IS MODERNIZATION THE ENGINE OF POLITICAL INSTABILITY? A POOLED CROSS-SECTIONAL TIME-SERIES TEST OF CAUSALITY

DISSERTATION

Presented to the Graduate Council of the University of North Texas in Partial Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Bedford Nwabueze Umezulike, B.Sc., M.Sc.

Denton, Texas

August, 1990

CT

Umezulike, Bedford Nwabueze, Is Modernization the Engine of Political Instability? A Pooled Cross-Sectional Time-Series Test of Causality. Doctor of Philosophy (Political Science), August, 1990, 187 pp., 22 tables, bibliography, 115 titles.

Traditional studies of the modernization-instability thesis have neglected the simultaneous influence of time and place on the relationship between modernization (social mobilization and political participation) and political instability, and the possible causal linkage between the two concepts. Empirical support for modernization-instability hypothesis will be obtained if and only if there is a strong positive correlation between modernization and political instability and the former causes the latter unidirectionally. Only then can one assert that modernization is exogenous, and that a policy geared toward restricting modernization is a proper anti-instability policy.

This work attempts to address the question of correlation and causality through a pooled time-series cross-sectional data design and the use of Granger-causality tests. Particular attention is paid to the error structure of the models.

Using pooled regression, a model of political instability is estimated for a total of 35 countries for the

CNT

period 1960-1982. Granger tests are performed on twelve separate countries randomly selected from the 35.

The results indicate that there is the expected positive relationship between modernization and political instability. Further, political institutionalization and economic well-being have strong negative influence on political instability. With regard to causality, the results vary by country. Some countries experience no causality between modernization and political instability, while some witness bidirectional causality. Further, some nations experience unidirectional causality running from modernization to political instability, while some depict a reverse causation.

The main results suggest that modernization and political instability are positively related, and that political instability can have causal influence on modernization, just as modernization can exert causal influence on political instability.

TABLE OF CONTENTS

Page

LIST OF TABLES vi

LIST OF ILLUSTRATIONS viii

Chapter

I. IS MODERNIZATION THE ENGINE OF POLITICAL INSTABILITY? A POOLED CROSS-SECTIONAL TIME-SERIES TEST OF CAUSALITY 1

Introduction
Inadequacies in Previous Analysis of Modernization-Instability Thesis and Significance of the Study
Summary

II. MODERNIZATION AND POLITICAL INSTABILITY . . . 23

Anomie, Role Conflict, Group Consciousness and Political Instability
Modernization, Social Mobilization, Political Participation, Economic Development, Political Institutionalization, and Political Instability
Modernization-Instability: Additive Model
Modernization-Instability: Nonadditive Model
Selected Hypotheses
Summary

III. DEFINITIONS, OPERATIONALIZATIONS, THE RESEARCH METHODS 54

Political Instability: Definition and Measurement
Modernization, Economic Development, Political Institutionalization: Definition and Measurement
The Sample, Missing Observations and the Data
Indexes
Measuring Change

Chapter Page

Statistical Procedures
Pooled Cross-Sectional Time-Series Design
Causality Tests: Granger-Causality
Summary

IV. DATA ANALYSIS: POOLED REGRESSION AND GRANGER-CAUSALITY RESULTS 99

The Model Specification
Pooled Regression Results:
The Ordinary Least Squares (OLS) Results
The Generalized Least Squares (GLS) Results
Granger-Causality
Modernization-Instability Causality in Belgium
Modernization-Instability Causality in Burma
Modernization-Instability Causality in Ethiopia
Modernization-Instability Causality in Greece
Modernization-Instability Causality in Jamaica
Modernization-Instability Causality in Mexico
Modernization-Instability Causality in Morocco
Modernization-Instability Causality in Nicaragua
Modernization-Instability Causality in Peru
Modernization-Instability Causality in Syria
Modernization-Instability Causality in the United Kingdom
Modernization-Instability Causality in Zaire
Summary

V. CONCLUSIONS AND PROSPECTS FOR FUTURE RESEARCH 152

Empirical Findings: An Overview
Major Arguments Developed in This Study
Limitations of the Study
Recommendations for Future Research

Page

APPENDIX

A. LIST OF COUNTRIES AND THEIR ABBREVIATIONS 160

B. COUNTRIES AND DATA USED IN THE STUDY 162

REFERENCES 179

LIST OF TABLES

Table		Page
1.	Physical Quality of Life Indicators by Region and Countries, 1960-1982 (N = 35)	74
2.	Means and Standard Deviations	77
3.	Intercorrelation Matrix	85
4.	Effects of Political Participation Index, Social Mobilization, Economic Development, and Political Institutionalization on Political Instability 1960-1982, (N = 770) Ordinary Least Squares Estimates	106
5.	Effects of Social Mobilization When Ratioed With Economic Development and Political Institutionalization on Political Instability 1960-1982, (N = 770) Ordinary Least Squares Estimates	108
6.	An Alternative Test for Serial Correlation, 1960-1982	111
7.	Glejser Formal Test for Heteroscedasticity Effects of Social Mobilization on the Absolute Number of Residuals, (e_i), 1960-1982	116
8.	Effects of Political Participation Index, Social Mobilization, Economic Development, and Political Institutionalization on Political Instability 1960-1982, (N = 770) Generalized Least Squares Estimates	120
9.	Effects of Social Mobilization When Ratioed With Economic Development and Political Institutionalization on Political Instability 1960-1982, (N = 770) Generalized Least Squares Estimates	121

Table Page

10. Results From Granger Causal Tests, 1960-1982: Belgium 127

11. Results From Granger Causal Tests, 1960-1982: Burma 129

12. Results From Granger Causal Tests, 1960-1982: Ethiopia 130

13. Results From Granger Causal Tests, 1960-1982: Greece 132

14. Results From Granger Causal Tests, 1960-1982: Jamaica 134

15. Results From Granger Causal Tests, 1960-1982: Mexico 135

16. Results From Granger Causal Tests, 1960-1982: Morocco 137

17. Results From Granger Causal Tests, 1960-1982: Nicaragua 139

18. Results From Granger Casual Tests, 1960-1982: Peru 140

19. Results From Granger Causal Tests, 1960-1982: Syria 142

20. Results From Granger Causal Tests, 1960-1982: UK 144

21. Results From Granger Causal Tests, 1960-1982: Zaire 145

22. Summary of Observed Causal Relationships . . . 148

LIST OF ILLUSTRATIONS

Figure		Page
1.	Implicit Model to Show the Nature of the Interdependence Between the Demand Social Mobilization (SOM) and the Supply, Economic Development (ECD)	41
2.	Implicit Model to Show the Nature of the Interdependence Between the Demand Social Mobilization (SOM) and the Supply, Political Institutionalization (POI) . . .	42
3.	Implicit Model to Show the Overall Nature of the Demand Social Mobilization (SOM) and the Supplies, Economic Development and Political Institutionalization (ECD and POI)	43
4.	Histogram of Frequencies of Deaths From Domestic Political Violence, 1960-1982 . .	57
5.	Histogram of Frequencies of Logarithmic Transformed Deaths From Domestic Political Violence, 1960-1982	58
6.	Histogram of Government Revenues as a Percentage of GDP, 1960-1982	78
7.	Histogram of Savings per Capita, 1960-1982	79
8.	Histogram of Life Expectancy at Birth (years) 1960-1982.	80
9.	Histogram of Infant Mortality Rates (per 1,000 infants) 1960-1982.	81
10.	Histogram of Percentage of Labor Force in Agriculture, 1960-1982	82
11.	Histogram of Protest Demonstrations, 1960-1982	83
12.	Histogram of Political Strikes, 1960-1982	84

Figure | Page

13. Positive Autocorrelation 110

14. Increasing Variance of Error (u) as the Rate of Social Mobilization (SOM) Increases 114

CHAPTER I

IS MODERNIZATION THE ENGINE OF POLITICAL INSTABILITY? A POOLED CROSS-SECTIONAL TIME-SERIES TEST OF CAUSALITY

Introduction

The relationship between the rate of modernization and political instability has received much attention in comparative political research since the 1950s as the new nations of Asia, Africa and Latin America gained their political independence (see, for example, Deutsch 1961; Pye 1962; Eisenstadt 1964; Apter 1965, 1970; Black 1966; Huntington 1965, 1968; Friedland 1969; Lewis 1969; Landsberger and McDaniel 1976; Hudson 1977; Bill and Leiden 1979). These scholars generally contend that modernization is the engine of political instability, especially in the modernizing nations of Asia, Africa and Latin America. For instance, Huntington argues that political instability is mainly a function of rapid social change and rapid mobilization of new groups into politics (1968, 4).

The general assumption is that the traditional governments emerging from the colonial period are too weak to meet the teeming demands generated by the process of modernization; this leads to political instability. Simply

stated, the rate of modernization is the engine of political instability given a low rate of economic development and political institutionalization or strength of the state (Deutsch 1961; Huntington 1968; Feierabend, Feierabend and Nesvold 1966). In this study, this proposition is termed the "modernization-instability" thesis. It is the purpose of this study to provide further empirical evidence on the modernization-instability thesis. In so doing, it makes a conscious effort not only to look for a significant statistical association between modernization and political instability, which is the norm adopted by the previous studies on this topic, but also to capture the causal relationship between the two concepts, which previous studies have assumed to run from modernization to political instability.

Before laying out the framework for analysis, the term modernizing nations needs to be clarified. While all nations are constantly modernizing, at least by definition, modernizing nations, as discussed here, are those nations that are often referred to as "transitional" nations (LaPalombara 1966). For LaPalombara, societies can be ideally categorized into three major types--"traditional," "transitional" and "modern." In traditional societies, politics is considered to be functionally diffused, lacking structural differentiation and specialized structures for dealing with political decisions. Recruitment into the political system is mainly a function of ascription (e.g. race, sex,

religion) rather than merit or achievement (LaPalombara 1966, 76). In such societies there is political stability because the rules of the game are accepted with general consensus. For instance, the king's right to rule is generally accepted in traditional societies.

At the other extreme is the modern society. Here, political roles and functions are very organized and specific and political decisions are based on universalistic criteria. Authority is exercised based on written documents and the society is guided by the rule of law. The output of the system does not penalize persons because of race or sex and does not reward them because of kinship or friendship (LaPalombara 1966, 77). Additionally, modernity includes "the aspiration and capacity in a society to produce and consume a wide range and quantity of goods and services. It includes high development in science, technology and education, and high attainment in scores of specialized skills" (Feierabend and Feierabend 1966, 257). Similarly, Parsons (1971, Chapter 3) presents the following "pattern variable" dichotomies showing the contrasting tendencies of ideal modern and traditional societies:

MODERN	TRADITIONAL
Universalism	Particularism
Achievement	Ascription
Specificity	Diffusion
Collective-orientation	Self-orientation

According to the above variables, social systems will be amenable to modernity if their goals substantially reflect general standards and criteria rather than particular cases; if they judge and reward actors based on their performances rather than particular kinship, caste, or class; if they operate on rationally defined, differentiated and changeable laws as opposed to diffused and traditionally handed down canons; and if they are committed to collective interest instead of self-interest (Parsons 1967, 101-112). Parsons also believes that all these orientations and the institutions they create interact in a way as to give rise to an integrated, equilibrated and consensual social system --and hence stability.

Between the two extremes--traditional and modern--lie transitional or modernizing societies. Transitional/modernizing societies are characterized by the coexistence of traditional and modern orientations (LaPalombara 1966; Pye 1962, 54-55). This is mainly because modern affluent nations, with their complexity of economic, political and social systems, serve as models of modernity to nations emerging from traditional society (Feierabend and Feierabend 1966, 257). Transitional society is also a place where there is a presence of low government capacity to cope with the problems attendant on modernization (Huntington 1968).

It is at this transitional stage of development, the stage where there is an absence of strong and adaptable

political institutions, that the process of modernization is said to induce political instability. In this line of reasoning, modernity and traditionality are presumed to mean stability and modernization instability (Huntington 1968, 47). For Huntington, "a purely traditional society would be ignorant, poor and stable" (1968, 41). In transitional societies, on the other hand, there is the arousal of a modernizing society to awareness of complex modern patterns of behavior and organization that brings with it a desire to emulate and achieve the same high level of satisfaction. However, there is an inevitable lag between aspiration and achievement which varies in length with the specific condition of the country (Feierabend, Feierabend and Nesvold 1966, 257).

Despite these arguments, a reverse causation running from political instability to modernization may be equally likely. That is, while it is postulated by the modernization theorists that the social mobilization that accompanies modernization can induce political instability, nations lacking in social mobilization can equally use political instability to increase it. The rationale behind this feedback effect will be presented in Chapter II.

To explore the modernization-instability thesis then, this present work focuses on two broad questions: (1) Is modernization the engine of political instability, and (2) Does modernization causally precede political instability?

From the arguments of modernization theorists (to be explored in Chapter II), the general conclusion is that modernization and political instability are strongly associated and that the former induces the latter unidirectionally.

The importance of the alleged link between modernization and political instability calls for a discriminating test of the modernization-instability hypothesis that will focus not on mere correlations (e.g., regressing political instability on modernization indicators), but instead on the direction of causation between modernization and political instability. The genesis of this study, therefore, lies in my desire to rethink the nature of the relationship between modernization and political instability.

To test the modernization-instability thesis, two estimation procedures are adopted: pooled time-series cross-sectional analysis as specified by Parks (1967) and the test of causality suggested by Granger (1969). From the modernization-instability thesis, we expect a positive relationship between modernization and political instability, while a negative relationship is expected between economic development and the strength of government (political institutionalization) and political instability. Before dealing with the above questions, let me first highlight the inadequacies of previous works on this and related topics, and, hence, the significance and the purpose of this study.

Inadequacies in Previous Analysis of the Modernization-Instability Thesis and Significance of the Study

One of the most widely investigated relationships in comparative political research in recent years is the role modernization, principally the changes resulting from social mobilization and political participation, plays in the determination of political instability (see, Putnam 1967; Schneider and Schneider 1971; Duvall and Welfling 1973a, 1973b; Hibbs 1973; Ruhl 1975; Yough and Sigelman 1976; Jackman 1978). But while there have been numerous theoretical and empirical studies made, several important issues remain conspicuously unaddressed. It is the aim of this study to address some of the issues not adequately dealt with in previous works and correct some methodological flaws in them so that we can further understand, empirically, the nature of the relationship between modernization and political instability.

First, there has been no pooled cross-sectional time-series study on this topic in spite of the numerous advantages of the design over the traditional cross-national and time-series research designs (see, for example, Maddala 1977; Zuk and Thompson 1982; Dillon and Goldstein 1984; Levenbach and Cleary 1984; Stimson 1985). A pooled model includes observations for N cross-sections over T times; it has these characteristics and advantages, especially as

compared to separate time-series or cross-sectional regressions:

1. A pooled model "contrasts cross-sections of nations on one dimension as well as points of time for each nation on another" (Zuk and Thompson 1982, 63). With a pooled model, one can simultaneously examine the relationship between modernization and political instability across nations (in space) and historically (in time).

2. Pooling is considered to be a robust research design. According to Stimson (1985, 916)

> pooling data gathered across both units and time points can be an extraordinarily robust research design, allowing the study of causal dynamics across multiple cases where the potential cause may even appear at different times in different cases.

3. Pooling minimizes the chances of running out of cases. Because N becomes relatively large (n x time periods) as we pool, pooling increases the degrees of freedom relative to computing two or more separate regressions. As degrees of freedom are increased, the standard errors become small and, subsequently, one improves the relative precision of the estimated parameters (Dillon and Goldstein 1984, 246).

4. Since cross-section variation is usually greater than time-series variation, the estimates for a pooled model "may be based on a wider range of variation in a potential independent variable than will exist for time series models" (Levenbach and Cleary 1984, 355).

Second, most of the previous works on modernization-instability and related topics have been based on cross-national aggregate data analysis (see, inter alia, Feierabend and Feierabend 1966; Bwy, 1968a, 1968b; Schneider and Schneider 1971; Hibbs 1973; Ruhl 1975; Jackman, 1978; McGowan and Johnson 1984). There are some inherent limitations with cross-national design:

1. The use of a cross-national design restricts the analysis to very general and long-term developments without taking into account important differentiations within societies that occur over time (Ravenhill 1980, 100). Rates of modernization and political instability fluctuate from time to time and their indicators are collected periodically. Given the differing and increasing rates of modernization within and between nations, it is very difficult to delineate the true dynamic relationship between modernization and political instability via cross-national design alone.

2. Relatedly, a cross-national design masks the economic and political effects of structural and institutional changes that some nations have gone through. These changes can affect the nature of the relationship between modernization and political instability over time. The process of modernization and its destabilizing effects, if any, cannot be adequately captured without incorporating time-series procedures (and hence variations due to time) in the research design.

3. One cannot place full confidence in the relationships between the variables in question in the traditional cross-national aggregate data analysis because the time periods for both the dependent and the independent variables may not be matched in a real sense (Ravenhill 1980, 101). Often, cross-national studies estimate variables at different times. For example, in Jackman's (1978) study, the data for the dependent variable (coups, a measure of political instability) covered the time period 1960-1975 while the independent variable, social mobilization (an aspect of modernization), was measured in 1965 and 1966.

Countering these difficulties, cross-national design has one major advantage over the traditional time-series design. Hibbs (1973) argues that cross-national analyses

> are superior to those estimated against time-series data, since typical time-series, especially those available to social scientists, are of relatively short duration. Short-duration time-series simply cannot pick up the effects of such variables as regime type, levels of institutionalization, cultural differentiation, and democratization. These variables, which have important effects on levels of mass political violence, do not change much in the short run; and without variance, estimation precision and causal inferences are not feasible (1973, 201).

Hibbs's defense of cross-national design is valid for many important variables and would be more cogent for time series (only) than for pooled time-series designs. However, there are some variables that vary in the short run, namely, political event variables such as deaths resulting from

political violence, protest demonstrations and riots, (Sanders 1981, 41).

Similarly, the indicators of social mobilization (e.g., increases in urbanization, literacy, education) change over time; it has been suggested and empirically demonstrated that social mobilization indicators are quite amenable to time-series analysis (Zapf and Flora 1971). Accepting Hibbs' justification ignores such variations, and thus may result in "full advantage not being taken of those data which are available" (Sanders 1981, 41). With pooled time-series design, this study capitalizes on the variations displayed by such political event variables as deaths from political violence and by social mobilization indicators, as well as those due to cross-national differences.

Third, previous empirical inquiries into the modernization-instability thesis have generally derived their findings from correlational analyses (e.g., Putnam 1967) or regression analyses (e.g., Schneider and Schneider 1971; Ruhl 1975; Jackman 1978) with the direction of causality assumed. Analyses through correlation and regression can reveal the presence (or lack) of statistical correlation between the two variables, but have little to say about the causal link between the variables. Yet, a question commonly posed concerns the causal priority of economic development and political actions. Similarly, one can ask a logical question about the causal relationship or ordering between

modernization and political instability, especially when one realizes that the relationship between modernization and political instability may be very complex (see Chapter II). How can one be certain that modernization precedes political unrest causally? Thus another major contribution of this study will be to provide further empirical evidence, not just on the relationship between modernization and political instability, but on their causal linkage. In attempting to do so, a test of causality, namely, Granger-causality (1969), is employed.

Briefly stated (details are given in Chapter III), causality, in the Granger sense, is defined by stating that a time series M causes a time series X if the present value of X can be better predicted using past values of M in addition to its own past value. The definition of Granger causality can be expressed "in terms of either the moving average or autoregressive form of the (covariance stationary, purely nondeterministic) bivariate system" (Freeman 1983, 330). The autoregressive form is used here to assess Granger causality in the modernization-instability hypothesis.

Empirical research must be based on a theory or a hunch that must be tested to contribute to theory building (Shamir 1983; Freeman, Williams and Lin 1989). However, in most disciplines of social science we lack theory that stipulates clearly the types of constraints to impose in our models:

> The problem is that in most fields of political science we lack theory that might indicate what restrictions to use. Thus, the theoretical foundations of the models are weak, as are their statistical assumptions. This in turn should raise suspicions about those models and their results since incorrect assumptions very often invalidate the whole analysis (Shamir 1983, 171-172).

In view of this, Shamir recommends the use of Granger-causality procedures (Granger 1969), because they avoid restrictions based on "supposed a priori knowledge." That is, the procedure is not based on an over-arching theory in specifying the model.

To use Granger-causality in this analysis then, there are two major concerns: (1) a theoretical concern, which is to identify a model derived from the modernization-instability hunch, and (2) to determine the direction of causality within the model, i.e., does causality run from political instability to modernization or the other way around, an ordering derived from conventional wisdom (to be discussed in Chapter II). Note that the Granger tests also reveal whether the relationship involves feedback (modernization <----> political instability) or independent (modernization <--/--> political instability) causality.

If the results of the Granger-causality tests show that modernization and political instability exhibit dual causality, then we know that the relationship between them is that of the chicken and the egg (where the chicken and the egg are jointly determined). Given such feedback effects and dual causality, modernization and political instability

should be studied through a system of simultaneous equations where political instability has an effect on at least one of the modernization variables in addition to the effect that modernization variables have on political instability.

Fourth, this study uses better measures of both modernization and political instability than many previous studies. Some previous studies of modernization-instability and related topics express the indicators of social mobilization as "levels" only. For instance, Ruhl (1975) has rightly been attacked (Yough and Sigelman 1976, 224) for expressing social mobilization indicators only in terms of "levels" instead of "rates" as supposed by Deutsch (1961). For Deutsch, social mobilization indicators should be expressed not in terms of the total percentage of a population sharing some sociodemographic characteristic (e.g., level of education), but rather in terms of the average annual percentage of the total population added to or subtracted from the total share of the population in that category over a period of years (e.g., change in education rate) (Deutsch 1961, 502). This point is also emphasized by Coulter (1975, 11). "Rates" of change in modernization are considered to be more powerful predictors of political instability than the actual "levels" (Huntington 1968, 46, 49-50). Thus, in this study, the variables are expressed in terms of annual percentage changes (rates).

Fifth, this study extends the analysis of modernization-instability far beyond the dominant focus on "coups." Previous studies on modernization-instability and related topics have dwelt heavily on one major indicator of political instability, namely, coups or elite instability (see, for instance, Putnam 1967, 1970; Hoadley 1973; Jackman 1978; McGowan and Johnson 1984). Very little work has been done in the case of mass political instability (e.g., deaths from political violence). For instance, very few studies (Gurr 1968; Duvall and Welfling 1973a; Ruhl 1975) could be found that tested the impact of economic development and/or social mobilization on collective political violence in modernizing nations.

While coups may be a valid measure of political instability, they occur at the elite level of the society which constitutes a very small segment of the population (Ake 1974, 590). Ake's remark on this point is highly instructive:

> Contemporary African and Latin American politics are usually said to be highly unstable mainly because they often have coups d'etat, changes of the executive. . . These phenomena are forms of political interactions associated with elites. Elites constitute only a small proportion of the political population; we cannot say anything conclusive about the level of political stability by concentrating on elite interactions (1974, 590).

Similarly, Morrison and Stevenson (1972) argue that elite instability is

> characterized by a low intensity of violence, and by a relative stability in relations of authority. Only a small number of people is directly involved in the "action," and there is no major reorganization of power and the ruling class (p. 908).

Moreover, it has been argued (Finer 1962; Afrifa 1966; Nordlinger 1977) and empirically demonstrated (Thompson 1973) that coups are a function of the "military corporate self-interest." Military coup makers are more concerned with maintaining and increasing the status of both the military and, perhaps, the middle class (from which the officer corps is drawn) even at the expense of the society's desires.

Given the small size of the elite and the corporate self-interests of the military, it becomes more compelling to look at the relationship between modernization and political instability beyond the dominant focus on the elite level of instability. This study, therefore, improves on this overemphasis on coups by considering and examining the nature of the relationship between modernization and political instability at the level of mass instability, proxied here as deaths from political violence.

Sixth, previous studies on this topic have suffered from a narrow focus. Most confined their studies to only Africa (Duvall and Welfling 1973a, 1973b; Jackman 1978), Latin America (Putnam 1967; Bwy 1968a, 1968b; Ruhl 1975), Asia (Weiner and Hoselitz 1961; Hoan 1972; Hoadley 1973) or Western European nations (Schneider and Schneider 1971), and

from these area studies made some general statement about modernization-instability.

To be sure, such a limited scope does have its own merit, given the fact that the nations in some regions tend to share a common historical background and similar ethnic/cultural patterns (Ravenhill 1980, 105). The problem is that systemic factors (common historical background or similar cultural patterns) cannot be the principal mediating variable that explains the relationship between modernization and political instability. Instead, the mediating variable that explains the relationship between modernization and political instability is a lack (or presence) of a strong or adaptable political system (government capacity) to better meet the problems attendant on modernization.

To correct the myopia associated with such area studies and to remain within the framework of the modernization-instability thesis, this study adopts the strategy of the "most different systems" design (Przeworski and Teune 1970, 32-35): including both "modern" and "modernizing" nations in one analysis (by discounting such irrelevant systemic factors as similar cultural patterns or historical background) and later selecting, at random, twelve nations on which to do separate causality tests.

According to Przeworski and Teune (1970), the "most different system" design eradicates, to a large extent, irrelevant systemic factors. Hence,

> If rates of suicide are the same among Zuni, the Swedes, and the Russians, those factors that distinguish these three societies are irrelevant for the explanation of suicide. If education is positively related to attitudes of internationalism in India, Ireland, and Italy, the differences among these countries are unimportant in explaining internationalist attitudes . . . . The "most different systems" design centers on eliminating irrelevant systemic factors (Przeworski and Teune 1970, 35).

Similarly, if a researcher draws samples from Nigeria and the United States and discovers that the relationship between rioting and education is the same in both samples, it goes without saying that the explanation of rioting is not a function of a systemic factor (e.g., culture).

Further, modernization, as a multifaceted concept, involves continuous changes in all areas of human thought and activity (Huntington 1968, 32). This statement is true in all nations regardless of the level of development--politically and economically. All nations are, by definition, constantly modernizing and consequently face the problem of modernization.

It will be recalled also that the major thesis of the modernization-instability school is that modernization leads to instability <u>if and only if</u> the rate of political institutionalization/capacity of government lags behind the rate of modernization. Huntington's emphasis on this point is worth repeating here:

> Huntington is concerned with the relationship between political participation and political institutionalization. The source of the former is ultimately in the process of modernization. . . . The problem of balanc-

> ing political participation and institutionalization, moreover, is one which occurs in societies at all levels of development (Huntington 1971, 315).

For instance, the disruptions that occurred when black Americans rioted in the United States in the late 1960s, according to Huntington, "could be profitably analyzed from this framework" (1971, 315). Thus, modernization can lead to instability in either "modern" or "modernizing" nations given a lower rate of institutionalization. This relationship can be expressed symbolically as

$$\text{MOD}/\text{POI} \xrightarrow{+\ -} \text{PINS}$$

where MOD, POI and PINS are modernization, political institutionalization/capacity of the government and political instability, respectively. A plus (+) or minus (-) over any variable represents relative leads and lags.

Seventh, some previous works on this topic or related topics suffer from small statistical samples. For example, Schneider and Schneider (1971) used only twenty nations to test Huntington's idea of political institutionalization. This work provides adequate sample size (N=805) via pooled cross-sectional time-series procedures.

Finally, this study goes further than previous works by extending its analysis into the most recent available data on the dependent variable--deaths from domestic political violence. This adds greater variability so that the effect

of modernization can better be addressed both in space and time.

In this study, the political instability equation is first estimated using yearly pooled cross-sectional and time-series data over the 1960-1982 period for a sample of thirty-five nations, and later estimated for twelve separate nations via Granger-causality tests (see Chapter IV). See Appendix A for a list of the countries in the analysis.

The above designs will also help in theory-building. While this study is not an attempt to build a theory of political instability, since it uses the most recent data and employs better statistical procedures, it will contribute to our understanding of the modernization-instability thesis, thereby proving very useful to students of comparative political development in particular and to students of social science in general.

Summary

In this chapter, I have outlined the significance of the study and identified the major limitations attendant on the methodological procedures/approaches adopted by the previous works on modernization-instability and related topics. I undertook a systematic critique of the more recent approaches and attempted to show how current research methods--most of which are statistical--could not take us far enough in understanding the more complex and dynamic

relationships between modernization and political instability.

I have also attempted to introduce, very briefly, the major focus of this study. I have defined the concepts of "modernity," "traditionality" and "modernizing/transitional," as widely used in the literature of social science.

While "modern" nations are defined as societies with strong and adaptable political institutions capable of handling the demands attendant on modernization, and "modernizing" nations are regarded as weak and incapable of meeting the needs coming from modernization, it is my contention that any society (irrespective of the level or the rate of economic or political development) is not immune to political instability, given high rates of modernization relative to the rates of economic development and political institutionalization. Thus, the study of modernization and political instability should be better tackled with the most different systems design.

In the next chapter, I will present a theoretical overview of the modernization-instability thesis. Chapter III presents and describes the definitions and measurements of the two basic concepts in this study--modernization and political instability. It also describes the statistical procedures adopted in this study, the problems with such procedures, and the methods for correcting them. Chapter IV reports the empirical findings derived from both the pooling

procedure and the Granger-causality tests. Chapter V concludes the study.

CHAPTER II

MODERNIZATION AND POLITICAL INSTABILITY

This chapter delineates exactly what is referred to here as the modernization-instability thesis. It establishes the position of modernization theorists, namely, modernization is the engine of political instability.

There are basically two lines of argument in support of the modernization-instability thesis. They have to do with (1) anomie, role conflict and group consciousness; and (2) social mobilization, political participation, economic development and political institutionalization.

Anomie, Role Conflict, Group Consciousness and Political Instability

One of the often cited arguments in support of the modernization-instability hypothesis is rooted in psychology. Its major thesis is that modernization involves changes in norms, values, roles and group consciousness. These changes invariably cause upheavals and disorientations within the society. The upheavals and disorientations, in turn, weaken the solidarity that hitherto has tied the society together, incapacitating the controlling mechanisms of the state. Psychological stress emerges and this stress leads to political instability (see, for example, Merton

1957; Pye 1962; Black 1966; Huntington 1965, 1968; Lewis 1969).

Pye maintains that modernization brings changes in norms and values which render society unstable:

> First, there is the problem of certainty or predictability: people in transitional societies can take nothing for granted; they are plagued on all sides by uncertainty and every kind of unpredictable behavior. In their erratically changing world, every relationship rests upon uncertain foundations. . . . Second there is a related problem of lack of trust in human relationships. Above all, the individual cannot be sure of the actions of others because he cannot be sure about himself (Pye 1962, 54-55).

Pye's major point is that there is a breakdown of associational sentiments as a result of disorientations and uncertainty about behavior expectations which are associated with modernization. To Pye, associational sentiments make it possible for members of a society to have "considerable conflict without destroying the stability of the system" (1962, 55). The breakdown of associational sentiments is a function of the fragmentary nature of the socialization process within a transitional society. For example, primary socialization imparts values which are more or less incongruent with the values from secondary socialization (Pye 1962, 54-55). The consequence of such an uneasy marriage between primary socialization and secondary socialization is incoherence within attitudinal orientations which leaves associational sentiments in shambles. When the

associational sentiments are weakened, conflicts become more intense and difficult to control.

Modernization has been associated with the growth of nuclear families. Nuclear families, in turn, have been linked to political instability (Huntington 1968; Black 1966). In many traditional societies the most important social unit was the extended family, which often constituted a small civil society performing political, economic, welfare, security, religious and other social functions. Under the impact of modernization, the extended family begins to disintegrate and is replaced by the nuclear family which is too small, too isolated and too weak to perform these functions (Huntington 1968, 37). As the family becomes nuclear, it begins to stress freedom in the choice of the partner, leading to a reluctance to accept parental control of everyday activities. A separate household is created upon marriage, independent of, and away from, the family. Also the increasing economic freedom of women brought about by the extension of education and equalization of occupational opportunities and their engagement outside the household, in skilled, professional and unskilled jobs has led to disruption of traditional family stability (Black 1966, 22).

Black presents four phases of modernization as water-sheds that contain critical problems that all modernizing nations must face. They are:

1. the challenge of modernity--the initial confrontation of a society within its traditional framework of knowledge with modern ideas and institutions and the emergence of advocates of modernity;

2. the consolidation of modernizing leadership--the transfer of power from traditional to modernizing leaders in the course of a normally bitter revolutionary struggle often lasting several generations;

3. economic and social transformation--the development of economic growth and social change to a point where a society is transformed from a predominantly rural and agrarian way of life to one predominantly urban and industrial; and

4. the integration of society--the phase in which economic and social transformation produces a fundamental reorganization of the social structure throughout the society (Black 1966, 67-68).

These four phases are not easily experienced by modernizing nations because they are fraught with problems that often culminate in violence. If individuals think of modernization as the integration of societies on the basis of new principles and new standards, Black argues, they must also think of it as disintegration of traditional values that hold society together (1966, 27). In a reasonably well-integrated society, and hence in modern nations, institutions work effectively, a larger proportion of the

people generally agree on ends and means and violence and disorders are largely controlled. However, when a significant and rapid change is introduced, no two groups welcome it simultaneously and this disagreement might lead to disorder or outright violence, even in such a well-integrated society.

Black also maintains that in transitional societies, eternal truths (generally enshrined in religious dogmas), come to be questioned and discarded as old-fashioned because they are expressed in a way regarded as outdated (1966, 28). Consequently, conflict arises between the fanatic, dogmatic religious elements and less orthodox ones. The desire to be modern has led to frequent and complete rejection of the fundamental norms and values which once held the society together.

An inherent contradiction in the process of modernization, as argued by Black, is produced by urbanization (1966, 31-33). Urbanization brings atomization (a situation where individuals are not directly related to one another through a network of multiple independent associations) which alters the extended family structure and traditional cultural heritage. Under these circumstances, the individual is much freer, yet less certain as to his purpose. This isolation, inherent in atomization, is what Black calls "alienation" (1966, 32). To Black, alienation has a relationship to

violence, though its relationship to violence is not very clear-cut.

Apter describes modernization as a process characterized by industrialization--the emergence of industrial roles in nonindustrial societies. In his words, modernization is the "spread of roles originating in societies with an industrial infrastructure, serving functional purposes in the industrial process, to systems lacking an industrial infrastructure" (1970, 158-159). Apter also focuses on the structural problems emanating from modernization. Modernization produces multiple roles in a complex form which need to be managed. For instance, as modernization takes place, the norms which once held the society together begin to weaken and consequently broaden the area of public meaning and reduce the area of prescriptive values. There exists more ambitiousness and less predictability in social actions. This gives rise to "greater uncertainty by individuals both of themselves and of the anticipated responses of others" (Apter 1970, 159).

The effects of modernization on political stability are expressed more clearly in Apter's (1965) earlier work. In this work he asserts that the source of political problems, and the conflicts resulting from modernization, is the lack of fit or incompatibility between roles (Apter 1965, 123-124). Societies in the process of modernization are said to have three basic roles: traditional,

accommodationist (semi-new roles) and industrial (new roles). Modernizing politics is the result of the conflict between these roles. Simply stated,

> The substance of modernizing politics is in large measure the result of incompatibilities between these three types of roles. The effort to adjust and modify them is particularly difficult in the absence of an impersonal dynamic mechanism such as exists in industrialized countries. . . . The claims put forward by competing political groups, each representing some portion of the total stratification system, are the means by which role malintegration is transformed into political conflict (Apter 1965, 123-124).

Not only do the roles become incompatible, but new groups emerge and make different claims on the political systems which result in conflict as the capacity of government lags behind those claims (Apter 1965, 124).

As modernization breaks up traditional institutions, Huntington (1968) maintains, it also creates new types of group consciousness such as tribalism or regionalism. The word "tribalism" was almost unknown in African nations until the advent and advancement of modernization forces from the Western world. For instance, in southern Nigeria, "Yoruba Consciousness" was first used by Anglican missionaries in the nineteenth century (Huntington 1968, 38). One of the goals of modernizing nations has been to achieve national integration. But in most, if not all, modernizing nations, nation-building or regional integration is very difficult to achieve because of tribal/regional divisiveness. Consequently, the effort to achieve national integration leads to

conflict or outright civil war as a result of tribalism/regionalism.

Group consciousness also generates group prejudices which, in turn, leads to group conflict. Such conflict might be intensified if tribalism/regionalism has destroyed the effectiveness of the political institutions. Ethnic groups which once maintained a peaceful coexistence in traditional society become aroused to violent conflict as a result of the interaction, the tensions and the inequalities created by social and economic modernization (Huntington 1968, 39). The new elites with their acquired modern education come into conflict with the traditional elites whose authority rests on ascribed status. These conflicts often find their expressions in outright violence. Modernization, therefore, enhances conflict among traditional groups as well as between traditional groups and modern ones.

The Nigerian civil war (1967-1970), according to Nordlinger, is an example of a war generated by communal divisiveness and prejudices, especially within the officer corps (1977, 41-42). The issue of tribal and regional representation generated mutual resentments and fears within the army and eventually led to civil war. The Hausa-Fulani tribes in the North favored the use of a quota system as the standard for promotion within the army. The Ibo tribe favored the use of a merit system. As a result of this

disagreement, the Ibo tribe carried out a military coup d'etat that ousted the previous civilian government. The Hausa and the Fulani tribes in the North and the Yoruba tribe in the West quickly took vengeance. Ibos were massacred by the tens of thousands and their futile attempts to secede from Nigeria, under the name Biafra, were overcome by military force.

The point made by Huntington and Nordlinger is that the civil war in Nigeria, was to a large extent, a function of the processes of modernization (e.g., quota system versus merit system) and exacerbated by local patriotism. Similarly, Zolberg (1966) and Barrows (1976) have pointed out that deep-rooted ethnic and linguistic divisions inevitably pose considerable problems both for political integration and for the creation and maintenance of a stable political order, especially when formal political organizations develop along the lines of the ethnic-linguistic cleavage.

In sum, it is the position of the modernization theorists that anomie, role conflict and group consciousness resulting from modernization lead to political instability in the modernizing nations of Asia, Africa and Latin America. At the psychological level, modernization means a shift in fundamental values, attitudes and expectations. Thus, modernization produces alienation and anomie, i.e., normlessness generated by the conflict of old values and new ones, as in the biblical phrase which says that if one "puts

new wine into old wineskins, the wine will burst the skins, and the wine is lost."

Modernization, Social Mobilization, Political Participation, Economic Development, Political Institutionalization, and Political Instability

The major arguments of modernization-instability theorists, and thus the major relationship to be tested here, have to do with the links between social mobilization, political participation, economic development, political institutionalization, and instability. First, the individual (separate) effects of social mobilization, political participation, economic development and political institutionalization on political instability will be presented and discussed. In this study, this is referred to as the "additive model." Second, the complex relationship between the above concepts of modernization and political instability, called the "gap hypothesis," will be presented. This is regarded as the "nonadditive" or "ratio structure" in this study.

Modernization-Instability: Additive Model

Produced by such developments as urbanization, industrialization, educational expansion, increase in literacy, media exposure, economic development, social mobilization (Deutsch 1961, 494) is "the process in which major clusters of old social, economic and psychological commitments are

eroded or broken and people become available for new patterns of socialization and behavior." These indicators contribute to breaking down the traditional values and increasing the options available to an individual about his roles and jobs in the society to which he belongs. A rapid rate of change in social mobilization indicators means that the above changes are occurring very fast. Simply put, social mobilization is a process by which traditional attitudes are eroded and replaced by more modern ones.

For Deutsch, social mobilization occurs in two stages: first, the stage of uprooting from the old habits, customs and commitments, and second, the stage of induction of the mobilized people into new patterns of commitments and lifestyles. This process of social mobilization, according to Deutsch (1961, 493) is what happens to a people undergoing modernization. As the number of the mobilized population increases, so also does the number of their needs. The individuals now begin to need such provisions as housing and employment, social security against illness and old age and medical care against health hazards resulting from, say, crowded new dwellings. The expanding number of the mobilized population and the greater urgency of their needs for political decisions tend to translate themselves into increased political participation, especially in such unconventional ways as "crowds, riots, meetings, demonstrations, strikes and uprisings. . . ." (Deutsch 1961,

499). These extreme political activities place serious stress on the political system and, consequently, lead to outright violence or civil war.

Following Deutsch's (1961) lead, Huntington (1968, 1971) maintains that the relationship between social mobilization and political instability is direct because all the indicators of social mobilization (e.g., urbanization, increases in education, exposure to mass media) lead to increased aspirations and expectations "which, if unsatisfied, galvanize individuals and groups into politics. In the absence of strong and adaptable political institutions such increases in participation mean instability and violence" (Huntington 1968, 47).

Further, social mobilization, according to Huntington (1968, 57), stimulates political instability in the face of unequal distribution of income. Unequal distribution of wealth, which was generally accepted as a normal part of life in the traditional period, now becomes questionable in the modernizing era. This is because social mobilization increases the awareness of the inequality and the resentment of it. Growth in education and literacy (associated with social mobilization) calls into question the legitimacy surrounding the old method of income distribution and subsequently suggests more equitable distribution. And, because it often happens that those "who command income usually command government," social mobilization "turns the

traditional economic inequality into a stimulus to rebellion" (Huntington 1968, 57).

While modernization produces social mobilization, it also produces an increase in political participation (Huntington 1971, 315). Participation in politics by groups and individuals beyond villages and towns is a part of modernization (Huntington 1968, 36). Depending on who participates, political participation can induce political instability: "Literates and semiliterates may furnish recruits for extremist movements generating instability" (Huntington 1968, 49). The rationale is that the literates generally have higher aspirations and, consequently, make greater demands on government. In this light, political participation, especially in an unconventional way, has a direct positive impact on political instability.

Bill and Leiden (1979) equally contend that one of the causes of violence in the Middle East is "the growing gap between modernization on the one hand, and political development on the other" (p. 402). As modernization races far ahead of the rate of political development, the potential for political violence and other social upheavals increases significantly: "New demands, sharpened and heightened by modernization and petroleum wealth, inundate political leaders who are less and less able to meet them on traditional patrimonial terms" (Bill and Leiden 1979, 402-403).

Economic development is another aspect of modernization that has an impact on political instability (Huntington 1968, 33). Economic development is the "growth in the total economic activity and output of a society" and can be measured by the gross national product per capita, or the level of individual welfare, e.g., life expectancy, calorie intake, supply of hospitals (Huntington 1968, 33-34). While social mobilization increases the aspirations and expectations of individuals, groups and societies, Huntington (1968, 1971) argues, economic development increases the capacity of a society to meet those aspirations and rising expectations and thus "should tend to reduce social frustration and the consequent political instability" (1968, 49).

