RESEARCH MEMORANDUM

ECONOMIC DEVELOPMENT AND MUTUAL SECURITY:
Some Problems of U.S. Foreign Assistance
Programs in Southeast Asia

Charles Wolf, Jr.

RM-1778-RC

14 August 1956

Assigned to_____

This is a working paper. It may be expanded, modified, or withdrawn at any time.

The RAND Corporation
1700 MAIN ST. • SANTA MONICA • CALIFORNIA

Copyright 1956
The RAND Corporation

SUMMARY

The following pages contain the first part of a RAND-sponsored study of U.S. foreign assistance programs in Southeast Asia. Part One focusses on the broad problem of quantitative relationships between economic development and political behavior. Implicit in this approach is the notion that assumptions about these relationships underlie much recent thinking and planning concerning aid programs. Consequently, there is a fundamental need to formulate the relationships explicitly and, if possible, to test their validity.

Chapter 1 is a general introduction to the study as a whole. Chapter 2 presents an experimental model of the relationship between political vulnerability, on the one hand, and three complex variables, on the other: economic aspirations, the level of living, and economic expectations. The implication of the model is that economic development primarily affects political vulnerability by acting on these variables. Each of the variables is formulated in terms of measurable indicators, and the rationale for selecting the indicators is discussed at some length.

Chapter 3 attempts to show how the model can be applied. Using Indian data, a preliminary test of the model is made. The hypothesis tested is that vulnerability indices, derived from the model, are of value in explaining the regional distribution of communist voting in the Indian national elections of 1951-52. The test results tend to support the hypothesis. Further testing is needed, as well as more extensive consideration of how the model might be used to assist in foreign aid planning.

The second part of the study is expected to be concerned with the historical record of U.S. aid programs in Southeast Asia. Later in the study, it is planned to give attention to the problem of devising criteria to help in allocating aid funds among different countries and different programs in the region.

CONTENTS

	Page
SUMMARY	ii
Chapter	
1. INTRODUCTION--THE PROBLEM OF AID ALLOCATION	1
Part One: ECONOMIC CHANGE AND POLITICAL BEHAVIOR	8
2. ECONOMIC INDICATORS OF POLITICAL VULNERABILITY--AN EXPERIMENTAL APPROACH IN THE ASIAN SETTING	9
A. A Note on Method	9
B. Southeast Asia: A Background Summary	12
C. The Vulnerability Function	19
D. The Aspirations Function	28
E. The Level of Living Function	41
F. The Expectations Function	50
G. A Summary of the Model	53
3. A PRELIMINARY TEST OF THE MODEL	57
A. The Test Design	57
B. The Electoral Data	58
C. Data for the Vulnerability Model	59
D. The Statistical Model	68
E. Results of the Preliminary Tests	72

Chapter 1

INTRODUCTION--THE PROBLEM OF AID ALLOCATION

When Secretary of State Marshall delivered a commencement address in Cambridge, Massachusetts, on June 5, 1947, he initiated what was to become the European Recovery Program. At the same time, he began a foreign policy debate in the U.S. which has recurred annually, and shows promise of continuing in the indefinite future. Though the need for appropriations has remained the primary stimulus to the debate on foreign economic and military assistance, the scope has fundamentally altered. In addition to Europe, the debate now focusses on Asia and the Middle East. Instead of economic recovery, the stress is on military strength and, increasingly, on economic development. Instead of whether the U.S. should embark on foreign assistance, the debate concentrates on how much, to whom, and for what purposes assistance should be extended. It is with these latter allocative questions that the present study is mainly concerned.

One way of approaching them is, inductively, by considering actual aid figures and making intercountry and interprogram comparisons from the historical record of the past several years. Attention will be devoted to this approach later in the study to see, for example, what general criteria seem to underlie the allocative decisions that have been made. But our method will also be deductive and will proceed, as well, by considering the general problem of an optimal allocation of U.S. assistance funds. What meaning, if any, can be attached to "optimality" in this field? What are the precise objectives to be attained or maximized, and how do we calculate the costs to be minimized or incurred? And, perhaps most important, what criteria can

guide us in choosing between alternative allocative patterns? More modestly (and more accurately), we will be concerned with methods to assist in making allocative decisions in the foreign aid field, even if they fall short of assuring optimality. In this, as in many other policy problems, it is not likely that a precise optimum can be found except under assumptions so restrictive as to preclude its practical usefulness. Nor is it essential. We can be amply satisfied with helping to find a "good" or a "better", rather than the "best", allocative choice, especially if we have reason to believe that there will not be much of a payoff difference among the "good" alternatives. As in most issues of public policy, our concern is with improvement rather than perfection.

