dominated among leaders from small ethnic groups, while among their counterparts with large ethnic support bases the security effect was stronger.

Ethnicity and Nonconstitutional Rule

Our second hypothesis is that leaders from ethnic minority groups are more likely to lose power by nonconstitutional means. This hypothesis does not address the question of the frequency of leadership change, but instead focuses on the nature of that change when it occurs. Accordingly, we test this hypothesis on the subset of leadership exits. Given that the leader loses power, we test whether or not the probability that power changes hands nonconstitutionally is inversely related to the size of the leader's ethnic group.

As with our first hypothesis, we want to test this claim in the context of a model that accounts for other factors that predispose countries to coups and assassinations. One such variable is poverty, which predisposes countries to coups (Londregan and Poole, 1990), or at least militates against democratic or polyarchic rule (Lipset, 1959; Dahl, 1972). In addition, it has been claimed that coups beget countercoups, creating a "coup trap" (Finer, 1962; Londregan and Poole, 1990). Accordingly, our model of nonconstitutional transfers includes the natural log of the previous period's per capita income, and an indicator variable that equals "1" for leaders who seized power nonconstitutionally, and "0" otherwise.

A substantial role in predisposing some countries toward or away from nonconstitutional succession may be played by historical variables and slow changing aspects of political culture. Failing to account for these influences on the nature of power transfers could substantially bias our parameter estimates and could lead to false results in the test of our hypothesis. Accordingly we need to test whether or not failing to take country-specific effects into account results in biased results.

Unlike our earlier analysis of leadership exit, where we had at least a dozen annual observations for each country, the number of exits per country is much smaller. As discussed above, 14 countries report no political exits for our sample period and thus do not provide us with information about the nature of leadership changes. Even among countries reporting political exits, the numbers tend to be small. Only Benin, Ghana, and Nigeria had as many as six political leadership transitions during the period under review. We observe only a single political exit in our sample for Cameroon, as well as for Guinea-Bissau, Liberia, Mauritius, Niger, Rwanda, Senegal, and Tanzania.

In short panels, fixed-effect estimators that directly estimate individual intercepts for each country can result in severe biases (Andersen, 1973). We can obtain consistent parameter estimates using a conditional likelihood approach advocated by Chamberlain (1984). This method involves using a country's average leadership exit rate to control for the country-specific factors. We then learn about the effects of the explanatory variables from the *timing* of the exits for each country. The consistency of the parameter estimates delivered by this approach comes at the cost of an unavoidable reduction in precision.

Because of the loss in precision associated with this procedure, it should only be used when ignoring the fixed effects would lead to biased estimates of the parameters of interest. Thus we want to test whether the fixed-effect correction is necessary. Accordingly we use a Hausman test (Hausman, 1978) to assess whether our parameter estimates would remain unbiased if we did not correct for the possible presence of country-specific fixed effects.[11]

Logit parameter estimates of our baseline model for the nonconstitutionality of leadership transitions appear in column (1) of Table 5. These estimates indicate a significant coup-inhibiting effect of income. The estimated coefficient of –2.47 corresponds to a t-ratio of –2.16. Similarly, our positive coefficient estimate of 2.95

[11]We use a Hausman test instead of the more standard likelihood ratio test because it has the correct implicit null hypothesis: that the remaining parameter estimates are unbiased (Holly, 1980).

TABLE 5. Ethnicity and Nonconstitutional Succession

Dependent Variable: Nonconstitutional Exit				
Variable	*(1)*	*(2)*	*(3)*	*(4)*
Previous year's log of per capita income	−2.47	−2.53	−3.21	−3.73
	(1.15)[a]	(4.46)	(1.28)	(1.49)
Nonconstitutional ruler	2.95	2.41	3.10	2.88
	(1.13)	(1.37)	(1.24)	(1.29)
ln(leader's ethnic share)			5.46	
			(3.17)	
ln(leader's ethnic share)^2			1.70	
			(1.02)	
ln(ESD_1)				8.70
				(4.06)
ln(ESD_1)^2				5.37
				(2.69)
Log likelihood function[b]	−22.24	−6.61	−19.79	−18.02
Sample size	67	67	67	67

[a]Standard errors in parentheses.

[b]In column (2) this is the log of the conditional likelihood function corresponding to the conditional logit, and is not comparable with the logit likelihoods reported in columns (1), (3), and (4).

for leaders who came to power nonconstitutionally, which corresponds to a t-ratio of 2.62, indicates the presence of a coup trap in which leaders who live by the sword of nonconstitutional rule tend to lose power that way. Conditional logit estimates, calculated by the method advocated by Chamberlain (1984), appear in column (2) of Table 5. While the point estimates for the parameters change little from those in column (1), the estimated standard errors are considerably larger. The Hausman test, which in this case is asymptotically distributed as χ^2 with 2 degrees of freedom, takes on a value of 2.46, corresponding to a p-value of 0.29, and indicating acceptance at all significance levels.