Note that while Deutsch (1961) includes economic development as a part of social mobilization, Huntington (1968) keeps the two analytically separate. Following Huntington (1968), economic development is kept analytically distinct from social mobilization in this work. Thus, as social mobilization increases the aspirations and expectations of a nation, economic development involves changes in the capacity of the nation to meet those aspirations. In this line of reasoning, it then follows that there is a direct negative relationship between economic development and political instability.

Political institutionalization is another factor affecting political instability (Huntington 1968, 1971). According to Huntington, political institutionalization is defined by "adaptability" and "complexity" (1968, 13, 17). Adaptability is characterized by the ability of an organization or political system to adjust to changes (e.g., alterations in personnel) and survive. For any organization to acquire such adaptability it must be flexible, yet this flexibility is what young organizations lack (Huntington 1968, 13). Complexity, on the other hand, involves multiplication of organizational subunits, hierarchically and functionally organized. This enables the political system to permeate the society. Therefore, the more complex an organization, the greater the number of its subunits and "the greater the ability of that organization to secure and maintain the loyalties of its members" (1968, 18). Thus, political institutionalization should have a negative impact on political instability.

From the foregoing discussions, the general nature of the direct links between social mobilization, political participation, economic development, political institutionalization and political instability becomes discernible. Modernization produces social mobilization and political participation. The demands created by social mobilization and political participation produce stress on the political system and, to survive, the demands must be met. If there

is economic development and adaptable political institutions, the demands are likely to be well-managed and political order is maintained. Thus, social mobilization and political participation should increase political instability, while economic development and political institutionalization should decrease political instability. Modern nations that are presumed to have highly institutionalized political organizations are better prepared to handle high demands generated by the processes of modernization: "all have strong, adaptable, coherent political institutions . . . for regulating succession, and controlling political conflict" (Huntington 1968, 1).

Modernization-Instability: Nonadditive Model

In addition to the individual impacts that modernization has on political instability, Huntington (1968) presents a more dynamic relationship between modernization and political instability in what he calls the "gap hypothesis" (1968, 53-56). He implies that the real strength of the relationship between social mobilization and political instability is a function of two mediating variables--economic development and political institutionalization. The "gap hypothesis" is expressed as:

$$\frac{+}{SOM} \Big/ \frac{-}{ECD} = UPP \quad \text{(i.e., stress)}$$

$$UPP \longrightarrow PINS$$

$$\frac{+}{SOM} \Big/ \frac{-}{POI} \longrightarrow PINS$$

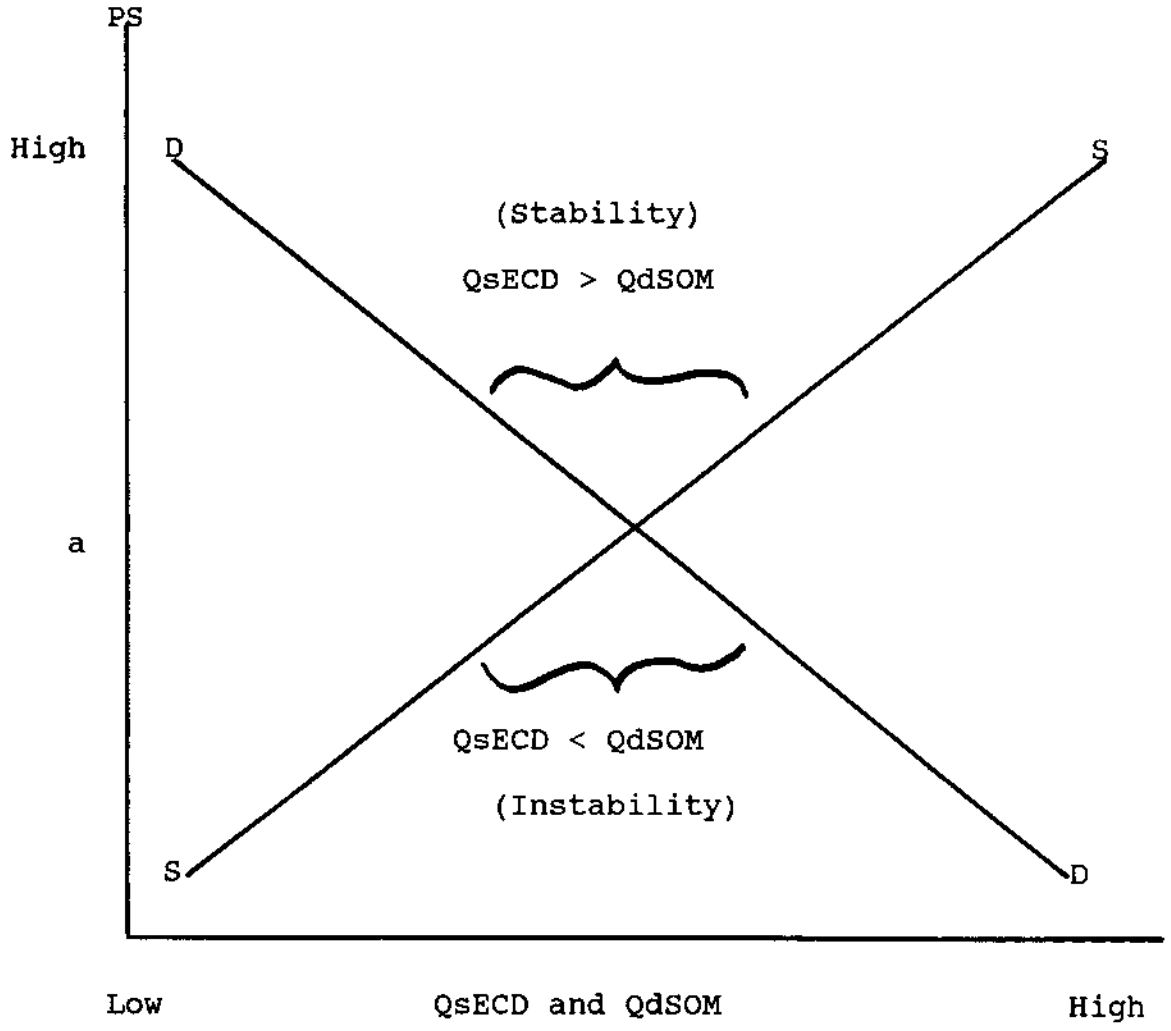
(Adapted from Huntington 1968, 55; Ruhl, 1975, 7)

where SOM, ECD, UPP, POI and PINS are social mobilization, economic development, political participation potential, political institutionalization and political instability respectively.

From the above ratio structure, the impact of social mobilization on political instability is mediated by economic development. That is, if the rate of economic development (ECD) lags behind social mobilization (SOM), the result becomes unconventional political participation (UPP) or stress on the political system, which in turn leads to political instability. That is, a high ratio means that the demands generated by social mobilization are not met by increased resources furnished by economic development and, as a result, political instability occurs. If the society is well off, as indicated by a low ratio between social mobilization and economic development, the demands generated by social mobilization will be met by the resources produced by economic development and political order is maintained (Huntington 1968, 1971; Schneider and Schneider 1971; Ruhl 1975).

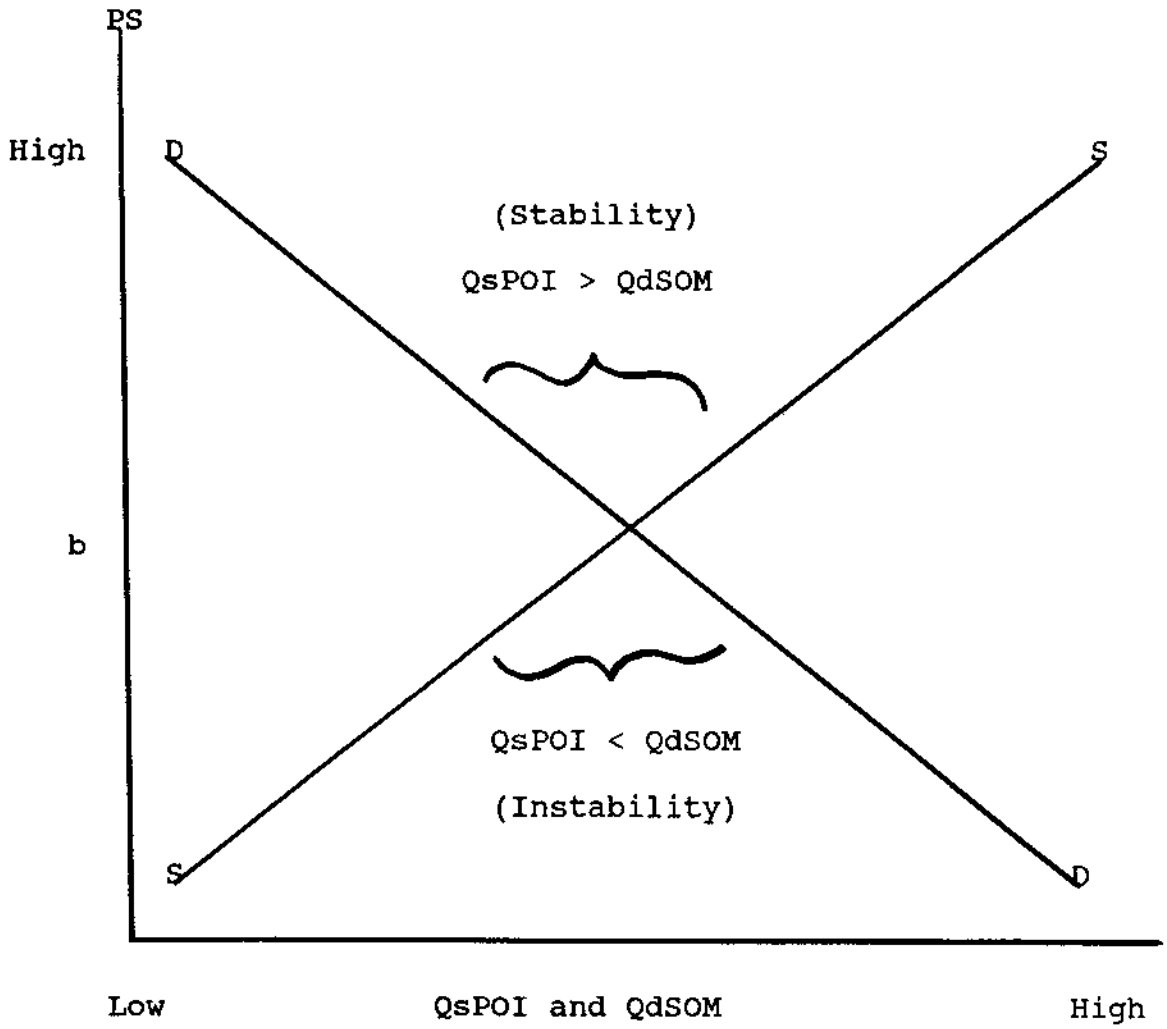
Another ratio constructed from the gap hypothesis is that of social mobilization and political institutionalization. From the above hypothesis, a high ratio between social mobilization and political institutionalization, portends political instability. That is, if the rate of social mobilization outruns the rate of political institutionalization, political disorder occurs. However, if a low ratio obtains between social mobilization and political institutionalization, political order prevails (see Huntington 1968, 55 and 1971, 315; Schneider and Schneider 1971, 73-74; Ruhl 1975, 7).

The complex relationships between modernization, economic development, political institutionalization and political instability can best be pictured graphically as demonstrated in Figures 1, 2 and 3. Figure 1 is an illustration of the interdependence between supply of economic development (ECD) and demand for social mobilization (SOM). This graph puts a society's supply (ECD) and demand (SOM) curves on the same graph. The horizontal axis reflects both the society demand (i.e., QdSOM) and the society supply (i.e., QsECD). An examination of this graph indicates that at any stability level equal to or greater than "a" (i.e., QsECD $\geq$ QdSOM), our hypothetical society experiences stability. Conversely, at any stability level below "a" (i.e., QsECD < QdSOM), our hypothetical society will experience political instability.



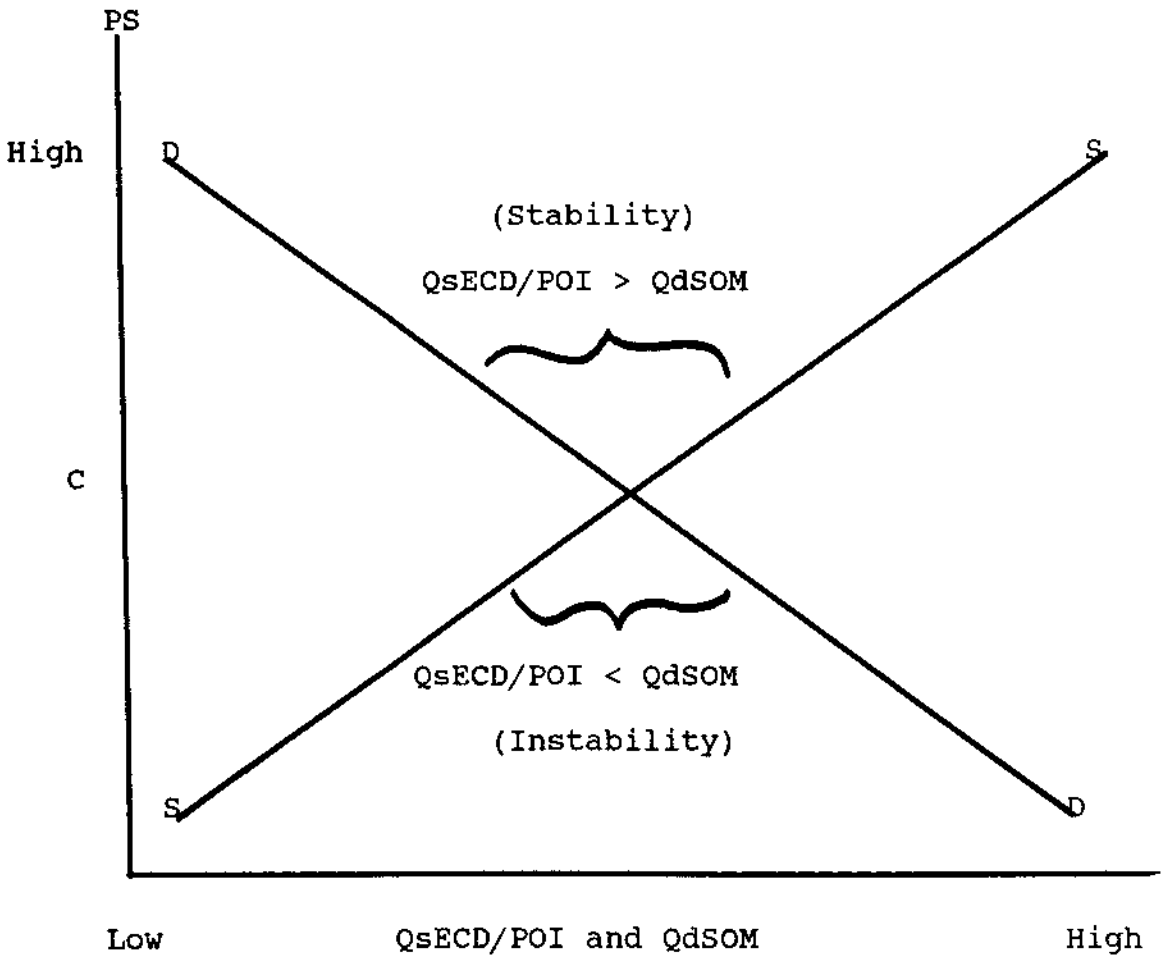
Source: By the author

Figure 1: Implicit model to show the nature of the interdependence between the demand, social mobilization (SOM) and the supply, economic development (ECD).



Source: By the author

Figure 2: Implicit model to show the nature of the interdependence between the demand, social mobilization (SOM) and the supply, political institutionalization (POI).



Source: By the author

Figure 3: Implicit model to show the nature of the interdependence between the demand, social mobilization (SOM) and the supplies, economic development/political institutionalization (ECD/POI).

From the above illustration, "a" (i.e., stability level) can be estimated as a function of the relationship between QdSOM and QsECD. Symbolically,

$$a = F (SOM/ECD)$$

Figure 2 illustrates the interdependence between supply of political institutionalization (POI) and the demand for social mobilization (SOM). The horizontal axis reflects both the society demand (i.e., QdSOM) and the society supply (i.e., QsPOI). This figure indicates that at any stability level equal to or greater than "b" (i.e., QsPOI $\geq$ QdSOM), political stability is maintained. Conversely, at any stability level below "b" (i.e., QsPOI < QdSOM), political instability occurs.

From Figure 2, "b" (i.e., stability level) can be estimated as a function of the relationship between QdSOM and QsPOI. Symbolically,

$$b = F (SOM/POI)$$

Figure 3 is a combination of figures 1 and 2: an overall illustration of the interdependence between supply of economic development and political institutionalization (ECD/POI), and the demand for social mobilization (SOM).

Figure 3 puts a society's supply (ECD/POI) and demand (SOM) curves on the same graph. The horizontal axis now reflects both the society demand (i.e., QdSOM) and the society supply (i.e., QsECD/POI). At any stability level equal to or greater than "c" (i.e., QsECD/POI $\geq$ QdSOM), our

hypothetical society experiences stability, while at any stability level below "c" (i.e., QsECD/POI < QdSOM) the society experiences political instability.

From Figure 3, "c" (i.e., stability level) can be estimated as a function of the relationship between social mobilization and economic development (SOM/ECD), on one hand, and social mobilization and political institutionalization (SOM/POI), on the other. Symbolically,

$$c = F (SOM/ECD, SOM/POI)$$

From the "gap hypothesis," Huntington (1968) theoretically presents how political participation (stress) could be derived, namely, SOM/ECD (see also, Schneider and Schneider 1971; Ruhl 1975). Additionally, political strikes and protest demonstrations (both peaceful) constitute another measure of political participation in this study. How political strikes and protest demonstrations are measured and used are described in detail in Chapter III. However, it is worth mentioning that the measures of political participation employed here produce more stress on the political system than the mere act of voting (Ruhl 1975; Janda, Berry and Goldman 1989; Conway 1987). Following Huntington's hypothesis, the following ratios will be tested:

$$SOM/PQLI \xrightarrow{+\ -} PINS$$

$$SOM/POI \xrightarrow{+\ -} PINS$$

where PQLI is physical quality of life index (a measure of economic development/well-being) and the rest of the notations remain as previously defined.

In essence, there are two alternative paths for a political system to respond to the demands generated by modernization, namely, political institutionalization or political decay. Briefly stated, "The system either provides for this participation in ways harmonious with the continued existence of the system or alienates the group from the system and produces overt or covert civil strife and secession" (Huntington 1968, 140). Political decay or declining political order in the nations of Africa, Asia and Latin America occurs because (1) the rate of economic development is low vis-a-vis the rate of social mobilization, and (2) political institutions are not complex and flexible enough to handle or manage aspirations and expectations generated by the processes of social mobilization:

> The rates of social mobilization and expansion of political participation are high [in modernizing nations of Asia, Africa and Latin America]; the rates of political organization and political institutions are low. The result is political instability and disorder. The primary problem of politics is the lag in the development of political institutions behind social and economic change (Huntington 1968, 5).

Selected Hypotheses

From the foregoing discussions, emerge the hypotheses to be tested here:

H_1: The higher the rate of change of social mobilization (SOM) the higher the level of political instability.

H_2: The higher the rate of unconventional political participation (UPPI) the higher the level of political instability (PINS).

H_3: The higher the rate of economic development (ECD) the lower the level of political instability.

H_4: The higher the rate of political institutionalization (POI) the lower the level of political instability.

H_5: The higher the ratio between the rates of social mobilization and economic development (SOM/ECD), potential political participation (stress), the higher the level of political instability.

H_6: The higher the ratio between the rates of social mobilization and political institutionalization (SOM/POI) the higher the level of political instability.

The above hypotheses need some clarifications. The first four (H_1, H_2, H_3 and H_4) consider the direct individual impacts of social mobilization, political participation, economic development and political institutionalization on political instability. The last two (H_5 and H_6), on the other hand, consider Huntington's "gap hypothesis." This is because the gap hypothesis suggests the following: (1) a high (positive) ratio between social mobilization and economic development portends political instability, and

(2) a high (positive) ratio between social mobilization and political institutionalization leads to political instability. Therefore, H_5 assesses the effects of the ratio of social mobilization with economic development (social frustration) on political instability and H_6 addresses the ratio of social mobilization with political institutionalization on political instability.

The above hypotheses are designed to reveal which model is better specified and consequently lends support to the modernization-instability thesis. That is, does the ratio structure, Huntington's nonadditive complex model of modernization-instability (expressed in H_5 and H_6), represent a better specification that estimates instability, or does the additive model (expressed in H_1, H_2, H_3 and H_4) prove to be better specified?

To understand the causal ordering of the relationship between modernization and political instability, a number of additional hypotheses are formulated. Recall that the major position of the modernization theorists is that modernization induces political instability unidirectionally. But while it may seem obvious from the modernization-instability thesis that modernization induces political instability, it is equally plausible that a people lacking modernization can, as well, use political instability to increase it or bring it about. Simply stated, political instability can

explain some variations in the rate of modernization. Let us consider this argument in detail.

In the modernization-instability literature, there are two fundamental views of the causes of political stability/instability. One view dwells on the demand side, emphasizing increased aspirations brought about by a high rate of modernization. Very few will deny that increases in social mobilization (e.g., mass education, communication) and mass participation have adverse effects on a nation's political system (whatever the level of development). The other view focuses on the supply side, stressing low rate of economic development and political institutionalization.

On the supply side then, an explanation of the much higher political instability rate is a high ratio between social mobilization and economic development/political institutionalization:

$$\text{SOM/PQLI} \xrightarrow{+\ -} \text{PINS}$$

$$\text{SOM/POI} \xrightarrow{+\ -} \text{PINS}$$

The above ratios deserve close examination. First, the ratios may be attributing much more importance to social mobilization than it deserves because of interdependence between causes on the supply side and causes on the demand side (refer to Figures 1-3). Thus, political instability may not be an independent supply side cause, but in large part an effect of the demand side factors. Empirically,

observing the nature of this relationship is not only desirable, but necessary. That is, to estimate the demand function without taking account of the supply equation may result in simultaneous equation bias.

In addition, modernization theorists argue that increasing social mobilization and political participation leads to political instability. This implies that restricting both factors leads to political stability. One should realize that during the colonial period (when the colonized demanded political rights and independence from the colonial masters), increasing social mobilization and political participation may have had the opposite effect: Huntington's ratio may have led to political stability. "Taxation without representation," the United States experience under the British, and apartheid rule in today's South Africa are cases in point. The above two examples illustrate that restricting (decreasing) social mobilization and political participation can, as well, lead to political instability just as increasing social mobilization and political participation can lead to political instability. Whereas restricting (decreasing) the rate of political participation may encourage political stability in today's nations, a reduction in social mobilization and political participation in the colonial period might have encouraged political instability.

By the same reasoning, it is surely appropriate today to ask whether the cause of the relatively higher political instability is high rates of social mobilization/political participation and low rates of political institutionalization. Combining this question with its opposite, one may pose the following question on causation: Is the higher rate of political instability in some nations due to their high rate of modernization and low rate of political institutionalization, or is their high rate of modernization and low rate of political institutionalization due to their higher political instability? Symbolically,

SOM ---------> PINS
SOM <--------- PINS
UPP ---------> PINS
UPP <-------- PINS

Finally, it is possible that modernization can cause political instability and vice versa, and that they exhibit a feedback relationship. Hence,

SOM <--------> PINS
SOM <--------> PINS
UPP <--------> PINS
UPP <--------> PINS

Additional hypotheses are needed to explore these possibilities.

H_7: Social mobilization causes political instability.

H_8: Political instability causes social mobilization.

H_9: Political instability and social mobilization are causally reciprocal.

H_{10}: Political participation causes political instability.

H_{11}: Political instability causes political participation.

H_{12}: Political instability and political participation are simultaneously determined.

The above causal ordering will be tested using Granger tests as will be described in Chapter III.

Summary

In this chapter, I have attempted to review the major thesis of the modernization-instability school. Generally, I presented two classes of arguments that support the modernization theorists: (1) anomie politics, role conflict and group awareness/tribalism, and (2) social mobilization, political participation, economic development and political institutionalization, as all are parts of the modernization process that can affect political order. This chapter has shown that there is a widely shared belief that a paradoxical relationship exists between modernization and political instability, where modernity is presumed to produce stability and modernization instability.

I have outlined a number of testable hypotheses concerning the possible relationships between modernization and political instability which merit detailed statistical

investigation. I have, in fact, specified twelve hypotheses --some of them complementary--to be examined.

In the next chapter, I will discuss how modernization and political instability will be defined, identified and measured. Chapter III thus deals with the definitions of the concepts, operationalization of those concepts, research designs and the data sources.

CHAPTER III

DEFINITIONS, OPERATIONALIZATIONS, THE RESEARCH METHODS

Two of the biggest problems facing quantitative researchers, especially in social science, are how to bridge the gap between concepts and their operational indicators and how to select appropriate units of analysis. To ensure that the gap between concepts and operational indicators is narrowed, and that the proper units are included in the model, this study takes advantage of critical evaluations and recommendations directed at previous studies on modernization-instability and related topics. The problem of selecting the appropriate units of analysis and the criteria for selecting them have already been discussed in Chapter I. In this chapter, I specifically present the definitions and the measures of the two major concepts in this study, modernization and political instability. I also present the research design, data description and sources.

Political Instability: Definition and Measurement

Political instability as used here refers mostly to violent aspects of instability involving governments, regimes and the political community in a polity (Sanders

1981, 59). Previously, political instability has been defined as the short duration of governments (Lipset 1960; Blondel 1968) or as the incidences of civil disorder and violence (Gurr 1968; Feierabend and Feierabend 1966). The definition of instability in terms of government duration has been severely challenged on the ground that not all changes in the political system are destabilizing (Ake 1974). Ake (1974) asserts that the above definitions often lead to different results and consequently undermine the chances of understanding the relationship between modernization and political instability (p. 584). Simply put, "when we build the notion of longevity into our concept of stability, we are already confusing political stability with the absence of political change" (Ake 1974, 589).

Following Ake's recommendation, the definition of political instability does not dwell on the duration of the government. Instead, political instability, as defined here, can affect any political system irrespective of its age. To better measure this type of political instability, deaths from domestic political violence are used. There are other reasons why deaths from domestic political violence are used here. Deaths from domestic political violence occur at all levels of society. Other violent activities such as coups d'etat usually occur at the elite level of the society. In addition, the definition of deaths from domestic political violence is broader and more inclusive of

other violent activities. According to Taylor and Jodice, deaths from domestic political violence "are coded as an attribute of other events rather than as events in and of themselves" (1983b, 43). In fact, deaths from domestic political violence occur in conjunction with violent events such as riots, armed attacks and assassinations. The category also includes nationals who are victims of foreign attacks but excludes deaths by murder, deaths in international war, political executions, deaths in enemy prisons and deaths in border incidents with other nations. The data on deaths from political violence are taken from the extended computer data files accompanying the World Handbook of Political and Social Indicators: Political Protests and Government Change (Taylor and Jodice 1983b). These and all other data used in this study were supplied by the International Consortium for Political and Social Research (ICPSR).

The dependent variable, deaths from domestic political violence, is expressed in natural logarithm form to help reduce the problem of its skewed distribution demonstrated in Figure 4. Logarithmic transformation "compresses the scales in which the variables are measured, thereby reducing a tenfold difference between two values to a twofold difference" (Gujarati 1978, 210.). Figure 5 clearly demonstrates the impact of the transformation.

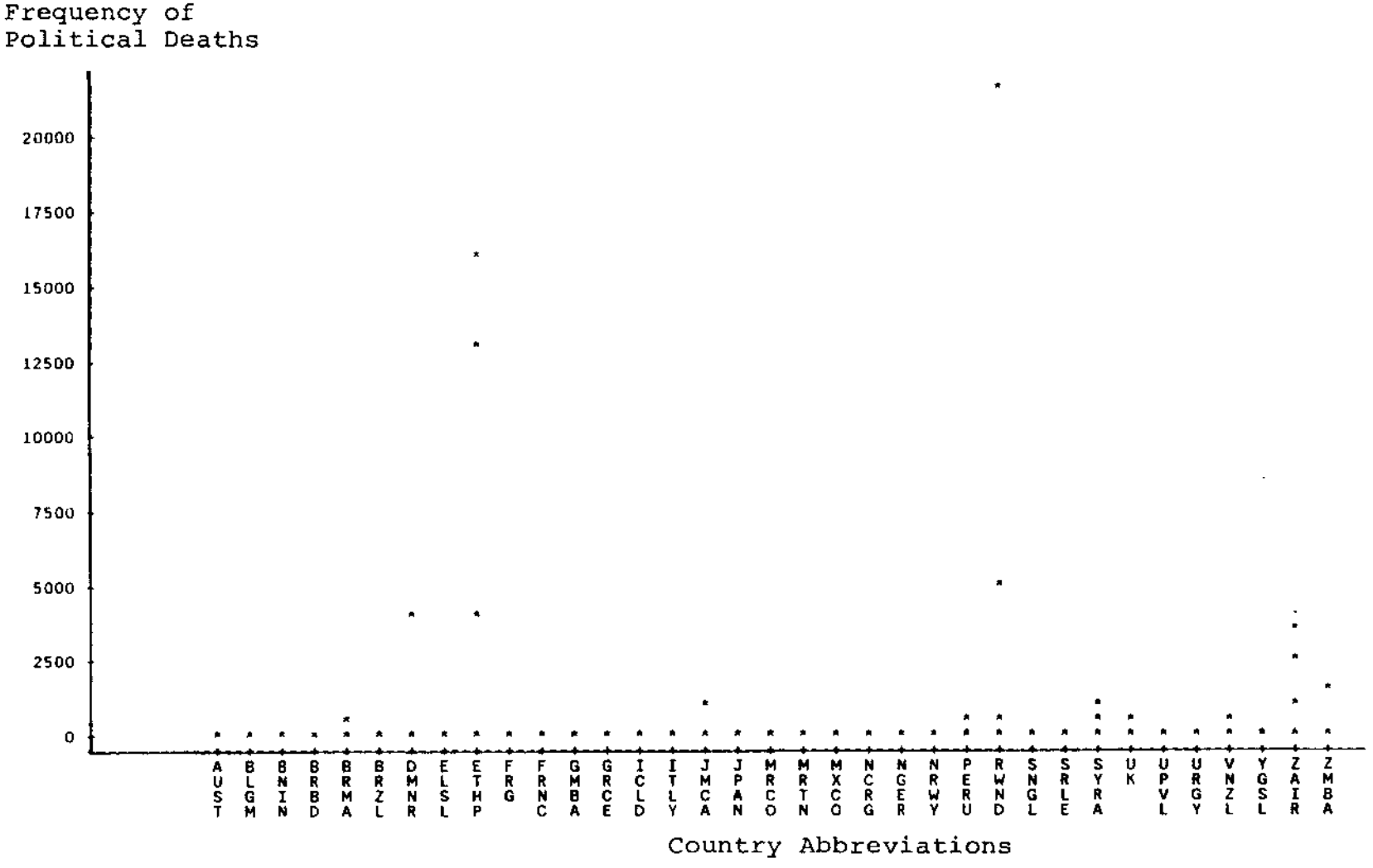


Figure 4. Histogram of Frequencies of Deaths From Domestic Political Violence, 1960-1982

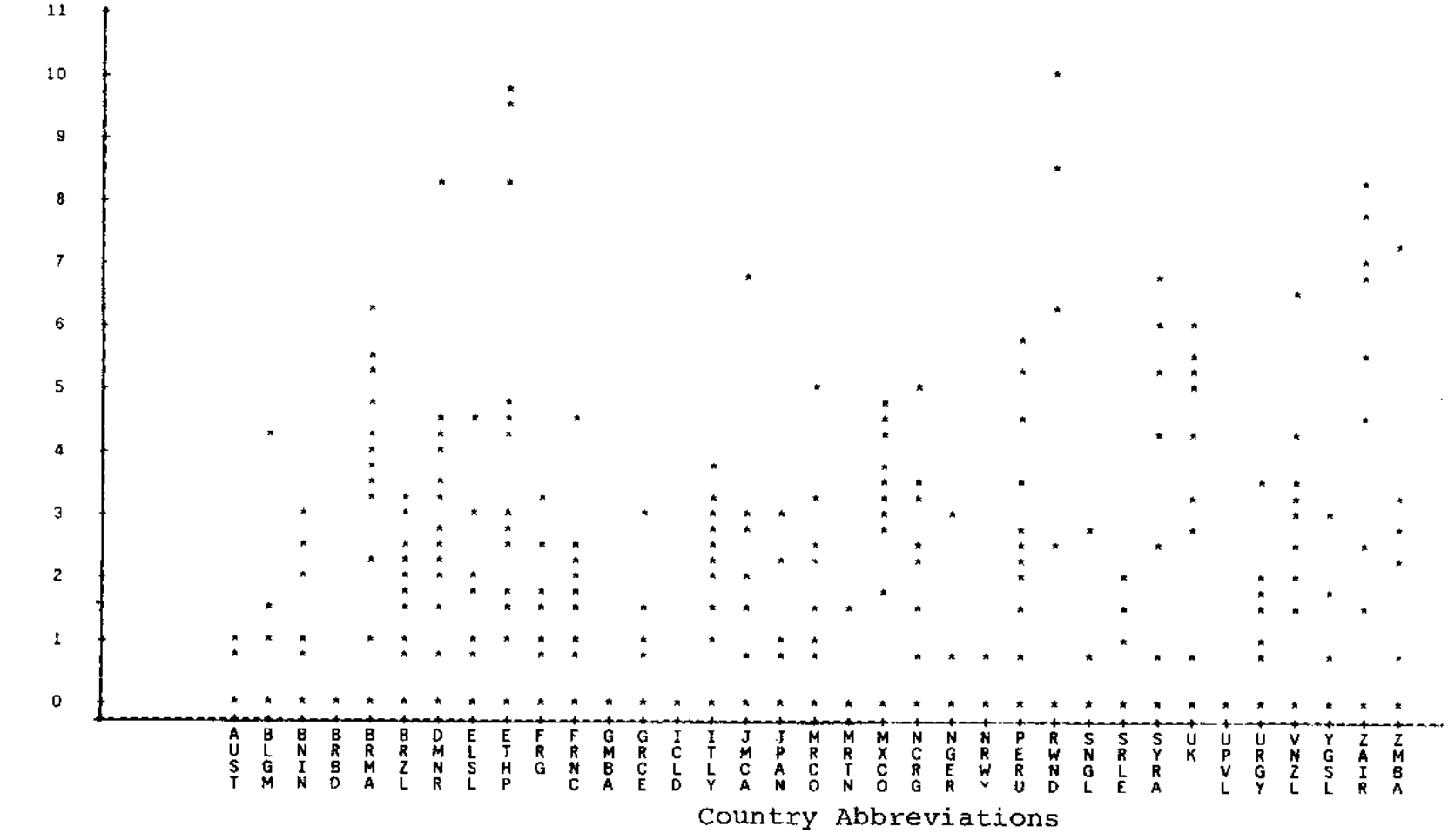


Figure 5. Histogram of Frequencies of Logarithmic Transformed Deaths From Domestic Political Violence, 1960-1982

Modernization, Economic Development, Political Institutionalization: Definition and Measurement

Modernization, the independent variable, should be interpreted with caution since the term is still ambiguous and can be interpreted variously. Some scholars have narrowed their views of modernization to economic determinism. For instance, Bernstein (1977, 141-160) suggests that modernization is a total social process associated with economic development. Similarly, Rostow (1960, 4-16) argues that modernization is a watershed that marks the "take-off" into "self-sustained growth" of traditional economies. The "take-off" is, in turn, followed by a push towards industrial maturity, leading towards an era of high mass consumption made possible by high average income and resilience of the perfected industrial process.

However, some scholars want to divest modernization of its economic determinism and focus more on the very dynamic change that has been recognized as desirable by individuals and their societies for their own good. Lerner, for example, argues that modernization does not only comprise economic development. It is, rather, the generic nature of change and its concomitant attributes--rationality and positivism--that have come to be recognized as a potent force for producing economic, social as well as political changes for the emancipation of man (Lerner 1958, 45-46). Weiner equally stresses the idea of inherent change in

modernization. Modernization involves changes in social behavior, in individual attitudes, in economic as well as political dimensions (Weiner 1966, v). The idea of dynamism inherent in modernization is also emphasized by Black, when he states that modernization is

> the process by which historically evolved institutions are adapted to the rapidly changing functions that reflect the unprecedented increase in man's knowledge, permitting control over his environment that accompanied the scientific revolution (1966, 7).

Huntington defines modernization as a "multifaceted process involving changes in all areas of human thought and activity" (1968, 32). He points out that there are two major aspects of modernization that are pertinent to political violence, namely, social mobilization (Huntington 1968, 33) and political participation (1971, 315). Social mobilization, according to Deutsch, is what happens to a people that are in the process of modernization (1961, 494).

Levy stresses the importance of industrialization and the technological aspects of modernization. For him, modernization should be measured in terms of the "use of inanimate sources of power and/or the use of tools to multiply the effects of their efforts" (Levy 1966, 9-16).

Faced with these competing and complementary conceptualizations of the term "modernization," a student is confronted with difficulties in selecting a consistent and universally acceptable definition of modernization. Lacking guidance, the student must make a subjective choice from

among the various definitions. But, in fact, this study does not lack such guidance. While other definitions of modernization are generally accepted, the definition of modernization relevant to this study is the one offered by Huntington that ultimately narrows the definition to two specific indicators that have political significance. Specifically, modernization is defined as social mobilization (Huntington 1968, 33) and political participation (Huntington 1971, 314-315).

Deutsch (1961) suggests several indicators measuring social mobilization: change in urbanization, change in education, change from agricultural occupations, change in literacy and change in communication, for example.

While the above indicators of social mobilization are generally accepted as valid, I was forced to delete such indicators as communication, urbanization, education and literacy rates since no indicators of those dimensions (measuring social mobilization) are readily available in time-series form for the period considered in this study, 1960-1982. As a result, social mobilization is measured here in terms of one indicator--percentage of labor force in agriculture. That not all indicators measuring social mobilization are utilized should not constitute a major problem in this study because "if the relationship between variables is strong, mere differences in preferred measures ought not to produce widely divergent findings" (Eckstein

1980, 156). The various measures are highly correlated (Putnam 1967, 93).

From the argument of modernization theorists, we expect a positive relationship between changes from agricultural occupations (one measure of social mobilization) and political instability. But in this study, change from agricultural occupations is replaced by the percentage of labor force in agriculture. Thus to be properly directed (i.e., for a positive relationship to be expected between social mobilization and political instability), the percentage of labor force in agriculture (our measure for social mobilization) is multiplied by -1.

Political participation is another modernization variable to be operationally measured. Many studies have ignored the relationship between political participation and political instability. However, Schneider and Schneider (1971) and Ruhl (1975) attempted to investigate the relationship between political participation and political instability. For Ruhl, "political participation is used here in the broadest sense of political involvement as opposed to mere voting participation" (1975, 6). Hibbs (1973), on the other hand, uses the conventional mode of political participation, the percentage of eligible voters voting. Using conventional political participation (e.g., percentage of eligible adult voter) is valid, but it has two major problems. First, political participation expressed

primarily in terms of voting is less stressful on the participants as well as the political system than other forms of participation. The comments by Janda, Berry and Goldman (1989) on this point are quite instructive:

> Although most people think of political participation primarily in terms of voting, there are other forms of political participation [e.g., protest demonstration], and sometimes they are more effective than voting. . . Unconventional participation is relatively uncommon behavior that challenges or defies government channels (and this is personally stressful to participants and their opponents) (1989, 225-227).

It should be remembered that the type of political participation referred to in the works of Deutsch (1961) and Huntington (1968) implies stress on the political system (or broader political activities or involvements). To better measure this type of political participation, this study, like Ruhl (1975), defines political participation broadly, namely, as those activities performed by the citizens to influence either the government personnel or its policies. While this definition acknowledges the validity of voting, it also recognizes the significance of other acts of participation such as peaceful protests and political strikes.

Following the stress argument, this study adopts two different measures of political participation. First, an index of political participation (UPP1) is created. UPP1 includes peaceful protest demonstrations and political strikes. The method used in the construction of the political participation index is discussed later in this chapter.

The data are taken from the expanded computer files accompanying the World Handbook of Political and Social Indicators (Taylor and Jodice 1983b).

The second measure of stressful political participation adopted here is an indirect one "potential stress from participation," derived from the original gap hypothesis (Huntington 1968, 55; 1971, 315). Symbolically, the second measure of political participation, here referred to as political participation potential, takes the following familiar form:

$$SOM/PQLI^{+}_{-} = UPP2$$

where SOM, PQLI remain as mentioned previously, UPP2 represents political participation potential (social frustration), and PQLI is a physical quality of life index representing economic development defined below.

The second reason why this study does not consider conventional political participation is that data on periodic elections, conventional political participation, in the modernizing nations are not readily available. Some modernizing nations do not hold periodic elections; some are under military regimes. Thus, the better measures of political participation are the ones that consider broader political activities such as peaceful protest demonstrations and political strikes. A protest demonstration is defined as a nonviolent gathering of people organized for the sole

purpose of protesting against a regime or government--its policies, leaders or previous intended actions (Taylor and Jodice 1983b, 19). A political strike is defined as a non-violent work stoppage by say, a body of workers, or a stoppage of normal academic life by students to protest a regime or government's policies or actions (Taylor and Jodice 1983b, 21).

Economic development has been traditionally measured by some variation of gross national product (GNP) per capita. For instance, Schneider and Schneider (1971) constructed an economic development index from two indicators: gross national product per capita and the energy consumption per capita in kilograms of coal equivalent. Ruhl (1975) used the gini index of income distribution. However, GNP per capita has come under severe attack and is been considered a crude measure of satisfaction or well-being (Zartman and Entelis 1971; Sewell 1977, 1980). According to Zartman and Entelis, GNP per capita is generally "inaccurate and specifically it is realistically inapplicable to the man in the street. A new oil well or iron mine may greatly enhance the gross national product with almost nothing reaching the man in the street" (1971, 298). Accordingly, "money measures do not in themselves indicate anything about the levels of physical well-being of individuals..." (Sewell 1977, 148).