The regional focus of the present study is the mainland and island arc stretching from Pakistan in the West to the Philippines in the East, and including, besides these countries, India, Nepal, Ceylon, Burma, Thailand, Viet Nam, Cambodia, Laos, Malaya and Indonesia. In the interest of brevity, rather than precision, we shall refer to this area as Southeast Asia. Though the allocative problems which concern us are admittedly generic and global, use of the regional framework has several advantages. Southeast Asia is an area in which the grim struggle, euphemistically referred to as "competitive coexistence", is perhaps being waged most intensively. It is, consequently, the area on which foreign policy debate in the United States tends, currently and prospectively, to be concentrated. Moreover, the complex problems we are interested in are likely to be more manageable, both conceptually and programmatically, if approached in terms of an area with some important influences and interests linking the component parts. This will permit us to venture and test generalizations about the entire area using data from some

of the countries in it, with more assurance than if, for example, our "area" were the world and the components continents or other heterogeneous regions within it.

If we think of the allocative alternatives in a given region as involving various possible combination of country and program magnitudes, e.g., more to country X and less to Y, or more to economic programs and less to military programs, it is clear that the problem of a preferred allocation of foreign assistance funds is complex and ramified. What, for instance, can we say about such crucially relevant questions as the relative likelihood and timing of "limited" local aggression in Southeast Asia, forcible internal subversion, or less direct measures of communist penetration? What emphasis can we expect the adversary to assign to instruments of foreign economic policy, to organization and activity by indigenous communist parties, to external military pressure, and to Chinese economic development as an emulative example for the countries of Southeast Asia, in formulating his plans? And what assessment can we make of the probable reactions and attitudes of the Asian countries themselves (especially, but by no means exclusively, the "neutralist" countries), to any or a combination of these strategies? Whatever answers we give--and they are bound to be uncertain, at best--will significantly affect the choice of a preferred allocation.

Yet despite the relevance and importance of these questions, they do not include what is probably the major conceptual obstacle to an improved solution of the allocative problem, namely, the fact that the returns from economic assistance[1] are essentially political and qualitative rather than

1. The term "economic assistance" is used to refer to technical, as well as non-military commodity, aid. Later we will distinguish in more detail among the various categories of assistance in the foreign assistance vocabulary.

economic and quantitative. In extending economic aid, it is the purpose of the U.S. to assist "the peoples of free Asia in their efforts to attain economic and social well-being, to safeguard basic rights and liberties, and to protect their security and independence."[1] Clearly, these objectives are extremely hard to translate into measurable payoffs for we lack standards to measure the strengthening of governments, the growth of support for free political systems and values, or the winning of friendship and understanding abroad. Yet these are the returns we primarily seek through economic aid in Asia.

That economic aid, by its effect on the internal economic growth of recipient countries, is presumed to yield real political returns is a basic tenet of American foreign policy. In testifying in support of aid to Asia, for example, Secretary of State Dulles stated the principle very clearly: "We know that nations which are economically weak find it difficult to become politically strong and nationally secure. We believe that an increase in free Asia's economic strength can be another effective resistant to communism."[2] But if we accept the principle, the problem remains of how to measure these returns so that we can compare them among countries, and with returns from other types of aid within a single country.

How can we compare the qualitative political returns attributed to general economic development with the quantitative strategic returns generally

---

1. The Mutual Security Act of 1955, Public Law 138 - 84th Congress, Section 418.

2. Hearings on the Mutual Security Act of 1955, House Committee on Foreign Affairs, Washington, D. C., p. 25. The statement is typical of many others. In the same vein, see the testimony by the then-administrator of foreign aid, Harold E. Stassen, ibid, p. 55; W. A. Brown, Jr. and Redvers Opie, American Foreign Assistance, Washington, 1953, pp. 384, 387; The Communique of the Council of the Southeast Asia Treaty Organization, paragraphs 24 and 25, New York Times, March 9, 1956; and Mr. Dulles' statement in Bangkok on March 13, 1956: "Sound economic growth is of equal importance with military strength to the well-being of the free world," New York Times, March 14, 1956.

attributed to military aid? In the latter case, there tends to be acceptance of a procedure for calculating returns in terms of increased force capabilities. Within the framework of global U.S. military strategy, for example, it is generally assumed that the more military strength (e.g., in combat teams, fighter squadrons, etc.) created by a particular allocation of Mutual Defense Assistance dollars in a given region, the higher the returns. Of course, a number of objections can be raised to this simple criterion. One can grant, for example, that a country allied with the United States in the Southeast Asia Treaty Organization may be an "efficient" producer of a certain type of military force. Viewed from the standpoint of maximizing returns--calculated in force units--from military aid, the country may therefore be a good bet as a recipient of more MDAP dollars. Yet there are likely to be other side-effects which need to be considered. The country's increased military strength might, for instance, so antagonize neighboring countries as to create serious animosity toward SEATO and the United States. Under such circumstances it is by no means evident that the proximate return, in the form of increased force strength, can be considered a net contribution to broader U.S. foreign policy objectives.