Having accepted the hypothesis that fixed effects do not significantly bias our parameter estimates, we proceed to evaluate our hypothesis that ethnic minorities are more likely to be pried from office at bayonet point. Estimates using linear and quadratic terms in the log of the leader's ethnic share appear in column (3) of Table 5, while column (4) reports estimates calibrating ethnicity using the log and the square of our ESD_1 measure. The ethnic share variables fail to achieve significance either individually, with t-ratios of 1.72 and 1.67 for the linear and squared terms, respectively, or jointly, with a likelihood ratio test statistic for exclusion of both variables equal to 4.89. Compared with the asymptotic distribution of this statistic, which is χ^2 with 2 degrees of freedom, this value of the likelihood ratio statistic, corresponding to a p-value of 0.09, is significant at the $\alpha = 10\%$ level, but not at $\alpha = 5\%$.

Our results for the ESD_1 measure, which accounts for the relative size of the leader's ethnic group in the context of the ethnic mix of his country, are statistically significant. The coefficients for both the log of ESD_1 (with a t-ratio of 2.14) and the square of the log of ESD_1 (corresponding to a t-ratio of 2) are individually significant. The likelihood ratio test for the joint exclusion of the two ESD_1 parameters takes on a value of 8.42. Compared with the asymptotic distribution for this parameter, which is χ^2 with 2 degrees of freedom, this parameter is significant at $\alpha = 5\%$, but not at $\alpha = 1\%$ (the p-value is just over 0.01).

The net impact of our ESD_1 variable is a weighted average of the coefficients of the log of ESD_1 and its square. More precisely, the estimated impact is given by:

$$\frac{p'(\underline{x}'\underline{\hat{\beta}})\{\hat{\beta}_1 + 2\hat{\beta}_2 \ln(ESD_1)\}}{ESD_1}$$

Estimates of this effect are shown in Figure 2. These estimates are calculated for a probability of nonconstitutional transition at the mean for the subsample of exit observations: 0.82. There we see that for low values of ESD_1 the estimated impact of an increase in ESD_1 on the probability a leadership transition is nonconstitutional is negative. However, these estimated negative effects are statistically insignificant, as indicated by the wide confidence bands, which encompass 0. At higher levels of ESD_1, the effect reverses: for values above 0.57, increases in ESD_1 significantly increase the probability that leadership transitions take place by nonconstitutional means. This critical value is just below the sample median of 0.63, so that, for just over half of our sample, the effects of increasing the relative size of the leader's ethnic group are directly counter to the prediction of the hypothesis