Given these problems, the need for a better measure of economic progress and physical well-being becomes more compelling. An alternative measure, referred to as the Physical Quality Life Index (PQLI), has been suggested and used by Sewell (1977). As briefly mentioned in Chapter I, the PQLI includes life expectancy, literacy and infant mortality. The PQLI is based on the assumption that "the needs and desires of individuals initially and at the most basic level are for longer life expectancy, reduced illness, and greater opportunity" (Sewell 1977, 149). As in the case of percentage of labor force in agriculture, infant mortality rate was also multiplied by -1 before the PQLI was constructed in order to be properly directed.

In this study, however, a slight modification is made in the construction of the PQLI because time series data on literacy are not readily available for most of the nations used in the analysis. The literacy figure is replaced in this study with savings per capita. Just as the literacy variable indexes opportunity for an individual, so does savings per capita (Liu 1976, 55). Data on savings per capita are taken from the computer data files reported in the World Tables, 1988-89 Edition (World Bank 1989).

Political institutionalization (capacity/strength of the government) has been measured variously in previous works. This should not be a great surprise, since there are different and divergent views of the concept and how to

measure it accurately. For instance, Deutsch (1961) perceives it as the "capacity" of the government to meet the needs of the society, whereas Huntington (1968) views it as the emergence of strong and adaptable political institutions. Apter (1971) equates political development with an expansion in the range of political and economic choices available to an individual within a given political system; Pye (1962), like Deutsch (1961), equates political development with the capacity of the government.

Given these various views, we are confronted with different potential indicators measuring political institutionalization. Gurr (1968) measures political institutionalization in terms of the central government expenditure as a percentage of the gross domestic product (GDP). Hibbs (1973) constructs an additive index of political institutionalization which includes direct taxes as a percentage of general government revenue, age in decades of present national institutional form, union membership as a percentage of the nonagricultural work force, general government expenditure as a percentage of the gross domestic product, age of the largest political party divided by the number of parties, and the age of the largest political party.

Ruhl (1975) constructs a political institutionalization index from four indicators: legislative effectiveness, percentage of presidential votes going to parties active

prior to 1945, number of regular executive transfers minus the number of irregular transfers (1948-1959) and the number of full years during which a constitutionally elected and constitutionally achieved chief executive was in office.

Yough and Sigelman (1976) constructed a political institutionalization index combining measures of administrative efficiency, legislative effectiveness and the age of national political institutions. Sanders relied on the capacity dimension, and therefore used national government revenue per capita because "it appears to offer the best indication of the extent to which the political system has penetrated the society and the economy" (1981, 125).

Rubinson (1976) and Rubinson and Quinlan (1977) measured the strength of a government as the value of government revenue as a percentage of gross domestic product. Their rationale is that

> government revenue is a measure of state strength, and the strength of the state is one of the most important causes of inter-country variations in class formation and inequality. State strength has this effect because the state is one of the primary mechanisms for controlling the world-economy to the advantage and disadvantage of various economic groups. (Rubinson and Quinlan 1976, 618).

Morrison and Stevenson used total government budgeted expenditures "in the expectation that this would closely approximate total government revenue, including all foreign aid" (1974, 253).

All these different measures capture political institutionalization or capacity of government in some logical way. To select measure(s) of political institutionalization, we need to pause for a moment and ask ourselves some important questions: (1) which measure(s) of political institutionalization applies adequately to the modernizing nations as well as the modern nations? and (2) Do we have indicators that readily and consistently measure such concepts as flexibility, complexity, autonomy and coherent political institutions in both modernizing nations and the modern nations?

Owing to the paucity of data, especially in the modernizing nations, it appears that the "best" indicator is the capacity of the government to meet the demands of the society. The measure adopted here to operationalize political institutionalization or the capacity of government is the one used by Rubinson (1976) and Rubinson and Quinlan (1977), government revenue as a percentage of gross domestic product. This measure not only provides a good indication of the extent to which political systems penetrate their societies and economies, it is also available for both modernizing and modern nations. The data on government revenue as a percentage of the gross domestic product is taken from the computer data files reported in the World Tables (World Bank 1989).

The Sample, Missing Observations and the Data

The sample analyzed in this work includes 35 nations which were politically independent as of 1960. The year 1960 was used as the beginning period for the analysis because most contemporary nations were recognized as national units in or before the end of 1960. The end year (1982) was chosen because it contains the most recent available data on the dependent variable (deaths from domestic political violence) used here (see Taylor and Jodice 1983b).

Although all the nations included in this analysis (see Appendix A) are politically independent, political independence was not the major selection criterion. The major selection criterion involved the availability of time-series data on the independent variables.

For some communist nations (e.g., the Soviet Union) there is no reported data on most of the relevant variables used here. Such nations were immediately dropped from the sample. Other nations had too many missing observations and, subsequently, were dropped from the analysis. For instance, data on government revenue was missing for Honduras from 1960-1980. I considered ten or more missing observations on the variables used in this study in ten consecutive years too many. I therefore, selected only

nations that had fewer than ten missing observations on any variable for the twenty-three year period considered here.

After eliminating those nations with too many missing observations, I still faced a problem of missing observations for the remaining nations, those that did not have missing values on as many as ten data points consecutively. For the dependent variable (deaths from domestic political violence) and one of the independent variables (the UPP1, political participation index), there were no missing observations. However, missing observations were a problem with regard to other component variables: social mobilization (change in agricultural occupations), political institutionalization (government revenue as a percentage of GDP) and economic development (life expectancy, infant mortality and savings per capita).

Given the seriousness of the problem of missing observations, a strategy is needed to replace the missing values. Since there is no "best" method for dealing with missing observations, the choice of a procedure to use "depends upon the nature of each particular regression model and the related data" (Pindyck and Rubinfeld 1976, 194). If it is a time-series problem and the pattern of missing observations is systematic (e.g., if missing observations are occurring more for low-income countries as is the case in this work), the analysis can be improved by regressing the known values of the variable, X, on time and replacing the missing

observations by the fitted values of the regression (Pindyck and Rubinfeld 1976, 197). Since this work is dealing with time-series and the pattern of missing observations appears to be systematic for a lot of countries, this method is used, in general. Replacing missing observations by fitted values of regression has some advantages. This method improves time-series analysis because (1) "most time-series variables tend to undergo relatively predictable rates of growth," and (2) the "procedure is perhaps most useful because it suggests a more general approach to the systematic missing observations problem which also yields consistent parameter estimates" (Pindyck and Rubinfeld 1976, 197-198).

The sample (35) that resulted after eliminating some countries that had data problems is fairly a good representation of different regions of the world. By region, it includes twelve African nations (Benin, Ethiopia, Gambia, Mauritania, Morocco, Niger, Rwanda, Senegal, Serria Leone, Upper Volta, Zaire and Zambia); ten Latin American and Carribean nations (Barbados, Brazil, Dominican Republic, El Salvador, Jamaica, Mexico, Nicaragua, Peru, Uruguay, and Venezuela); three Asian countries (Burma, Japan and Syria); and ten European nations (Austria, Belgium, Federal Republic of Germany, France, Greece, Iceland, Italy, Norway, United Kingdom, and Yugoslavia). These countries are also

heterogeneous with regard to the level of economic development (see Table 1).

As can be seen from Table 1, the 35 countries used in this study are generally similar by economic well-being as indicated by the indicators of physical quality of life (savings per capita, infant mortality rate and life expectancy). For instance, in Africa, the highest mean of life expectancy (1960-1982) achieved was 52 (Morocco), while the lowest mean of the same indicator was 34 (Sierra Leone). In Asia, Burma and Syria were similar with regard to the above indicators, while Japanese indicators were very similar to those of European nations.

In Europe, higher savings per capita, higher life expectancy and lower infant mortality were generally achieved compared to those of African and Latin American/ Caribbean countries. However, Yugoslavia achieved a similar physical quality of life as that experienced in most of the Latin American/ Caribbean countries.

In the main, this geographic and economic diversity should be sufficient to meet the requirements for a strong, most different systems analysis of the modernization-instability hypothesis.

Despite the fact that the resultant sample is a good representation of different regions of the world, it does not include communist nations (except Yugoslavia), and, surprisingly, North American nations (e.g., U.S.A. or

TABLE 1

PHYSICAL QUALITY OF LIFE INDICATORS
BY REGION AND COUNTRIES,
1960-1982 (N=35)

	Savings Per Capita (US$)		Infant Mortality Rate		Life Expectancy at birth	
	Mean	STD*	Mean	STD	Mean	STD
Africa						
Benin	.64	11.58	150	19.62	48	2.66
Ethiopia	5.72	2.14	159	7.32	43	.80
Gambia	6.99	18.34	183	18.14	38	2.06
Mauritania	30.72	22.01	164	16.53	42	2.38
Morocco	47.74	29.30	127	19.84	52	3.54
Niger	18.93	25.78	168	13.37	37	2.16
Rwanda	5.50	6.22	135	5.85	47	1.65
Senegal	20.02	14.97	162	10.83	43	1.98
Serria Leone	2.39	22.35	194	16.24	34	1.80
Upper Volta	-1.80	7.10	174	21.30	42	1.98
Zaire	43.06	16.70	129	13.06	46	2.52
Zambia	133.21	62.41	107	15.09	46	2.79
Asia						
Burma	11.82	7.84	99	26.53	51	4.28
Japan	1239.61	1020.37	15	7.04	73	2.89
Syria	276.04	512.37	93	23.62	56	3.99
Europe						
Austria	1041.30	792.60	24	7.04	71	1.31
Belgium	992.33	668.89	20	6.07	71	.99
Fed. Rep. of Germany	1306.28	868.75	21	6.20	71	1.18
France	1216.50	780.85	17	5.92	72	1.54
Greece	330.57	259.98	28	8.30	72	1.83
Iceland	1445.52	1132.85	12	3.45	75	1.31
Italy	737.30	532.44	28	9.81	72	1.80
Norway	1643.62	1449.98	13	3.57	74	1.03
United Kingdom	696.33	491.10	17	3.59	72	.98
Yugoslavia	421.24	347.07	53	19.24	67	1.90

TABLE 1--continued

	Savings Per Capita (US$)		Infant Mortality Rate		Life Expectancy at birth	
	Mean	STD*	Mean	STD	Mean	STD
Latin America/ Caribbean						
Barbados	196.40	192.43	28	12.51	69	2.41
Brazil	182.31	146.04	92	13.38	59	2.60
Dominican Republic	77.77	61.16	97	14.63	57	3.48
El Salvador	58.75	39.80	101	21.31	58	4.17
Jamaica	165.61	36.43	38	12.44	67	2.64
Mexico	251.99	234.45	71	11.80	62	2.55
Nicaragua	63.42	42.45	105	18.05	53	3.72
Peru	185.95	86.65	117	13.68	54	3.68
Uruguay	157.49	115.76	45	5.42	69	1.31
Venezuela	623.69	339.31	54	12.66	65	2.95

*STD is the standard deviation.

Canada). This is partly a problem of data availability on some variables previously discussed in this chapter.

Thirty-five nations in the framework of pooled regression yields a large sample for analysis, because overall sample size is n (35) multiplied by time (t). Thus, the sample size becomes 805. However, we lost the 1960 year for the 35 nations as a result of expressing some variables as first differences, to compute growth rates. This brings the total sample to 770.

To summarize the data overall, Table 2 presents the means and standard deviations and Figure 6-12 are histograms

for the variables (government current revenue as a percentage of GDP, savings per capita, life expectancy at birth, infant mortality rate, percentage of labor force in agriculture, protest demonstrations and political strikes) used in the analysis prior to any standardizing, differencing or the computation of the indexes used in the time series analysis.

The intercorrelation coefficients among the variables are reported in Table 3. Table 3 reveals that multicollinearity, a violation of one of the classical regression assumptions that no independent variable is a perfect linear function of the other independent variable, is not a serious problem in the data. There are very high correlations between infant mortality, life expectancy and percentage of labor force in agriculture. However, the use of composite indexes in this study (to be described below) to combine some variables reduces these problems of multicollinearity (Berry and Feldman 1985, 43). Therefore, by combining infant mortality rates, life expectancy and saving per capita into the Physical Quality of Life Index, multicollinearity is greatly reduced. Also, because these indexes, discussed below, are based on the modernization-instability theory, they are composed of several variables and provide a good measures of the overall concepts of importance in this analysis.

TABLE 2

MEANS AND STANDARD DEVIATIONS
(N=805)

Variable*	Mean	Standard Deviation
Political Deaths (DTH)	110.49	1094.32
Political Strikes (PST)	.84	3.39
Protest Demonstrations (PTD)	3.11	10.20
Savings per capita (SAV)	388.80	678.17
Government Current Revenue as a % of GDP (GCRGDP)	21.60	49.54
Infant Mortality Rate (IMR)	86.94	60.07
Life Expectancy Rate (LEX)	57.90	12.84
Labor Force in Agriculture (LFA)	47.53	29.09

Indexes

Having identified the operational measures of social mobilization and economic development, and having coped with the problem of missing observations, overall indexes of economic development (PQLI), social mobilization (SOM) and unconventional political participation can now be constructed. While there are several methods for composite index construction, the most widely used and the one adopted in this study is the "standardized additive method" (see, for example, Putnam 1967; Duval and Welfling 1973; Liu

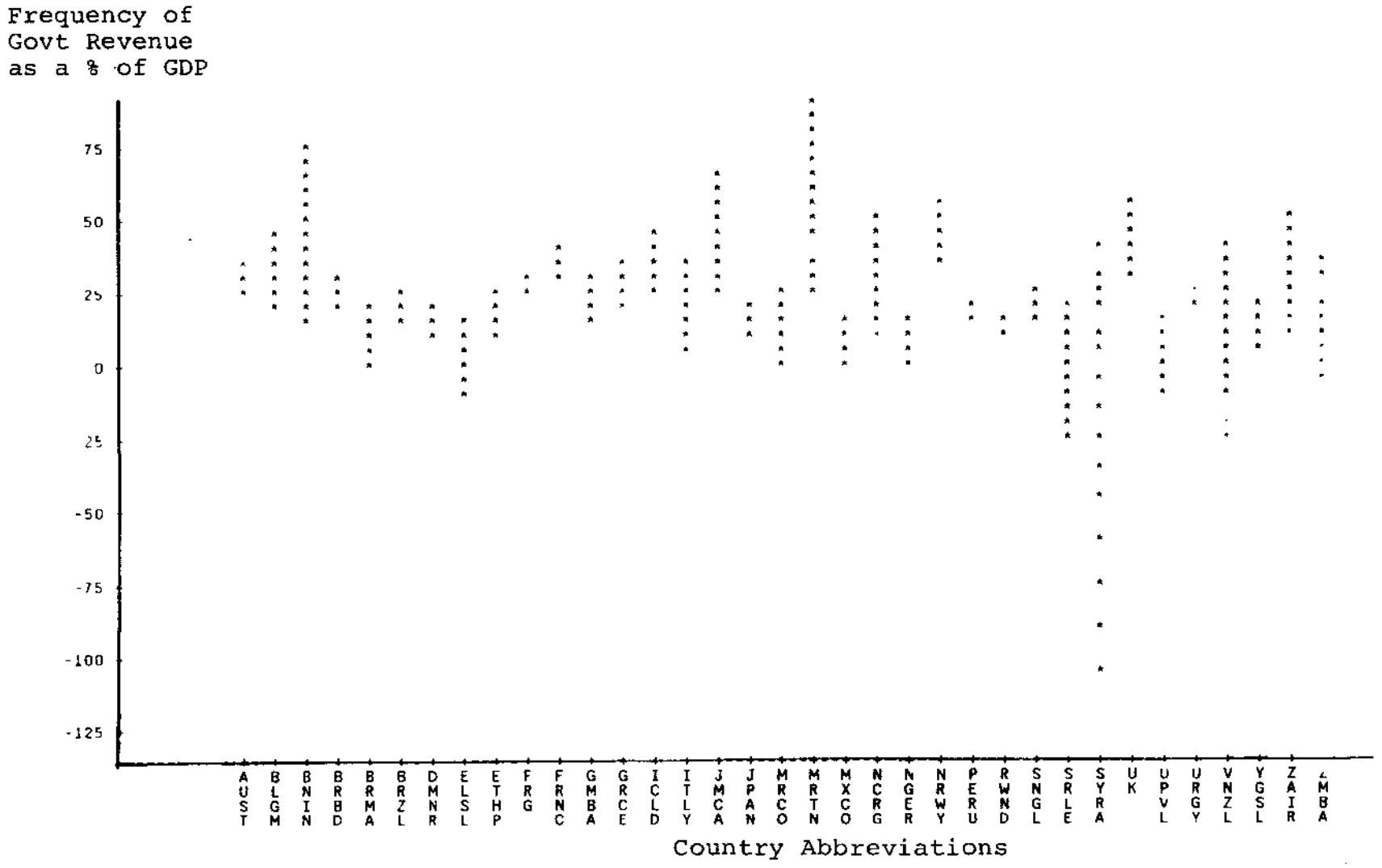


Figure 6. Histogram of Government Current Revenue as a Percentage of GDP, 1960-1982

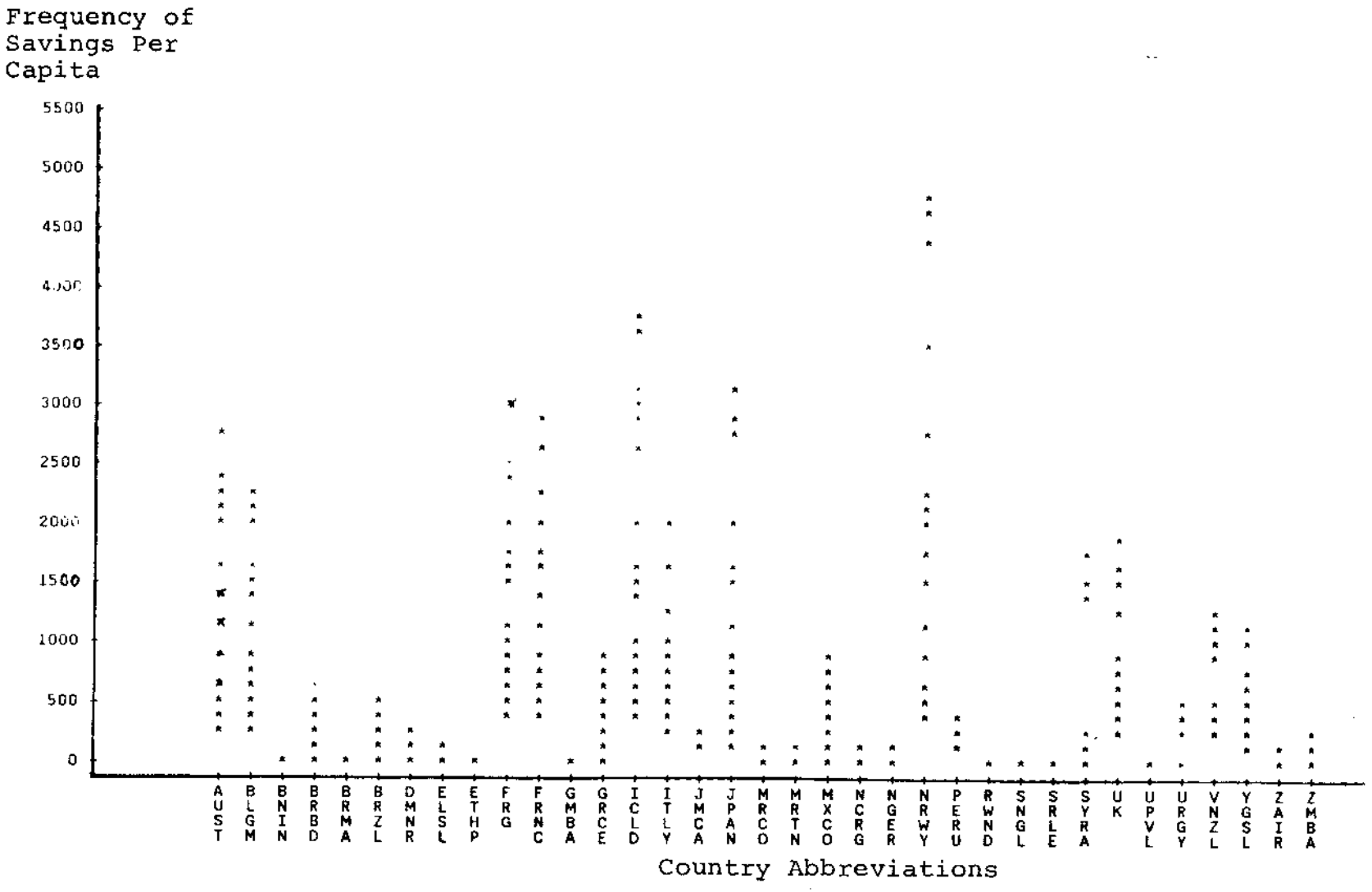


Figure 7. Histogram of Savings per Capita, 1960-1982

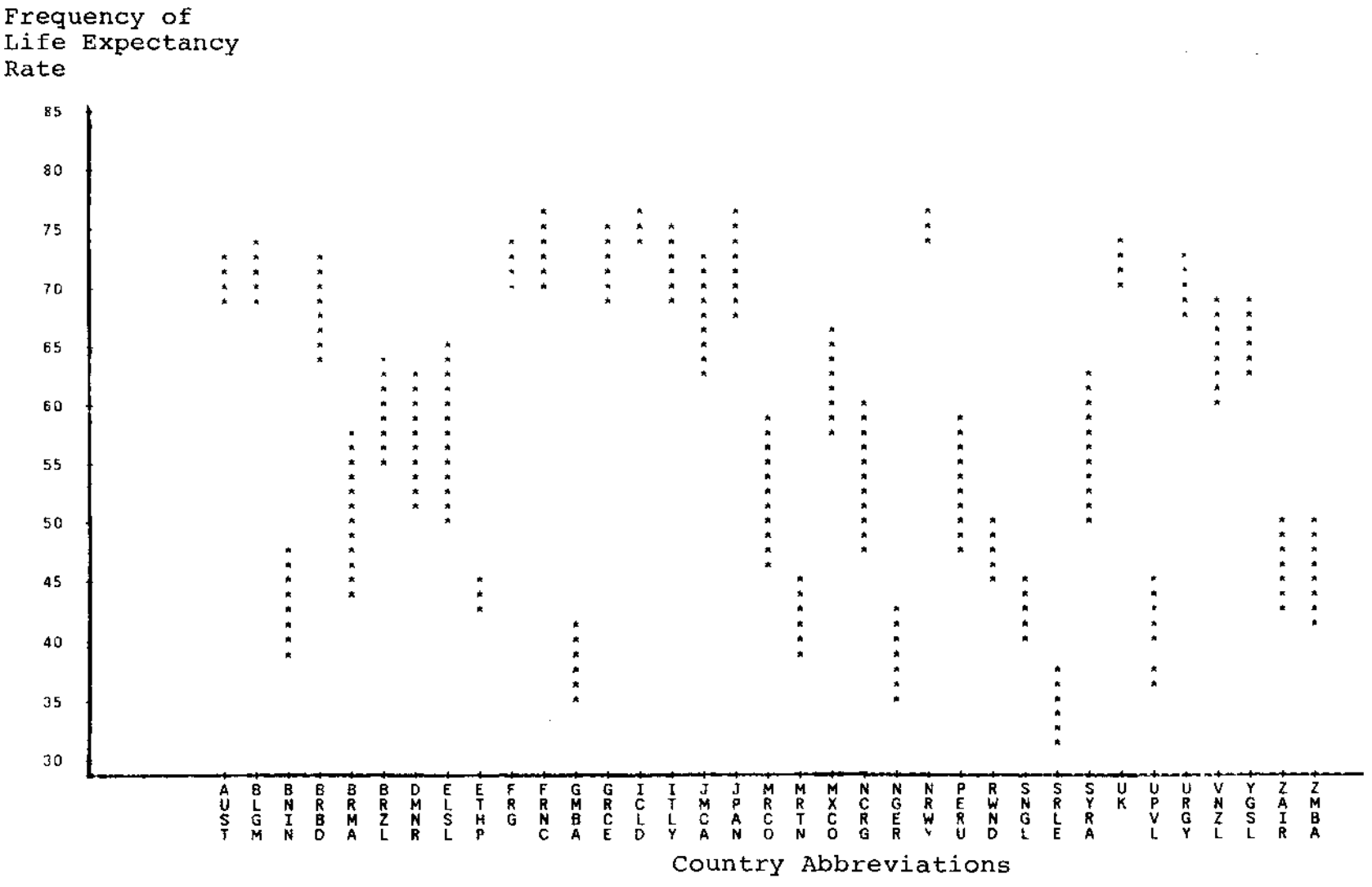


Figure 8. Histogram of Life Expectancy at Birth (years), 1960-1982

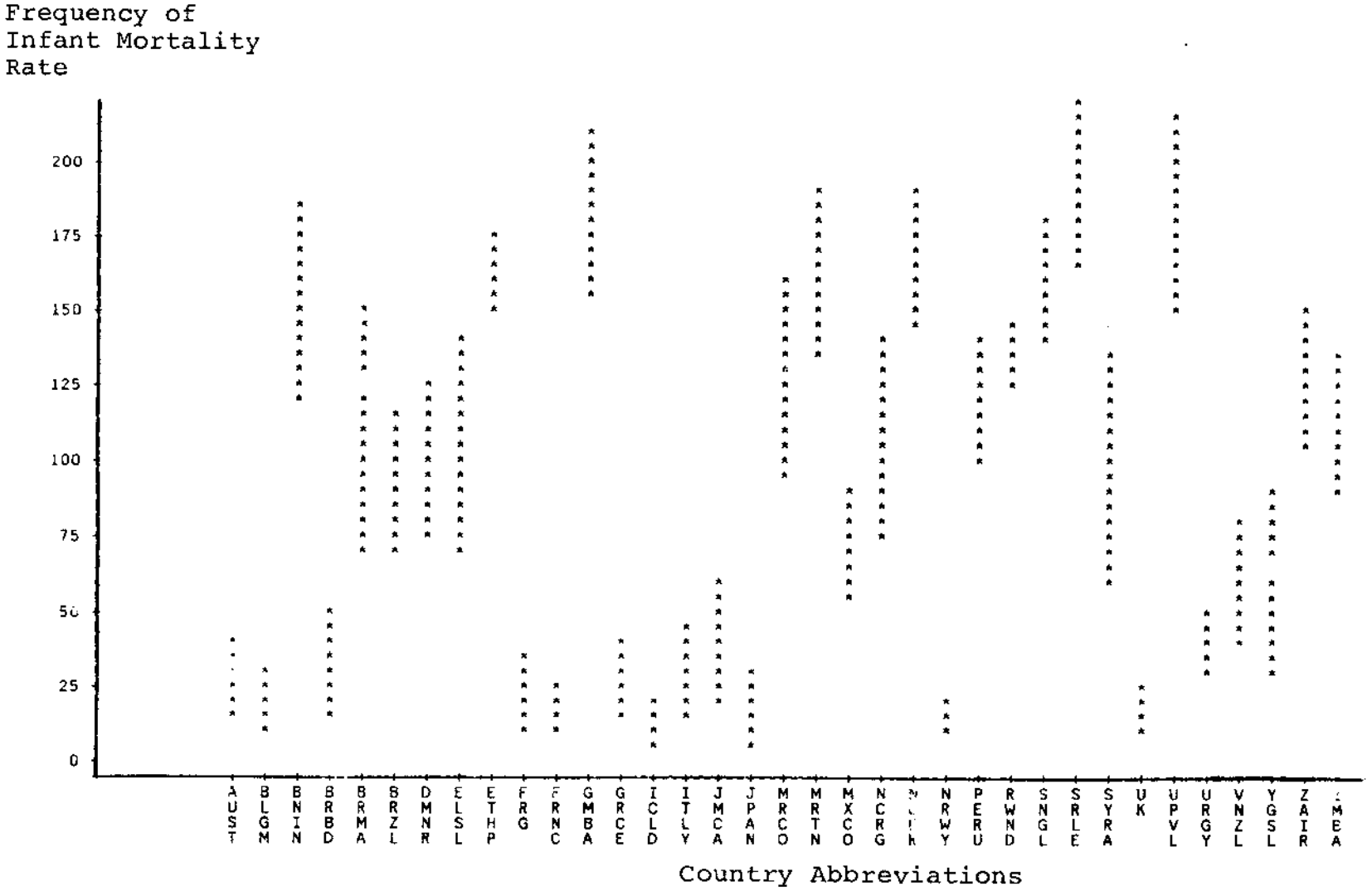


Figure 9. Histogram of Infant Mortality Rates (per 1,000 infants), 1960-1982

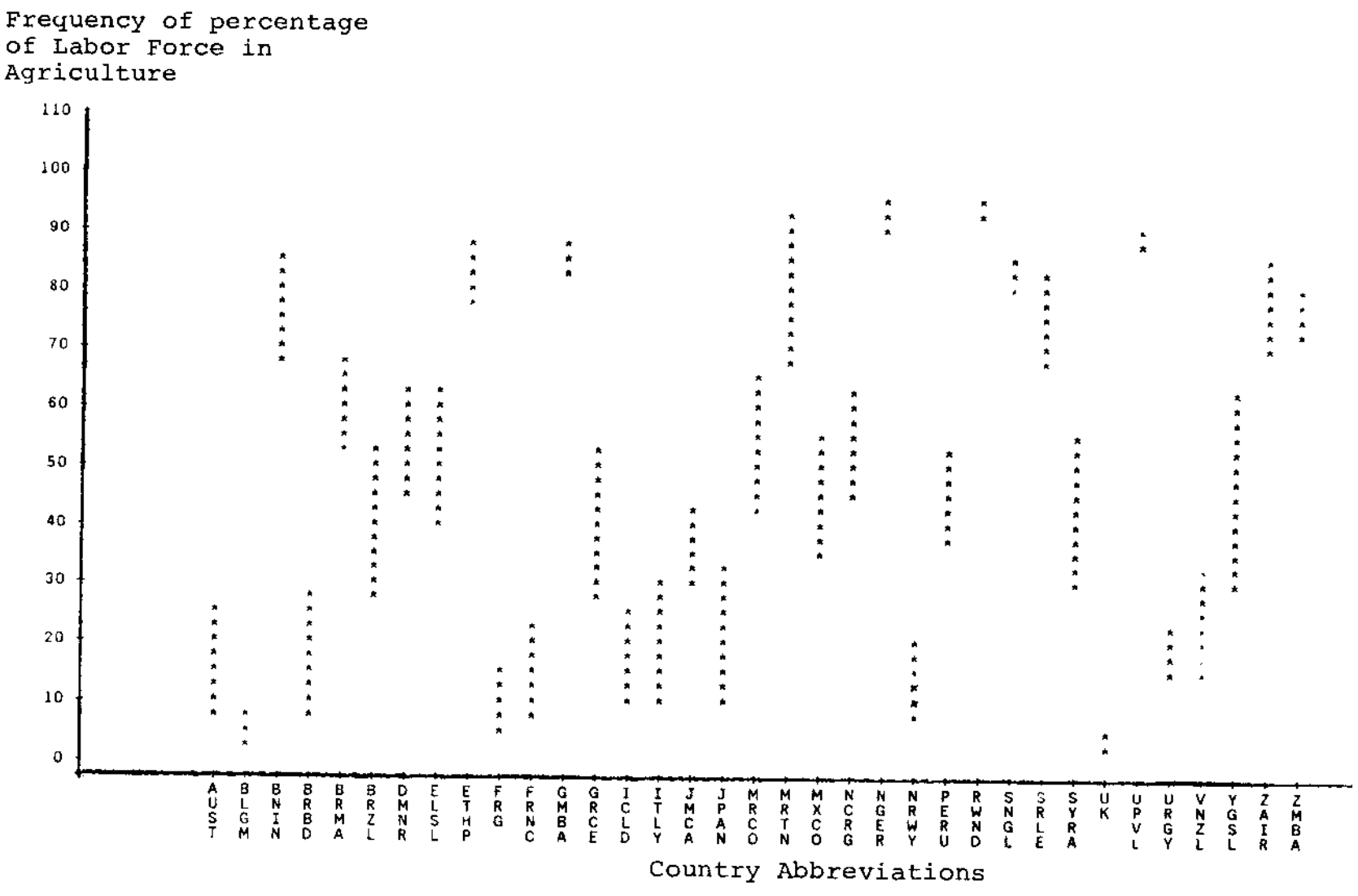


Figure 10. Histogram of Percentage of Labor Force in Agriculture, 1960-1982

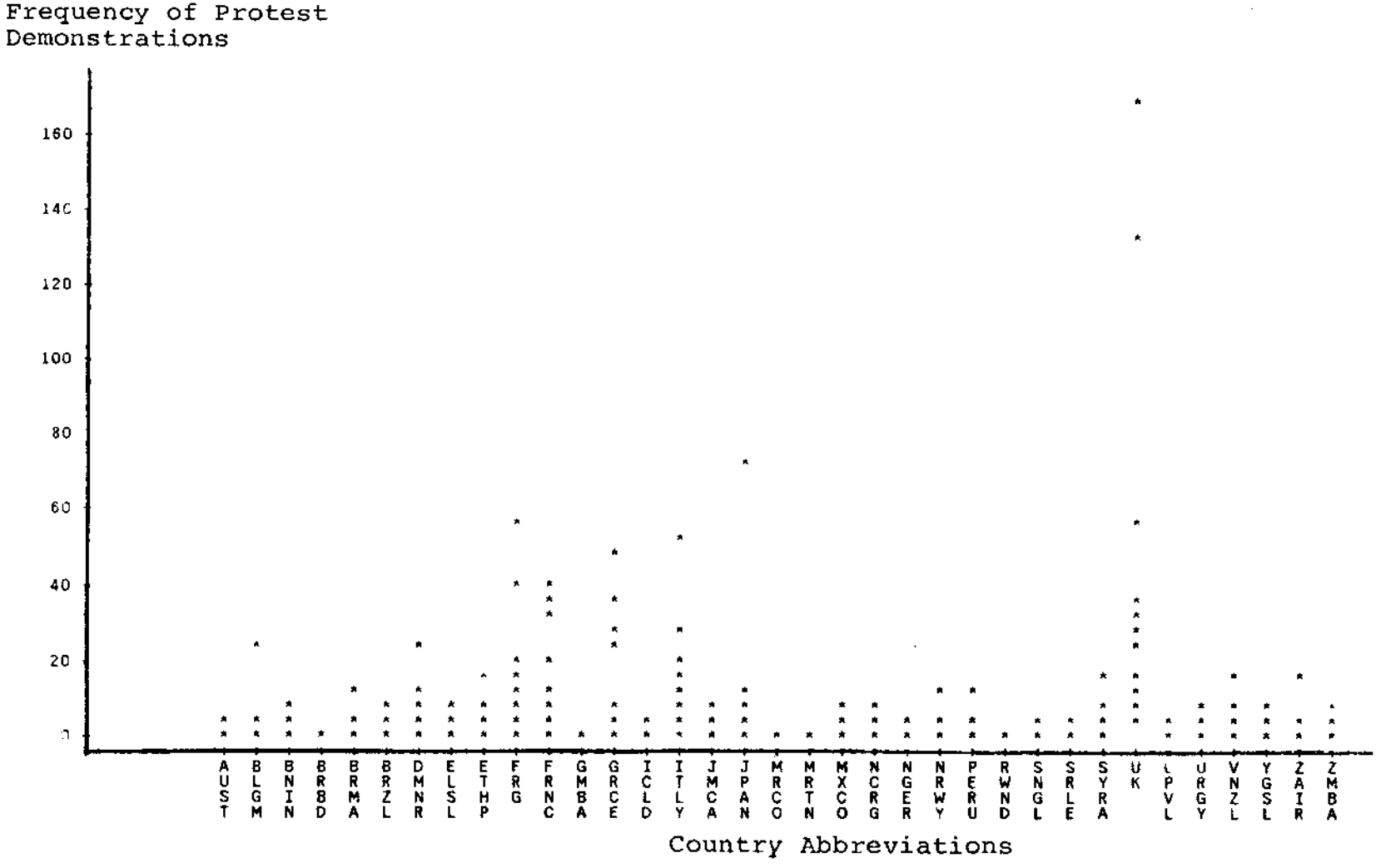


Figure 11. Histogram of Protest Demonstrations, 1960-1982

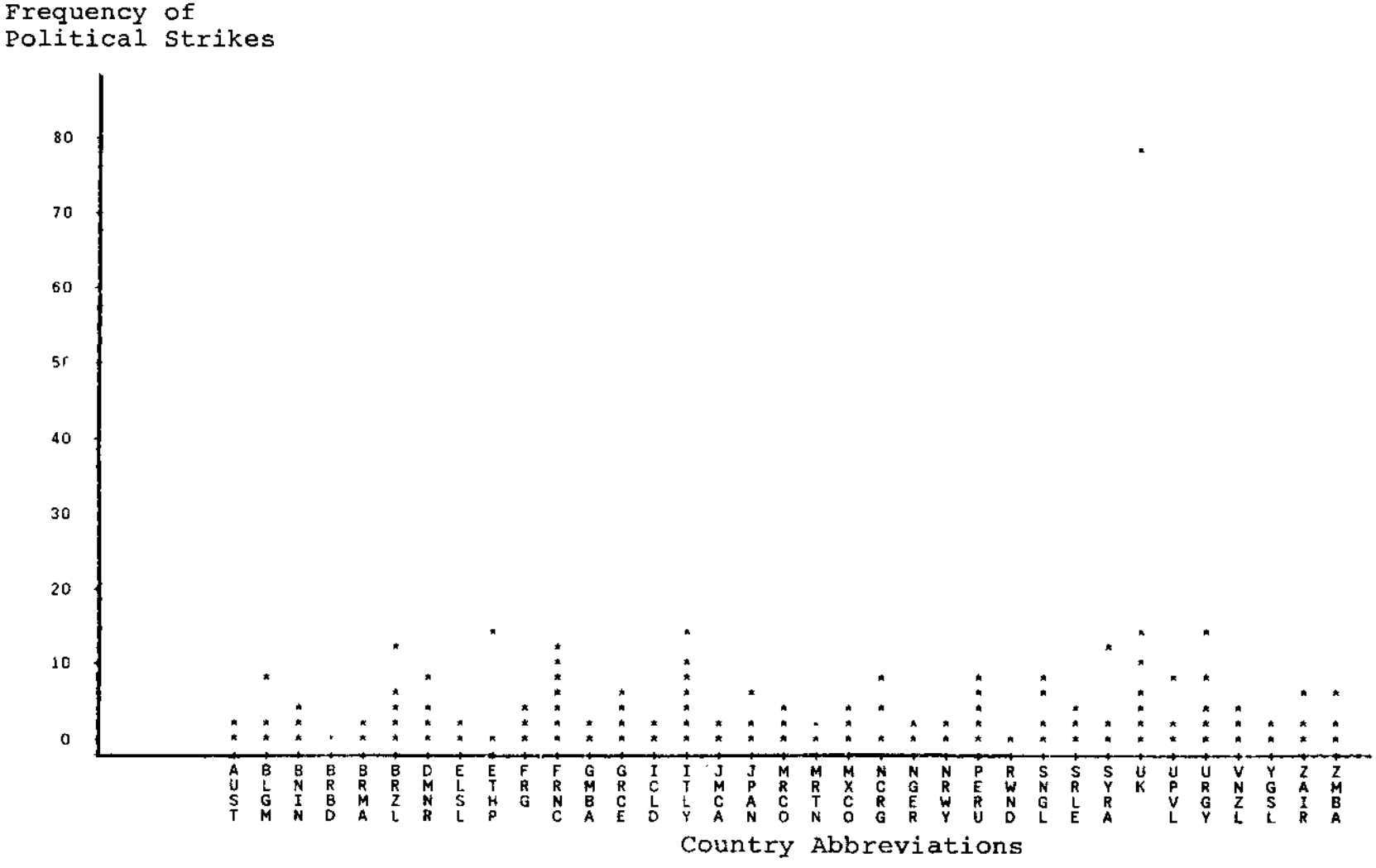


Figure 12. Histogram of Political Strikes, 1960-1982

TABLE 3

INTERCORRELATION MATRIX[a]

Variable	PTD	PST	DTH	SAV	GCR	IMR	LEX	LFA	EDU
PTD	1.000								
PST	.668	1.000							
DTH	.002	.002	1.000						
SAV	.137	.030	-.052	1.000					
GCR	.085	.013	-.030	.185	1.000				
IMR	-.261	-.114	.083	- .578	-.275	1.000			
LEX	.254	.121	-.082	.584	.264	-.984	1.000		
LFA	-.279	-.144	.113	-.602	-.256	.931	-.941	1.000	

[a]Rounded to three decimal places

1976). The standardized additive method entails the transformation of the data on separate variables into standardized scores, Z-scores, which are in turn added to give the index. The major reason for the standardization is, of course, to eliminate the differing units of measurement among those variables so that they can be more validly combined into an additive index. All indexes are created as an unweighted average of the standardized scores of the variables composing them. The unweighted average is employed here because there is no compelling theoretical basis for using any weighting scheme and because the original PQLI was similarly constructed (Sewell 1980, 162).

In this work, economic development is measured by a physical quality of life index (PQLI) composed of life expectancy, infant mortality, and savings per capita. Similarly, the political participation index (UPP1) is constructed using the Z-scores of number of peaceful demonstrations and political strikes.

Measuring Change

As mentioned in Chapter I, all the independent variables used here are expressed as percentage changes (rates) as opposed to "levels" as suggested by Deutsch's theoretical discussion (1961). The method adopted here to measure change and, hence, to compute rates of growth, needs some discussion. Although there are other methods for

computing rates of growth (Van Meter 1974), the percentage change score, otherwise called relative change, is used in this study. It is calculated as

$$\%\Delta X = \frac{X_t - X_{t-1}}{X_{t-1}} \quad 100$$

where X_t and X_{t-1} are values of a particular variable taken at two consecutive points in time. While there is no simple answer with regard to the best measure of change or growth rate, Van Meter suggests that the best approach should be a function of situations, the nature of the data, and the purpose of one's research (1974, 135). In this study, theory suggests that we use relative changes in the rates of social mobilization, political participation and political institutionalization to operationalize the modernization-instability thesis. The dependent variable, however, is best measured as levels of political instability since modernization-instability thesis suggests that it is rate of change that produce amounts of instability.