In the case of economic aid, the calculation of returns is perhaps still more complex. If we pursue the military parallel, we might try to estimate the impact of aid on some such rough measures of economic growth as national (or sectoral) product, agricultural yields, or labor productivity. With such measures, the problem of allocating economic aid funds would then seem to be manageable through the use of the optimizing rules of conventional economic theory. We might say, for example, that we should seek to allocate aid so as to equalize the growth impact of marginal aid dollars in the recipient countries. The rule need only be stated to make the point that there would be at least as much objection to this approach for calculating the returns

from economic aid and for arriving at allocative decisions, as in the case of military aid. Nor is the reason hard to find. Basically, the returns we seek through economic aid cannot, in the first instance, be expressed in these strictly economic terms. To speak plainly, we seek through economic aid to reduce the appeal and the threat of communism in the underdeveloped countries, or, put more positively, to strengthen the economic foundations of free political systems in these areas.[1] We are convinced that the instrument of economic aid is directly related to achieving these objectives. We are much less clear about how and to what extent this relationship operates. Stated another way, we are not clear as to how the proximate returns from economic aid, measured in terms of various indicators of economic growth, can be related with any precision to the broader objectives we seek.

The point, and its bearing on the general allocative problem, can be stated quite simply. In the case of economic aid in the underdeveloped areas, we lack standards for adequately measuring returns. Without means of evaluating the returns from economic aid, we lack suitable criteria for selecting among alternative ways of using foreign assistance funds.

For these reasons, our approach to the allocative problem in this study will be roundabout. We will begin (Chapter 2) with a discussion of the relationship between political behavior and economic change in the context of Southeast Asia, and will suggest an experimental approach for quantifying this relationship. In Chapter 3 we will test the approach in a preliminary

---

1. The statement is intended to focus on what is in fact the primary objective of economic aid in the underdeveloped areas. It is not intended to deny that genuine humanitarian feelings and the desire to promote world trade and increase the supply of raw materials also affect U.S. interest in economic development. Foreign policy, no less than national policy, is characterized by multiplicity rather than singleness of purpose. But for analytical purposes it remains important to identify and differentiate primary and secondary objectives.

way. Implicit in this discussion, and in much of what we have already said, is an assumption that the connection between external economic aid and internal economic change is, at least from one standpoint, reciprocal. Since economic assistance is a method of affecting the pace and character of economic change, political effects ascribed generally to economic change can by extension be ascribed specifically to economic aid. For the present, however, we will be concerned with developing an analytical tool for relating political behavior and economic change, rather than attempting to apply it to the problem of aid allocation. Only after a direct look at the historical record of U. S. aid programs in Southeast Asia (Chapters 4-7) will we attempt to apply this analytical tool, along with others, to the problem of devising criteria for assisting in the allocation of aid (Chapters 8-10). Finally, we will conclude with some partial suggestions for improving and systematizing allocative decisions in relation to overall U.S. foreign policy (Chapter 11).

The word "partial" should be emphasized. The suggestions will be based on an analysis which admittedly deals with only a part of the complex environment in which foreign aid decisions must be made. Domestic political pressures within the United States, unique and unforeseen emergencies abroad, personalities and publicity at home and abroad, bargaining between agencies and governments, to mention only a few of the factors which are excluded from much of our analysis, are bound to be highly influential in allocative, as in other major public policy, decisions. Yet given the present status of precise and predictive knowledge about the influence of such factors, they remain more in the realm of the administrator's judgment than of the analyst's methodology. These and subsequent qualifying remarks should, however, be taken as a counsel of realism, not despair. With problems as complex and fluid as those we are concerned with, analysis can be an important aid to, but--one hastens to add--never a substitute for, responsible policy judgments.

Part One

ECONOMIC CHANGE AND POLITICAL BEHAVIOR

Chapter 2

ECONOMIC INDICATORS OF POLITICAL VULNERABILITY-- AN EXPERIMENTAL APPROACH IN THE ASIAN SETTING

A. A NOTE ON METHOD

In a sense, method is like fashion: the need to explain it arises only if one appears to be out of step. Our aim in this chapter is to set forth a somewhat novel and experimental method for analyzing an extremely complex subject. The method is derived partly from the factual context of Southeast Asia, partly from personal judgment as to which of the facts are strategic for the problem at hand, and partly from reasoning about the strategic facts. To make the approach operational, that is, to permit it to be tested, if only in a preliminary way, we will translate it into a mathematical model. The model, like all models, simplifies the phenomena it is concerned with. It aggregates complex interactions into a few variables. It suppresses other variables, either because they are considered of secondary importance, or because using them would make the model untestable for lack of data. It assumes other-things-equal conditions frequently, when we know that the real world which the model is trying to simulate exhibits changeability.