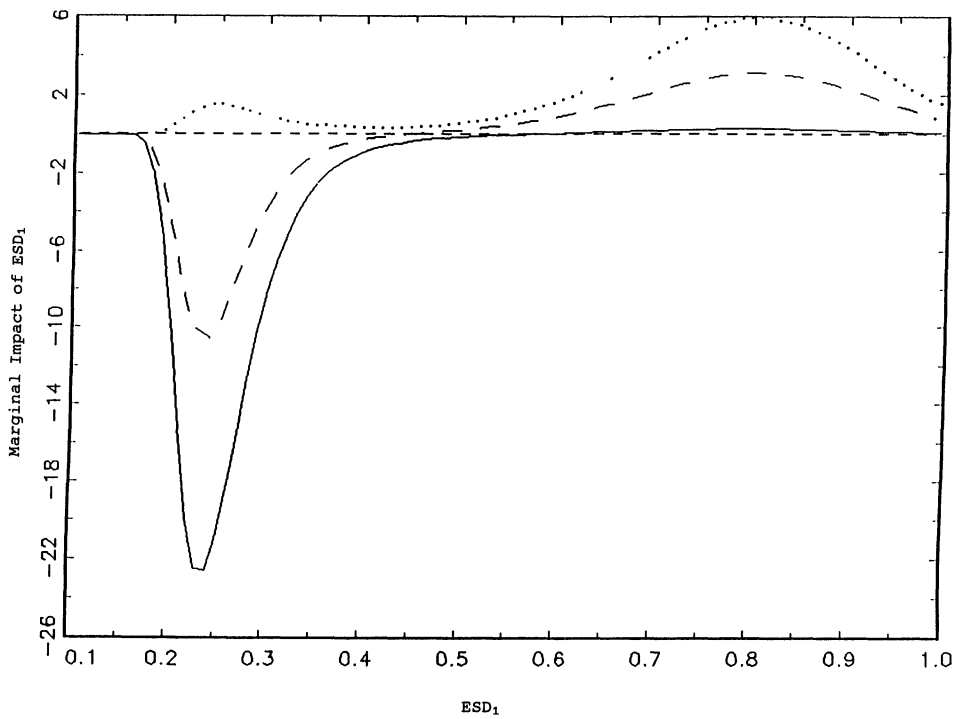

FIG. 2. ESD_1 vs. its marginal impact on the probability a leadership transition takes place nonconstitutionally.

..... upper confidence bound on the impact of ESD_1 on the probability a leadership transition takes place nonconstitutionally

— — — predicted impact of ESD_1 on the probability a leadership transition takes place nonconstitutionally

——— lower confidence bound on the impact of ESD_1 on the probability a leadership transition takes place nonconstitutionally

- - - - - - - impact = 0

that leaders from larger ethnic groups are less likely to be replaced nonconstitutionally.

These findings are robust to the inclusion of additional explanatory variables: when we add the current rate of growth to our specification, it receives an insignificant coefficient. The same is true for several of the other explanatory variables used in our analysis, including the cube of the log of ESD_1, indicating that our choice of a polynomial in the log of ESD_1 is adequate to capture the nonlinearities in the data.

We can comfortably reject the hypothesis that leaders from minority ethnic groups are more likely to leave power at gunpoint. In contrast to this hypothesis, we find that among leaders from small ethnic groups the effects of ethnic share, as measured by either ethnic share or our ESD_1 measure which accounts for the size of other ethnic groups, are insignificantly different from zero. Among larger ethnic groups the findings are even more unfavorable to the hypothesis: further increases in the relative size of the leader's ethnic group significantly increase the probability that leadership transition takes place nonconstitutionally. A possible explanation for this finding is that, contrary to our hypothesis, ethnic majority leaders are better able to form ethnically based ruling coalitions (albeit coalitions that are more frequently composed of military officers than of elected parliamentarians), while their minority counterparts are more likely to form ethnically inclusive coalitions which are better able to effect constitutional leadership change.

Inter-Ethnic Transitions

Our third hypothesis is that when leaders leave power, their replacements are disproportionately likely to come from their own ethnic group. An alternative to this hypothesis is that the probability a leader is replaced by a member of another ethnic group is directly proportional to the population share of all other ethnic groups.

To test our hypothesis we use a logit model. The dependent variable in this model of inter-ethnic leadership transitions takes on a value of "1" if the leader and his successor belong to different ethnic groups, and "0" if they are from the same ethnic group. We construct a new variable, s*, which allows for the possibility $1 - s$ has the desired linear effect on the probability a leadership transition is inter-ethnic:

$$s^* = \ln(1 - s) - \ln(s).$$

If the probability of inter-ethnic leadership change equals $1 - s$, then in our logit model, s* will receive a coefficient of "1" and the intercept term will equal "0". If instead leaders are disproportionately likely to be replaced by members of their own ethnic group, so that there is a kind of "ethnic incumbency advantage," the coefficient for s* will be less than 1, and the intercept will not, in general, equal "0".

The first column of Table 6 presents parameter estimates for the logit model of inter-ethnic leadership transitions with s* as the lone explanatory variable. The estimated coefficient for s* of 0.77 is low. When we test the joint hypothesis that the intercept term equals 0 and the slope coefficient is 1, we obtain a test statistic of 9.31. Relative to the asymptotic distribution of this statistic, which is χ^2 with 2 degrees of freedom, this corresponds to a p-value of just under 0.01, indicating rejection at all standard significance levels.

Given the intercept term is not estimated at 0, we are left to wonder whether the country-specific intercept terms differ from one another, as we found they did

TABLE 6. Inter-Ethnic Leadership Transitions

Dependent Variable: Inter-Ethnic Leadership Transfer		
Variable	*(1)*	*(2)*
Intercept term	−0.57	
	(0.36)[a]	
s* = ln(1 − leader's ethnic share)		
− ln(leader's ethnic share)	0.77	0.30
	(0.26)	(0.33)
Log likelihood function[b]	−40.49	−13.80
Sample size	67	67

[a]Standard errors in parentheses.