Statistical Procedures

I now describe, in greater detail, the statistical procedures to be used in this study, the problems associated with them and the remedies to those problems. As noted, there are two statistical procedures used in this study: pooled cross-sectional time-series regression and Granger-causality tests.

Pooled Cross-Sectional Time-Series Analysis

The political instability equation is estimated here using annual cross-sections and time-series data over 1960-1982 for a group of thirty-five nations listed in Appendix A and described above. The advantages and the strengths of a pooled cross-sectional and time-series design over a separate cross-sectional or time-series design have been presented in Chapter I. When one deals with cross-sectional and time-series data, one combines the assumptions that are usually made about cross-sectional and time-series data (Kmenta 1971; Zuk and Thompson 1982; Stimson 1985).

In time-series analysis it is usually suspected that the error terms are serially correlated, since the order of the observations has a meaning. Serial correlation (also called autocorrelation) implies that the error term from one time period depends in some systematic way on error terms from earlier time periods. When this is true, one of the underlying assumptions in classical linear regression, that different observations of the error term are independent of each other, is violated (Levenbach and Cleary 1984, 355).

With cross-sectional observations like nation-states, it is frequently true that the errors are mutually independent, but heteroscedastic (Kmenta 1971). Heteroscedasticity violates the classical regression assumption that the error terms are drawn from a distribution that has a constant

variance (homoscedasticity). Often, heteroscedasticity occurs in data sets in which there is wide disparity between the largest and smallest observed values, which is why it is common in cross-sectional models.

Serial correlation and heteroscedasticity do not cause bias in the coefficient estimates. However, since both increase the variances of the estimated coefficients, the tests of significance that we apply will be based on the wrong covariance matrix. Neither the t statistic nor F statistic can be relied on in the face of autocorrelation or heteroscedasticity. Therefore, in the presence of either/or (or both), the researcher might reject a null hypothesis that should not be rejected. Given the consequences of autocorrelation and heteroscedasticity, this study makes a conscious effort to investigate and remedy them.

There are basically three methods available for estimating pooled models.

1. Ordinary least squares (OLS) is considered best when it is "feasible to assume that the intercepts are fixed (not random) and equal for all cross-sections, that the coefficients of the independent variables are fixed and equal for all cross-sections, that autocorrelation and heteroscedasticity are not present" (Levenbach and Cleary 1984, 356). Simply stated, OLS is appropriate when there are no complications in the error structure. This assumption is certainly naive, because "the foregoing represent a

rather restrictive set of assumptions that will generally not be satisfied" (Levenbach and Cleary 1984, 356) for time-series observations from pooled cross-sections.

2. The analysis of covariance model, i.e., the OLS model incorporating either time-point or cross-section dummy variables (LSDV), assumes that the coefficients are constant, but the intercepts may differ. LSDV recognizes that pooling may lead to variable cross-section and time-series intercepts, and so uses the dummy variables to allow for different intercepts for each cross-section and for different time periods (Levenbach and Cleary 1984, 357). However, this method can consume substantial degrees of freedom and, consequently, reduces the statistical power of the model (Pindyck and Rubinfeld 1976, 205). In addition, this approach does not deal with situations in which the regression lines for variables shift over time and over cross-sections (Pindyck and Rubinfeld 1976, 205).

3. Another type of model is the "variance components" or "error components" model (Balestra and Nerlove 1966, 585-612; Fuller and Battese 1974). In this model, the intercepts are treated as random, instead of fixed variables, and are assumed to be independent of the residuals and mutually independent. Further, the residuals are assumed to display zero mean and common variance, to be serially independent, and independent across cross-sections.

The error component model allows for different intercepts and also assumes a fairly sophisticated error structure. But it is often hard to assume that the intercepts are independent of the residuals and also mutually independent. In fact, sometimes it is very reasonable to treat intercepts as correlated with an explanatory variable X. For instance, in the study of modernization-instability, it is very conceivable that some features or patterns of modernization in some nations or regions may affect the rate of modernization in other nations similarly. Feierabend and Feierabend (1966, 257) have aptly argued that modern affluent nations (with their complex nature of economic and political systems) serve as models of modernity to nations emerging from a traditional society. It is also equally plausible to argue that some countries (irrespective of their level of modernization) emulate the modernization patterns of others. Japan is a good example of a country that many industrialized and nonindustrialized nations are trying to emulate. Often patterns copied by other nations may have some lingering effects in the modernization processes. The same argument can be made with regard to the effect of political participation. It is quite conceivable that some of the cross-section or time-series relevant variables may complicate the error structure and, consequently, cause what is referred to as "contemporaneous correlation between cross-sections" (Parks 1967, 1974).

The error component model fails to account for such complications in the error structure because it assumes homoscedasticity (i.e., that the error terms are drawn from a distribution with equal variance), implies that the contemporaneous correlation between the disturbances of two cross-section units is the same for every pair of countries and that the correlation between the disturbances of a given nation is constant over time and the same for every nation (Kmenta 1971; Levenbach and Cleary 1984; Pindyck and Rubinfeld 1976).

4. Given that some of the cross-section or time-series relevant variables (social mobilization and/or political participation) may lead to a contemporaneously correlated error structure, and since the data display autocorrelation and heteroscedasticity (see Tables 5 and 6 in Chapter IV), the deaths from domestic political instability equation is estimated here using a form of the generalized least squares (GLS) procedure that is based on the cross-sectionally correlated time-wise autoregressive model of the error structure (Kmenta 1971). This method is called the "autoregressive model" (Parks 1974), and is discussed in Chapter IV.

Causality Tests: Granger-Causality

Granger (1969) has suggested a notion of causality that is applicable in longitudinal analysis. The application of

Granger's idea of causation is widespread in economics and business, but less so in political science (but see Freeman 1983). The usefulness of this method has been presented in Chapter I. In the current chapter, an attempt is made to describe how it is applied in this study. The Granger-causality tests are applied to time-series data over the period 1960-1982 in the cases of twelve nations selected randomly from the thirty-five nations listed in Appendix A.

Before carrying out an empirical test for causality, a certain theoretical framework will be necessary as to the notion of causality that underlie this study. To define "cause" and, hence, "causality," is essentially a philosophical problem; various definitions have been given through the years (see Zellner 1979). The problem associated with the definition of "cause" and, hence, "causality," is equally noted by Granger.

> It is doubtful that philosophers would completely accept this definition [their definition], and possibly cause is too strong a term, or one too emotionally laden, to be used. A better term might be temporally related, but since cause is such a simple term we shall continue to use it (Granger and Newbold 1977, 225).

Therefore, the term "cause" (and hence "causality") is used here mainly in the sense of Granger. To test for Granger-causality, one examines whether lagged values of one series add statistically significant predictive power to another series' own lagged values for one-step ahead forecasts. If so, the first series is said to Granger-cause the second.

The estimation of Granger-causality is a two-step procedure. For example, to determine if there is causality running from social mobilization (SOM) to deaths from domestic political violence (DPV), DPV is first estimated as a function of past values of DPV (called the restricted equation) and then estimated as a function of its past values and past values of SOM (called the unrestricted equation). The two autoregressive equations are expressed as follows:

$$DPV_t = a_0 + \sum_{j=1}^{P} a_j DPV_{t-j} \qquad \text{(Restricted)}$$

$$DPV_t = b_0 + \sum_{j=1}^{P} b_j DPV_{t-j} + \sum_{k=1}^{q} c_k SOM_{t-k} \qquad \text{(Unrestricted)}$$

where p and q are the number of lags of DPV and SOM respectively. There is causality, in the sense of Granger, from SOM to DPV if the inclusion of the past values of SOM significantly improved the prediction of DPV.

To implement the Granger test, one calculates the following F-statistic under a null hypothesis that all the coefficients of the lagged values of the independent variables are jointly insignificant:

$$F = \frac{(RS_{FM} - RS_{RM}) \;/\; (DF_{FM} - DF_{RM})}{(1 - RS_{FM}) \;/\; (N - DF_{FM})}$$

where N is the sample size, RS_{FM} is the square of the multiple correlation coefficient for the full model, RS_{RM} is the square of the multiple correlation coefficient for the restricted model, DF_{FM} is the degrees of freedom associated with the full model, that is, the number of parameters to be estimated in the full model, and DF_{RM} is the degrees of freedom or number of parameters to be estimated in the restricted model.

We calculate the F-statistics under the null hypothesis that all the coefficients of the lagged values of SOM are jointly insignificant (all $C_i = 0$). If we cannot reject the null hypothesis, then the conclusion is that SOM does not cause DPV. If we reject the null hypothesis, the conclusion is that SOM Granger causes DPV.

Since Granger-causality tests involve time-series data and the use of lagged variables, some decisions must be made before implementing them. First, the Granger tests require that the series be differenced (detrended) (Granger 1969, 1980; Brillembourg and Kham 1979; Darrat 1988). That means that the series' basic statistical properties (e.g., means, variance and covariance) should remain constant over time. This step is very important "to avoid problems of spurious correlation that could emerge with the series following a common trend as well as to remain within the Granger framework of causality" (Brillembourg and Khan 1979, 360). Second, the tests require that maximum lag lengths of the

dependent variable (e.g., DPV) be used to produce white noise. These requirements must be met for meaningful results to be obtained.

First, let us consider the issue of detrending. To detrend the data and achieve mean and variance stationarity, all the variables are expressed in growth rates which is asymptotically equivalent to taking the log of the variables and applying the first-difference operator (Pierce 1977; Levenbach and Cleary 1984). However, to confirm that stationarity is achieved through the employment of growth rates, regressions of each of these variables on a constant and time were carried out for each country. The coefficient of time was insignificant at even the 10 percent level, while similar regressions of the raw variables displayed the presence of strong time trends.

The second issue is the choice of appropriate lag lengths in the specification of the model. This is a very important consideration because if the lag length of the dependent variable is not long enough to capture all nonzero coefficients, Granger tests may yield a spurious result of causality (Cassidy 1981; Kmenta 1971). This is because serial correlation in the residuals may exist if the lag lengths are too short in the Granger tests, invalidating the F-test. If the lag lengths are too long, the estimates will be unbiased, but inefficient.

Despite the fact that equations estimated using growth rates avoid the spurious correlation phenomenon common in regressions based on a level format estimation (Granger and Newbold 1974), potential problems of serial correlation in the estimation of equation (2) are eliminated because of inclusion of lagged dependent variables (Guilkey and Salemi 1982, 669). In this study, Granger tests were estimated with two past values of the dependent variable. Given the size of our sample (23) and to avoid running short of degrees of freedom (Gujarati 1978, 261), the unrestricted equations were estimated with one through seven past values of the independent variable. In addition, the two year lag length on the dependent variable was found to minimize auto-correlation accross all equations.

Summary

In this chapter, I have argued that instability should be regarded as violent deviations from specific normality. Of course, there are different measures of such deviations, but the measure adopted here over all other measures of political instability is deaths resulting from domestic political violence. This measure has some major advantages over others in that it measures the immediate end-product of other violent activities such as armed attack, riots and demonstrations. Besides, it measures instability at the mass level, as opposed to counts of coups d'etat that

measure instability at the elite level. Elite instability is a common phenomenon in the modernizing nations. As such it could be considered culture/region bound, while deaths from political violence is a universal phenomenon that better fits the criteria of the most different system design.

I have also defined modernization and selected some indicators measuring it. Economic development is differently measured here to better account for the physical well-being of a society as opposed to using the conventional gross national product per capita. The index of economic development used is a variation of the Physical Quality of Life Index combining life expectancy, infant mortality rate and savings per capita.

All the measures of modernization and political instability are collected annually from 1960-1982 for the 35 nations. In the next chapter, I will begin the empirical analysis of the modernization-instability thesis for these nations.

CHAPTER IV

DATA ANALYSIS: POOLED REGRESSION AND GRANGER-CAUSALITY RESULTS

The principal objective in this chapter is empirically to assess the extent to which modernization affects political instability. In the pooled regression analysis, the relationship between modernization and political instability over a twenty-three year period (1960-1982) is analyzed for the 35 nations discussed previously. In the Granger-causality tests, twelve nations were randomly selected from the group of 35 for individual time-series analysis. They include, alphabetically, Belgium, Burma, Ethiopia, Greece, Jamaica, Mexico, Morocco, Nicaragua, Peru, Syria, the United Kingdom, and Zaire.

To review, growth in social mobilization, is a part of what happens to a people in the process of modernization (Deutsch 1961, 493), as is political participation (Huntington 1971, 315). However, the impact of modernization on political instability may be mediated through the interaction between social mobilization, political participation, economic development and political institutionalization, according to the gap hypothesis (Huntington 1968, 1971).

To analyze this impact, I estimate two models. The first (the additive model) assesses the simple additive effects of social mobilization, political participation, economic development and political institutionalization on political instability. The second (the gap hypothesis model) examines the effects of the ratios of social mobilization to economic development and political institutionalization. Before reporting the findings, here is how the entire model for this study is specified.

Model Specification

The modernization-instability model is a complex one. Given this complexity, a complete model is needed. To truly determine which of the aforementioned hypotheses (presented in Chapter II) is valid, the entire model takes the following general form:

$$\text{LogDPV}_{it} = F\ (\text{SOM}_{it};\ \text{UPP}_{it};\ \text{PQLI}_{it};\ \text{POI}_{it}) \qquad (1)$$

and

$$\text{SOM}_{it} = f\ (\text{LFA}_{it})$$

$$\text{UPP}_{it} = f\ (\text{UPP1}_{it} \text{ or } \text{UPP2}_{it})$$

$$\text{UPP1}_{it} = f\ (\text{PTD}_{it},\ \text{PST}_{it})$$

$$\text{UPP2}_{it} = f\ (\text{SOM}_{it}/\text{PQLI}_{it})$$

$$\text{PQLI}_{it} = f\ (\text{LEX}_{it},\ \text{IMR}_{it},\ \text{SAV}_{it})$$

$$\text{POI}_{it} = f\ (\text{GCRGDP}_{it})$$

The above model simply states that deaths from domestic political violence (DPV), logged because its distribution is very skewed, in the ith country at time period, t, is

determined by modernization (MOD), including social mobilization (SOM) and political participation (UPP), economic development (PQLI), and political institutionalization (POI). Social mobilization (SOM) is, in turn, measured by the percentage of labor force in agriculture (LFA). Unconventional political participation (UPP) is measured in two ways. UPP1 is the political participation index formed from Z-scores of protest demonstration (PTD) and political strikes (PST). UPP2 is political participation potential measured by the ratio of social mobilization to physical quality of life index (SOM/PQLI). Economic development is the physical quality of life index (PQLI) constructed from the Z-scores of savings per capita, life expectancy at age one and infant mortality rate. Political institutionalization (POI) is measured by the central government current revenue as a percentage of the gross domestic product (GCRGDP).

The additive version of the general model (1a) assesses the individual effects of social mobilization, political participation, economic development and political institutionalization on deaths from domestic political violence:

$$\log DPV_t = a_0 + a_1 SOM_t + a_2 UPP1_t + a_3 PQLI_t + a_4 GCRGDP_t + e_t \quad (1a)$$

where SOM is the social mobilization index, UPP1 is the political participation index, PQLI is the physical quality

of life index, GCRGDP is government revenue as a percentage of gross domestic product and e is the error term.

The gap hypothesis version of the of the general model (1b) assesses the effects on deaths from political violence of the ratio of social mobilization with economic development and with political institutionalization.

$$\log DPV_t = b_0 + b_1 SOM_t/PQLI_t + b_2 SOM_t/GCRGDP_t + u_t \qquad (1b)$$

where all varibles are as defined previously, and u is the estimation error term.

With respect to the signs of the coefficients, modernization theorists have argued that the greater the rates of social mobilization and political participation, the more deaths from domestic political violence (DPV), while the greater the rates of economic development and political institutionalization the lower the DPV. Similarly, they have contended that the ratio between social mobilization and economic development, and the ratio between social mobilization and political institutionalization the greater the rate of political instability. Thus a_1, a_2, b_1, b_2, > 0, while a_3 and $a_4 < 0$.

The rationale for developing these two separate models, to review, is to find out which model is better specified and consequently proves more useful in the analysis of the modernization-instability thesis. The next section examines

the results of the pooled regression analyses for these models.

Pooled Regression Results

Equations 1a and 1b were estimated by pooling annual time-series and cross-section data, for the period 1960 to 1982 for the thirty-five nations listed in the Appendix B. In order to estimate both equations, some assumptions were made about the estimation error term e_{it} in 1a and 1b.

When pooling cross-sectional and time-series data, certain questions must be answered with regard to the structure of the error term. As mentioned in Chapter III, there are basically four methods of pooling cross-section time-series data, namely, Ordinary Least Squares (OLS), covariance model, i.e., OLS incorporating dummy variables (LSDV), error component model and autoregressive model. To use any of these methods depends on the nature of the data, and hence the error term.

First, the OLS model assumes that there is no complication in the error term, i.e., the intercepts are fixed, equal for all cross-section units, no autocorrelation and heteroskedasticity and no contemporaneous correlation among the residuals of the cross-section units. These assumptions are rather naive because they are very difficult to satisfy. However, in this study, it is used as a referent.

The second model, covariance model, recognizes that pooling may result in different cross-section and time-series intercepts and adds dummy variables to characterize each cross-section unit and time period. However, this model consumes a large number of degrees of freedom and also fails to account for the sources of variable cross-section and time-series intercepts. Consequently, it is not used here.

The third model is the error component model (a hybrid of the OLS and LSDV models). In this method, the intercepts, α_i, are treated as random, independent of residuals, u_{it}, and also are mutually independent. Further, it assumes that the error term has zero mean, common variance and are serially independent and independent across cross-section units. The error component model is not used here because as will be shown later, the data reveal presence of (a) autocorrelation, (b) heteroskedasticity, and (c) the likelihood of contemporaneous correlation.

To account for such complexities in the data, the above models fail. Thus, it is more appropriate to use the autoregressive model (Parks 1967) that accounts for heteroskedasticity and both autocorrelation and contemporaneous correlation among disturbances. This preferred method is a variant of the generalized least squares method (to be discussed later). On the whole, two alternative approaches were used here--the OLS and autoregressive models.

First, I assumed that there were no complications in the estimation error term e_{it}, i.e., that the data do not suffer from heteroskedasticity, autocorrelation or contemporaneous correlation between cross sections. As a result, Ordinary Least Squares (OLS) was first applied to the data.

Secondly, I assumed that the error term e_{it} is heteroskedastic, contemporaneously correlated and autoregressive. This specification of the model was estimated by the method proposed by Parks (1967) (to be discussed later in this chapter).

The Ordinary Least Squares (OLS) Results

The estimated coefficients and their standard errors are displayed in Tables 4 and 5. The standard errors are given in parentheses beneath the estimated coefficients.

For model (1a), the additive model, the regression coefficients for political participation (UPPI), social mobilization (SOM), economic development (PQLI), and political institutionalization (GCRGDP) are all consistent with the modernization-instability theory--with UPPI and SOM displaying a positive relationship with deaths from domestic political violence (DPV) and PQLI and GCRGDP showing a negative relationship with DPV (see Table 4). However, the standard errors indicate that the impacts of SOM and UPPI on DPV are not statistically significant ($p > .22$), while the

negative impacts of PQLI and GCRGDP on DPV are very significant ($p < .001$).

TABLE 4

ADDITIVE MODEL: EFFECTS OF POLITICAL PARTICIPATION INDEX, SOCIAL MOBILIZATION, ECONOMIC DEVELOPMENT AND POLITICAL INSTITUTIONALIZATION ON POLITICAL INSTABILITY 1960-1982 (N=770)

ORDINARY LEAST SQUARES ESTIMATES (OLS)

Independent Variables	Dependent Variable: DPV
Constant	1.1523* (.17405)
Political Participation Index (UPP1)	.00003 (.00015)
Social Mobilization (SOM)	.000017 (.00002)
Economic Development (PQLI)	-.00021* (.00004)
Political Institutionalization (GCRGDP)	-.00324* (.00073)
R^2 = .06 F = 13.22 P = .0001	SE = 1.66

Main table entries are the parameter estimates and the numbers below them in parentheses are then standard errors.
*Significant at or below the .001 level.

As can be seen from Table 4, the statistical fit of the equation (1a) is not very impressive: R^2 is only .06. However, the F value for the equation is statistically

significant ($p < .0001$), allowing one to reject the null hypothesis that all the right-hand side variables as a group except the constant term have zero coefficients. The R^2 of .06 is particularly small, despite the fact that two variables in the equation are statistically significant. This is common with equations estimated in growth rate format. Its low value should not be very discouraging because equations estimated in growth rates format avoid the spurious correlation phenomenon common in regressions based on a level format (Granger and Newbold 1974).

For model (1b) the nonadditive model, Table 5 reports the OLS estimates. The results indicate that gap hypothesis is not supported. Contrary to the gap argument, the ratios of social mobilization with economic development (SOM/PQLI) and political institutionalization (SOM/GCRGDP) displayed negative relationships with DPV. Furthermore, their coefficients are statistically insignificant even at the 10 percent level ($p > .30$), as is the F coefficient for the equation. Finally, as can be seen in Table 5, the fit of the equation (1b), as indicated by R^2 of .004, F statistics of .139, is less satisfactory than that of the additive model. These findings are clearly at odds with the gap hypothesis.

The Generalized Least Squares (GLS) Results

Despite the positive results displayed for the additive

OLS model in Table 4, the OLS results are generally suspect.

TABLE 5

GAP HYPOTHESIS MODEL: EFFECTS OF SOCIAL MOBILIZATION WHEN RATIOED WITH ECONOMIC DEVELOPMENT AND POLITICAL INSTITUTIONALIZATION ON POLITICAL INSTABILITY 1960-1982 (N=770)

ORDINARY LEAST SQUARES ESTIMATES (OLS)

Independent Variables	Dependent Variable: DPV
Constant	.92790* (.06190)
Ratio of Social Mobilization to Economic Development (SOM/PQLI)	-.00043 (.00085)
Ratio of Social Mobilization to Political Institutionalization (SOM/GCRGDP)	-.00001 (.00011)
R^2 = .004 F = .139 P = .871 SE = 1.72	

Note: See notes to Table 4.
*Significant at or below the .001 level.

They most likely are plagued by serial correlation and heteroscedasticity in the data, since these are very common in pooled time-series data. Further inquiry into the distribution pattern of the regression residuals is necessary to determine whether these problems are actually present. When the residuals are grouped by country and

their behavior over time examined, positive autocorrelation emerges for most of the nations used in the analysis (Figure 13). Positive autocorrelation means that this time's observation of the error term tends to have the same sign as last time's observation of the error term, i.e. when the successive values of errors do not change sign frequently.

To formalize the graphical approach (since different individuals can interpret a graph differently), it is essential that one performs an alternative test for autocorrelation. In practice most classical econometric research assumes a first-order autoregressive scheme and regresses the residual (u) on its one period lag without intercept (Koutsoyiannis 1977, 216).

First, the OLS is applied to the data and the residuals u_{it} are obtained. For the additive model, the equation is that estimated in Table 4:

$$DPV_t = a_o + a_1SOM_t + a_2UPPl_t + a_3PQLI_t + u_t$$

The value of the residuals from the above equation were then regressed on several forms of their one period lagged values. The presence of autocorrelation is determined by the significance of the autocorrelation coefficient, rho (ρ). The standard tests of significance are the t-statistics (for the statistical significance of ρ) and F statistic for the global significance of the regression.

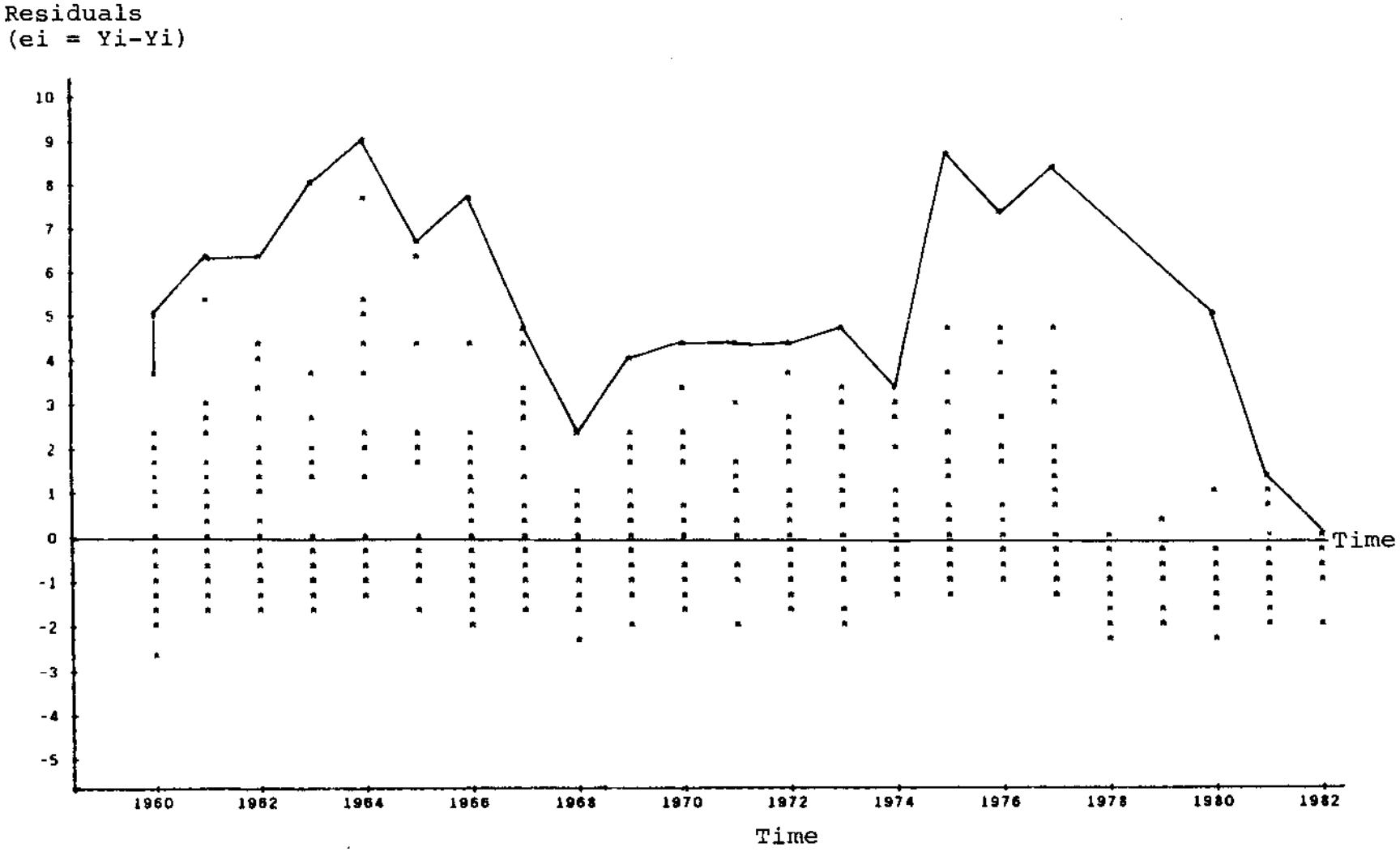


Figure 13. Positive Autocorrelation

After the residual u was obtained and regressed on its one period lag:

$$u_t = \rho u_{t-1} + v_t$$

where u = the error term of the equation,

ρ = the coefficient of the autocorrelation, and

v_t= a random (non-serially correlated) error term,

the coefficient of the lagged value of residuals was statistically significant ($p < .001$) (Table 6).

TABLE 6

AN ALTERNATIVE TEST FOR SERIAL CORRELATION, 1960-1982 (N = 805)

Independent Variable		Dependent Variable: u_{it}
u_{t-1}		.45310** (.03145)
R^2 = .21	F = 202.01	P = .0001

Note: Seen notes to Table 4.
**Significant at the .0001 level.

To check for the presence of heteroscedasticity in the data, I used three methods.

1. Nature of the problem. According to Gujarati, often the nature of the problem under consideration indicates whether the data are heteroskedastic or not. For

instance, "in family budget studies, it was found that the residual variance around the regression of consumption on income increased with income" (Gujarati 1978, 200-201). Similarly, heteroskedasticity is expected in our data since we notice that deaths from domestic political violence are notably higher in some nations (those nations that fought Civil wars, (Ethiopia) or have high violent events (Rwanda) than in others (e.g., Belgium). As already hinted in Chapter III, figure 4 provides the evidence of the kinds of variation within the analyzed countries. Thus, it is logical to conclude that the residuals e_1, e_2, ... e_N and, hence, the error terms v_1, v_2, ... v_N, are likely to vary from nation to nation with regard to deaths from political violence even after DPV has been logged.

The thirty-five nations under study also differ markedly in size of population. As a result, in using such indicators of social mobilization and economic development, one is likely to encounter different magnitudes of errors. For instance, the errors in measuring savings per capita, life expectancy, infant mortality and the like for small countries are, ceteris paribus, smaller than for large countries. Thus, heteroskedasticity will be particularly prevalent when the data cover a large range of indicators of social mobilization and economic development, as in this analysis.

2. Graphic Method. Another method used in this analysis to test for heteroscedasticity is to examine the scatter diagram of residual plots (Frank 1978, 287-288). To use this method, one plots the residuals (e_i) against any of the independent variables or against the predicted value of the dependent variable. If heteroscedasticity is present, there should be a fan-shaped pattern of residuals increasing with the increasing values of the independent variables or a funnel shaped pattern of residuals decreasing with the increasing values of the independent variables. If there is no heteroscedasticity we will observe a rectangular pattern of residuals which indicates that the residuals are relatively constant in absolute values as the values of the independent variable increase. Figure 14 demonstrates a fan-shaped pattern of residuals increasing with the increasing values of the social mobilization index.

3. Glejser test. Glejser (1969, 316-23) suggests using the absolute values of residuals, in a further test for heteroscedasticity. The test is performed as follows: (a) the regression equation is estimated by OLS and the residuals calculated; (b) the absolute values of residuals, $|e_i|$, are regressed on an explanatory variable, X, that is thought to be closely associated with the error variance; and (c) the slope coefficient for the regression in (b) is examined. If it is statistically significant, using the

Figure 14

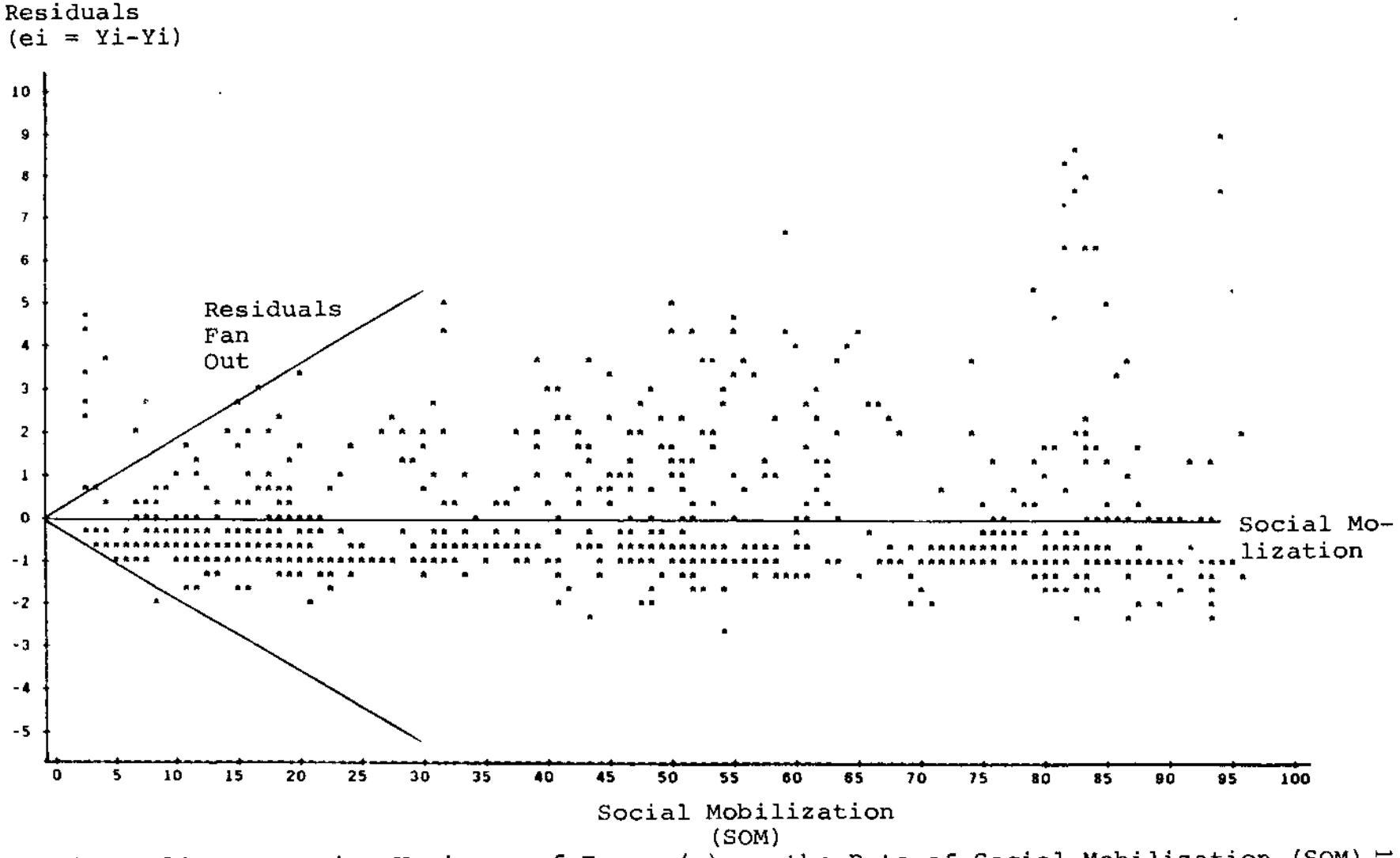


Figure 14. Increasing Variance of Error (u) as the Rate of Social Mobilization (SOM) Increases

t-test, this will indicate that the error variances increase proportionately with X. The advantage of this procedure is that it gives us information on the form of heteroscedasticity, that is, on the particular way in which the variance of the error term is connected to Xi.

The above procedure was followed by first regressing DPV on the SOM, PPP1 and GCRGDP as in Table 4. That is:

$$DPV_t = c_0 + c_1SOM_t + c_2UPP1_t + c_3PQLI_t + c_4GCRGDP_t + v_t.$$

The absolute values of the residuals from the above equation were then regressed on SOM. The results, presented in Table 7, indicate a strong positive relationship between SOM and the absolute values of the residual. That is, the estimated coefficient of SOM is significant below the .001 level. From Table 7, then, it is quite evident that the variance of the error term is a function of SOM (i.e., SOM is related to the heteroscedasticity).

As demonstrated above, the data are beset with heteroscedasticity as well as autocorrelation. Another issue that is often overlooked by researchers is that there is a possibility of further complications in the error structure (due to influence of modernization patterns of some nations on the modernization processes of others and, consequently, forcing regression lines to shift). This is called "contemporaneous correlation" (Parks 1967, 1974). It is likely

present in these data because of the impact of modernization pattern of some nations on others.

TABLE 7

GLEJSER FORMAL TEST FOR HETEROSCEDASTICITY
EFFECTS OF SOCIAL MOBILIZATION ON THE
ABSOLUTE NUMBER OF RESIDUALS,
(e_i), 1960-1982
(N=770)

Independent Variables	Dependent Variable: $\|e_i\|$
Constant	.82803* (.07654)
Social Mobilization (SOM)	.00714* (.00137)
R_2 = .03 F = 27.04	P = .0001

Note: See notes to Table 4.
*Significant at or below the .001 level.

Given the consequences of such complications in the error structure--autocorrelation, heteroscedasticity and contemporaneous correlation, the preferred analysis method becomes a generalized least squares (GLS) procedure (to be discussed below) that is based on the cross-sectionally correlated and time-wise autoregressive model of the error structure (Kmenta 1971; Parks 1967, 1974; Pindyck and Rubinfeld 1981). This model assumes that, over time, disturbances are autoregressively related, heteroscedastic over cross-section units, and mutually correlated. Models

(1a) and (1b) were reestimated using this variant of the GLS procedure as developed by Parks (1974).

Parks (1974) considered the first-order autoregressive model in which the random errors

$$u_{ij} \qquad i=1,2,.....,N;\ j=1,2,.....,T$$

are heteroscedastic, contemporaneously correlated and autoregressive. Given such a complex nature of the disturbances, the covariance matrix, v, for the vector of random errors, u, is estimated by a two-stage procedure, leaving the regression estimates to be estimated via the usual generalized least squares.

First, each equation is estimated separately by the usual ordinary least Squares (OLS) to obtain the estimated residuals, $\hat{u}_{it}$. From these estimated residuals, $\hat{u}_{it}$, we calculate the estimate of the covariances of the disturbances, σ_{ij}.

$$\sigma_{ij} = [1/(T-K)]\Sigma\hat{u}_{it}\ \hat{u}_{it},$$

where K is the number of regression parameters estimated. After we estimate σ_{ij}, we then reestimate all the N cross-sectional equations jointly, using GLS to estimate all the α_s and β_s simultaneously.

GLS (the Aitken estimator) rids an equation of first-order autocorrelation and, in doing so, restores the minimum variance property to its estimation. It begins with an equation that does not meet the classical assumptions (due in this case to autocorrelation) and transforms it into one

that does meet those assumptions. It is usually assumed that in practice the errors follow a first-order autoregressive scheme:

$$U_t = \rho U_{t-1} + V_t$$

where the absolute value of $|\rho| < 1$ and V_t follow the OLS assumptions of zero mean, constant variance and lack of serial correlation (Studenmund and Cassidy 1987, 227). The autocorrelation can satisfactorily be resolved if $rho_{(\rho)}$, the first order autocorrelation coefficient, is known. In the SAS TSCSREG implementation of Parks' procedure, rho is calculated from the data.

To see how GLS corrects serial correlation consider these models.

$$Y_t = d_0 + d_1 X_t + u_t \qquad (a)$$

If the above model is true at time t, it is also true at time t-1. Thus,

$$Y_{t-1} = d_0 + d_1 X_{t-1} + u_{t-1} \qquad (b)$$

Multiplying model (b) by rho, ρ, on both sides gives

$$\rho Y_{t-1} = \rho d_0 + \rho d_1 X_{t-1} + \rho U_{t-1} \qquad (c)$$

and subtracting model (c) from (a) gives

$$Y_t - \rho Y_{t-1} = d_0(1-\rho) + a_1(X_t - \rho X_{t-1}) + v_t \qquad (d)$$

Since v_t satisfies the OLS assumption of uncorrelated errors, one proceeds to apply OLS to (d) to obtain estimates that have optimum properties. If rho is not given, one can derive it from Durbin Watson (DW) values printed in the

than the R^2 of .06 and .004 for the OLS estimates in Tables 4 and 5. Willet and Singer's (1988) comments on such high values of R^2, when weighted least-squares is applied, is very instructive:

TABLE 8

ADDITIVE MODEL: EFFECTS OF POLITICAL PARTICIPATION INDEX, SOCIAL MOBILIZATION, ECONOMIC DEVELOPMENT AND POLITICAL INSTITUTIONALIZATION ON POLITICAL INSTABILITY
1960-1982
(N=770)

GENERALIZED LEAST SQUARES ESTIMATES (GLS)

Independent Variables	Dependent Variable: DPV
Constant	1.21464** (.04678)
Political Participation Index (UPP1)	.000015 (.000023)
Social Mobilization (SOM)	.000013 (.000009)
Economic Development (PQLI)	-.000258** (.000017)
Political Institutionalization (GCRGDP)	-.003348** (.000138)
R^2 = .99 SE = .79	

Note: See notes to Table 4.
**Significant at or below the .0001 level.

TABLE 9

GAP HYPOTHESIS MODEL: EFFECTS OF SOCIAL MOBILIZATION WHEN RATIOED WITH ECONOMIC DEVELOPMENT AND POLITICAL INSTITUTIONALIZATION ON POLITICAL INSTABILITY
1960-1982
(N=770)

GENERALIZED LEAST SQUARES (GLS)

Independent Variables	Dependent Variable: DPV
Constant	.89214** (.04806)
Ratio of Social Mobilization to Economic Development (SOM/PQLI)	-.00068** (.00004)
Ratio of Social Mobilization to Political Institutionalization (SOM/GCRGDP)	-.000015** (.0000005)
R^2 = .99	SE = .79

Note: See notes to Table 4.
**Significant at or below the .0001 level.

> Weighted least-squares (WLS) regression analysis minimized the sum of squared residuals (and therefore maximizes the coefficient of determination) with respect to the transformed variables, whereas OLS regression analysis minimizes the sum of squared residuals (and maximizes the coefficient of determination) with respect to the original variables. Providing that the weighting scheme has been chosen appropriately to counteract the heteroscedastic nature of the random errors, a better fit will be achieved by WLS in transformed world. Thus, the coefficient of determination obtained unthinkingly from a statistical computer package under WLS regression is frequently much larger than the value obtained under the corresponding OLS fit (p. 237).

Since the preliminary OLS results are strengthened, we proceed to discuss the implications of the findings. The results obtained from the additive model (1a) are consistent with the modernization-instability hypothesis. However, the findings from the nonadditive model (1b) are at odds with the argument of modernization theorists. It is the conclusion of this study that while the gap hypothesis makes an intuitive sense, it is unnecessary for the following reasons.

Upon close examination, model (1b) is very similar to the import demand model in economics, which hypothesized that quantity of imports (M) depends on the price of imports in domestic currency (PM) as well as the price of domestically produced substitutes (PD) (Murray and Ginman 1976, 75). That is, the quantity of imports (M) is a function of relative price index (PM/PD). Symbolically,

$$M_t = F\ (PM/PD)_t$$

According to Murray and Ginman, this type of mathematical specification (i.e., PM/PD) is troublesome. This is because the specification, $M_t = F\ (PM/PD)_t$, "constrains the influence of the two price variables to be <u>equal</u> but opposite in sign" with respect to their coefficients (Murray and Ginman 1976, 75). The specification discounts other factors that might affect PM or PD (e.g., individual preferences). For instance, while some people might prefer foreign cars, others might prefer domestic cars. This preference

obviously influences the PD or PM. The constraints, according to Murray and Ginman, can be removed by simple modification of the import demand equation, namely,

$$M_t = F\ (PM_t,\ PD_t)$$

The traditional complex "nonadditive" model of modernization-instability, namely,

$$DPV_t = F\ (SOM_t/PQLI_t,\ SOM_t/GCRGDP_t)$$

is similar to the import demand model. Casual reference to Figure 3, presented in Chapter II, makes this point clearer. With respect to their coefficients, the model specification in the gap hypothesis constrains the influence of modernization variables--SOM and PQLI or SOM and GCRGDP--to be equal in magnitude but different in signs with respect to their coefficients. For any given nation, the magnitude of, say, SOM and GCRGDP (with respect to their coefficients) may not be equal as the specification forces them to be. The original specification of the gap hypothesis, as we know, implies that the level of political instability depends on the rate of social moblization as well as the economic development or the rate of social mobilization and political institutionalization. This specification constrains the influence of, say, social mobilization and economic development or social mobilization and political institutionalization to be equal but opposite in sign with respect to their coefficients. The specification discounts other factors that might affect these variables. This may explain why the

gap hypothesis is not better specified. Given this problem, I contend that the model should be disregarded.

Given the inaccuracy of the gap hypothesis model (1b), the instability equation is better estimated by considering the separate effects of social mobilization, political participation and political institutionalization on deaths from domestic political violence. From the work of Ruhl (1975) one also discovers that the gap hypothesis model is problematic. Ruhl concludes (albeit not from the same rationale) that Huntington's complex model is unnecessary.

> Huntington's theory states that the impact of modernization depends on the institutionalization and satisfaction levels with which it is associated; these results suggest that non-additive assumptions, that is, the ratio structures, may be unnecessary . . . The ratio structure of variable interrelationship which is at the core of Huntington's theory is more complex than necessary. Simpler additive assumptions, of independent variable effects appear more useful (1975, 15-18).

The enquiry into the impact of modernization on political instability is of vital importance, and empirical studies on the subject have been carried out through the years (see, for instance, Schneider and Schneider 1971; Ruhl 1975; Jackman 1978). These studies generally conclude just as this work does from its pooled regression analysis that there is a positive relationship between modernization and political instability.

It should be emphasized, however, that the above works derived their results from regressing modernization on

political instability. Obviously, regressions like these only show the presence of statistical correlation between modernization and political instability, but have very little to say about the causal ordering between them. In the remaining section of this chapter, the causal question between modernization and political instability will be addressed. In doing so, this work utilizes a causality technique proposed by Granger (1969). In what follows, I will present the empirical results of the Granger causality tests.

Granger-Causality

Having discarded the gap hypothesis, Granger-causality tests are applied using the additive model. The application of Granger tests in this analysis is bivariate in nature: Social mobilization and political instability equations are estimated separately from those of political participation (UPP1) and instability.

Recall that the Granger tests were estimated with two past values of the dependent variable because this resulted in fewer problems with serial correlation than shorter lag lengths. Recall also that the unrestricted equations were estimated with one through seven lags of the independent variables.

Reported in Tables 10 through 22 are the Granger results for lag distributions from one through seven, including degrees of freedom (DF) and the calculated F-sta-

tistics under the null hypothesis that the coefficients of the lagged independent variables are zero. Each table contains four panels of seven equations. The first panel reports the findings whether social mobilization (SOM) causes deaths from domestic political violence (DPV). The second panel reports the findings about the reverse. The third panel presents the findings about whether political participation (UPP1) causes DPV, while the last panel reports the findings about the reverse ordering.

Modernization-Instability Causality in Belgium

The results from Belgium reported in Table 10 do not support any of the hypotheses of causality. Social mobilization (SOM) and political participation (UPP1) do not cause political instability, nor does instability cause them.

In each of the four panels, the lagged values of the independent variables did not significantly help in predicting the future values of the dependent variables. It is obvious from Table 10 that in no case can one reject, at any reasonable significance level, the null hypotheses of no causality between modernization and political instability. Hence, we conclude that in Belgium modernization and political instability are causally independent, thus confirming none of hypotheses H_7 through H_{12}. Symbolically, the causal ordering in Belgium takes this form:

SOM <----/----> DPV
UPP1 <---/----> DPV

TABLE 10

RESULTS FROM GRANGER-CAUSALITY TESTS, 1960-1982: BELGIUM

Dependent Variable (Lags)	Independent Variable (Lags)	F	D.F.	Implications
DPV (2)	SOM (1)	.19	(1,19)	SOM --/---> DPV
DPV (2)	SOM (2)	.24	(2,18)	SOM --/---> DPV
DPV (2)	SOM (3)	.36	(3,17)	SOM --/---> DPV
DPV (2)	SOM (4)	.59	(4,16)	SOM --/---> DPV
DPV (2)	SOM (5)	.59	(5,15)	SOM --/---> DPV
DPV (2)	SOM (6)	.50	(6,14)	SOM --/---> DPV
DPV (2)	SOM (7)	.48	(7,13)	SOM --/---> DPV
SOM (2)	DPV (1)	.65	(1,19)	DPV --/---> SOM
SOM (2)	DPV (2)	.64	(2,18)	DPV --/---> SOM
SOM (2)	DPV (3)	.62	(3,17)	DPV --/---> SOM
SOM (2)	DPV (4)	.44	(4,16)	DPV --/---> SOM
SOM (2)	DPV (5)	.33	(5,15)	DPV --/---> SOM
SOM (2)	DPV (6)	.25	(6,14)	DPV --/---> SOM
SOM (2)	DPV (7)	.20	(7,13)	DPV --/---> SOM
DPV (2)	UPP1 (1)	.19	(1,19)	UPP1 --/---> DPV
DPV (2)	UPP1 (2)	.18	(2,18)	UPP1 --/---> DPV
DPV (2)	UPP1 (3)	.17	(3,17)	UPP1 --/---> DPV
DPV (2)	UPP1 (4)	.13	(4,16)	UPP1 --/---> DPV
DPV (2)	UPP1 (5)	.13	(5,15)	UPP1 --/---> DPV
DPV (2)	UPP1 (6)	.12	(6,14)	UPP1 --/---> DPV
DPV (2)	UPP1 (7)	.10	(7,13)	UPP1 --/---> DPV
UPP1 (2)	DPV (1)	.15	(1,19)	DPV --/---> UPP1
UPP1 (2)	DPV (2)	.23	(2,18)	DPV --/---> UPP1
UPP1 (2)	DPV (3)	.16	(3,17)	DPV --/---> UPP1
UPP1 (2)	DPV (4)	.65	(4,16)	DPV --/---> UPP1
UPP1 (2)	DPV (5)	.15	(5,15)	DPV --/---> UPP1
UPP1 (2)	DPV (6)	.17	(6,14)	DPV --/---> UPP1
UPP1 (2)	DPV (7)	.23	(7,13)	DPV --/---> UPP1

Modernization-Instability Causality in Burma

The results from Burma (Table 11) also lend no support to either the hypothesis of causality from social mobiliza-

tion (SOM) to political instability or that of unconventional political participation (UPP1) to DPV or the reverse causations.

As in Belgium, all the F-statistics indicate that the null hypothesis of no causality in either direction between modernization and political instability, should not be rejected, thus confirming none of hypotheses H_7 through H_{12}. Symbolically, the causal flow in Burma is:

SOM <----/----> DPV
UPP1 <---/----> DPV

Modernization-Instability Causality in Ethiopia

The Ethiopian results in Table 12 are similar to those of Belgium and Burma: There is no support for the hypothesis of causality from social mobilization (SOM) to political instability or that of unconventional political participation (UPP1) to DPV or the reverse.

In all the equations, the lagged values of the independent variables did not significantly help in predicting the future values of the dependent variables. None of the calculated F-statistics is significant at even the 10 percent level, indicating that the null hypotheses of no causality in either direction between modernization and political instability should not be rejected. As in Belgium and Burma, we conclude that modernization and political instability are causally independent in Ethiopia, supporting

TABLE 11

RESULTS FROM GRANGER-CAUSALITY TESTS,
1960-1982: BURMA

Dependent Variable (Lags)	Independent Variable (Lags)	F	D.F.	Implications
DPV (2)	SOM (1)	2.13	(1,19)	SOM --/---> DPV
DPV (2)	SOM (2)	1.01	(2,18)	SOM --/---> DPV
DPV (2)	SOM (3)	.70	(3,17)	SOM --/---> DPV
DPV (2)	SOM (4)	.50	(4,16)	SOM --/---> DPV
DPV (2)	SOM (5)	.41	(5,15)	SOM --/---> DPV
DPV (2)	SOM (6)	.32	(6,14)	SOM --/---> DPV
DPV (2)	SOM (7)	.26	(7,13)	SOM --/---> DPV
SOM (2)	DPV (1)	.02	(1,19)	DPV --/---> SOM
SOM (2)	DPV (2)	.21	(2,18)	DPV --/---> SOM
SOM (2)	DPV (3)	.13	(3,17)	DPV --/---> SOM
SOM (2)	DPV (4)	.14	(4,16)	DPV --/---> SOM
SOM (2)	DPV (5)	.34	(5,15)	DPV --/---> SOM
SOM (2)	DPV (6)	.78	(6,14)	DPV --/---> SOM
SOM (2)	DPV (7)	1.86	(7,13)	DPV --/---> SOM
DPV (2)	UPP1 (1)	.00	(1,19)	UPP1 --/---> DPV
DPV (2)	UPP1 (2)	.00	(2,18)	UPP1 --/---> DPV
DPV (2)	UPP1 (3)	.23	(3,17)	UPP1 --/---> DPV
DPV (2)	UPP1 (4)	.21	(4,16)	UPP1 --/---> DPV
DPV (2)	UPP1 (5)	.22	(5,15)	UPP1 --/---> DPV
DPV (2)	UPP1 (6)	.45	(6,14)	UPP1 --/---> DPV
DPV (2)	UPP1 (7)	.77	(7,13)	UPP1 --/---> DPV
UPP1 (2)	DPV (1)	1.28	(1,19)	DPV --/---> UPP1
UPP1 (2)	DPV (2)	.61	(2,18)	DPV --/---> UPP1
UPP1 (2)	DPV (3)	.38	(3,17)	DPV --/---> UPP1
UPP1 (2)	DPV (4)	.30	(4,16)	DPV --/---> UPP1
UPP1 (2)	DPV (5)	1.75	(5,15)	DPV --/---> UPP1
UPP1 (2)	DPV (6)	1.36	(6,14)	DPV --/---> UPP1
UPP1 (2)	DPV (7)	1.13	(7,13)	DPV --/---> UPP1

TABLE 12

RESULTS FROM GRANGER-CAUSALITY TESTS,
1960-1982: ETHIOPIA

Dependent Variable (Lags)	Independent Variable (Lags)	F	D.F.	Implications
DPV (2)	SOM (1)	.84	(1,19)	SOM --/---> DPV
DPV (2)	SOM (2)	.04	(2,18)	SOM --/---> DPV
DPV (2)	SOM (3)	.26	(3,17)	SOM --/---> DPV
DPV (2)	SOM (4)	.35	(4,16)	SOM --/---> DPV
DPV (2)	SOM (5)	.31	(5,15)	SOM --/---> DPV
DPV (2)	SOM (6)	.35	(6,14)	SOM --/---> DPV
DPV (2)	SOM (7)	.37	(7,13)	SOM --/---> DPV
SOM (2)	DPV (1)	.50	(1,19)	DPV --/---> SOM
SOM (2)	DPV (2)	.74	(2,18)	DPV --/---> SOM
SOM (2)	DPV (3)	.57	(3,17)	DPV --/---> SOM
SOM (2)	DPV (4)	.84	(4,16)	DPV --/---> SOM
SOM (2)	DPV (5)	.61	(5,15)	DPV --/---> SOM
SOM (2)	DPV (6)	.73	(6,14)	DPV --/---> SOM
SOM (2)	DPV (7)	1.19	(7,13)	DPV --/---> SOM
DPV (2)	UPP1 (1)	.84	(1,19)	UPP1 --/---> DPV
DPV (2)	UPP1 (2)	.40	(2,18)	UPP1 --/---> DPV
DPV (2)	UPP1 (3)	.39	(3,17)	UPP1 --/---> DPV
DPV (2)	UPP1 (4)	.48	(4,16)	UPP1 --/---> DPV
DPV (2)	UPP1 (5)	.61	(5,15)	UPP1 --/---> DPV
DPV (2)	UPP1 (6)	.55	(6,14)	UPP1 --/---> DPV
DPV (2)	UPP1 (7)	.78	(7,13)	UPP1 --/---> DPV
UPP1 (2)	DPV (1)	.00	(1,19)	DPV --/---> UPP1
UPP1 (2)	DPV (2)	.00	(2,18)	DPV --/---> UPP1
UPP1 (2)	DPV (3)	.70	(3,17)	DPV --/---> UPP1
UPP1 (2)	DPV (4)	.60	(4,16)	DPV --/---> UPP1
UPP1 (2)	DPV (5)	.49	(5,15)	DPV --/---> UPP1
UPP1 (2)	DPV (6)	.38	(6,14)	DPV --/---> UPP1
UPP1 (2)	DPV (7)	1.68	(7,13)	DPV --/---> UPP1

none of hypotheses H_7 through H_{12}. Symbolically:

SOM <----/----> DPV
UPP1 <---/----> DPV

Modernization-Instability Causality in Greece

The experience of Greece presented in Table 13 also does not (as in the cases of Belgium, Burma and Ethiopia) support the hypothesis of causality in either direction between modernization and political instability. It is clear from Table 13 that in no equation can one accept causality between modernization and political instability. All F-statistics indicate that the null hypothesis, of no causality between modernization and political instability, should be retained. Thus, the same conclusion reached for Belgium, Burma and Ethiopia is maintained: modernization and political instability are causally independent. Symbolically, the causal flow is expressed as:

SOM <----/----> DPV
UPP1 <---/----> DPV

TABLE 13

RESULTS FROM GRANGER-CAUSALITY TESTS,
1960-1982: GREECE

Dependent Variable (Lags)	Independent Variable (Lags)	F	D.F.	Implications
DPV (2)	SOM (1)	1.05	(1,19)	SOM --/---> DPV
DPV (2)	SOM (2)	.72	(2,18)	SOM --/---> DPV
DPV (2)	SOM (3)	.74	(3,17)	SOM --/---> DPV
DPV (2)	SOM (4)	.52	(4,16)	SOM --/---> DPV
DPV (2)	SOM (5)	.43	(5,15)	SOM --/---> DPV
DPV (2)	SOM (6)	.37	(6,14)	SOM --/---> DPV
DPV (2)	SOM (7)	.35	(7,13)	SOM --/---> DPV
SOM (2)	DPV (1)	.15	(1,19)	DPV --/---> SOM
SOM (2)	DPV (2)	.36	(2,18)	DPV --/---> SOM
SOM (2)	DPV (3)	.23	(3,17)	DPV --/---> SOM
SOM (2)	DPV (4)	.33	(4,16)	DPV --/---> SOM
SOM (2)	DPV (5)	.55	(5,15)	DPV --/---> SOM
SOM (2)	DPV (6)	1.04	(6,14)	DPV --/---> SOM
SOM (2)	DPV (7)	2.17	(7,13)	DPV --/---> SOM
DPV (2)	UPP1 (1)	.20	(1,19)	UPP1 --/---> DPV
DPV (2)	UPP1 (2)	.60	(2,18)	UPP1 --/---> DPV
DPV (2)	UPP1 (3)	.89	(3,17)	UPP1 --/---> DPV
DPV (2)	UPP1 (4)	.74	(4,16)	UPP1 --/---> DPV
DPV (2)	UPP1 (5)	.56	(5,15)	UPP1 --/---> DPV
DPV (2)	UPP1 (6)	.53	(6,14)	UPP1 --/---> DPV
DPV (2)	UPP1 (7)	.43	(7,13)	UPP1 --/---> DPV
UPP1 (2)	DPV (1)	.19	(1,19)	DPV --/---> UPP1
UPP1 (2)	DPV (2)	1.50	(2,18)	DPV --/---> UPP1
UPP1 (2)	DPV (3)	1.10	(3,17)	DPV --/---> UPP1
UPP1 (2)	DPV (4)	.78	(4,16)	DPV --/---> UPP1
UPP1 (2)	DPV (5)	.67	(5,15)	DPV --/---> UPP1
UPP1 (2)	DPV (6)	.53	(6,14)	DPV --/---> UPP1
UPP1 (2)	DPV (7)	.45	(7,13)	DPV --/---> UPP1

Modernization-Instability Causality in Jamaica

The Jamaican results (Table 14) differ from the previous ones (Tables 10 through 13). While there is no causality from social mobilization (SOM) to political instability or vice versa, deaths from domestic political violence (DPV) does Granger-cause unconventional political participation (UPP1) unidirectionally at lags three through seven, a finding that is at odds with the modernization-instability thesis. In the UPP1 and DPV equations (the fourth panel in the table) the calculated F-statistics are all statistically significant at or below the .05 level. As the number of lags in the independent variable (DPV) increases, generally so does its impact in predicting the future values of UPP1 growth. It is obvious from Table 14, fourth panel of the table, that one can reasonably reject the null hypothesis of no causality from DPV to UPP1 ($p < .05$). Hence, we conclude that in Jamaica, it is DPV that Granger-causes UPP1 without feedback, thus confirming H_{11}. Symbolically, the causal ordering in Jamaica takes this form:

SOM <----/----> DPV
UPP1 <-------- DPV

Modernization-Instability Causality in Mexico

The results from Mexico reported in Table 15 support both the hypotheses of causality from social mobilization (SOM) to political instability (DPV) and the reverse.

TABLE 14

RESULTS FROM GRANGER-CAUSALITY TESTS,
1960-1982: JAMAICA

Dependent Variable (Lags)	Independent Variable (Lags)	F	D.F.	Implications
DPV (2)	SOM (1)	.95	(1,19)	SOM --/---> DPV
DPV (2)	SOM (2)	1.06	(2,18)	SOM --/---> DPV
DPV (2)	SOM (3)	.97	(3,17)	SOM --/---> DPV
DPV (2)	SOM (4)	1.01	(4,16)	SOM --/---> DPV
DPV (2)	SOM (5)	.76	(5,15)	SOM --/---> DPV
DPV (2)	SOM (6)	.60	(6,14)	SOM --/---> DPV
DPV (2)	SOM (7)	.51	(7,13)	SOM --/---> DPV
SOM (2)	DPV (1)	.91	(1,19)	DPV --/---> SOM
SOM (2)	DPV (2)	.48	(2,18)	DPV --/---> SOM
SOM (2)	DPV (3)	.33	(3,17)	DPV --/---> SOM
SOM (2)	DPV (4)	.28	(4,16)	DPV --/---> SOM
SOM (2)	DPV (5)	.38	(5,15)	DPV --/---> SOM
SOM (2)	DPV (6)	.33	(6,14)	DPV --/---> SOM
SOM (2)	DPV (7)	.74	(7,13)	DPV --/---> SOM
DPV (2)	UPP1 (1)	1.76	(1,19)	UPP1 --/---> DPV
DPV (2)	UPP1 (2)	.95	(2,18)	UPP1 --/---> DPV
DPV (2)	UPP1 (3)	.60	(3,17)	UPP1 --/---> DPV
DPV (2)	UPP1 (4)	.59	(4,16)	UPP1 --/---> DPV
DPV (2)	UPP1 (5)	1.21	(5,15)	UPP1 --/---> DPV
DPV (2)	UPP1 (6)	.94	(6,14)	UPP1 --/---> DPV
DPV (2)	UPP1 (7)	.79	(7,13)	UPP1 --/---> DPV
UPP1 (2)	DPV (1)	.71	(1,19)	DPV --/---> UPP1
UPP1 (2)	DPV (2)	.96	(2,18)	DPV --/---> UPP1
UPP1 (2)	DPV (3)	3.74***	(3,17)	DPV ------> UPP1
UPP1 (2)	DPV (4)	3.55***	(4,16)	DPV ------> UPP1
UPP1 (2)	DPV (5)	2.66***	(5,15)	DPV ------> UPP1
UPP1 (2)	DPV (6)	9.77****	(6,14)	DPV ------> UPP1
UPP1 (2)	DPV (7)	7.78****	(7,13)	DPV ------> UPP1

***Significant at or below the .05 level.
****Significant at or below the .01 level.

TABLE 15

RESULTS FROM GRANGER-CAUSALITY TESTS,
1960-1982: MEXICO

Dependent Variable (Lags)	Independent Variable (Lags)	F	D.F.	Implications
DPV (2)	SOM (1)	12.67****	(1,19)	SOM ------> DPV
DPV (2)	SOM (2)	6.27****	(2,18)	SOM ------> DPV
DPV (2)	SOM (3)	4.12****	(3,17)	SOM ------> DPV
DPV (2)	SOM (4)	5.04****	(4,16)	SOM ------> DPV
DPV (2)	SOM (5)	4.70****	(5,15)	SOM ------> DPV
DPV (2)	SOM (6)	3.66***	(6,14)	SOM ------> DPV
DPV (2)	SOM (7)	3.83***	(7,13)	SOM ------> DPV
SOM (2)	DPV (1)	7.60****	(1,19)	DPV ------> SOM
SOM (2)	DPV (2)	6.75****	(2,18)	DPV ------> SOM
SOM (2)	DPV (3)	7.55****	(3,17)	DPV ------> SOM
SOM (2)	DPV (4)	5.33****	(4,16)	DPV ------> SOM
SOM (2)	DPV (5)	4.00****	(5,15)	DPV ------> SOM
SOM (2)	DPV (6)	3.11***	(6,14)	DPV ------> SOM
SOM (2)	DPV (7)	2.48*****	(7,13)	DPV ------> SOM
DPV (2)	UPP1 (1)	.20	(1,19)	UPP1 --/---> DPV
DPV (2)	UPP1 (2)	1.80	(2,18)	UPP1 --/---> DPV
DPV (2)	UPP1 (3)	.58	(3,17)	UPP1 --/---> DPV
DPV (2)	UPP1 (4)	1.26	(4,16)	UPP1 --/---> DPV
DPV (2)	UPP1 (5)	.94	(5,15)	UPP1 --/---> DPV
DPV (2)	UPP1 (6)	.96	(6,14)	UPP1 --/---> DPV
DPV (2)	UPP1 (7)	1.11	(7,13)	UPP1 --/---> DPV
UPP1 (2)	DPV (1)	.21	(1,19)	DPV --/---> UPP1
UPP1 (2)	DPV (2)	.20	(2,18)	DPV --/---> UPP1
UPP1 (2)	DPV (3)	.19	(3,17)	DPV --/---> UPP1
UPP1 (2)	DPV (4)	.14	(4,16)	DPV --/---> UPP1
UPP1 (2)	DPV (5)	.33	(5,15)	DPV --/---> UPP1
UPP1 (2)	DPV (6)	1.04	(6,14)	DPV --/---> UPP1
UPP1 (2)	DPV (7)	.83	(7,13)	DPV --/---> UPP1

***Significant at or below the .05 level.
****Significant at or below the .01 level.
*****Significant at or below the .10 level.

With causality running from SOM to DPV in the first panel of the table, the null hypothesis is clearly rejected at or below the 10 percent level. In the case of the reverse ordering in the second panel of the table, from DPV to SOM, the null hypothesis is also rejected below the 1 percent level. We conclude that SOM and DPV are causally reciprocal, thus confirming hypothesis H_9.

Political participation (UPP1) and DPV, however, are causally independent. All the F-statistics indicate that the null hypothesis of no causality between UUP1 and DPV should not be rejected. The causal ordering in Mexico takes this form:

SOM <----------> DPV
UPP1 <---/----> DPV

Modernization-Instability Causality in Morocco

For Morocco (Table 16) the results are similar to those of Mexico; the bidirectional causality from changes in social mobilization (SOM) to political instability as reported in the first two panels of the table confirms H_7. With regard to DPV and political participation (UPP1) causality, however, the null hypothesis of no causality should not be rejected even at the 10 percent level. SOM Granger causes DPV at lags three through seven; DPV Granger causes SOM at lag two. Thus, while there is feedback causality between changes in DPV and SOM, it is fair to conclude that SOM appears to exert greater impact in

TABLE 16

RESULTS FROM GRANGER-CAUSALITY TESTS,
1960-1982: MOROCCO

Dependent Variable (Lags)	Independent Variable (Lags)	F	D.F	Implication
DPV (2)	SOM (1)	.10	(1,19)	SOM --/---> DPV
DPV (2)	SOM (2)	.08	(2,18)	SOM --/---> DPV
DPV (2)	SOM (3)	14.97****	(3,17)	SOM ------> DPV
DPV (2)	SOM (4)	10.70****	(4,16)	SOM ------> DPV
DPV (2)	SOM (5)	8.60****	(5,15)	SOM ------> DPV
DPV (2)	SOM (6)	7.89****	(6,14)	SOM ------> DPV
DPV (2)	SOM (7)	6.37****	(7,13)	SOM ------> DPV
SOM (2)	DPV (1)	1.67	(1,19)	DPV --/---> SOM
SOM (2)	DPV (2)	2.70*****	(2,18)	DPV ------> SOM
SOM (2)	DPV (3)	2.00	(3,17)	DPV --/---> SOM
SOM (2)	DPV (4)	2.42	(4,16)	DPV --/---> SOM
SOM (2)	DPV (5)	1.75	(5,15)	DPV --/---> SOM
SOM (2)	DPV (6)	1.50	(6,14)	DPV --/---> SOM
SOM (2)	DPV (7)	1.31	(7,13)	DPV --/---> SOM
DPV (2)	UPP1 (1)	.20	(1,19)	UPP1 --/---> DPV
DPV (2)	UPP1 (2)	.40	(2,18)	UPP1 --/---> DPV
DPV (2)	UPP1 (3)	.25	(3,17)	UPP1 --/---> DPV
DPV (2)	UPP1 (4)	.17	(4,16)	UPP1 --/---> DPV
DPV (2)	UPP1 (5)	.31	(5,15)	UPP1 --/---> DPV
DPV (2)	UPP1 (6)	.24	(6,14)	UPP1 --/---> DPV
DPV (2)	UPP1 (7)	.27	(7,13)	UPP1 --/---> DPV
UPP1 (2)	DPV (1)	1.00	(1,19)	DPV --/---> UPP1
UPP1 (2)	DPV (2)	.47	(2,18)	DPV --/---> UPP1
UPP1 (2)	DPV (3)	.49	(3,17)	DPV --/---> UPP1
UPP1 (2)	DPV (4)	.35	(4,16)	DPV --/---> UPP1
UPP1 (2)	DPV (5)	.26	(5,15)	DPV --/---> UPP1
UPP1 (2)	DPV (6)	.23	(6,14)	DPV --/---> UPP1
UPP1 (2)	DPV (7)	.23	(7,13)	DPV --/---> UPP1

****Significant at or below .01 level
*****Significant at or below .10 level

predicting the future values of DPV. We conclude, as in Mexico, that SOM and DPV are causally bidirectional, thus confirming H9. Symbolically:

SOM <----------> DPV
UPP1 <---/---> DPV

Modernization-Instability Causality in Nicaragua

The experience of Nicaragua (Table 17) is similar to that of Belgium, Burma, Ethiopia, and Greece. The results indicate no causality in either direction between modernization and political instability. From Table 17 it is obvious that in no equation can one accept causality between modernization and political instability. All the F-statistics are not significant even at the 10 percent level. Thus, the conclusion reached for Belgium, Burma, Ethiopia, and Greece is maintained: modernization and political instability are causally independent. Symbolically modernization-instability causality in Nicaragua takes this form:

SOM <---/---> DPV
UPP1 <---/---> DPV

Modernization-Instability Causality in Peru

For Peru (Table 18) the results indicate unidirectional causality from changes in social mobilization (SOM) to political instability (DPV) at lags one and two. In the first panel, the null hypothesis of no causality from SOM to DPV is rejected at or below the 5 percent level, thus confirming H_7. However, the null hypothesis must be

retained for the reverse ordering (DPV ---> SOM).

TABLE 17

RESULTS FROM GRANGER-CAUSALITY TESTS,
1960-1982: NICARAGUA

Dependent Variable (Lags)	Independent Variable (Lags)	F	D.F.	Implications
DPV (2)	SOM (1)	.40	(1,19)	SOM --/---> DPV
DPV (2)	SOM (2)	.23	(2,18)	SOM --/---> DPV
DPV (2)	SOM (3)	.16	(3,17)	SOM --/---> DPV
DPV (2)	SOM (4)	.14	(4,16)	SOM --/---> DPV
DPV (2)	SOM (5)	.13	(5,15)	SOM --/---> DPV
DPV (2)	SOM (6)	.16	(6,14)	SOM --/---> DPV
DPV (2)	SOM (7)	.19	(7,13)	SOM --/---> DPV
SOM (2)	DPV (1)	1.55	(1,19)	DPV --/---> SOM
SOM (2)	DPV (2)	.73	(2,18)	DPV --/---> SOM
SOM (2)	DPV (3)	.46	(3,17)	DPV --/---> SOM
SOM (2)	DPV (4)	.33	(4,16)	DPV --/---> SOM
SOM (2)	DPV (5)	.38	(5,15)	DPV --/---> SOM
SOM (2)	DPV (6)	.30	(6,14)	DPV --/---> SOM
SOM (2)	DPV (7)	.28	(7,13)	DPV --/---> SOM
DPV (2)	UPP1 (1)	1.03	(1,19)	UPP1 --/---> DPV
DPV (2)	UPP1 (2)	.81	(2,18)	UPP1 --/---> DPV
DPV (2)	UPP1 (3)	.58	(3,17)	UPP1 --/---> DPV
DPV (2)	UPP1 (4)	.41	(4,16)	UPP1 --/---> DPV
DPV (2)	UPP1 (5)	.63	(5,15)	UPP1 --/---> DPV
DPV (2)	UPP1 (6)	.57	(6,14)	UPP1 --/---> DPV
DPV (2)	UPP1 (7)	.45	(7,13)	UPP1 --/---> DPV
UPP1 (2)	DPV (1)	.07	(1,19)	DPV --/---> UPP1
UPP1 (2)	DPV (2)	.05	(2,18)	DPV --/---> UPP1
UPP1 (2)	DPV (3)	.60	(3,17)	DPV --/---> UPP1
UPP1 (2)	DPV (4)	.86	(4,16)	DPV --/---> UPP1
UPP1 (2)	DPV (5)	.69	(5,15)	DPV --/---> UPP1
UPP1 (2)	DPV (6)	.57	(6,14)	DPV --/---> UPP1
UPP1 (2)	DPV (7)	.45	(7,13)	DPV --/---> UPP1

TABLE 18

RESULTS FROM GRANGER-CAUSALITY TESTS,
1960-1982: PERU

Dependent Variable (Lags)	Independent Variable (Lags)	F	D.F.	Implications
DPV (2)	SOM (1)	3.66***	(1,19)	SOM ------> DPV
DPV (2)	SOM (2)	3.04*****	(2,18)	SOM ------> DPV
DPV (2)	SOM (3)	1.91	(3,17)	SOM --/---> DPV
DPV (2)	SOM (4)	1.35	(4,16)	SOM --/---> DPV
DPV (2)	SOM (5)	1.56	(5,15)	SOM --/---> DPV
DPV (2)	SOM (6)	1.22	(6,14)	SOM --/---> DPV
DPV (2)	SOM (7)	1.05	(7,13)	SOM --/---> DPV
SOM (2)	DPV (1)	1.36	(1,19)	DPV --/---> SOM
SOM (2)	DPV (2)	1.00	(2,18)	DPV --/---> SOM
SOM (2)	DPV (3)	.70	(3,17)	DPV --/---> SOM
SOM (2)	DPV (4)	.55	(4,16)	DPV --/---> SOM
SOM (2)	DPV (5)	.65	(5,15)	DPV --/---> SOM
SOM (2)	DPV (6)	.80	(6,14)	DPV --/---> SOM
SOM (2)	DPV (7)	1.18	(7,13)	DPV --/---> SOM
DPV (2)	UPP1 (1)	.19	(1,19)	UPP1 --/---> DPV
DPV (2)	UPP1 (2)	.19	(2,18)	UPP1 --/---> DPV
DPV (2)	UPP1 (3)	.30	(3,17)	UPP1 --/---> DPV
DPV (2)	UPP1 (4)	.77	(4,16)	UPP1 --/---> DPV
DPV (2)	UPP1 (5)	1.56	(5,15)	UPP1 --/---> DPV
DPV (2)	UPP1 (6)	1.27	(6,14)	UPP1 --/---> DPV
DPV (2)	UPP1 (7)	1.55	(7,13)	UPP1 --/---> DPV
UPP1 (2)	DPV (1)	.42	(1,19)	DPV --/---> UPP1
UPP1 (2)	DPV (2)	.51	(2,18)	DPV --/---> UPP1
UPP1 (2)	DPV (3)	.54	(3,17)	DPV --/---> UPP1
UPP1 (2)	DPV (4)	.43	(4,16)	DPV --/---> UPP1
UPP1 (2)	DPV (5)	.33	(5,15)	DPV --/---> UPP1
UPP1 (2)	DPV (6)	.41	(6,14)	DPV --/---> UPP1
UPP1 (2)	DPV (7)	.36	(7,13)	DPV --/---> UPP1

***Significant at or below the .05 level.
*****Significant at or below the .10 level.

With regard to DPV and political participation (UPP1) causality, the null hypotheses of no causality in either direction should be maintained. All the F-statistics are not significant even at the 10 percent level. Symbolically:

SOM ----------> DPV
UPP1 <---/---> DPV

Modernization-Instability Causality in Syria

The results from Syria reported in Table 19 lend support to the modernization-instability hypothesis and to the reverse ordering. The results indicate bidirectional causation between social mobilization (SOM) and political instability (DPV) (at lags two through seven for SOM --> DPV and lags four through six for DPV --> SOM) as experienced in Mexico and Morocco, thus confirming H9. Unlike Mexico and Morocco, Syria experiences unidirectional causation from unconventional political participation (UPP1) to DPV (at lags four through seven), and hence confirms H10. From Table 19 we conclude that there is a feedback causality between social mobilization and political instability, while political participation Granger causes political instability without feedback. In Syria, the causal ordering is expressed as:

SOM <----------> DPV
UPP1 ----------> DPV

TABLE 19

RESULTS FROM GRANGER-CAUSALITY TESTS,
1960-1982: SYRIA

Variable (Lags)	Variable (Lags)	F	D.F.	Implication
DPV (2)	SOM (1)	1.48	(1,19)	SOM --/---> DPV
DPV (2)	SOM (2)	9.18****	(2,18)	SOM ------> DPV
DPV (2)	SOM (3)	5.78****	(3,17)	SOM ------> DPV
DPV (2)	SOM (4)	4.25***	(4,16)	SOM ------> DPV
DPV (2)	SOM (5)	3.33***	(5,15)	SOM ------> DPV
DPV (2)	SOM (6)	2.57*****	(6,14)	SOM ------> DPV
DPV (2)	SOM (7)	5.07****	(7,13)	SOM ------> DPV
SOM (2)	DPV (1)	2.11	(1,19)	DPV --/---> SOM
SOM (2)	DPV (2)	2.25	(2,18)	DPV --/---> SOM
SOM (2)	DPV (3)	2.43	(3,17)	DPV --/---> SOM
SOM (2)	DPV (4)	2.67*****	(4,16)	DPV ------> SOM
SOM (2)	DPV (5)	3.00***	(5,15)	DPV ------> SOM
SOM (2)	DPV (6)	2.33*****	(6,14)	DPV ------> SOM
SOM (2)	DPV (7)	1.86	(7,13)	DPV --/---> SOM
DPV (2)	UPP1 (1)	.02	(1,19)	UPP1 --/---> DPV
DPV (2)	UPP1 (2)	.19	(2,18)	UPP1 --/---> DPV
DPV (2)	UPP1 (3)	2.19	(3,17)	UPP1 --/---> DPV
DPV (2)	UPP1 (4)	2.36*****	(4,16)	UPP1 ------> DPV
DPV (2)	UPP1 (5)	4.09***	(5,15)	UPP1 ------> DPV
DPV (2)	UPP1 (6)	3.63***	(6,14)	UPP1 ------> DPV
DPV (2)	UPP1 (7)	2.88*****	(7,13)	UPP1 ------> DPV
UPP1 (2)	DPV (1)	.27	(1,19)	DPV --/---> UPP1
UPP1 (2)	DPV (2)	2.21	(2,18)	DPV --/---> UPP1
UPP1 (2)	DPV (3)	1.52	(3,17)	DPV --/---> UPP1
UPP1 (2)	DPV (4)	1.26	(4,16)	DPV --/---> UPP1
UPP1 (2)	DPV (5)	1.73	(5,15)	DPV --/---> UPP1
UPP1 (2)	DPV (6)	1.52	(6,14)	DPV --/---> UPP1
UPP1 (2)	DPV (7)	1.28	(7,13)	DPV --/---> UPP1

***Significant at or below the .05 level.
****Significant at or below the .01 level.
*****Significant at or below the .10 level.

Modernization-Instability Causality in the United Kingdom

The U.K experience presented in Table 20 is similar to that of Jamaica in that it is changes in deaths from domestic political violence (DPV) that Granger-causes unconventional political participation (UPP1) unidirectionally. Once again, this is at odds with the modernization-instability thesis. In the DPV and SOM equations, reported in the first two panels of the table, there is no causality in either direction. Hence, we conclude that in the United Kingdom, as in Jamaica, it is DPV that Granger-causes UPP1 without feedback, thus confirming H_{11}. Symbolically, the causal ordering in the U.K. takes this form:

SOM <----/----> DPV
UPP1 <-------- DPV

Modernization-Instability Causality in Zaire

The results from Zaire reported in Table 21 are similar to those for Peru in that they depict a situation where changes in SOM Granger-cause changes in DPV without delay and without feedback.

Starting with the first lag of the independent variable (SOM), in the first panel of the table, the null hypothesis of no causality from SOM to DPV, can be rejected below the .025 level, a finding that is consistent with the argument of modernization theorists. From Table 21, it is clear that in no case can one reject, at any reasonable significance level, the null hypothesis that there is no causality

TABLE 20

RESULTS FROM GRANGER-CAUSALITY TESTS,
1960-1982: UK

Dependent Variable (Lags)	Independent Variable (Lags)	F	D.F.	Implications
DPV (2)	SOM (1)	.22	(1,19)	SOM --/---> DPV
DPV (2)	SOM (2)	.32	(2,18)	SOM --/---> DPV
DPV (2)	SOM (3)	.35	(3,17)	SOM --/---> DPV
DPV (2)	SOM (4)	.35	(4,16)	SOM --/---> DPV
DPV (2)	SOM (5)	.31	(5,15)	SOM --/---> DPV
DPV (2)	SOM (6)	.27	(6,14)	SOM --/---> DPV
DPV (2)	SOM (7)	.24	(7,13)	SOM --/---> DPV
SOM (2)	DPV (1)	1.09	(1,19)	DPV --/---> SOM
SOM (2)	DPV (2)	.90	(2,18)	DPV --/---> SOM
SOM (2)	DPV (3)	1.66	(3,17)	DPV --/---> SOM
SOM (2)	DPV (4)	1.37	(4,16)	DPV --/---> SOM
SOM (2)	DPV (5)	1.71	(5,15)	DPV --/---> SOM
SOM (2)	DPV (6)	1.80	(6,14)	DPV --/---> SOM
SOM (2)	DPV (7)	1.93	(7,13)	DPV --/---> SOM
DPV (2)	UPP1 (1)	.93	(1,19)	UPP1 --/---> DPV
DPV (2)	UPP1 (2)	.56	(2,18)	UPP1 --/---> DPV
DPV (2)	UPP1 (3)	.43	(3,17)	UPP1 --/---> DPV
DPV (2)	UPP1 (4)	.78	(4,16)	UPP1 --/---> DPV
DPV (2)	UPP1 (5)	.85	(5,15)	UPP1 --/---> DPV
DPV (2)	UPP1 (6)	.80	(6,14)	UPP1 --/---> DPV
DPV (2)	UPP1 (7)	.64	(7,13)	UPP1 --/---> DPV
UPP1 (2)	DPV (1)	1.46	(1,19)	DPV --/---> UPP1
UPP1 (2)	DPV (2)	.84	(2,18)	DPV --/---> UPP1
UPP1 (2)	DPV (3)	2.43	(3,17)	DPV --/---> UPP1
UPP1 (2)	DPV (4)	1.83	(4,16)	DPV --/---> UPP1
UPP1 (2)	DPV (5)	4.00***	(5,15)	DPV ------> UPP1
UPP1 (2)	DPV (6)	8.56****	(6,14)	DPV ------> UPP1
UPP1 (2)	DPV (7)	6.81****	(7,13)	DPV ------> UPP1

***Significant at or below the .05 level.
****Significant at or below the .01 level.

TABLE 21

RESULTS FROM GRANGER-CAUSALITY TESTS,
1960-1982: ZAIRE

Dependent Variable (Lags)	Independent Variable (Lags)	F	D.F.	Implications
DPV (2)	SOM (1)	13.91****	(1,19)	SOM ------> DPV
DPV (2)	SOM (2)	7.47****	(2,18)	SOM ------> DPV
DPV (2)	SOM (3)	4.70***	(3,17)	SOM ------> DPV
DPV (2)	SOM (4)	3.46*****	(4,16)	SOM ------> DPV
DPV (2)	SOM (5)	2.70*****	(5,15)	SOM ------> DPV
DPV (2)	SOM (6)	2.19	(6,14)	SOM --/---> DPV
DPV (2)	SOM (7)	1.75	(7,13)	SOM --/---> DPV
SOM (2)	DPV (1)	.211	(1,19)	DPV --/---> SOM
SOM (2)	DPV (2)	1.03	(2,18)	DPV --/---> SOM
SOM (2)	DPV (3)	.87	(3,17)	DPV --/---> SOM
SOM (2)	DPV (4)	1.05	(4,16)	DPV --/---> SOM
SOM (2)	DPV (5)	1.01	(5,15)	DPV --/---> SOM
SOM (2)	DPV (6)	1.39	(6,14)	DPV --/---> SOM
SOM (2)	DPV (7)	1.98	(7,13)	DPV --/---> SOM
DPV (2)	UPP1 (1)	1.47	(1,19)	UPP1 --/---> DPV
DPV (2)	UPP1 (2)	1.15	(2,18)	UPP1 --/---> DPV
DPV (2)	UPP1 (3)	.80	(3,17)	UPP1 --/---> DPV
DPV (2)	UPP1 (4)	.67	(4,16)	UPP1 --/---> DPV
DPV (2)	UPP1 (5)	.51	(5,15)	UPP1 --/---> DPV
DPV (2)	UPP1 (6)	.39	(6,14)	UPP1 --/---> DPV
DPV (2)	UPP1 (7)	.39	(7,13)	UPP1 --/---> DPV
UPP1 (2)	DPV (1)	.64	(1,19)	DPV --/---> UPP1
UPP1 (2)	DPV (2)	1.75	(2,18)	DPV --/---> UPP1
UPP1 (2)	DPV (3)	1.10	(3,17)	DPV --/---> UPP1
UPP1 (2)	DPV (4)	.90	(4,16)	DPV --/---> UPP1
UPP1 (2)	DPV (5)	.94	(5,15)	DPV --/---> UPP1
UPP1 (2)	DPV (6)	.91	(6,14)	DPV --/---> UPP1
UPP1 (2)	DPV (7)	.77	(7,13)	DPV --/---> UPP1

***Significant at or below the .05 level.
****Significant at or below the .01 level.
*****Significant at or below the .10 level.

between unconventional political participation and political instability (DPV). We conclude that in Zaire, as in Peru, social mobilization causes deaths from domestic political violence unidirectionally, thereby confirming H7. Symbolically, the causal flow in Zaire is:

SOM ---------> DPV
UPP1 ----/----> DPV

Summary of Granger-Causality Findings

The above findings on causality are summarized in Table 22. Table 22 depicts a number of similarities and differences among the nations with regard to the causal flow between modernization and political instability. For instance, the experiences of Belgium, Burma, Ethiopia, Greece, and Nicaragua are very similar in that they yield no support for either the modernization-instability argument or the reverse causation derived from conventional wisdom. The implication seems to be that modernization and political instability are causally unrelated. A possible explanation for this noncausal relationship in these five nations could be that the Granger causal tests applied here used a bivariate causality approach which may not avoid specification bias in these nations. Two variables can be highly correlated and yet depict causal independence if both are caused by other factors (Granger 1980). Thus, the bivariate causal approach adopted here could possibly omit important variables (in those five nations) that might causally have

influence on both modernization and political instability.