[b]In column (2) this is the log of the conditional likelihood function corresponding to the conditional logit, and is not comparable with the logit likelihoods reported in column (1).

in our analysis of when leadership changes occurred. To test for this, we again use the conditional logit framework recommended by Chamberlain (1984). Conditional logit estimates of the model appear in column (2) of Table 6. Notably, the coefficient for the transformed population share of people outside the leader's ethnic group is considerably smaller, suggesting leaders are disproportionately likely to turn over power to members of their own group. A Hausman test of the hypothesis of no fixed effect–induced bias in our estimates in column (1) generates a test statistic of 5.60. Relative to the asymptotic distribution for this statistic, which is χ^2 with 1 degree of freedom, this corresponds to a p-value of just under 0.02, indicating rejection of the hypothesis of no fixed effect–induced bias at $\alpha = 5\%$, although not at $\alpha = 1\%$.

The conditional logit estimates of column (2) confirm our hypothesis that leaders are disproportionately unlikely to be replaced by people from outside their own ethnic group. The estimated coefficient for the transformed population share[12] for nonmembers of the leader's ethnic group is only 0.30, 2.13 standard deviations less than 1, the value it would have to assume if leaders and their successors shared the same ethnic affiliation merely as a matter of chance.

Conclusion

In this analysis we use cross-national data in which each country is followed over time to examine the impact of ethnicity on leadership changes. Exit and entry of national leaders can be measured with relative ease and precision. That we can measure something is not necessarily a good reason for building an argument. However, we have felt that much of the analysis of the impact of ethnicity on politics in Africa and elsewhere, including the concept of ethnicity and its roles, has been elusive and difficult to test. Thus we hoped to construct hypotheses that could be made testable in order to move the argument forward. We have tried to provide measures of ethnic size. At the same time we are aware that ethnic membership remains difficult to measure. We also believe that leadership change is important in and of itself, but we go further. We feel that arguments about the centrality of both individual leaders and ethnicity in African politics allows us to think that examination of the effect of ethnicity on leadership duration is not a

[12]Notice that the conditional likelihood approach does not deliver an estimate of the intercept term, which is "conditioned out" of the likelihood function along with the country-specific fixed effects.

narrow subject. Our statistical tests are aimed at illuminating important aspects of African politics.

The point of departure for our first hypothesis is the conjecture that a leader's ethnic affines are natural political allies, helping him to remain in power. All else being equal, the more allies the better, so our first hypothesis is: the larger the population share of the leader's ethnic group, the lower the probability that the leader loses power. We decisively reject this hypothesis. Only among leaders from the smallest ethnic groups do variations in the size of the leader's ethnic group have the hypothesized effect. For much of our sample, the results are directly opposite those predicted: leaders from larger ethnic groups run greater risks of losing power. All else held equal, leaders from the largest ethnic groups are the *most* likely to lose power.

These surprising findings suggest that large population share may change not only the ability of the leader's support group to maintain the leader in power, but also their perceived need to do so. A large population share may increase a group's willingness to risk a change of leaders precisely because they are better able to guarantee that the new leader will continue to represent their interests.

Our second hypothesis is framed from the perspective that minority ethnic groups may use nonconstitutional rule as a shield against ethnic oppression by more populous groups. Accordingly, we expect rulers from ethnic minorities to more ruthlessly cling to power, and hence, we hypothesize that the probability of nonconstitutional replacement declines with the size of the leader's ethnic group. Our results directly counter this claim. Among leaders from the smallest ethnic groups, we observe no statistically significant effect of the leader's ethnicity on the probability of nonconstitutional replacement; whereas among leaders from ethnic groups with population shares that are large within the context of their country, the probability of nonconstitutional replacement actually *rises* with the size of the leader's ethnic group. A possible explanation for our finding of a heightened tendency among leaders from large ethnic groups to lose power nonconstitutionally is that being from a large ethnic group reduces the need for compromise, while smaller ethnic groups have great difficulty in even attaining power without forming alliances with members of other ethnic groups, alliances that provide for more regular and legal transfer of power.

Our third hypothesis, and the only one that receives strong support from the data, is that rulers are disproportionately likely to be replaced by members of their own ethnic group. This is what we would expect to see if the ruling elite were drawn disproportionately from one or a few ethnic groups.

This analysis illustrates the importance of subjecting widely accepted beliefs about the role of ethnicity in politics to direct tests. Whereas anecdotal evidence can generally be marshaled to support almost any view, carefully conceived statistical tests often provide resolution to conflicting assertions. In this analysis we test three intuitively appealing and widely believed assertions about the role of ethnicity in African politics, and find that only one of them is borne out. The other two are decisively contradicted, indicating the importance of rethinking our theories about the role of ethnicity in African politics.

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