If the models for the nations showing no apparent causal relationships in the Granger analyses are misspecified, what variables might have been omitted that would spuriously remove the causal links between modernization and instability? Two obvious candidates are economic development and political institutionalization, the variables that were strongly negatively related to instability in the pooled analysis. A cursory analysis of the economic development and institutionalization experiences of Belgium, Burma, Ethiopia, Greece, and Nicaragua does not suggest that they are extremely similar. Yet it is possible that their rates of growth on these variables could be similar enough to affect the causal relationship between modernization and instability. A promising lead may also come from considering the colonial experiences of these five nations. Among them, only Burma can be said to have had the kind of twentieth century colonial experience that in some circumstances may have prematurely initiated rapid modernization. Of course one could speculate much further about these findings. Future research might well begin by concentrating on the speculations just offered, however.

The findings for Jamaica and the United Kingdom are similar in that deaths from domestic political violence Granger- causes unconventional political participation with some delay. The implication in the unique cases of Jamaica

and the United Kingdom is that the modernization-instability hypothesis will be rejected in favor of the alternative hypothesis (derived from the conventional wisdom). That is, a people deprived of the right to demonstrate peacefully against their government's policies or actions could possibly use violent means (e.g., assassinations) to bring about such political participation.

For Mexico, Morocco, and Syria we discover similar experiences depicting bidirectional causality between changes in social mobilization and changes in political instability. For Mexico and Morocco, unconventional political participation and deaths from political violence are causally unrelated, while in Syria it was unconventional

TABLE 22

SUMMARY OF OBSERVED CAUSALITY RELATIONSHIPS

Country	Implications	
Belgium	SOM <---/----> DPV,	UPP1 <---/---> DPV
Burma	SOM <---/----> DPV,	UPP1 <---/---> DPV
Ethiopia	SOM <---/----> DPV,	UPP1 <---/---> DPV
Greece	SOM <---/----> DPV,	UPP1 <---/---> DPV
Jamaica	SOM <---/----> DPV,	UPP1 <------- DPV
Mexico	SOM <--------> DPV,	UPP1 <---/---> DPV
Morocco	SOM <--------> DPV,	UPP1 <---/---> DPV
Nicaragua	SOM <---/----> DPV,	UPP1 <---/---> DPV
Peru	SOM --------> DPV,	UPP1 <---/---> DPV
Syria	SOM <--------> DPV,	UPP1 --------> DPV
United Kingdom	SOM <---/----> DPV,	UPP1 <------- DPV
Zaire	SOM --------> DPV,	UPP1 <---/---> DPV

political participation that causes deaths from political violence. This finding suggests that a study of the modernization-instability thesis in Mexico, Morocco, and Syria should be performed with a simultaneous equation model. That is, single equation estimates in Mexico, Morocco, and Syria in which either social mobilization or political instability is treated as an exogenous variable would be misleading due to the presence of simultaneous equation bias. The relationship between social mobilization and political instability in Mexico, Morocco and Syria is that of the chicken and the egg: they are jointly (simultaneously) determined. For Peru and Zaire social mobilization causes deaths from political violence unidirectionally as predicted by the modernization-instability hypothesis.

Summary

This chapter investigated both the statistical relationships between modernization and political instability as well as the causal linkages between them. The investigation of the statistical relationships was accomplished through a pooled regression analysis while causal linkages were investigated through Granger-causality tests.

It is the conclusion of this empirical inquiry that modernization (social mobilization and mass political involvement) is to some extent the engine of political instability. The above conclusion is reached, not on the

basis of the complex gap hypothesis model as originally presented by Huntington (1968) and similarly used by Schneider and Schneider (1971) and Ruhl (1975). Rather, the conclusion is reached by considering the individual effects of social mobilization, political participation, economic well-being and political institutionalization on deaths resulting from domestic violence over the period 1960-1982. While unconventional political participation and social mobilization are positively related to the rate of political instability, their impacts are small. The effects of economic development and political institutionalization are clearly in support of modernization theorists and they have strong impacts in reducing political instability.

It is also the conclusion of this study that the ratio structure of the gap hypothesis presented by Huntington (1968) is unnecessary. The modernization-instability thesis is better studied through the additive model. The ratio structure, while it makes intuitive sense, is troublesome mathematically due to constraints it imposes on the variables, and unnecessary in an explanatory sense, since it fails to be confirmed by the analysis.

In the case of the causality tests, the argument of modernization theorists is supported (via Granger tests) in some countries, but the reverse causation is equally plausible in others. While social mobilization Granger-causes political instability, a country lacking in social mobiliza-

tion (e.g., possibly Mexico, Morocco and Syria) may be having increased social mobilization as a result of violent political instability. It was only in Syria that unconventional political participation Granger-caused political instability without feedback; the reverse causality was experienced in Jamaica and the United Kingdom.

The experiences of Mexico, Morocco, and Syria require special comment. The feedback relationship between social mobilization and political instability in those three nations implies that a more fruitful inquiry into the modernization-instability theory might be performed with a simultaneous-equation model, a clear and obvious topic for further research. A single-equation estimate, in which either social mobilization or political instability is treated as an exogenous variable, might lead to misleading results because the model suffers from simultaneous-equation bias. If DPV Granger-causes SOM and SOM Granger-causes DPV, inconsistent parameter estimates will be obtained in fitting one-way distributed lag models (Cassidy and Studenmund 1987).

In the next chapter, an attempt will be made to bring the pieces together. Chapter V offers a conclusion of the study, as well as the implications and limitations of this study.

CHAPTER V

CONCLUSIONS AND PROSPECTS FOR FUTURE RESEARCH

In this concluding chapter, I will review the major arguments developed here, summarize empirical findings, present the limitations of this study, and indicate prospects for future work in this line of inquiry. I will not elaborate on detailed substantive inferences drawn in this paper, since the conclusions have already been adumbrated in the "Summary" sections of each chapter.

Empirical Findings: An Overview

Throughout this dissertation I have been concerned with two principal research questions: (1) Is modernization the engine of political instability, and (2) Does political instability precede modernization? These questions formed the basis of this work because I discovered that none of the various studies of the modernization-instability thesis have turned to the available time-series data to find (1) the correlation between the two concepts where the potential cause may be a function of different times in different cases, and (2) what causal relationship, if any, exists between the two concepts.

To resolve the first question, the analysis was initially carried out via pooled regression across thirty-five nations over the years 1960-1982. To confront the second question, the data were subjected to Granger-causality tests on twelve separate nations randomly selected from the 35.

In investigating the first question, I have found that it is a relatively high social mobilization and unconventional political participation rates that induce political instability, while high rates of changes in economic well-being and political institutionalization reduce political instability. These findings are consistent with the modernization-instability hypothesis. I also found that the impacts of social mobilization and political participation on deaths from political violence are not as great as those of economic development and political institutionalization. In the main, therefore, I conclude that the modernization-instability thesis is supported in this analysis. However, the analysis revealed that the complex model of Huntington's gap hypothesis is unnecessary.

In investigating the second question, I found that social mobilization in two nations (Zaire and Peru), Granger causes political instability unidirectionally. In the case of these nations, social mobilization is exogenous and a restrictive social mobilization policy might be considered a proper anti-political instability policy.

In the unique case of Mexico, Morocco and Syria a policy implication is rather fuzzy, since both social mobilization and political instability are mutually causaltive. In the case of Syria, where unconventional political participation Granger-causes political instability unidirectionally, an appropriate anti-instability policy might be to restrict the rate of political participation.

For Jamaica and the United Kingdom, restricting deaths from poliltical violence is an appropriate anti-mass political participation policy. In the cases of Belgium, Burma, Ethiopia, Greece, and Nicaragua, modernization and political instability are not causally related, and any restrictive policy on any of them might play a passive role.

The empirical evidence from the causal analysis is, at best, conflictual. Different countries, irrespective of regions or the level of economic development experience similar causal flows while some countries experience different causal orderings. Thus, there is no uniform prescription for political order across the nations used in the causality tests.

Major Arguments Developed in This Study

One of the arguments developed here is that the "most different systems" design is more appropriate than the "most similar systems" design in studying modernization and

political instability (see Chapter 1). Except for Schneider and Schneider (1971), analysts have focused their analyses on either Africa or Asia or Latin America, thereby, explicitly or implicitly, adopting the "most similar systems" approach. Schneider and Schneider (1971), who investigated the relationship between modernization (i.e., social mobilization) and political instability in mainly West European nations, also used a most similar systems design.

It has been the argument of this study that the modernization-instability theory is not culture bound or region specific. Any nation (modern or modernizing) can be troubled by political instability if the rate of modernization outruns the rate of economic development and political institutionalization. As demonstrated here (see Chapter IV) a modernizing nation might be experiencing instability and yet the cause might not be modernization. For instance, Ethiopia is a nation experiencing deaths from domestic political violence (e.g., civil war) for the past twenty-five years, yet the causal link between modernization and political instability (in that nation) is null. This finding makes the experiences of Ethiopia and Belgium seem very similar with regard to the causal flow between modernization and political instability, despite their otherwise impressive differences.

Another argument developed here is that the modernization-instability thesis could be better studied by investi-

gating the relationship between modernization and mass political instability as measured by deaths from domestic political violence, as opposed to elite instability, e.g., coups d'etat. One of the compelling reasons for doing so, among others (see Chapter I), is that elite instability happens not at the mass level of a society, but at the level of the national government. The results demonstrate the suitability of this choice of dependent variables.

Finally, one of the arguments and findings of this analysis was that the ratio structure of Huntington's nonadditive complex model

$$DPV_t = F(SOM_t/POLI_t, SOM_t/GCRGDP_t)$$

is unnecessary, indeed incorrect. With respect to their coefficients, the above model specification constrains the relative influence of SOM and PQLI or SOM and GCRGDP, to be equal in magnitude but opposite in sign. The alternative, the additive model:

$$DPV_t = F(SOM_t, PQLI_t, GCRGDP_t)$$

is more appropriate because it fits the data and because the constraints are removed.

Limitations of This Study

Three important methodological limitations of this work are (1) the use of bivariate causality tests, (2) the

use of common lag lengths in the Granger-causality tests, and (3) missing observations.

As pointed out by Granger (1980), two variables can be highly correlated and yet causally independent if both variables are caused by other factors. This is one of the limitations of bivariate causality tests: They omit variables that might causally have impact on both modernization and political instability. However, a bivariate analysis should not be discarded as a useless exercise for an applied social scientist. It has raised a number of interesting questions in this analysis.

In this study uniform lag lengths (two and seven for the dependent and the independent variables) were adopted for manageability. The use of a common lag length should not constitute a major problem in this study, since it uses annual data. Also, two lag lengths on the dependent variable was long enough to minimize serial correlation, and seven lag lengths on the independent variable was long enough (given our sample size) to significantly influence the dependent variable, assuming that there is a causal relationship between them.

Another limitation of this study is that many missing observations were encountered. But this problem is unavoidable and should not be considered too serious here since the method, OLS regression estimates, adopted to replace missing observations is appropriate given the nature of our data.

In view of the above limitations, some recommendations for future research are warranted.

Recommendations for Future Research

Three important recommendations are presented here to help students of comparative politics understand modernization-instability relationships better. They include: (1) multicausal analysis, (2) use of the FPE criterion for selecting appropriate lag lengths, and (3) use of the two-stage least squares (2SLS).

To avoid the problem attendant on bivariate causal analysis, a multivariate causality analysis (including additional variables that could have important effects on modernization and political instability) is recommended.

One way of handling the choice of optimal lag length has been suggested by Hsiao (1981) on the basis of the "final prediction error" (FPE) criterion. The FPE criterion imposes no restrictions on the model and allows for different lag lengths for each variable in the equation. The FPE criterion allows more lags of a variable in the specification of an equation only if, after imposing a penalty for more regressions, the sum of squared errors (SSE) for the equation is reduced. For details see Akaike (1969a and 1969b) and Hsiao (1981).

With regard to causal analysis, the experiences of Mexico, Morocco and Syria merit a separate study that

utilizes a simultaneous equation model. In these three nations, the causal relationship between social mobilization and political instability is reciprocal. Utilizing such techniques as two-stage least squares (2SLS) in any future study of the modernization-instability theory in Mexico, Morocco and Syria would be more appropriate.

In conclusion, this study found support for the modernization-instability thesis. However, given some limitations inherent in this analysis, the results reported here should be considered suggestive and interpreted with caution. Future research efforts should endeavor to incorporate some procedures adopted here and also include some recommendations presented here. It is only in this way that a more complete understanding of the relationship between modernization and political instability can be accomplished.

APPENDIX A

LIST OF COUNTRIES AND THEIR ABBREVIATIONS

LIST OF COUNTRIES AND THEIR ABBREVIATIONS

Austria (AUST)*
Belgium (BLGM)
Benin (BNIN)
Barbados (BRBD)
Burma (BRMA)
Brazil (BRZL)
Dominican Republic (DMNR)
El Salvador (ELSL)
Ethiopia (ETHP)
Federal Republic of Germany (FRG)
France (FRNC)
Gambia (GMBA)
Greece (GRCE)
Iceland (ICLD)
Italy (ITLY)
Jamaica (JMCA)
Japan (JPAN)
Morocco (MRC0)
Mauritania (MRTN)
Mexico (MXC0)
Nicaragua (NCRG)
Niger (HGER)
Norway (NRWY)
Peru (PERU)
Rwanda (RWND)
Senegal (SNGL)
Serria leone (SRLE)
Syria (SYRA)
United Kingdom (UK)
Upper Volta (UPVL)
Uruguay (URGY)
Venezuela (VNZL)
Yugoslavia (YGSL)
Zaire (ZAIRE)
Zambia (ZMBA)

*In parentheses are country abbreviations.

APPENDIX B

COUNTRIES AND DATA USED IN THE STUDY

OBS	ABBRVWH	COUNTRY	YEAR	GCR	PTD	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
1	AUST	305	1960	27.3055	0	1	0	243.71	27.3055	37.5	68.6	7048001	23.8000
2	AUST	305	1961	27.3033	0	1	0	281.18	27.3033	32.7	68.9	7087001	22.9000
3	AUST	305	1962	27.3407	0	1	0	285.63	27.3407	32.8	69.1	7130001	22.0000
4	AUST	305	1963	27.4175	0	0	1	297.95	27.4175	31.3	69.3	7172001	21.1000
5	AUST	305	1964	27.5338	0	0	0	338.50	27.5338	29.2	69.4	7215001	20.2000
6	AUST	305	1965	27.6896	1	0	0	359.01	27.6896	28.3	69.6	7255001	19.3000
7	AUST	305	1966	27.8849	0	0	0	400.98	27.8849	28.1	69.7	7308001	18.4000
8	AUST	305	1967	28.1196	0	0	0	401.81	28.1196	26.4	69.8	7338001	17.5000
9	AUST	305	1968	28.3939	0	0	0	434.72	28.3939	25.5	69.9	7362001	16.6000
10	AUST	305	1969	28.7076	1	0	2	493.95	28.7076	25.4	70.1	7384001	15.7000
11	AUST	305	1970	29.2833	0	0	0	597.54	29.2833	25.9	70.2	7426001	14.8000
12	AUST	305	1971	29.7031	0	0	0	685.85	29.7031	26.1	70.4	7456001	14.2000
13	AUST	305	1972	29.8119	2	0	0	863.67	29.8119	25.2	70.5	7495001	13.6000
14	AUST	305	1973	30.1402	2	0	0	1152.30	30.1402	23.8	70.7	7525001	13.1000
15	AUST	305	1974	30.6454	0	0	0	1353.02	30.6454	23.5	71.0	7533001	12.5000
16	AUST	305	1975	31.3271	2	0	2	1331.60	31.3271	20.5	71.3	7537001	11.9000
17	AUST	305	1976	31.2853	2	0	0	1380.82	31.2853	18.2	71.5	7540001	11.3000
18	AUST	305	1977	31.9283	2	0	0	1608.92	31.9283	16.9	71.8	7544001	10.7000
19	AUST	305	1978	34.4544	0	0	0	2001.32	34.4544	14.9	72.1	7547001	10.2000
20	AUST	305	1979	34.6114	0	0	0	2386.13	34.6114	14.8	72.3	7551001	9.8000
21	AUST	305	1980	34.9432	1	0	0	2695.89	34.9432	13.9	72.5	7554001	9.0000
22	AUST	305	1981	36.4158	1	0	2	2195.06	36.4158	12.6	72.7	7558001	8.4464
23	AUST	305	1982	35.1609	0	0	0	2160.51	35.1609	12.8	73.0	7571001	7.8779
24	BLGM	211	1960	20.7800	22	7	2	224.66	20.7800	31.2	69.2	9119001	8.0000
25	BLGM	211	1961	22.3350	2	2	4	261.22	22.3350	28.1	69.8	9166001	7.7000
26	BLGM	211	1962	23.8508	1	0	0	289.72	23.8508	27.5	70.5	9218001	7.4000
27	BLGM	211	1963	25.3273	4	0	0	291.62	25.3273	27.2	70.8	9283001	7.0000
28	BLGM	211	1964	26.7646	0	0	0	380.40	26.7646	25.4	70.9	9367001	6.7000
29	BLGM	211	1965	28.1627	1	0	0	403.12	28.1627	23.7	70.9	9448001	6.4000
30	BLGM	211	1966	29.5215	1	2	0	430.98	29.5215	24.7	70.9	9508001	6.1000
31	BLGM	211	1967	30.8411	3	0	0	471.82	30.8411	22.9	71.0	9557001	5.8000
32	BLGM	211	1968	32.1215	0	2	0	483.32	32.1215	21.7	71.0	9590001	5.4000
33	BLGM	211	1969	33.3626	1	0	0	569.40	33.3626	21.2	71.1	9613001	5.1000
34	BLGM	211	1970	35.5674	0	0	0	700.36	35.5674	21.1	71.2	9638001	4.8000
35	BLGM	211	1971	35.8245	1	0	0	749.44	35.8245	20.4	71.3	9673001	4.6000
36	BLGM	211	1972	35.9586	1	0	89	914.82	35.9586	18.8	71.3	9709001	4.4000
37	BLGM	211	1973	37.0138	1	0	0	1149.78	37.0138	17.7	71.5	9738001	4.2000
38	BLGM	211	1974	37.9472	1	0	0	1377.60	37.9472	17.4	71.7	9768001	4.0000
39	BLGM	211	1975	40.8296	4	0	0	1407.70	40.8296	16.1	71.8	9795001	3.8000
40	BLGM	211	1976	41.0907	0	0	2	1541.90	41.0907	15.3	72.0	9811001	3.6000
41	BLGM	211	1977	42.4777	0	0	0	1686.18	42.4777	13.6	72.2	9822001	3.4000
42	BLGM	211	1978	43.5219	1	0	0	2030.41	43.5219	13.3	72.4	9830001	3.2000
43	BLGM	211	1979	43.8314	1	0	0	2168.64	43.8314	11.1	72.6	9837001	3.0000
44	BLGM	211	1980	44.1451	2	0	0	2311.08	44.1451	11.0	72.8	9847001	2.8000
45	BLGM	211	1981	44.7313	4	2	3	1573.35	44.7313	11.7	73.0	9852001	2.6000
46	BLGM	211	1982	45.8886	1	1	0	1406.32	45.8886	11.7	73.3	9856001	2.4000
47	BNIN	434	1960	75.3192	0	0	2	8.89	75.3192	182.8	38.8	2050001	85.0000
48	BNIN	434	1961	72.5051	0	0	0	7.33	72.5051	179.4	39.2	2100001	84.6000
49	BNIN	434	1962	69.6909	0	0	0	5.09	69.6909	176.0	39.7	2156001	84.2000
50	BNIN	434	1963	66.8767	5	4	0	4.21	66.8767	172.8	40.3	2213001	83.8000
51	BNIN	434	1964	64.0626	0	0	12	3.55	64.0628	169.6	41.0	2271001	83.4000
52	BNIN	434	1965	61.2484	6	1	20	2.54	61.2484	166.4	41.6	2332001	83.0000
53	BNIN	434	1966	58.4342	0	0	0	-0.06	58.4342	163.2	42.2	2393001	82.6000
54	BNIN	434	1967	55.6200	0	0	0	0.08	55.6200	160.0	42.9	2457001	82.2000
55	BNIN	434	1968	52.8059	0	0	0	4.97	52.8059	158.2	43.3	2522001	81.7000

OBS	ABBRVWH	COUNTRY	YEAR	GCR	PTD	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
56	BNIN	434	1969	49.9917	0	0	0	6.307	49.9917	156.4	43.6	2589001	81.3000
57	BNIN	434	1970	47.1775	0	0	6	6.614	47.1775	154.6	43.8	2657001	80.9000
58	BNIN	434	1971	44.3633	0	1	0	4.722	44.3633	152.8	44.1	2728001	79.8000
59	BNIN	434	1972	41.5492	0	0	1	4.687	41.5492	151.0	44.4	2800001	78.8000
60	BNIN	434	1973	38.7350	0	0	0	10.109	38.7350	146.8	44.6	2874001	77.7000
61	BNIN	434	1974	35.9208	0	0	0	9.116	35.9208	142.6	44.9	2951001	76.7000
62	BNIN	434	1975	33.1066	0	0	6	3.759	33.1066	138.4	45.2	3029001	75.6000
63	BNIN	434	1976	30.2925	0	0	0	-0.983	30.2925	134.2	45.4	3109001	74.5000
64	BNIN	434	1977	27.9154	0	0	0	2.219	27.8154	130.0	45.7	3192001	73.4000
65	BNIN	434	1978	23.7899	0	0	0	0.095	23.7899	128.0	46.0	3276001	72.4000
66	BNIN	434	1979	22.2871	0	0	0	5.508	22.2871	126.0	46.5	3363001	71.3000
67	BNIN	434	1980	19.0358	0	0	0	-20.780	19.0358	124.0	46.9	3464001	70.2000
68	BNIN	434	1981	16.2216	0	0	0	-43.836	16.2216	122.0	47.4	3573001	68.8031
69	BNIN	434	1982	13.4074	0	0	0	-7.341	13.4074	120.0	48.0	3685001	67.4056
70	BRBD	53	1960	18.1322	0	0	0	8.344	18.1322	52.0	64.2	230700	26.4000
71	BRBD	53	1961	18.8789	0	0	0	30.728	18.8789	49.0	64.9	231600	25.6000
72	BRBD	53	1962	19.5993	0	0	0	28.351	19.5993	46.0	65.5	232500	24.7000
73	BRBD	53	1963	20.2933	0	0	0	64.731	20.2933	43.4	66.0	233400	23.9000
74	BRBD	53	1964	20.9609	0	0	0	52.034	20.9609	40.8	66.4	234300	23.0000
75	BRBD	53	1965	21.6021	0	0	0	36.706	21.6021	38.2	66.7	235200	22.2000
76	BRBD	53	1966	22.2169	0	0	0	46.963	22.2169	35.6	67.1	236000	21.4000
77	BRBD	53	1967	22.8054	0	0	0	63.629	22.8054	33.0	67.4	236000	20.6000
78	BRBD	53	1968	23.3675	0	0	0	69.620	23.3675	31.8	67.8	237000	19.8000
79	BRBD	53	1969	23.9032	0	0	0	50.000	23.9032	30.6	68.1	237000	19.0000
80	BRBD	53	1970	24.4125	0	0	0	53.138	24.4125	29.4	68.5	239000	18.2000
81	BRBD	53	1971	24.8954	0	0	0	88.612	24.8954	28.2	68.8	240000	17.4000
82	BRBD	53	1972	26.6503	0	0	0	86.675	26.6503	27.0	69.2	242000	16.5000
83	BRBD	53	1973	24.8432	0	0	0	124.347	24.8432	24.4	69.5	243000	15.7000
84	BRBD	53	1974	25.3898	0	0	0	219.667	25.3898	21.8	69.8	245000	14.8000
85	BRBD	53	1975	26.3663	0	0	0	150.319	26.3663	19.2	70.1	246000	14.0000
86	BRBD	53	1976	26.3682	0	0	0	146.267	26.3682	16.6	70.5	246000	13.2000
87	BRBD	53	1977	26.8720	0	0	0	98.232	26.8720	14.0	70.8	247000	12.4000
88	BRBD	53	1978	29.6736	0	0	0	334.200	29.6736	13.9	71.1	248000	11.5000
89	BRBD	53	1979	27.9961	0	0	0	376.818	27.9961	13.7	71.4	247000	10.7000
90	BRBD	53	1980	28.3587	0	0	0	647.147	28.3587	13.6	71.8	249000	9.9000
91	BRBD	53	1981	26.8928	0	0	0	476.309	26.8928	13.5	72.1	250000	9.0600
92	BRBD	53	1982	28.7688	0	0	0	645.358	28.7688	13.4	72.6	251000	8.2343
93	BRMA	775	1960	0.7540	0	0	24	6.499	0.7540	150.4	43.8	21746016	68.4000
94	BRMA	775	1961	1.4790	1	0	33	8.377	1.4790	145.2	44.3	22196016	67.5000
95	BRMA	775	1962	2.2112	0	0	47	7.951	2.2112	140.0	44.8	22661024	66.5000
96	BRMA	775	1963	2.9507	0	0	49	7.722	2.9507	134.0	45.5	23143024	65.6000
97	BRMA	775	1964	3.6974	0	0	237	5.240	3.6974	128.0	46.4	23644016	64.6000
98	BRMA	775	1965	4.4515	10	0	57	8.464	4.4515	122.0	47.3	24167024	63.7000
99	BRMA	775	1966	5.2128	0	0	9	2.838	5.2128	116.0	48.2	24711024	62.8000
100	BRMA	775	1967	5.9813	0	0	67	7.029	5.9813	110.0	49.1	25366016	61.9000
101	BRMA	775	1968	6.7572	0	0	2	9.973	6.7572	105.0	49.8	25943024	60.9000
102	BRMA	775	1969	7.5403	1	0	178	8.461	7.5403	100.0	50.4	26533024	60.0000
103	BRMA	775	1970	8.3306	0	0	212	8.450	8.3306	95.0	51.0	27137024	59.1000
104	BRMA	775	1971	9.1282	0	0	8	7.287	9.1282	90.0	51.6	27754016	58.5000
105	BRMA	775	1972	9.9331	0	0	8	7.179	9.9331	85.0	52.2	28385024	57.9000
106	BRMA	775	1973	12.9868	0	0	0	8.470	12.9868	83.0	52.8	29031024	57.2000
107	BRMA	775	1974	10.4450	1	1	121	10.587	10.4450	81.0	53.3	29632016	56.6000
108	BRMA	775	1975	9.8692	3	2	466	10.424	9.8692	79.0	53.8	30246016	56.0000
109	BRMA	775	1976	12.4512	1	0	191	11.882	12.4512	77.0	54.3	30872016	55.4000
110	BRMA	775	1977	14.6870	0	0	232	11.378	14.6870	75.0	54.8	31512016	54.8000

OBS	ABBRVWH	COUNTRY	YEAR	GCR	PTD	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
111	BRMA	775	1978	15.7264	1	0	0	15.934	15.7264	74.0	55.3	32165024	54.2000
112	BRMA	775	1979	17.0181	0	0	0	28.324	17.0181	73.0	55.8	32831024	53.6000
113	BRMA	775	1980	17.0582	0	0	0	30.417	17.0582	72.0	56.3	33511024	53.0000
114	BRMA	775	1981	17.6516	0	0	0	28.104	17.6516	71.0	56.8	34171024	52.4000
115	BRMA	775	1982	17.3058	0	0	0	22.845	17.3058	70.0	57.5	34844016	51.8000
116	BRZL	140	1960	17.1633	5	6	2	61.960	17.1633	114.2	54.7	72594016	52.1000
117	BRZL	140	1961	16.9631	6	3	5	65.086	16.9631	111.6	55.1	74989024	51.4000
118	BRZL	140	1962	16.8171	1	12	17	38.594	16.8171	109.0	55.6	77346016	50.7000
119	BRZL	140	1963	16.7252	0	1	8	61.866	16.7252	107.2	56.1	79674016	49.9000
120	BRZL	140	1964	16.6875	0	6	0	45.516	16.6875	105.4	56.5	81982016	49.2000
121	BRZL	140	1965	16.7039	1	2	1	57.902	16.7039	103.6	56.9	84279024	48.5000
122	BRZL	140	1966	16.7744	4	0	22	64.507	16.7744	101.8	57.3	86571024	47.8000
123	BRZL	140	1967	16.8991	0	1	0	56.877	16.8991	100.0	57.7	88737024	47.1000
124	BRZL	140	1968	17.0779	8	0	8	69.043	17.0779	98.2	58.1	91046016	46.3000
125	BRZL	140	1969	17.3109	2	1	6	89.599	17.3109	96.4	58.5	93416016	45.6000
126	BRZL	140	1970	17.4907	3	0	3	88.894	17.4907	94.6	58.9	95847024	44.9000
127	BRZL	140	1971	17.6656	0	0	8	97.117	17.6656	92.8	59.3	98169024	43.5000
128	BRZL	140	1972	18.8457	1	0	11	114.054	18.8457	91.0	59.7	100547024	42.1000
129	BRZL	140	1973	19.0906	0	0	18	169.280	19.0906	88.6	60.0	102982016	40.7000
130	BRZL	140	1974	19.3406	1	0	0	194.450	19.3406	86.2	60.4	105477024	39.3000
131	BRZL	140	1975	19.5016	1	2	3	261.684	19.5016	83.8	60.8	108032016	37.9000
132	BRZL	140	1976	19.5530	1	0	0	285.314	19.5530	81.4	61.2	110592016	36.6000
133	BRZL	140	1977	22.4727	2	2	0	331.473	22.4727	79.0	61.6	113197024	35.2000
134	BRZL	140	1978	22.8395	0	1	0	369.520	22.8395	77.4	62.0	115848016	33.9000
135	BRZL	140	1979	22.1966	0	1	0	387.354	22.1966	75.8	62.3	118545024	32.5000
136	BRZL	140	1980	21.6784	0	0	0	400.102	21.6784	74.2	62.6	121286016	31.2000
137	BRZL	140	1981	24.2507	6	0	0	470.037	24.2507	72.6	62.9	124015024	29.8773
138	BRZL	140	1982	26.1508	0	0	0	412.933	26.1508	71.0	63.4	126805024	28.5666
139	DMNR	42	1960	11.6566	2	0	92	40.514	11.6566	123.0	50.9	3231001	63.7000
140	DMNR	42	1961	12.8887	24	8	28	30.838	12.8887	120.0	51.6	3340001	62.8000
141	DMNR	42	1962	14.0048	1	2	13	27.570	14.0048	117.0	52.3	3453001	61.9000
142	DMNR	42	1963	15.0048	13	2	73	28.279	15.0048	114.6	52.9	3568001	61.0000
143	DMNR	42	1964	15.8888	1	3	1	27.719	15.8888	112.2	53.4	3687001	60.1000
144	DMNR	42	1965	16.6568	13	2	3960	13.659	16.6568	109.8	54.0	3807001	59.2000
145	DMNR	42	1966	17.3087	6	2	36	17.154	17.3087	107.4	54.5	3929001	58.3000
146	DMNR	42	1967	17.8446	0	0	7	22.044	17.8446	105.0	55.1	4042001	57.4000
147	DMNR	42	1968	18.2645	0	0	0	18.727	18.2645	102.8	55.6	4165001	56.6000
148	DMNR	42	1969	18.5683	1	0	4	30.172	18.5683	100.6	56.1	4292001	55.7000
149	DMNR	42	1970	18.7561	1	0	73	32.941	18.7561	98.4	56.8	4423001	54.8000
150	DMNR	42	1971	18.8279	0	0	53	32.151	18.8279	96.2	57.1	4541001	53.9000
151	DMNR	42	1972	18.8685	0	0	12	69.526	18.8685	94.0	57.7	4663001	53.0000
152	DMNR	42	1973	17.7284	0	0	8	87.678	17.7284	92.0	58.1	4788001	52.0000
153	DMNR	42	1974	18.3716	0	0	3	85.578	18.3716	90.0	58.6	4916001	51.1000
154	DMNR	42	1975	20.4752	0	0	0	158.241	20.4752	88.0	59.1	5048001	50.2000
155	DMNR	42	1976	16.8157	0	0	0	122.757	16.8157	86.0	59.5	5172001	49.3000
156	DMNR	42	1977	15.7628	0	0	0	135.410	15.7628	84.0	60.0	5298001	48.4000
157	DMNR	42	1978	15.4785	0	0	0	130.822	15.4785	82.2	60.5	5428001	47.5000
158	DMNR	42	1979	14.3419	0	0	0	166.067	14.3419	80.4	61.0	5561001	46.6000
159	DMNR	42	1980	15.3269	1	1	0	148.131	15.3269	78.6	61.4	5697001	45.7000
160	DMNR	42	1981	14.5108	1	0	4	208.090	14.5108	76.8	61.9	5834001	44.8000
161	DMNR	42	1982	10.9756	0	0	0	154.553	10.9756	75.0	62.6	5974001	43.9000
162	ELSL	92	1960	-7.6999	0	0	6	24.115	-7.6999	139.8	50.5	2571001	61.4000
163	ELSL	92	1961	-5.2577	0	0	5	29.402	-5.2577	135.4	51.2	2627001	60.9000
164	ELSL	92	1962	-2.9635	1	0	8	29.952	-2.9635	131.0	52.0	2703001	60.3000
165	ELSL	92	1963	-0.8174	0	0	0	26.371	-0.8174	127.2	52.7	2794001	59.8000

OBS	ABBRVWH	COUNTRY	YEAR	GCR	PTD	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
166	ELSL	92	1964	1.1806	0	0	0	34.67	1.1806	123.4	53.4	2897001	58.2000
167	ELSL	92	1965	3.0305	0	0	0	32.81	3.0305	119.6	54.1	3008001	58.7000
168	ELSL	92	1966	4.7323	0	0	0	29.94	4.7323	115.8	54.8	3124001	58.2000
169	ELSL	92	1967	6.2861	0	0	0	31.25	6.2861	112.0	55.8	3227001	57.6000
170	ELSL	92	1968	7.6918	0	0	0	25.79	7.6918	109.0	56.2	3343001	57.1000
171	ELSL	92	1969	8.9494	1	0	0	27.87	8.9494	106.0	56.9	3463001	56.5000
172	ELSL	92	1970	10.8112	0	0	0	37.77	10.8112	103.0	57.5	3588001	56.0000
173	ELSL	92	1971	10.9069	0	0	0	40.36	10.9069	100.0	58.1	3682001	54.7000
174	ELSL	92	1972	11.5229	0	0	100	46.57	11.5229	97.0	58.8	3779001	53.4000
175	ELSL	92	1973	11.8715	0	0	0	53.15	11.8715	94.0	59.3	3878001	52.0000
176	ELSL	92	1974	12.2699	0	0	2	56.35	12.2699	91.0	59.7	3980001	50.7000
177	ELSL	92	1975	12.5444	0	0	1	74.65	12.5444	88.0	60.2	4085001	49.4000
178	ELSL	92	1976	14.1397	0	0	0	109.42	14.1397	85.0	60.6	4169001	48.2000
179	ELSL	92	1977	16.3776	4	0	19	163.58	16.3776	82.0	61.0	4256001	46.9000
180	ELSL	92	1978	13.1289	0	0	0	103.29	13.1289	79.6	61.6	4344001	45.7000
181	ELSL	92	1979	13.7966	1	0	0	139.08	13.7966	77.2	62.3	4433001	44.4000
182	ELSL	92	1980	11.3844	3	2	0	111.80	11.3844	74.8	63.0	4525001	43.2000
183	ELSL	92	1981	12.5484	1	1	0	61.61	12.5484	72.4	63.7	4573001	41.9932
184	ELSL	92	1982	12.1080	8	0	0	61.55	12.1080	70.0	64.8	4621001	40.7962
185	ETHP	530	1960	23.4836	0	0	12	4.55	23.4836	174.0	42.1	22536016	87.4000
186	ETHP	530	1961	21.4783	1	0	2	4.74	21.4783	172.0	42.3	23083024	87.2000
187	ETHP	530	1962	19.6692	0	0	5	4.75	19.6692	170.0	42.4	23644016	86.9000
188	ETHP	530	1963	18.0563	0	0	100	4.71	18.0563	168.4	42.5	24218016	86.7000
189	ETHP	530	1964	16.6396	0	0	0	5.54	16.6396	166.8	42.6	24807024	86.4000
190	ETHP	530	1965	15.4191	0	0	0	8.11	15.4191	165.2	42.7	25409024	86.2000
191	ETHP	530	1966	14.3948	0	0	0	5.54	14.3948	163.6	42.8	26078016	86.0000
192	ETHP	530	1967	13.5667	0	0	78	8.30	13.5667	162.0	42.9	26765024	85.7000
193	ETHP	530	1968	12.9348	2	0	0	6.77	12.9348	160.6	43.0	27471024	85.5000
194	ETHP	530	1969	12.4991	1	0	3	6.48	12.4991	159.2	43.1	28194016	85.2000
195	ETHP	530	1970	12.2595	0	0	0	6.89	12.2595	157.8	43.2	28937024	85.0000
196	ETHP	530	1971	12.2182	0	0	14	8.30	12.2162	158.4	43.3	29699024	84.5000
197	ETHP	530	1972	12.3574	0	0	12	7.28	12.3574	155.0	43.4	30481024	84.0000
198	ETHP	530	1973	13.0085	0	0	17	10.20	13.0085	153.8	43.8	31284018	83.4000
199	ETHP	530	1974	12.9017	16	14	114	11.12	12.9017	152.6	43.9	32108016	82.9000
200	ETHP	530	1975	14.4983	0	0	15815	6.09	14.4983	151.4	44.2	32954016	82.4000
201	ETHP	530	1976	14.2300	0	0	4010	7.42	14.2300	150.2	44.5	33856016	81.9000
202	ETHP	530	1977	15.9545	6	0	12993	5.41	15.9545	149.0	44.8	34782016	81.4000
203	ETHP	530	1978	17.1736	0	0	0	1.90	17.1736	151.0	44.8	35734016	80.8000
204	ETHP	530	1979	19.9740	0	0	0	3.60	19.9740	153.0	44.3	36712016	80.3000
205	ETHP	530	1980	20.6752	0	0	0	4.02	20.6752	155.0	43.9	37717024	79.8000
206	ETHP	530	1981	22.1692	0	0	0	3.44	22.1692	157.0	43.4	38784016	79.2600
207	ETHP	530	1982	24.6886	0	0	0	2.41	24.6886	159.0	42.8	39881024	78.7343
208	FRG	260	1960	22.9623	1	0	0	388.37	22.9623	33.8	69.5	55433024	14.1000
209	FRG	260	1961	23.0560	0	1	0	430.77	23.0560	32.0	69.7	56175024	13.4000
210	FRG	260	1962	23.1698	0	0	0	453.75	23.1698	29.3	69.9	56837024	12.8000
211	FRG	260	1963	23.3039	0	0	0	462.59	23.3039	27.1	70.0	57389024	12.1000
212	FRG	260	1964	23.4581	1	0	0	537.25	23.4581	25.3	70.1	57971024	11.5000
213	FRG	260	1965	23.6325	57	0	0	562.53	23.6325	23.8	70.2	58619024	10.8000
214	FRG	260	1966	23.8271	9	0	0	582.10	23.8271	23.6	70.2	59148016	10.1000
215	FRG	260	1967	24.0418	19	0	4	555.23	24.0418	22.8	70.3	59286016	9.5000
216	FRG	260	1968	24.2768	39	3	5	628.45	24.2768	22.6	70.4	59500016	8.8000
217	FRG	260	1969	24.5319	11	0	3	730.09	24.5319	23.2	70.4	60067024	8.2000
218	FRG	260	1970	24.5965	12	0	0	900.88	24.5965	23.4	70.5	60651024	7.5000
219	FRG	260	1971	24.8734	6	0	1	1001.41	24.8734	23.1	70.5	61302016	7.3000
220	FRG	260	1972	25.2774	4	0	24	1172.20	25.2774	22.4	70.6	61672016	7.1000

OBS	ABBRVWH	COUNTRY	YEAR	GCR	PTD	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
221	FRG	260	1973	26.4110	5	0	0	1562.15	26.4110	22.7	70.8	61976016	7.0000
222	FRG	260	1974	26.4438	9	1	3	1623.02	26.4438	21.1	71.1	62054016	6.8000
223	FRG	260	1975	26.5839	4	0	2	1522.24	26.5839	18.7	71.4	61929024	6.6000
224	FRG	260	1976	26.9434	5	0	1	1726.40	26.9434	17.4	71.8	61531024	6.4000
225	FRG	260	1977	27.4891	12	0	12	1961.63	27.4891	15.4	72.1	61401024	6.3000
226	FRG	260	1978	27.4173	7	0	0	2464.33	27.4173	14.7	72.4	61327024	6.1000
227	FRG	260	1979	27.1220	14	0	0	2969.28	27.1220	13.6	72.8	61399024	6.0000
228	FRG	260	1980	28.7834	2	0	0	3041.50	28.7834	12.7	73.2	61566016	5.8000
229	FRG	260	1981	29.3024	15	0	0	2402.55	29.3024	11.8	73.0	61682016	5.6747
230	FRG	260	1982	30.0660	18	0	0	2364.63	30.0660	10.9	73.3	61638016	5.5324
231	FRNC	220	1960	29.9904	35	7	0	357.58	29.9904	27.4	70.3	45684016	22.1000
232	FRNC	220	1961	30.0066	39	3	3	386.87	30.0066	25.7	70.6	46163024	21.3000
233	FRNC	220	1962	30.0691	1	11	81	416.86	30.0891	25.7	70.8	46988016	20.4000
234	FRNC	220	1963	30.1779	12	1	1	452.91	30.1779	25.6	71.0	47816016	19.6000
235	FRNC	220	1964	30.3329	9	1	1	509.63	30.3329	23.3	71.1	48310016	18.7000
236	FRNC	220	1965	30.5343	3	0	0	564.69	30.5343	21.9	71.3	48758016	17.9000
237	FRNC	220	1966	30.7819	0	0	0	606.78	30.7819	21.7	71.4	49164016	17.0000
238	FRNC	220	1967	31.0758	7	2	0	650.58	31.0758	20.7	71.5	49548016	16.2000
239	FRNC	220	1968	31.4159	30	11	7	677.21	31.4159	20.4	71.6	49915024	15.3000
240	FRNC	220	1969	31.8024	5	4	0	730.39	31.8024	19.6	71.8	50318016	14.5000
241	FRNC	220	1970	32.2351	10	1	0	782.13	32.2351	18.2	71.9	50772016	13.6000
242	FRNC	220	1971	32.7142	9	2	2	865.82	32.7142	17.2	72.1	51251024	13.1000
243	FRNC	220	1972	33.4332	6	9	1	1073.72	33.4332	16.0	72.2	51701024	12.6000
244	FRNC	220	1973	32.8882	19	11	7	1370.70	32.8882	15.4	72.5	52118016	12.1000
245	FRNC	220	1974	35.1697	31	7	8	1358.58	35.1697	14.6	72.8	52480016	11.6000
246	FRNC	220	1975	34.9410	21	2	10	1690.98	34.9410	13.8	73.1	52705024	11.1000
247	FRNC	220	1976	36.7661	13	8	12	1669.77	36.7661	12.5	73.4	52891024	10.6000
248	FRNC	220	1977	36.4479	11	6	5	1806.74	36.4479	11.5	73.7	53077024	10.1000
249	FRNC	220	1978	36.3422	3	1	0	2224.80	36.3422	10.6	74.0	53277024	9.6000
250	FRNC	220	1979	37.9711	9	2	0	2647.66	37.9711	10.1	74.4	53480016	9.1000
251	FRNC	220	1980	39.6006	12	6	0	2844.59	39.6006	10.0	74.8	53714016	8.6000
252	FRNC	220	1981	40.1668	8	0	0	2259.10	40.1668	9.8	75.1	53966016	8.1000
253	FRNC	220	1982	40.9816	10	1	0	2031.44	40.9816	9.4	75.7	54219024	7.6000
254	GMBA	420	1960	21.8682	0	0	0	4.77	21.8682	212.4	35.0	352000	88.7000
255	GMBA	420	1961	20.2991	0	0	0	1.86	20.2991	210.2	35.2	361000	88.5000
256	GMBA	420	1962	18.9103	0	0	0	0.00	18.9103	208.0	35.5	371000	88.3000
257	GMBA	420	1963	17.7016	0	0	0	1.62	17.7016	205.0	35.7	381000	88.0000
258	GMBA	420	1964	16.6731	0	0	0	0.14	16.6731	202.0	35.9	392000	87.8000
259	GMBA	420	1965	15.8248	0	0	0	2.92	15.8248	199.0	36.2	403000	87.6000
260	GMBA	420	1966	15.1567	0	1	0	6.61	15.1567	196.0	36.4	415000	87.4000
261	GMBA	420	1967	14.6688	0	0	0	8.48	14.6688	193.0	36.6	437000	87.2000
262	GMBA	420	1968	14.3611	0	0	0	-1.40	14.3611	190.4	36.9	447000	87.0000
263	GMBA	420	1969	14.2338	0	0	0	7.47	14.2338	187.8	37.2	456000	86.8000
264	GMBA	420	1970	14.2863	0	0	0	11.23	14.2863	185.2	37.6	466000	86.6000
265	GMBA	420	1971	14.5192	0	0	0	-0.91	14.5192	182.6	37.9	476000	86.3000
266	GMBA	420	1972	15.6877	0	0	0	10.05	15.6877	180.0	38.3	487000	86.1000
267	GMBA	420	1973	17.2810	0	0	0	1.71	17.2810	177.4	38.6	497000	85.8000
268	GMBA	420	1974	13.7615	0	0	0	19.79	13.7615	174.8	38.9	515000	85.6000
269	GMBA	420	1975	15.8209	0	0	0	52.46	15.8209	172.2	39.3	533000	85.3000
270	GMBA	420	1976	17.0535	0	0	0	-4.07	17.0535	169.6	39.6	552000	85.0000
271	GMBA	420	1977	18.1887	0	0	0	21.37	18.1887	167.0	40.0	571000	84.8000
272	GMBA	420	1978	28.3582	0	0	0	-37.11	28.3582	164.4	40.3	591000	84.5000
273	GMBA	420	1979	21.2542	0	0	0	45.74	21.2542	161.8	40.5	612000	84.3000
274	GMBA	420	1980	25.6353	0	0	0	19.54	25.6353	159.2	40.8	634000	84.0000
275	GMBA	420	1981	23.6564	0	0	0	-22.28	23.6564	156.6	41.1	655000	83.7600

OBS	ABBRVWH	COUNTRY	YEAR	GCR	PTD	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
276	GMBA	420	1982	29.8202	0	0	0	10.72	29.8202	154.0	41.5	677000	83.5057
277	GRCE	350	1960	18.3450	0	0	0	46.44	18.3450	40.1	68.7	8327001	52.2000
278	GRCE	350	1961	18.8600	0	0	0	60.69	18.8600	39.8	69.0	8398001	51.2000
279	GRCE	350	1962	19.3864	0	0	0	69.84	19.3864	40.4	69.3	8448001	50.2000
280	GRCE	350	1963	19.9243	4	1	1	74.13	19.9243	39.3	69.7	8480001	49.2000
281	GRCE	350	1964	20.4738	0	0	0	98.30	20.4738	35.8	70.0	8510001	48.2000
282	GRCE	350	1965	21.0347	23	2	1	104.99	21.0347	34.3	70.3	8550001	47.2000
283	GRCE	350	1966	21.6072	2	0	0	114.59	21.6072	34.0	70.6	8614001	46.2000
284	GRCE	350	1967	22.1912	7	0	3	123.45	22.1912	34.3	70.9	8716001	45.2000
285	GRCE	350	1968	22.7866	3	0	0	128.18	22.7866	34.4	71.2	8741001	44.2000
286	GRCE	350	1969	23.3936	3	0	0	171.54	23.3936	31.8	71.5	8773001	43.2000
287	GRCE	350	1970	24.0121	1	0	2	223.67	24.0121	29.6	71.8	8793001	42.2000
288	GRCE	350	1971	24.6421	7	0	1	247.03	24.6421	26.9	72.2	8831001	41.1000
289	GRCE	350	1972	26.0745	5	2	0	300.96	26.0745	27.3	72.5	8889001	40.0000
290	GRCE	350	1973	25.3970	35	6	21	453.69	25.3970	24.1	72.7	8929001	38.8000
291	GRCE	350	1974	25.4730	25	2	2	414.52	25.4730	23.9	72.8	8962001	37.7000
292	GRCE	350	1975	26.7080	29	0	3	393.62	26.7080	24.0	72.9	9047001	36.6000
293	GRCE	350	1976	29.0363	4	3	3	444.39	29.0363	22.5	73.0	9167001	35.5000
294	GRCE	350	1977	29.4637	4	1	1	506.89	29.4637	20.4	73.1	9309001	34.3000
295	GRCE	350	1978	30.0450	2	0	0	691.65	30.0450	19.3	73.3	9430001	33.2000
296	GRCE	350	1979	29.9085	2	0	1	903.31	29.9085	18.7	73.7	9548001	32.0000
297	GRCE	350	1980	30.6669	1	0	3	820.05	30.6669	17.9	74.2	9643001	30.9000
298	GRCE	350	1981	29.3070	46	0	0	595.32	29.3070	16.3	74.6	9729001	29.7400
299	GRCE	350	1982	33.8535	9	0	0	616.02	33.8535	14.7	75.2	9792001	28.5943
300	ICLD	395	1960	47.3822	0	0	0	348.54	47.3822	13.0	73.2	176000	24.7000
301	ICLD	395	1961	45.2044	1	0	0	377.18	45.2044	19.5	73.3	179000	23.9000
302	ICLD	395	1962	43.1484	0	0	0	407.36	43.1484	17.0	73.4	182000	23.2000
303	ICLD	395	1963	41.2141	1	0	0	451.04	41.2141	17.0	73.4	185000	22.4000
304	ICLD	395	1964	39.4014	0	0	0	593.88	39.4014	17.5	73.4	190000	21.7000
305	ICLD	395	1965	37.7105	0	0	0	761.45	37.7105	15.0	73.4	194000	20.9000
306	ICLD	395	1966	36.1413	0	0	0	821.15	36.1413	13.6	73.4	197000	20.2000
307	ICLD	395	1967	34.6938	0	0	0	683.74	34.6938	12.9	73.4	199000	19.4000
308	ICLD	395	1968	33.3679	0	1	0	504.95	33.3679	14.0	73.5	201000	18.7000
309	ICLD	395	1969	32.1638	0	0	0	544.90	32.1638	11.6	73.7	203000	17.9000
310	ICLD	395	1970	31.0814	0	0	0	626.67	31.0814	13.2	73.9	204000	17.2000
311	ICLD	395	1971	30.1207	0	0	0	787.68	30.1207	12.9	74.1	206000	16.5000
312	ICLD	395	1972	27.7985	2	0	0	943.01	27.7985	11.3	74.2	209000	15.8000
313	ICLD	395	1973	29.3727	1	0	0	1431.69	29.3727	9.8	74.5	212000	15.0000
314	ICLD	395	1974	29.2900	0	0	0	1599.08	29.2900	11.7	74.9	215000	14.3000
315	ICLD	395	1975	28.5478	0	0	0	1518.00	28.5478	12.5	75.3	218000	13.6000
316	ICLD	395	1976	26.5547	0	0	0	1973.26	26.5547	7.7	75.7	220000	12.9000
317	ICLD	395	1977	25.7563	0	1	0	2598.01	25.7563	9.5	76.1	222000	12.2000
318	ICLD	395	1978	26.4907	0	0	0	2876.73	26.4907	11.3	76.3	224000	11.6000
319	ICLD	395	1979	27.2710	1	0	0	3109.64	27.2710	9.5	76.4	226000	10.9000
320	ICLD	395	1980	26.3913	0	0	0	3752.79	26.3913	7.7	76.5	228000	10.2000
321	ICLD	395	1981	27.1424	0	0	0	3577.44	27.1424	7.2	76.8	231000	9.5046
322	ICLD	395	1982	28.1139	0	0	0	2957.88	28.1139	6.7	76.8	234000	8.7949
323	ITLY	325	1960	6.9436	0	10	11	202.60	6.9436	43.9	69.2	50198016	30.8000
324	ITLY	325	1961	8.3105	2	0	3	233.68	8.3105	40.7	69.5	50523024	29.6000
325	ITLY	325	1962	9.6621	0	6	9	250.09	9.6621	41.8	69.8	50843024	28.4000
326	ITLY	325	1963	10.9982	1	6	0	253.10	10.9982	40.1	70.0	51198016	27.2000
327	ITLY	325	1964	12.3189	5	2	0	283.91	12.3189	36.1	70.3	51600016	26.0000
328	ITLY	325	1965	13.6241	4	0	0	315.25	13.6241	36.1	70.5	51987024	24.8000
329	ITLY	325	1966	14.9140	3	0	4	327.45	14.9140	34.7	70.7	52332016	23.6000
330	ITLY	325	1967	16.1883	14	0	0	355.89	16.1883	33.2	70.9	52687024	22.4000

OBS	ABBRVWH	COUNTRY	YEAR	GCR	PTD	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
331	ITLY	325	1968	17.4473	16	6	2	389.86	17.4473	32.7	71.10	52887024	21.2000
332	ITLY	325	1969	18.6908	7	14	20	441.28	18.6908	30.8	71.30	53317024	20.0000
333	ITLY	325	1970	19.9188	14	10	7	501.91	19.9188	29.6	71.60	53661024	18.8000
334	ITLY	325	1971	21.1315	16	9	4	514.27	21.1315	28.5	71.80	54006016	18.1000
335	ITLY	325	1972	22.3286	6	7	4	579.85	22.3286	27.0	72.00	54400016	17.4000
336	ITLY	325	1973	23.6183	4	1	41	735.35	23.6183	26.2	72.30	54779024	16.8000
337	ITLY	325	1974	24.7575	20	9	25	798.59	24.7575	22.9	72.60	55130016	16.1000
338	ITLY	325	1975	25.4114	11	3	11	774.07	25.4114	21.1	72.80	55441024	15.4000
339	ITLY	325	1976	26.8906	0	2	21	909.27	26.8906	19.5	73.10	55701024	14.7000
340	ITLY	325	1977	28.0160	27	0	15	1031.08	28.0160	18.1	73.40	55930016	14.0000
341	ITLY	325	1978	29.8104	53	3	0	1256.47	29.8104	16.8	73.80	56127024	13.4000
342	ITLY	325	1979	30.3734	8	1	0	1588.51	30.3734	15.5	74.10	56292016	12.7000
343	ITLY	325	1980	31.6767	13	5	4	1947.02	31.6767	14.3	74.50	56416016	12.0000
344	ITLY	325	1981	31.0420	4	0	3	1671.82	31.0420	14.1	74.90	56503024	11.3400
345	ITLY	325	1982	34.1399	4	2	0	1596.55	34.1399	13.0	75.50	56640016	10.8657
346	JMCA	51	1960	64.2079	0	0	3	111.55	64.2079	60.8	62.70	1629001	41.5000
347	JMCA	51	1961	59.4076	0	0	0	125.31	59.4076	57.4	63.30	1668001	40.6000
348	JMCA	51	1962	54.9304	0	0	1	119.14	54.9304	54.0	63.90	1698001	39.8000
349	JMCA	51	1963	50.7764	0	0	7	124.06	50.7764	52.2	64.50	1722001	38.9000
350	JMCA	51	1964	46.9456	0	0	0	117.74	46.9456	50.4	64.90	1742001	38.1000
351	JMCA	51	1965	43.4380	0	0	0	126.63	43.4380	48.6	65.30	1760001	37.2000
352	JMCA	51	1966	40.2536	0	0	1	182.59	40.2536	46.8	65.70	1778001	36.4000
353	JMCA	51	1967	37.3923	0	0	1	181.99	37.3923	45.0	66.10	1799001	35.6000
354	JMCA	51	1968	34.8543	0	0	0	176.13	34.8543	43.2	66.40	1824001	34.8000
355	JMCA	51	1969	32.6394	0	0	0	183.15	32.6394	41.4	66.70	1851001	34.0000
356	JMCA	51	1970	30.7477	0	0	0	204.72	30.7477	39.6	67.00	1877001	33.2000
357	JMCA	51	1971	29.1792	0	0	0	204.91	29.1792	37.8	67.30	1901001	33.0000
358	JMCA	51	1972	27.9339	0	0	0	177.74	27.9339	36.0	67.70	1921001	32.8000
359	JMCA	51	1973	27.0118	0	0	0	213.65	27.0118	33.8	67.90	1941001	32.5000
360	JMCA	51	1974	26.4129	0	0	0	170.78	26.4129	31.6	68.10	1960001	32.3000
361	JMCA	51	1975	26.2229	0	0	0	222.89	26.2229	29.4	68.40	1979001	32.1000
362	JMCA	51	1976	26.3277	0	0	10	139.14	26.3277	27.2	68.60	1997001	31.9000
363	JMCA	51	1977	24.8485	0	0	15	173.60	24.8485	25.0	68.80	2013001	31.8000
364	JMCA	51	1978	30.2269	2	0	0	208.13	30.2269	24.2	69.40	2030001	31.6000
365	JMCA	51	1979	26.8554	8	1	7	209.17	26.8554	23.4	70.10	2047001	31.5000
366	JMCA	51	1980	29.0908	2	1	886	176.26	29.0908	22.6	70.90	2065001	31.3000
367	JMCA	51	1981	31.6958	0	0	0	130.99	31.6958	21.8	71.70	2096001	31.1600
368	JMCA	51	1982	33.2562	0	0	0	128.75	33.2562	21.0	72.90	2128001	31.0057
369	JPAN	740	1960	18.9457	71	2	2	155.19	18.9457	30.4	67.00	94094016	33.1000
370	JPAN	740	1961	17.8947	9	0	0	217.59	17.8947	28.3	67.70	94943024	31.8000
371	JPAN	740	1962	16.9145	11	0	0	220.38	16.9145	26.2	68.30	95832016	30.4000
372	JPAN	740	1963	16.0052	3	0	0	244.52	16.0052	23.0	68.90	96812016	29.1000
373	JPAN	740	1964	15.1667	2	0	0	294.46	15.1667	20.2	69.50	97828016	27.7000
374	JPAN	740	1965	14.3991	2	0	0	307.24	14.3991	18.4	70.10	98883024	26.4000
375	JPAN	740	1966	13.7023	4	0	0	361.15	13.7023	19.1	70.60	99790016	25.0000
376	JPAN	740	1967	13.0764	2	0	0	438.90	13.0764	14.9	71.20	100725024	23.7000
377	JPAN	740	1968	12.5214	11	1	0	551.59	12.5214	15.2	71.70	101061024	22.3000
378	JPAN	740	1969	12.0371	11	5	0	656.13	12.0371	14.2	72.00	103172016	21.0000
379	JPAN	740	1970	10.8569	7	1	0	786.84	10.8569	13.1	72.30	104345024	19.6000
380	JPAN	740	1971	10.8313	5	1	1	840.94	10.8313	12.4	72.80	105697024	18.8000
381	JPAN	740	1972	11.2658	7	0	20	1075.73	11.2658	11.7	73.00	107188016	17.9000
382	JPAN	740	1973	12.6261	2	0	1	1459.32	12.6261	11.3	73.58	108079024	17.1000
383	JPAN	740	1974	11.9134	6	2	8	1481.95	11.9134	10.7	73.70	110762016	16.2000
384	JPAN	740	1975	9.9031	0	1	0	1485.08	9.9031	10.0	74.30	111940016	15.4000
385	JPAN	740	1976	10.0058	2	1	1	1625.85	10.0058	9.3	74.70	112771024	14.6000

OBS	ABBRVWH	COUNTRY	YEAR	GCR	PTD	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
386	JPAN	740	1977	9.9988	1	0	1	1972.40	9.9988	8.9	75.1000	113863024	13.7000
387	JPAN	740	1978	10.1363	8	0	0	2759.78	10.1363	8.3	75.8000	114898016	12.9000
388	JPAN	740	1979	10.9318	1	0	0	2756.08	10.9318	7.8	75.7634	115870016	12.0000
389	JPAN	740	1980	11.6760	4	0	0	2843.18	11.6760	7.5	76.0000	116782016	11.2000
390	JPAN	740	1981	12.2811	8	0	0	3175.58	12.2811	7.1	76.2000	117648016	10.3568
391	JPAN	740	1982	12.2291	6	0	0	2821.24	12.2291	6.8	76.5000	118449024	9.5112
392	MRCO	600	1960	-1.4897	0	3	3	18.87	-1.4897	161.0	46.7000	11626001	65.7000
393	MRCO	600	1961	0.9572	0	1	0	10.78	0.9572	158.0	47.2000	11917001	64.8000
394	MRCO	600	1962	3.2896	0	0	130	15.50	3.2896	155.0	47.7000	12237001	63.9000
395	MRCO	600	1963	5.5076	1	0	3	19.95	5.5076	151.6	48.2000	12582001	63.1000
396	MRCO	600	1964	7.6111	0	1	10	22.59	7.6111	148.2	48.7000	12945001	62.2000
397	MRCO	600	1965	9.6001	0	0	25	25.51	9.6001	144.8	49.1000	13323001	61.3000
398	MRCO	600	1966	11.4747	1	0	0	19.96	11.4747	141.4	49.6000	13711001	60.6000
399	MRCO	600	1967	13.2348	0	1	2	23.89	13.2348	138.0	50.1000	14085001	59.8000
400	MRCO	600	1968	14.8805	0	2	0	24.57	14.8805	134.8	50.6000	14482001	59.1000
401	MRCO	600	1969	16.4117	0	2	0	32.01	16.4117	131.6	51.1000	14890001	58.3000
402	MRCO	600	1970	19.2648	0	1	0	37.57	19.2648	128.4	51.6000	15310001	57.8000
403	MRCO	600	1971	17.6537	0	1	0	42.13	17.6537	125.2	52.1000	15690001	56.4000
404	MRCO	600	1972	18.5479	1	4	8	46.21	18.5479	122.0	52.7000	16079001	55.2000
405	MRCO	600	1973	20.0928	1	2	0	59.08	20.0928	118.6	53.2000	16478001	53.8000
406	MRCO	600	1974	25.1443	0	1	0	90.98	25.1443	117.2	53.8000	16886016	52.7000
407	MRCO	600	1975	25.9418	0	0	1	74.25	25.9418	114.8	54.3000	17305024	51.5000
408	MRCO	600	1976	22.9786	0	0	0	45.54	22.9786	112.4	54.9000	17702016	50.3000
409	MRCO	600	1977	24.5554	0	0	0	84.20	24.5554	110.0	55.5000	18108016	49.1000
410	MRCO	600	1978	23.9022	0	1	0	83.87	23.9022	107.4	56.0000	18523024	48.0000
411	MRCO	600	1979	25.0826	0	0	0	97.74	25.0826	104.8	56.5000	18948016	46.8000
412	MRCO	600	1980	24.5649	0	0	0	108.12	24.5649	102.2	57.0000	19382016	45.6000
413	MRCO	600	1981	26.1490	1	1	0	55.10	26.1490	99.6	57.5000	19866016	44.4762
414	MRCO	600	1982	26.7294	0	0	0	61.50	26.7294	97.0	58.3000	20361024	43.3350
415	MRTN	435	1960	88.0379	0	0	0	3.90	88.0378	190.4	38.7000	990000	93.0000
416	MRTN	435	1961	85.1061	0	0	0	18.99	85.1061	188.2	38.7000	1009000	92.2000
417	MRTN	435	1962	82.1743	0	0	3	18.57	82.1743	186.0	38.6000	1029000	91.4000
418	MRTN	435	1963	79.2425	0	0	0	16.09	79.2425	183.4	38.9000	1050001	90.5000
419	MRTN	435	1964	76.3107	0	0	0	30.32	76.3107	180.8	39.6000	1071001	89.7000
420	MRTN	435	1965	73.3789	0	0	0	43.28	73.3789	178.2	40.2000	1094001	88.9000
421	MRTN	435	1966	70.4471	0	0	0	46.41	70.4471	175.6	40.8000	1118001	88.1000
422	MRTN	435	1967	67.5153	0	1	0	53.47	67.5153	173.0	41.4000	1148001	87.3000
423	MRTN	435	1968	64.5835	0	0	0	65.25	64.5835	170.6	41.8000	1174001	86.4000
424	MRTN	435	1969	61.6517	0	0	0	50.03	61.6517	168.2	42.1000	1200001	85.6000
425	MRTN	435	1970	58.7199	0	0	0	50.58	58.7199	165.8	42.4000	1228001	84.8000
426	MRTN	435	1971	55.7882	0	0	0	54.90	55.7882	163.4	42.7000	1255001	83.3000
427	MRTN	435	1972	52.8564	0	1	0	56.91	52.8564	161.0	43.0000	1284001	81.7000
428	MRTN	435	1973	49.9246	0	0	0	24.86	49.9246	158.8	43.4000	1313001	80.2000
429	MRTN	435	1974	46.9928	0	0	0	17.77	46.9928	156.2	43.7000	1343001	78.8000
430	MRTN	435	1975	37.2380	0	0	0	45.18	37.2380	153.8	44.1000	1373001	77.1000
431	MRTN	435	1976	51.0758	0	0	0	10.99	51.0758	151.4	44.4000	1404001	75.5000
432	MRTN	435	1977	38.8338	0	0	0	-4.77	38.8336	149.0	44.8000	1436001	74.0000
433	MRTN	435	1978	35.4449	0	0	0	-0.18	35.4449	146.6	45.0000	1466001	72.4000
434	MRTN	435	1979	30.3945	1	0	0	-2.75	30.3945	144.2	45.1000	1498001	70.9000
435	MRTN	435	1980	29.4020	0	0	0	31.91	29.4020	141.8	45.1000	1529001	69.3000
436	MRTN	435	1981	26.4702	0	0	0	60.46	26.4702	139.4	45.2000	1560001	67.8797
437	MRTN	435	1982	23.5384	0	0	0	14.22	23.5384	137.0	45.3000	1593001	66.3937
438	MXCO	70	1960	1.5479	9	1	19	55.31	1.5479	90.8	57.0000	38027024	55.1000
439	MXCO	70	1961	2.2612	6	0	112	58.60	2.2612	88.4	57.7000	39318024	54.0000
440	MXCO	70	1962	2.9702	1	0	20	59.31	2.9702	86.0	58.3000	40628016	52.9000

OBS	ABBRVWH	COUNTRY	YEAR	GCR	PTD	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
[illegible]	MXCO	70	1963	3.6750	2	1	0	71.249	3.6750	84.6	58.8	41862016	51.8000
[illegible]	MXCO	70	1964	4.3757	0	0	24	80.821	4.3757	83.2	59.1	43338016	50.7000
443	MXCO	70	1965	5.0721	1	1	20	93.468	5.0721	81.8	59.5	44765024	49.6000
444	MXCO	70	1966	5.7643	0	1	0	98.253	5.7643	80.4	59.8	46248016	48.5000
445	MXCO	70	1967	6.4524	2	2	61	107.018	6.4524	79.0	60.1	46422016	47.4000
446	MXCO	70	1968	7.1362	7	4	34	108.935	7.1362	77.0	60.5	47955024	46.3000
447	MXCO	70	1969	7.8158	0	0	20	122.732	7.8158	75.0	60.9	49539024	45.2000
448	MXCO	70	1970	8.4913	3	0	5	144.609	8.4913	73.0	61.3	51176016	44.1000
449	MXCO	70	1971	9.1625	3	0	14	142.116	9.1625	71.0	61.6	52857024	43.3000
450	MXCO	70	1972	10.3413	0	0	14	161.807	10.3413	69.0	62.0	54594016	42.6000
451	MXCO	70	1973	10.1029	1	0	24	199.302	10.1029	67.2	62.4	56387024	41.8000
452	MXCO	70	1974	10.6146	2	0	45	259.721	10.6146	65.4	62.8	58240016	41.1000
453	MXCO	70	1975	12.1631	1	1	46	306.729	12.1631	63.6	63.1	60153024	40.3000
454	MXCO	70	1976	12.3270	2	0	99	300.256	12.3270	61.8	63.5	61897024	39.5000
455	MXCO	70	1977	13.0376	4	3	34	295.061	13.0376	60.0	63.9	63691024	38.8000
456	MXCO	70	1978	13.8273	3	1	0	380.811	13.8273	58.6	64.2	65538016	38.0000
457	MXCO	70	1979	14.3145	2	0	0	492.438	14.3145	57.2	64.6	67438016	37.3000
458	MXCO	70	1980	15.7886	2	0	0	729.710	15.7886	55.8	64.9	69393024	36.5000
459	MXCO	70	1981	15.2305	1	0	0	920.319	15.2305	54.4	65.2	71184016	35.7600
460	MXCO	70	1982	16.1409	2	0	0	827.296	16.1409	53.0	65.7	73020016	35.0057
461	NCRG	93	1960	52.2062	0	0	12	27.921	52.2062	137.8	47.0	1493001	61.8000
462	NCRG	93	1961	48.3049	0	0	8	31.849	48.3049	134.4	47.6	1543001	60.8000
463	NCRG	93	1962	40.8648	0	0	0	36.858	40.8648	131.0	48.2	1593001	59.8000
464	NCRG	93	1963	35.8852	1	0	0	42.727	35.8852	127.8	48.8	1645001	58.7000
465	NCRG	93	1964	31.3667	2	0	0	54.129	31.3667	124.6	49.5	1697001	57.7000
466	NCRG	93	1965	27.3092	0	0	0	57.632	27.3092	121.4	50.1	1751001	56.7000
467	NCRG	93	1966	23.7126	0	0	0	54.471	23.7126	118.2	50.7	1807001	55.7000
468	NCRG	93	1967	20.5770	0	0	151	46.496	20.5770	115.0	51.3	1865001	54.6000
469	NCRG	93	1968	17.9022	0	0	0	52.959	17.9022	112.0	51.9	1926001	53.6000
470	NCRG	93	1969	15.8885	1	0	0	62.446	15.8885	109.0	52.6	1988001	52.5000
471	NCRG	93	1970	11.9387	5	0	0	61.033	11.9387	106.0	53.2	2053001	51.5000
472	NCRG	93	1971	12.4438	0	0	0	60.337	12.4438	103.0	53.8	2120001	51.0000
473	NCRG	93	1972	12.0728	1	0	0	74.785	12.0728	100.0	54.4	2188001	50.5000
474	NCRG	93	1973	13.6381	0	0	0	69.658	13.6381	98.6	54.9	2259001	50.1000
475	NCRG	93	1974	13.6949	0	0	4	116.944	13.6949	97.2	55.2	2332001	49.8000
476	NCRG	93	1975	13.2807	0	0	22	82.397	13.2807	95.8	55.5	2408001	49.1000
477	NCRG	93	1976	13.3358	0	0	3	137.301	13.3358	94.4	55.8	2477001	48.6000
478	NCRG	93	1977	13.9124	0	0	30	177.788	13.9124	93.0	56.1	2547001	48.1000
479	NCRG	93	1978	13.3197	9	7	1	126.254	13.3197	89.6	56.6	2620001	47.6000
480	NCRG	93	1979	14.7788	6	3	0	47.486	14.7788	86.2	57.3	2694001	47.1000
481	NCRG	93	1980	22.7150	1	0	0	-21.366	22.7150	82.8	58.0	2771001	46.6000
482	NCRG	93	1981	28.2972	1	0	0	28.111	28.2972	79.4	58.8	2860001	46.0851
483	NCRG	93	1982	28.7937	2	0	0	30.544	28.7937	76.0	59.8	2955001	45.5715
484	NGER	436	1960	0.3832	0	0	0	8.823	0.3832	190.0	35.2	3234001	96.2000
485	NGER	436	1961	1.0821	0	0	0	7.719	1.0821	188.0	35.5	3329001	96.0000
486	NGER	436	1962	1.7810	0	0	1	9.569	1.7810	186.0	35.8	3426001	95.8000
487	NGER	436	1963	2.4798	0	0	20	18.658	2.4798	184.0	36.1	3526001	95.6000
488	NGER	436	1964	3.1787	0	0	1	9.509	3.1787	182.0	36.4	3630001	95.4000
489	NGER	436	1965	3.8776	0	0	1	6.154	3.8776	180.0	36.7	3736001	95.2000
490	NGER	436	1966	4.5764	0	0	0	7.712	4.5764	178.0	37.0	3815001	95.0000
491	NGER	436	1967	5.2753	0	0	0	4.637	5.2753	176.0	37.4	3895001	94.8000
492	NGER	436	1968	5.9741	0	0	0	5.466	5.9741	174.0	37.7	3977001	94.7000
493	NGER	436	1969	6.6730	0	0	0	-1.377	6.6730	172.0	38.0	4061001	94.5000
494	NGER	436	1970	7.3719	0	0	0	3.934	7.3719	170.0	38.3	4146001	94.3000
495	NGER	436	1971	8.0707	0	0	0	7.348	8.0707	168.0	38.6	4263001	94.0000

OBS	ABBRVWH	COUNTRY	YEAR	GCR	PTD	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
496	NGER	436	1972	8.7696	1	0	0	8.11	8.7696	166 0	38.9	4384001	93.7000
497	NGER	436	1973	9.4685	0	1	0	14.11	9.4685	164.2	39.2	4508001	93.3000
498	NGER	436	1974	10.1673	1	0	1	-3.65	10 1673	162.4	39.5	4635001	93.0000
499	NGER	436	1975	10.8662	0	0	0	5.65	10.8662	160.6	39.8	4767001	92.7000
500	NGER	436	1976	11.9846	0	0	0	4.64	11.9846	158.8	40.1	4901001	92 4000
501	NGER	436	1977	11.8644	0	0	0	25.61	11.8644	157.0	40.4	5040001	92 1000
502	NGER	436	1978	12.5831	0	0	0	60.47	12.5831	154.8	40.7	5193001	91.7000
503	NGER	436	1979	13.9413	0	0	0	68.98	13.9413	152.6	41.1	5352001	91.4000
504	NGER	436	1980	14.4405	2	0	0	103.83	14.4405	150.4	41.5	5515001	91.1000
505	NGER	436	1981	15.0594	0	0	0	33.24	15 0594	148.2	41.9	5680001	90.8000
506	NGER	436	1982	15.7582	0	0	0	26.22	15 7582	146.0	42.5	5850001	90.5182
507	NRWY	385	1960	55.8118	0	0	0	361.51	55.8118	18.9	73.4	3581001	19.8000
508	NRWY	385	1961	53.3558	2	0	0	392.77	53.3558	17.9	73.4	3810001	18.9000
509	NRWY	385	1962	51.0797	0	0	0	403.34	51.0797	17.7	73.4	3639001	18.1000
510	NRWY	385	1963	48.9836	0	0	0	431.34	48.9836	16.9	73.5	3667001	17.2000
511	NRWY	385	1964	47.0673	0	0	0	481.51	47.0673	16.4	73.6	3694001	16.4000
512	NRWY	385	1965	45.3309	0	0	0	551.23	45.3309	16.8	73.6	3723001	15.5000
513	NRWY	385	1966	43.7745	11	0	0	589.50	43.7745	14.6	73.7	3753001	14.8000
514	NRWY	385	1967	42.3980	1	0	0	635.05	42.3980	14.8	73.8	3785001	14.0000
515	NRWY	385	1968	41.2013	0	0	0	660.04	41.2013	13.7	73.9	3819001	13.3000
516	NRWY	385	1969	40.1846	0	0	0	673.46	40.1846	13.8	74.0	3851001	12.5000
517	NRWY	385	1970	39.3478	0	1	0	841.30	39.3478	12.7	74.1	3877001	11.8000
518	NRWY	385	1971	38.6909	0	0	0	917.80	38.6909	12.8	74.2	3903001	11.4000
519	NRWY	385	1972	37.9277	0	0	0	1079.93	37.9277	11.8	74.4	3933001	11.1000
520	NRWY	385	1973	38.3598	0	0	1	1452.65	38.3598	11.9	74.5	3961001	10.7000
521	NRWY	385	1974	37.7887	0	0	0	1805.79	37.7887	10.4	74.7	3985001	10.4000
522	NRWY	385	1975	37.4797	1	0	0	2023.71	37.4797	11.0	74.9	4007001	10.0000
523	NRWY	385	1976	38.7343	0	0	0	2145.73	38.7343	10.4	75.1	4026001	9.7000
524	NRWY	385	1977	38.5598	1	0	0	2276.38	38.5598	9.1	75.2	4043001	9.3000
525	NRWY	385	1978	38.8061	0	0	0	2766.50	38.8061	8.8	75.5	4059001	9.0000
526	NRWY	385	1979	38.9175	1	0	0	3489.78	38.9175	8.7	75.8	4073001	8.8000
527	NRWY	385	1980	41.3263	0	0	0	4767.14	41.3263	8.0	76.1	4091001	8.3000
528	NRWY	385	1981	43.1026	1	0	0	4868.25	43.1026	7.5	76.4	4100001	7.9400
529	NRWY	385	1982	42.6967	0	0	0	4388.51	42.6967	8.1	76.8	4115001	7.5943
530	PERU	135	1960	19.0693	0	0	0	106.92	19.0693	140.8	47.7	9931001	52.3000
531	PERU	135	1961	18.2611	1	0	8	108.82	18.2611	138.4	48.3	10230001	51.8000
532	PERU	135	1962	17.5183	11	2	9	117.92	17.5183	136.0	48.8	10531001	51.3000
533	PERU	135	1963	16.8406	0	0	8	108.88	16.8406	134.0	49.4	10837001	50.7000
534	PERU	135	1964	16.2282	0	0	345	130.35	16.2282	132.0	49.8	11149001	50.2000
535	PERU	135	1965	15.6810	0	0	195	135.54	15.6810	130.0	50.3	11467001	49.7000
536	PERU	135	1966	15.1990	0	0	10	162.89	15.1990	128.0	50.8	11793001	49.2000
537	PERU	135	1967	14.7823	1	5	0	154.31	14.7823	126.0	51.3	11846001	48.7000
538	PERU	135	1968	14.4309	0	2	1	118.11	14.4309	122.8	51.9	12166001	48.1000
539	PERU	135	1969	14.1446	1	0	0	129.19	14.1446	119.6	52.7	12495001	47.6000
540	PERU	135	1970	14.2979	0	0	16	131.70	14.2979	116.4	53.8	12867001	47.1000
541	PERU	135	1971	12.7615	0	0	9	141.25	12.7615	113.2	54.4	13236001	46.4000
542	PERU	135	1972	15.4423	0	1	1	118.55	15.4423	110.0	55.2	13616001	45.7000
543	PERU	135	1973	12.8732	0	3	6	189.59	12 8732	109.0	55.8	14007001	44.9000
544	PERU	135	1974	13.1952	0	1	4	253.59	13.1952	108.0	56.2	14409001	44.2000
545	PERU	135	1975	13.7505	0	1	100	225.51	13.7505	107.0	56.6	14822001	43.5000
546	PERU	135	1976	13.3782	1	3	6	215.68	13.3782	106.0	57.1	15163001	42.8000
547	PERU	135	1977	13.8499	0	7	36	162.23	13.8499	105.0	57.5	15513001	42.1000
548	PERU	135	1978	14.9685	2	5	0	176.91	14 9685	103.8	57.8	15870001	41.4000
549	PERU	135	1979	15.5812	1	2	0	290.41	15.5812	102.6	57.9	16235001	40.7000
550	PERU	135	1980	16.8923	0	3	0	342.50	16.8923	101.4	58.1	16609001	40.0000

OBS	ABBRVWH	COUNTRY	YEAR	GDR	PTD	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
551	PERU	135	1981	14.163	1	1	0	376.981	14.163	100.2	58.3	16992016	39.3149
552	PERU	135	1982	16.360	0	0	0	381.109	16.360	99.0	58.5	17383024	38.6285
553	RWND	517	1960	14.225	0	0	0	3.632	14.225	146.2	46.2	2753001	84.8000
554	RWND	517	1961	13.504	0	0	500	3.529	13.504	144.6	46.9	2834001	84.7000
555	RWND	517	1962	12.853	0	0	0	1.918	12.853	143.0	47.6	2920001	84.6000
556	RWND	517	1963	12.271	0	0	0	0.466	12.271	141.8	48.1	3007001	84.4000
557	RWND	517	1964	11.759	0	0	21307	3.229	11.759	140.6	48.4	3097001	84.3000
558	RWND	517	1965	11.317	0	0	0	2.320	11.317	139.4	48.8	3189001	84.2000
559	RWND	517	1966	10.944	0	0	5000	0.358	10.944	138.2	49.1	3284001	84.1000
560	RWND	517	1967	10.641	0	0	0	1.135	10.641	137.0	49.4	3383001	84.0000
561	RWND	517	1968	10.407	0	0	0	0.884	10.407	136.4	49.3	3484001	83.9000
562	RWND	517	1969	10.243	0	0	0	-0.028	10.243	135.8	48.6	3588001	83.8000
563	RWND	517	1970	10.149	0	0	0	1.976	10.149	135.2	48.0	3695001	83.7000
564	RWND	517	1971	10.124	0	0	0	1.444	10.124	134.6	47.3	3819001	83.6000
565	RWND	517	1972	10.168	0	0	0	0.990	10.168	134.0	46.7	3947001	83.5000
566	RWND	517	1973	9.914	0	0	12	5.395	9.914	133.6	46.1	4080001	83.4000
567	RWND	517	1974	11.747	0	0	0	0.945	11.747	133.2	45.7	4218001	83.3000
568	RWND	517	1975	9.494	0	0	0	6.797	9.494	132.8	45.3	4358001	83.2000
569	RWND	517	1976	10.910	0	0	0	13.321	10.910	132.4	44.8	4504001	83.1000
570	RWND	517	1977	12.150	0	0	0	19.344	12.150	132.0	44.4	4655001	83.0000
571	RWND	517	1978	11.326	1	0	0	13.769	11.326	130.4	44.4	4811001	83.0000
572	RWND	517	1979	12.975	0	0	0	21.469	12.975	128.8	44.8	4982001	82.9000
573	RWND	517	1980	12.784	0	0	0	9.495	12.784	127.2	45.2	5139001	82.8000
574	RWND	517	1981	13.700	0	0	0	3.411	13.700	125.6	45.8	5305001	82.7400
575	RWND	517	1982	14.440	0	0	0	10.696	14.440	124.0	46.3	5477001	82.6857
576	SNGL	433	1960	16.924	0	0	0	25.131	16.924	179.2	39.4	3498001	83.8000
577	SNGL	433	1961	16.603	1	0	0	23.989	16.603	177.6	39.7	3580001	83.7000
578	SNGL	433	1962	16.339	0	0	0	22.991	16.339	176.0	40.0	3665001	83.6000
579	SNGL	433	1963	16.131	1	0	13	14.796	16.131	174.4	40.3	3751001	83.5000
580	SNGL	433	1964	15.979	0	0	0	20.049	15.979	172.8	40.6	3839001	83.4000
581	SNGL	433	1965	15.883	0	0	0	16.080	15.883	171.2	40.9	3930001	83.3000
582	SNGL	433	1966	15.843	1	5	0	21.252	15.843	169.6	41.2	4022001	83.2000
583	SNGL	433	1967	15.860	0	0	0	16.235	15.860	168.0	41.5	4117001	83.1000
584	SNGL	433	1968	15.933	1	8	0	8.748	15.933	166.8	41.8	4214001	82.9000
585	SNGL	433	1969	16.062	2	2	1	10.177	16.062	165.6	42.1	4313001	82.8000
586	SNGL	433	1970	16.239	0	0	0	21.777	16.239	164.4	42.4	4415001	82.7000
587	SNGL	433	1971	16.752	0	0	0	17.567	16.752	163.2	42.7	4519001	82.5000
588	SNGL	433	1972	16.786	0	0	0	31.291	16.786	162.0	43.0	4625001	82.3000
589	SNGL	433	1973	16.637	0	0	0	23.239	16.637	160.4	43.4	4734001	82.0000
590	SNGL	433	1974	17.550	0	0	0	45.218	17.550	158.8	43.7	4846001	81.8000
591	SNGL	433	1975	18.939	0	0	0	47.976	18.939	157.2	44.1	4960001	81.6000
592	SNGL	433	1976	18.539	0	0	0	31.841	18.539	155.6	44.4	5099001	81.4000
593	SNGL	433	1977	17.806	0	0	0	42.382	17.806	154.0	44.8	5244001	81.2000
594	SNGL	433	1978	19.812	0	0	0	19.144	19.812	151.6	45.0	5394001	81.0000
595	SNGL	433	1979	18.513	0	0	0	20.590	18.513	149.2	45.1	5548001	80.8000
596	SNGL	433	1980	24.536	1	1	0	-2.488	24.536	146.8	45.1	5706001	80.6000
597	SNGL	433	1981	22.689	0	0	0	-19.438	22.689	144.4	45.2	5869001	80.4150
598	SNGL	433	1982	21.324	0	0	0	1.916	21.324	142.0	45.3	6036001	80.2287
599	SRLE	451	1960	-23.810	0	0	0	-53.499	-23.810	218.8	31.8	2239001	81.3000
600	SRLE	451	1961	-18.979	0	0	0	-46.675	-18.979	217.4	32.0	2273001	80.7000
601	SRLE	451	1962	-14.442	0	0	0	-40.224	-14.442	216.0	32.2	2308001	80.1000
602	SRLE	451	1963	-10.200	0	0	0	-34.147	-10.200	213.8	32.4	2346001	79.8000
603	SRLE	451	1964	-6.253	0	0	0	13.207	-6.253	211.2	32.6	2385001	79.0000
604	SRLE	451	1965	-2.601	0	0	0	13.220	-2.601	208.8	32.8	2425001	78.4000
605	SRLE	451	1966	0.757	0	0	0	16.854	0.757	208.4	33.0	2467001	77.8000

OBS	ABBRVWH	COUNTRY	YEAR	GCR	PTO	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
606	SRLE	451	1967	3.82	0	0	4	12.07	3.82	204.0	33.1	2632001	77.2000
607	SRLE	451	1968	6.59	0	0	2	10.82	6.59	201.8	33.4	2674001	76.7000
608	SRLE	451	1969	9.06	0	0	0	19.65	9.06	199.6	33.7	2718001	76.1000
609	SRLE	451	1970	11.24	0	0	0	21.12	11.24	197.4	34.0	2762001	75.5000
610	SRLE	451	1971	13.12	0	0	2	16.53	13.12	195.2	34.3	2814001	74.9000
611	SRLE	451	1972	14.71	0	0	0	4.48	14.71	193.0	34.5	2868001	74.3000
612	SRLE	451	1973	16.00	0	0	0	8.56	16.00	190.4	34.8	2922001	73.8000
613	SRLE	451	1974	19.19	0	0	0	4.80	19.19	187.8	35.2	2978001	73.2000
614	SRLE	451	1975	16.94	0	0	0	12.26	16.94	185.2	35.5	3026001	72.6000
615	SRLE	451	1976	15.55	0	0	0	7.81	15.55	182.6	35.8	3075001	72.0000
616	SRLE	451	1977	16.04	1	0	7	8.02	16.04	180.0	36.1	3125001	71.4000
617	SRLE	451	1978	19.95	0	0	0	15.55	19.95	177.4	36.4	3175001	70.8000
618	SRLE	451	1979	18.72	2	0	0	15.87	18.72	174.8	36.7	3227001	70.2000
619	SRLE	451	1980	17.06	1	1	0	9.24	17.06	172.2	37.0	3279001	69.6000
620	SRLE	451	1981	18.33	0	3	0	17.81	18.33	169.6	37.2	3352001	69.0000
621	SRLE	451	1982	11.80	0	0	0	1.88	11.80	167.0	37.7	3425001	68.4000
622	SYRA	652	1960	-104.83	0	0	0	1732.93	-104.83	133.0	49.7	4561001	54.2000
623	SYRA	652	1961	-88.88	7	0	203	1550.08	-88.88	129.0	50.3	4709001	53.8000
624	SYRA	652	1962	-73.86	1	2	12	1378.25	-73.86	125.0	50.8	4857001	53.4000
625	SYRA	652	1963	-59.78	17	0	200	26.55	-59.78	121.4	51.3	5008001	53.0000
626	SYRA	652	1964	-46.65	1	12	878	25.14	-46.65	117.8	51.9	5164001	52.8000
627	SYRA	652	1965	-34.45	5	2	1	23.84	-34.45	114.2	52.5	5325001	52.2000
628	SYRA	652	1966	-23.19	0	0	400	15.39	-23.19	110.6	53.1	5484001	51.8000
629	SYRA	652	1967	-12.88	1	1	0	22.40	-12.88	107.0	53.7	5680001	51.4000
630	SYRA	652	1968	-3.50	1	0	0	29.35	-3.50	103.2	54.3	5867001	51.0000
631	SYRA	652	1969	4.94	0	0	0	38.33	4.94	99.4	54.9	6059001	50.6000
632	SYRA	652	1970	12.44	0	0	0	34.96	12.44	95.6	55.5	6258001	50.2000
633	SYRA	652	1971	19.00	0	0	1	39.61	19.00	91.8	56.1	6478001	48.4000
634	SYRA	652	1972	25.12	0	0	1	67.00	25.12	88.0	56.7	6706001	46.6000
635	SYRA	652	1973	27.74	1	0	62	40.85	27.74	84.4	57.3	6941001	44.7000
636	SYRA	652	1974	30.24	1	0	0	110.22	30.24	80.8	57.9	7185001	42.9000
637	SYRA	652	1975	41.95	0	0	0	148.35	41.95	77.2	58.5	7438001	41.1000
638	SYRA	652	1976	38.98	0	0	11	200.81	38.98	73.6	59.1	7692001	39.3000
639	SYRA	652	1977	38.18	0	0	12	114.43	38.18	70.0	59.8	7955001	37.6000
640	SYRA	652	1978	31.80	0	0	0	159.02	31.80	67.8	60.3	8228001	35.8000
641	SYRA	652	1979	39.62	3	0	0	115.28	39.62	65.6	60.8	8509001	34.1000
642	SYRA	652	1980	38.05	1	1	0	181.41	38.05	63.4	61.3	8800001	32.3000
643	SYRA	652	1981	32.23	1	0	0	91.53	32.23	61.2	61.8	9110001	30.5464
644	SYRA	652	1982	29.12	0	0	0	203.19	29.12	59.0	62.6	9434001	28.7817
645	UK	200	1960	56.59	14	0	0	236.88	56.59	22.5	70.6	52559024	4.0000
646	UK	200	1961	53.64	15	0	1	262.14	53.64	22.1	70.7	52954016	3.9000
647	UK	200	1962	50.89	13	0	0	254.95	50.89	22.3	70.7	53414016	3.8000
648	UK	200	1963	48.34	6	0	0	271.48	48.34	21.8	70.8	53691024	3.6000
649	UK	200	1964	45.99	3	0	0	324.02	45.99	20.6	71.0	54033024	3.5000
650	UK	200	1965	43.85	13	0	0	349.15	43.85	19.6	71.1	54378016	3.4000
651	UK	200	1966	41.91	8	0	0	374.60	41.91	19.6	71.2	54653024	3.3000
652	UK	200	1967	40.17	16	0	0	380.97	40.17	18.8	71.3	54933024	3.2000
653	UK	200	1968	38.63	28	5	0	375.09	38.63	18.7	71.4	55157024	3.0000
654	UK	200	1969	37.29	25	2	16	415.89	37.29	18.6	71.6	55372016	2.9000
655	UK	200	1970	37.15	28	6	23	456.86	37.15	18.5	71.7	55522016	2.8000
656	UK	200	1971	34.93	24	5	154	514.21	34.93	17.9	71.8	55942016	2.8000
657	UK	200	1972	33.32	130	14	361	530.52	33.32	17.5	72.0	56120016	2.8000
658	UK	200	1973	31.41	36	10	236	629.65	31.41	17.2	72.1	56259024	2.7000
659	UK	200	1974	35.10	167	78	200	592.90	35.10	16.8	72.2	56272016	2.7000
660	UK	200	1975	35.52	30	3	194	701.43	35.52	16.0	72.4	56257024	2.7000

OBS	ABBRVWH	COUNTRY	YEAR	GCR	PTD	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
661	UK	200	1976	34.922	55	0	205	764.42	34.922	14.5	72.5	56246016	2.7000
662	UK	200	1977	34.864	36	10	65	925.70	34.864	14.1	72.7	56220016	2.7000
663	UK	200	1978	33.140	5	0	0	1194.87	33.140	13.3	72.9	56210016	2.6000
664	UK	200	1979	33.126	17	0	0	1493.12	33.126	12.9	73.0	56274016	2.6000
665	UK	200	1980	35.889	16	1	0	1827.50	35.889	12.1	73.8	56360016	2.6000
666	UK	200	1981	36.633	28	1	0	1634.63	36.633	11.2	73.4	56348016	2.5536
667	UK	200	1982	39.482	22	1	0	1504.54	39.482	11.0	73.7	56341024	2.5221
668	UPVL	439	1960	-8.992	0	0	0	-1.23	-8.992	217.0	36.4	4630001	90.3000
669	UPVL	439	1961	-6.602	0	0	0	-0.65	-6.602	212.0	38.0	4713001	90.1000
670	UPVL	439	1962	-4.334	0	0	0	-0.50	-4.334	207.0	39.5	4804001	89.9000
671	UPVL	439	1963	-2.190	0	0	0	-0.37	-2.190	202.2	40.5	4900001	89.7000
672	UPVL	439	1964	-0.169	0	0	0	0.74	-0.169	197.4	40.8	5000001	89.5000
673	UPVL	439	1965	1.729	0	0	0	2.02	1.729	192.6	41.1	5103001	89.3000
674	UPVL	439	1966	3.504	5	0	0	1.68	3.504	187.8	41.4	5207001	89.1000
675	UPVL	439	1967	5.156	0	0	0	-0.22	5.156	183.0	41.7	5332001	88.9000
676	UPVL	439	1968	6.685	0	0	0	0.16	6.685	178.8	42.0	5435001	88.7000
677	UPVL	439	1969	8.090	0	0	0	-0.24	8.090	174.6	42.2	5539001	88.5000
678	UPVL	439	1970	9.373	0	0	0	0.20	9.373	170.4	42.5	5645001	88.3000
679	UPVL	439	1971	10.532	0	0	0	0.58	10.532	166.2	42.8	5759001	88.1000
680	UPVL	439	1972	11.569	0	0	0	2.55	11.569	162.0	43.1	5875001	88.0000
681	UPVL	439	1973	12.929	0	0	0	4.40	12.929	161.0	43.2	5993001	87.8000
682	UPVL	439	1974	13.366	0	0	0	11.17	13.366	160.0	43.2	6113001	87.7000
683	UPVL	439	1975	12.510	0	0	0	0.59	12.510	159.0	43.2	6236001	87.5000
684	UPVL	439	1976	14.090	0	1	0	6.47	14.090	158.0	43.2	6372001	87.3000
685	UPVL	439	1977	17.088	0	0	0	-4.01	17.088	157.0	43.2	6511001	87.2000
686	UPVL	439	1978	14.789	1	0	0	-4.43	14.789	155.8	43.3	6653001	87.0000
687	UPVL	439	1979	14.463	0	0	0	-9.96	14.463	154.2	43.6	6799001	86.9000
688	UPVL	439	1980	16.008	0	7	0	-16.55	16.008	152.8	43.8	6947001	86.7000
689	UPVL	439	1981	15.263	1	0	0	-16.42	15.263	151.4	44.1	7125001	86.5800
690	UPVL	439	1982	15.100	0	0	0	-17.41	15.100	150.0	44.5	7308001	86.4057
691	URGY	165	1960	25.459	1	1	0	59.28	25.459	50.0	67.8	2538001	21.3000
692	URGY	165	1961	24.857	6	0	1	106.41	24.857	49.0	68.1	2563001	21.0000
693	URGY	165	1962	24.300	2	1	0	77.13	24.300	48.0	68.3	2593001	20.7000
694	URGY	165	1963	23.789	0	0	0	78.25	23.789	48.0	68.4	2626001	20.5000
695	URGY	165	1964	23.322	0	0	0	70.72	23.322	48.0	68.5	2660001	20.2000
696	URGY	165	1965	22.901	0	2	0	66.03	22.901	48.0	68.5	2693001	19.9000
697	URGY	165	1966	22.525	1	0	0	93.87	22.525	48.0	68.6	2724001	19.6000
698	URGY	165	1967	22.195	2	3	0	80.19	22.195	48.0	68.8	2746001	19.4000
699	URGY	165	1968	21.909	1	4	4	74.38	21.909	47.8	68.8	2770001	19.1000
700	URGY	165	1969	21.669	2	13	5	87.14	21.669	47.6	68.7	2791001	18.9000
701	URGY	165	1970	21.474	3	0	6	86.89	21.474	47.4	68.7	2808001	18.6000
702	URGY	165	1971	21.325	4	0	2	113.91	21.325	47.2	68.8	2823001	18.3000
703	URGY	165	1972	22.303	2	1	29	99.42	22.303	47.0	68.8	2833001	18.0000
704	URGY	165	1973	21.476	3	8	5	143.71	21.476	46.4	68.9	2837001	17.7000
705	URGY	165	1974	19.996	0	0	5	118.79	19.996	45.8	69.1	2836001	17.4000
706	URGY	165	1975	18.528	1	0	0	126.39	18.528	45.2	69.2	2829001	17.1000
707	URGY	165	1976	22.092	2	0	4	187.01	22.092	44.6	69.4	2847001	16.8000
708	URGY	165	1977	22.646	0	0	0	182.68	22.646	44.0	69.5	2862001	16.5000
709	URGY	165	1978	22.318	0	0	0	240.33	22.318	41.2	70.0	2877001	16.3000
710	URGY	165	1979	21.001	0	0	0	325.29	21.001	38.4	70.7	2892001	16.0000
711	URGY	165	1980	22.257	0	0	0	409.37	22.257	35.6	71.3	2908001	15.7000
712	URGY	165	1981	23.741	0	0	0	441.11	23.741	32.8	72.0	2927001	15.4400
713	URGY	165	1982	21.278	0	0	0	354.23	21.278	30.0	73.1	2947001	15.1857
714	VNZL	101	1960	-23.817	8	1	27	337.70	-23.817	79.4	58.5	7502001	33.4000
715	VNZL	101	1961	-17.814	17	3	35	383.18	-17.814	76.2	60.1	7775001	32.8000

OBS	ABBRVWH	COUNTRY	YEAR	GCR	PTD	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
716	VNZL	101	1962	-12.162	3	2	820	396.38	-12.162	73.0	60.7	8058001	31.8000
717	VNZL	101	1963	-6.861	0	1	82	413.72	-6.861	70.4	61.3	8351001	31.1000
718	VNZL	101	1964	-1.911	0	1	36	335.08	-1.911	67.8	61.8	8655001	30.4000
719	VNZL	101	1965	2.687	1	2	26	314.48	2.687	65.2	62.4	8970001	29.6000
720	VNZL	101	1966	6.934	0	0	10	315.70	6.934	62.6	62.9	9275001	28.9000
721	VNZL	101	1967	10.829	0	0	21	310.15	10.829	60.0	63.5	9613001	28.2000
722	VNZL	101	1968	14.373	1	0	23	333.53	14.373	57.8	64.0	9963001	27.4000
723	VNZL	101	1969	17.566	1	0	18	335.68	17.566	55.6	64.5	10325001	26.7000
724	VNZL	101	1970	19.805	1	0	0	373.92	19.805	53.4	65.0	10804001	26.0000
725	VNZL	101	1971	21.853	3	0	0	417.90	21.853	51.2	65.5	10987001	25.0000
726	VNZL	101	1972	21.525	1	0	12	424.02	21.525	49.0	66.0	11385001	24.0000
727	VNZL	101	1973	23.217	1	0	3	561.15	23.217	47.8	66.4	11796001	22.9000
728	VNZL	101	1974	40.158	0	0	0	1042.78	40.158	46.6	66.7	12223001	21.9000
729	VNZL	101	1975	35.956	0	0	0	845.21	35.956	45.4	67.0	12665001	20.9000
730	VNZL	101	1976	29.596	1	0	0	860.61	29.596	44.2	67.3	13105001	19.9000
731	VNZL	101	1977	27.592	0	0	8	904.25	27.592	43.0	67.8	13561001	18.9000
732	VNZL	101	1978	25.379	0	0	0	834.14	25.379	42.2	67.9	14032001	18.0000
733	VNZL	101	1979	24.605	0	0	0	1117.57	24.605	41.4	68.1	14519001	17.0000
734	VNZL	101	1980	26.280	0	0	0	1297.91	26.280	40.6	68.4	15024001	16.0000
735	VNZL	101	1981	34.269	0	0	0	1236.37	34.269	39.8	68.6	15457001	15.0762
736	VNZL	101	1982	28.848	0	0	0	972.97	28.848	39.0	69.0	15902001	14.1350
737	YGSL	345	1960	14.498	0	0	0	187.33	14.498	87.7	62.9	18402016	63.7000
738	YGSL	345	1961	16.049	0	0	0	199.87	16.049	82.0	63.8	18612016	62.3000
739	YGSL	345	1962	17.410	0	0	0	254.19	17.410	84.2	64.3	18819024	60.9000
740	YGSL	345	1963	18.579	0	0	0	310.95	18.579	77.5	64.8	19029024	59.6000
741	YGSL	345	1964	19.557	0	0	0	367.69	19.557	75.8	65.2	19222016	58.2000
742	YGSL	345	1965	20.344	0	0	0	188.06	20.344	71.8	65.6	19434016	56.8000
743	YGSL	345	1966	20.939	0	0	5	120.61	20.939	62.1	66.0	19644016	55.4000
744	YGSL	345	1967	21.342	0	1	1	135.54	21.342	62.1	66.4	19840016	54.0000
745	YGSL	345	1968	21.553	8	1	1	144.05	21.553	58.6	66.8	20029024	52.6000
746	YGSL	345	1969	21.573	2	0	1	160.47	21.573	57.3	67.2	20209024	51.2000
747	YGSL	345	1970	20.152	1	0	0	182.36	20.152	55.5	67.5	20371024	49.8000
748	YGSL	345	1971	19.405	3	1	0	190.83	19.405	49.5	67.9	20572016	48.0000
749	YGSL	345	1972	20.716	2	0	21	194.59	20.716	44.4	68.2	20772016	46.3000
750	YGSL	345	1973	19.911	2	0	0	239.87	19.911	40.0	68.4	20956016	44.5000
751	YGSL	345	1974	21.877	0	0	0	258.57	21.877	40.9	68.5	21164016	42.8000
752	YGSL	345	1975	21.800	5	0	0	372.18	21.800	39.7	68.6	21365024	41.0000
753	YGSL	345	1976	20.956	1	0	0	507.20	20.956	36.7	68.6	21573024	39.3000
754	YGSL	345	1977	9.575	1	0	0	620.55	9.575	35.5	68.7	21775024	37.5000
755	YGSL	345	1978	8.834	0	0	0	736.88	8.834	33.8	68.8	21968016	35.8000
756	YGSL	345	1979	9.050	0	0	0	972.64	9.050	32.7	68.8	22166016	34.0000
757	YGSL	345	1980	7.589	1	0	0	1167.36	7.589	31.4	68.9	22304016	32.3000
758	YGSL	345	1981	7.897	3	0	0	1162.65	7.897	30.6	68.9	22471024	30.5485
759	YGSL	345	1982	7.323	2	0	0	1014.26	7.323	29.9	69.0	22646016	28.8106
760	ZAIR	490	1960	50.682	15	5	1220	29.17	50.682	148.0	42.0	15909001	84.9000
761	ZAIR	490	1961	46.389	0	6	2349	18.70	46.389	147.0	42.2	16254001	84.3000
762	ZAIR	490	1962	42.351	1	0	1085	14.80	42.351	146.0	42.4	16580001	83.7000
763	ZAIR	490	1963	38.567	2	0	3578	94.94	38.567	144.2	42.6	16895024	83.2000
764	ZAIR	490	1964	35.039	1	0	3980	44.10	35.039	142.4	42.9	17208016	82.6000
765	ZAIR	490	1965	31.765	0	1	953	53.11	31.765	140.6	43.2	17529024	82.0000
766	ZAIR	490	1966	28.746	0	0	3	42.17	28.746	138.8	43.5	17865024	81.4000
767	ZAIR	490	1967	25.982	0	1	240	29.05	25.982	137.0	43.8	18285024	80.8000
768	ZAIR	490	1968	23.473	1	0	0	29.46	23.473	135.0	44.2	18675024	80.3000
769	ZAIR	490	1969	21.219	0	0	12	37.73	21.219	133.0	44.6	19074016	79.7000
770	ZAIR	490	1970	19.220	0	0	0	39.48	19.220	131.0	45.0	19481024	79.1000

OBS	ABBRVWH	COUNTRY	YEAR	GCR	PTD	PST	DTH	SAV	GCR	IMR	LEX	POP	LFA
771	ZAIR	490	1971	16.4203	1	0	3	39.679	16.4203	129.0	45.4	20081024	78.4000
772	ZAIR	490	1972	15.5820	0	0	0	39.258	15.5820	127.0	45.8	20699024	77.6000
773	ZAIR	490	1973	15.6064	0	0	0	52.559	15.6064	125.0	46.2	21336016	76.9000
774	ZAIR	490	1974	17.1218	0	0	0	66.097	17.1218	123.0	46.6	21992016	76.1000
775	ZAIR	490	1975	13.3870	0	0	0	46.469	13.3870	121.0	47.0	22669024	75.4000
776	ZAIR	490	1976	10.4893	0	0	0	36.707	10.4893	119.0	47.4	23367024	74.6000
777	ZAIR	490	1977	10.9834	0	0	100	51.607	10.9834	117.0	47.8	24086016	73.8000
778	ZAIR	490	1978	9.9130	1	0	0	52.402	9.9130	115.0	48.2	24827024	73.1000
779	ZAIR	490	1979	13.2015	0	0	0	54.912	13.2015	113.0	48.6	25591024	72.3000
780	ZAIR	490	1980	16.1537	1	1	0	53.378	16.1537	111.0	49.0	26379024	71.5000
781	ZAIR	490	1981	14.8220	1	0	0	31.487	14.8220	109.0	49.4	27166016	71.2350
782	ZAIR	490	1982	13.7821	0	0	0	33.082	13.7821	107.0	50.0	27977024	70.7150
783	ZMBA	551	1960	-5.2431	8	0	1	88.161	-5.2431	134.0	41.7	3141001	80.8000
784	ZMBA	551	1961	-1.3284	7	1	22	78.797	-1.3284	132.0	42.1	3230001	80.4000
785	ZMBA	551	1962	2.3341	0	0	16	67.701	2.3341	130.0	42.6	3321001	80.0000
786	ZMBA	551	1963	5.7445	0	0	9	88.845	5.7445	127.0	43.0	3414001	79.5000
787	ZMBA	551	1964	8.9027	0	6	1270	84.572	8.9027	124.0	43.5	3511001	79.1000
788	ZMBA	551	1965	11.8087	0	0	0	117.537	11.8087	121.0	44.0	3609001	78.7000
789	ZMBA	551	1966	14.4626	0	5	1	148.108	14.4626	118.0	44.5	3711001	78.3000
790	ZMBA	551	1967	16.8643	0	0	0	141.868	16.8643	115.0	45.0	3816001	77.9000
791	ZMBA	551	1968	19.0138	0	0	0	162.694	19.0138	112.0	45.5	3923001	77.4000
792	ZMBA	551	1969	20.9112	0	0	0	243.277	20.9112	109.0	45.9	4034001	77.0000
793	ZMBA	551	1970	22.5564	1	0	0	193.788	22.5564	106.0	46.3	4159001	76.6000
794	ZMBA	551	1971	23.9494	0	0	1	135.720	23.9494	103.0	46.7	4288001	76.3000
795	ZMBA	551	1972	22.0327	0	0	0	157.635	22.0327	100.0	47.1	4421001	75.9000
796	ZMBA	551	1973	24.1627	0	0	1	240.830	24.1627	98.8	47.5	4559001	75.6000
797	ZMBA	551	1974	34.3715	0	0	0	287.788	34.3715	97.6	47.9	470000	75.2000
798	ZMBA	551	1975	29.2040	0	0	0	106.850	29.2040	96.4	48.3	484600	74.9000
799	ZMBA	551	1976	24.2888	1	0	13	151.878	24.2888	95.2	48.7	4997001	74.5000
800	ZMBA	551	1977	26.7872	1	0	0	107.789	26.7872	94.0	49.1	5152001	74.2000
801	ZMBA	551	1978	25.2855	1	0	0	108.466	25.2855	92.8	49.4	5312001	73.8000
802	ZMBA	551	1979	23.3048	4	0	0	141.499	23.3048	91.6	49.7	5477001	73.5000
803	ZMBA	551	1980	25.8095	0	1	0	132.524	25.8095	90.4	49.9	5647001	73.1000
804	ZMBA	551	1981	23.8452	0	1	0	46.742	23.8452	89.2	50.2	5844001	72.7600
805	ZMBA	551	1982	24.1704	0	0	0	51.033	24.1704	88.0	50.8	6048001	72.4057

OBS	=	Observation number
ABBRVWH	=	Country abbreviation (see Appendix A for full names)
COUNTRY	=	Country code number
PTD	=	Protest demonstration
PST	=	Political Strikes
DTH	=	Deaths from domestic political violence
SAV	=	Savings per capita
GCR	=	Government current revenue as a percentage of Gross Domestic Product (GDP)
IMR	=	Infant mortality rate (per 1,000 infants)
LEX	=	Life expectancy at birth (years)
POP	=	Population
LFA	=	Percentage of labor in agriculture

REFERENCES

Afrifa, A. A. 1966. The Ghana Coup. London: Frank Cass.

Akaike, Hizotogu. 1969a. "Statistical Prediction Identification." Annals of the Institute of Statistical Mathematics 21:203-217.

_____. 1969b. "Fitting Autoregressions for Prediction." Annals of the Institute of Statistical Mathematics 21:243-247.

Ake, Claude. 1974. "Modernization and Political Instability: A Theoretical Exploration." World Politics 26:574-591.

Apter, David. 1965. The Politics of Modernization. Chicago: University of Chicago Press.

_____. 1970. "Political Systems and Developmental Change." In The Methodology of Comparative Research, eds. R. T. Holt and J. E. Turner. N.Y.: The Free Press.

Balestra, P., and Nerlove, M. 1966. "Pooling Cross-Section and Time-Series Data in the Estimation of a Dynamic Model: The Demand for Natural Gas." Econometrica 34:585-612.

Barrows, W. 1976. "Ethnic Diversity and Political Instability In Black Africa." Comparative Political Studies 9:139-170.

Bernstein, Henry. 1971. "Modernization Theory and the Sociological Study of Development." Journal of Development Studies 7:141-160.

Berry, W., and Feldman, S. 1985. Multiple Regression in Practice. Sage University Paper Series on Quantitative Applications in the Social Sciences. Beverly Hills: Sage Publications.

Bill, James A., and Leiden, Carl. 1979. The Politics of the Middle East. Boston: Little, Brown and Co.

Black, Cyril E. 1966. Dynamics of Modernization: A Study of Comparative History. N.Y.: Harper and Row.

Blondel, J. 1968. "Party System and Patterns of Government in Western Democracies." Canadian Journal of Political Science 1:180-203.

Brillembourg, A. and Khan, M. 1979. "The Relationship between Money, Income, and Prices: Has Money Mattered Historically? Journal of Money, Credit and Banking 11:358-365.

Burrowes, Robert. 1970. "Multiple Time-Series Analysis of National-Level Data." Comparative Political Studies 2:465-480.

Bwy, Douglas. 1968a. "Dimensions of Social Conflict in Latin America." American Behavioral Scientist 11:39-50.

_____. 1968b. "Political Instability in Latin America: The Cross-Cultural Test of the Causal Model." Latin American Research Review 3:17-66.

Cassidy, Henry. 1981. Using Econometrics. Reston, VA.: Reston Publishing.

Conway, Margaret. 1985. Political Participation in the United States. Washington, D.C.: Congressional Quarterly Inc.

Coulter, Philip. 1975. Social Mobilization and Liberal Democracy. Lexington, Mass.: D.C. Heath and Company.

Crew, Robert. 1969. "Dimensions of Public Policy: A Factor Analysis of State Expenditures." Social Science Quarterly 50:381-389.

Darrat, Ali. 1988. "Have Large Budget Deficits Caused Rising Trade Deficits? Southern Economic Journal 54:879-887.

Deutsch, Karl. 1961. "Social Mobilization and Political Development." American Political Science Review 55:493-514.

Dillion, William, and Goldstein, Mathew. 1984. Multivariate Analysis: Methods and Applications. N.Y.: John Wiley and Sons.

Duvall, Raymond, and Welfling, Mary. 1973a. "Social Mobilization, Political Institutionalization, and Conflict in Black Africa: A Simple Dynamic Model." Journal of Conflict Resolution 17:673-702.

_____. 1973b. "Determinants of Political Institutionalization in Black Africa: A Quasi-Experimental Analysis." Comparative Political Studies 5:387-417.

Eckstein, Harry. 1980. "Theoretical Approaches to Explaining Collective Political Violence." In Handbook of Political Conflict, ed. Robert Gurr. N.Y.: The Free Press.

Eisenstadt, S. N. 1964. "Modern and Conditions of Sustained Growth." World Politics 16:584-594.

Feierabend, I. and Feierabend, R. 1966. "Aggressive Behaviors within Politics, 1948-1962: A Cross-National Study." Journal of Conflict Resolution 10:249-271.

Feierabend, I., Feierabend, R., and Nesvold, B. 1969. "Social Change and Political Violence." In Violence In America: Historical and Comparative Perspectives, eds. Davis Graham and Ted Gurr. N.Y.: Frederick A Praeger.

Finer, S. E. 1962. The Man on Horseback: The Role of the Military in Politics. London: Pall Mall.

Frank, C. R. 1971. Statistics and Econometrics. New York: Holt, Rinehart and Winston, Inc.

Freeman, John. 1983. "Granger Causality and the Time Series Analysis of Political Relationships." American Journal of Political Science 27:327-358.

Freeman, John., Williams, John., and Lin, Tse-min. 1989. "Vector Autoregression and the Study of Politics." American Journal of Political Science 33:842-877.

Friedland, William. 1969. "Sociological Approach to Modernization." In Modernization By Design: Social Change in the Twentieth Century, eds. Chandler Morse et al. Ithaca and London: Cornell University Press.

Fuller, W. A. and Battese, G. E. 1974. "Estimation of Linear Models with Crossed Error Structure." Journal of Econometrics 2:67-78.

Glejser, H. 1969. "A New Test for Heteroscedasticity." Journal of American Statistics Association 64:316-323.

Granger, C. W. 1969. "Investigating Causal Relations by Econometric Models and Cross-Spectral Methods." Econometrica 37:424-438.

_____. 1980. "Testing for Causality." Journal of Economic Dynamics and Control 2:329-352.

_____. 1981. "Some Properties of Time Series Data and Their Use in Econometric Model Specification." Journal of Econometrics 2:111-120.

Granger, C. W., and Newbold, P. 1974. "Spurious Regressions in Econometrics." Journal of Econometrics 2:111-120.

_____. 1977. Forecasting Economic Time-Series. N.Y.: Academic Press.

Guilkey, D. and Salemi, M. 1982. "Small Sample Properties of Three Tests for Granger-Causal Ordering in a Bivariate Stochastic System." The Review of Economics and Statistics 64:668-680.

Gujarati, Damodar. 1978. Basic Econometrics. New York: McGraw-Hill, Inc.

Gurr, Ted Robert. 1968. "A Causal Model of Social Strife: A Comparative Analysis Using New Indices." American Political Science Review 62:1104-1124.

Halpern, Manfred. 1963. The Politics of Social Change in the Middle East and North Africa. Princeton: Princeton University Press.

Hibbs, Douglas. 1973. Mass Political Violence: A Cross-National Causal Analysis. N.Y.: Wiley.

Hoadley, Stephen. 1973. "Social Complexity, Economic Development, and Military Coups d'Etat in Latin America and Asia." Journal of Peace Research 10:119-120.

Hoan, B. 1972. "Social Mobilization and Development." Philippine Journal of Public Administration 16:239-250.

Hsiao, Cheng. 1981. "Autoregressive Modelling and Money-Income Causality Detection." Journal of Monetary Economics 8:85-106.

Hudson, Michael. 1977. Arab Politics: The Search for Legitimacy. New Haven: Yale University Press.

Huntington, Samuel. 1965. "Political Development and Political Decay." World Politics 18:378-414.

_____. 1968. Political Order in Changing Societies. New Haven: Yale University Press.

_____. 1971. "The Change to Change: Modernization, Development, and Politics." Comparative Politics 3:282-320.

Jackman, Robert. 1978. "The Predictability of Coups d'Etat: A Model with Africa." American Political Science Review 72:1262-1275.

Janda, K., Berry, J., and Goldman, J. 1989. The Challenge of Democracy: Government in America. Boston: Houghton Mifflin Company.

Kachigan, S. K. 1982. Multivariate Statistical Analysis: A Conceptual Introduction. N.Y.: Radius Press.

Kenkel, James. 1984. Introductory Statistics for Management and Economics. Boston: Duxbury Press.

Kmenta, Jan. 1971. Elements of Econometrics. N.Y.: Macmillan.

Koutsoyiannis, A. 1971. Theory of Econometrics: An Introductory Exposition of Econometric Methods. London: The Macmillan Press Ltd.

Landsberger, Henry and McDaniel, Tim. 1976. "Hypermodernization in Chile, 1970-1973." World Politics 28:502-541.

LaPalombara, Joseph. 1966. "Public Administration and Political Change: A Theoretical Overview." In Empathy and Ideology, eds. Charles Press and Alan Arian. Chicago: Rand McNally and Company.

Levenbach, Hans and Cleary, James. 1984. The Modern Forecaster: The Forecasting Process Through Data Analysis. CA: Lifetime Learning Publications.

Levy, Marion, Jr. 1966. Modernization and the Structures of Societies. Princeton. N.J.: Princeton University Press.

Lewis, John. 1969. "The Social Limits of Politically Induced Change." In Modernization by Design: Social Change in the Twentieth Century, eds. Chandler Morse et al. Ithaca and London: Cornell University Press.

Linehan, William. 1976. "Models for the Measurement of Political Instability." Political Methodology 3:441-485.

Lipset, Seymour Martin. 1960. Political Man: The Social Basis of Politics. Garden City, N.Y.: Doubleday.

Liu, Ben-Chieh. 1976. Quality of Life Indicators in U.S.A. Metropolitan Areas: A Statistical Analysis. N.Y.: Praeger Publishers.

Lutkepohl, H. 1982. "Non-Causality Due to Omitted Variables." Journal of Econometrics 19:367-378.

Maddala, G. S. 1977. Econometrics. N.Y.: McGraw-Hill, Inc.

McGowan, Pat and Johnson, Thomas. 1984. "African Military Coups d'Etat and Underdevelopment. A Quantitative Historical Analysis." The Journal of Modern African Studies 22:633-666.

Merton, Robert. 1957. Social Theory and Social Structure. N.Y.: Free Press.

Montgomery, Douglas and Peck, Elizabeth. 1982. Introduction To Linear Regression Analysis. N.Y.: John Wiley and Sons.

Morrison, Donald and Stevenson, Hugh. 1972. "Integration and Instability: Patterns of African Political Development." American Political Science Review 66:902-927.

Murray, Tracy and Ginman, Peter. 1976. "An Empirical Examination of the Traditional Aggregate Import Demand Model." The Review of Economics and Statistics 58:75-80.

Nelson, C. R. and Plosser, G. J. 1982. "Trends and Random Walks in Macroeconomic Time Series." Journal of Monetary Economics 10:139-162.

Nordlinger, Eric. 1977. Soldiers in Politics: Military Coups and Governments. Englewood Cliffs: Prentice-Hall.

Parks, R. W. 1967. "Efficient Estimation of a System of Regression Equations when Distributions Are Both Serially and Contemporaneously Correlated." Journal of the American Statistical Association 62:500-509.

Parsons, Talcott. 1971. The System of Modern Societies. Englewood Cliffs, N.J.: Prentice-Hall.

_____. 1967. The Social System. London: Routledge and Kegan Paul.

Pierce, David. 1977. "Relationship--and the Lack Thereof--Between Economic Time Series, with special Reference to Money and Interest Rates." Journal of the American Statistical Association 72:11-22.

Pindyck, Robert and Rubinfeld, Daniel. 1976. Econometric Models. N.Y.: McGraw-Hill Inc.

Przeworski, Adam and Teune, Henry. 1970. The Logic of Comparative Social Inquiry. N.Y.: Wiley-Interscience.

Putnam, Robert. 1967. "Toward Explaining Military Intervention in Latin American Politics." World Politics 20:83-110.

Pye, Lucian. 1962. Politics, Personality, and Nation Building: Burma's Search for Identity. NY:Yale University Press.

Ravenhill, John. 1980. "Comparing Regime Performances in Africa: The Limitations of Cross-National Aggregate Analysis." Journal of Modern Africa 18:99-126.

Rostow, W. W. 1960. The Stages of Economic Growth. Cambridge: Cambridge University Press.

Rubinson, Richard. 1976. "The World-Economy and the Distribution of Income within States: A Cross-National Study." American Sociological Review 41:638-659.

Rubinson, Richard and Quinlan, Daniel. 1977. "Democracy and Social Inequality: A Reanalysis." American Sociological Review 42:611-623.

Ruhl, Mark. 1975. "Social Mobilization and Political Instability in Latin America: A Test of Huntington's Theory." Inter-American Economic Affairs 29:3-21.

Sanders, David. 1981. Patterns of Political Instability. N.Y.: St. Martin's Press.

SAS Institute Inc. 1986. Suggi Supplemental Library User's Guide, Version 5 Edition. Cary, NC: SAS Institute Inc.

Schneider, Peter and Schneider, Anne. 1971. "Social Mobilization, Political Institutions, and Political Violence, a Cross-National Analysis." Comparative Political Studies 4:69-90.

Sewell, John. 1977. The United States and World Development Agenda 1977. N.Y.: Praeger Publishers.

_____. 1980. The United States and World Development Agenda 1980. N.Y.: Praeger Publishers.

Shamir, Michael. 1983. "Investigating Relationships: A New Time-Series Methodology and a Political Application." Political Methodology 9:171-200.

Sheehan, Richard. 1983. "Money-Income Causality: Results for Six Countries." Journal of Macroeconomics 5:473-494.

Shipman, M.D. 1971. Education and Modernization. London: Faber and Faber.

Sigelman, Lee. 1979. "Understanding Political Instability: An Evaluation of the Mobilization-Institutionalization Approach." Comparative Political Studies 12:205-228.

Stimson, James. 1985. "Regression in Space and Time: A Statistical Essay." American Journal of Political Science 29:914-947.

Studenmund, A. H. and Cassidy, H. J. 1987. Using Econometrics. Boston: Little, Brown, and Company.

Taylor, Charles and Jodice, David. 1983. World Handbook of Political and Social Indicators: Political Protests and Government Change. New Haven: Yale University Press.

Thompson, William. 1973. The Grievances of Military Coup-Makers. Beverly Hills: Sage.

Van Meter, Donald. 1974. "Alternative Methods of Measuring Change: What Difference Does it Make?" Political Methodology 1:125-140.

Weiner, Myron. 1966. Modernization: The Dynamics of Growth. London: Basic Books.

Weiner, M. and Hoselitz, F. 1961. "Economic Development and Political Stability in India." Dissent 8:173-184.

Willett, John and Singer, Judith. 1988. "Another Cautionary Note About R-squared: Its Use in Weighted Least-Squares Regression Analysis." American Statistical Association 42:236-238.

World Bank. 1989. World Tables 1988-1989 Edition. Washington, D.C.: Johns Hopkins University Press.

Yough, Syng Nam and Sigelman, Lee. 1976. "Mobilization, Institutionalization, Development, and Instability: A Note of Reappraisal." Comparative Political Studies 9:223-232.

Younger, Mary. 1979. Handbook For Linear Regression. Boston: Duxbury Press.

Zapf, W. and Flora, P. 1971. "Some Problems of Time-Series Analysis in Research on Modernization." Social Science Information 10:53-102.

Zartman, W., Paul, J., and Entelis, J. 1971. "An Economic Indicator of Socio-Political Unrest." International Journal of Middle East Studies 2:293-310.

Zeller, A. 1979. "Causality and Econometrics." In Carnegie-Rochester Conference Series of Public Policy, eds. Karl Brunner and Allan Meltzer.

Zolberg, A. 1966. Creating Political Order: The Party States of West Africa. Chicago: Rand McNally.

Zuk, Gary and Thompson, William. 1982. "The Post-Coup Military Spending Question: A Pooled Cross-Sectional Time-Series Analysis." American Political Science Review 76:60-74.