There is nothing new about these matters. They are the very core of analytical method. What is new is the attempt to apply them to a complex socio-economic problem like the relationship between economic change and political behavior. Since this is our intention, it is fair to raise the question of whether we are not trying to mix oil and water. How appropriate is quantitative method for the kind of problem we are interested in? What purpose can the method serve in view of the qualifications and limitations already noted?

In part, the answer is that our purpose is to stimulate further research, and future refinement of the approach we are suggesting. We want to see how and to what extent the diverse material of this problem can be treated systematically. Our aim is to begin, not to exhaust, consideration of a problem which, from an analytical standpoint, has been relatively neglected.

But our purpose is also related to more immediate and practical matters. As we have previously noted, the presumed connection between economic change and political behavior in the underdeveloped areas of the world is a basic premise of U.S. foreign policy. It affects foreign policy decisions broadly, and foreign economic aid decisions particularly--the latter perhaps most obviously and significantly each year when the budget is being considered, and the need for and allocation of new aid appropriations become dominant concerns of the Administration and Congress. As one who was, for several years, directly concerned with the planning of foreign aid budgets, the author has been impressed by the frequent, varying, often unrecognized, but always prominent, ways the premise has affected decisions. He has been equally impressed by the need, which those participating in the decisions in both Congress and the Executive Branch have frequently expressed, for some way of "getting hold" of the premise, and of moving it a step beyond hunch and guesswork. It is in terms of this need that our purpose is a practical one. By stating the premise in a quantitative form, we seek to develop an analytical tool that will enable the relationship between economic change and political behavior to be tested statistically, and, in the light of the results, to be applied to policy decisions in a more explicit and coherent way than in the past.

Of course, application of this tool, like others we shall use, must take its limitations into account. Like any construct, physical or conceptual,

analytical tools can be misused. It is permissible, in fact essential, to simplify the real world in building models. But when decisions have to be made, the simplifications of a model must be carefully reassessed to determine their relevance and importance for the problem at hand. Otherwise the model can lead to wrong answers, or can even answer the wrong questions. Analytical tools are no substitute for good judgment: in formulating questions, in assessing the validity of assumptions underlying the analysis, and in interpreting results. But by organizing a segment of reality in a clear and, we hope, quantifiable form, they can help to focus judgment where it is most needed. This is their purpose and their merit.

We have said that the method used is derived from the factual context of Southeast Asia, and in the following section the essentials of this context will be briefly summarized. In moving from factual context to analytical model, questions arise concerning the method of selecting and combining variables. The procedure followed is to state a general principle which underlies a particular function in the model and then to discuss the selection and combination of the variables in the function in the light of the principle. In each case, the principle delimits, but does not precisely define, the form and content of the function actually used in the experimental model. The functions are consistent with, but not uniquely determined by, the general principles. Within the limits set by the principles, definition of the functions is admittedly arbitrary. However, we have tried to follow a counsel of simplicity and convenience in constructing the model. Consistent with the principles, variables have been selected on the basis of current or prospective convenience in securing the corresponding data; and consistent with the principles and variables, the forms of the functions have been chosen for reasons of computational simplicity in handling the data. This procedure does not

eliminate the arbitrary element, but instead should help the reader to see more clearly where it enters in. Some may disagree with the principles underlying the functions, some with the variables selected, and others with the forms of the functions. But the procedure followed will, we hope, make the point of disagreement easier to locate and the general approach easier to follow.

B. SOUTHEAST ASIA: A BACKGROUND SUMMARY

The so-called "arc of free Asia" is a region both vast and varied. It comprises twelve independent (or, in the case of Malaya, nearly independent) countries with a population of over 625 million people and a land area of 3.2 million square miles, slightly larger than the United States. Its cultural variety is suggested by the fact, among others, that more than 300 distinct languages are spoken in the area, while its religions cover the world's gamut: Hinduism in India; Islam in Pakistan and Indonesia; Buddhism in Burma, Thailand, Cambodia, Laos, and Viet Nam; and Christianity in the Philippines, as well as various unique syntheses and variants like the Cao Dai and Hoa Hao of Viet Nam. Despite this diversity, there are important characteristics shared by the countries of the region. Several of the common characteristics significantly influence the setting for the problem which concerns us.

In the period since World War II, Southeast Asia has been the scene of an explosive acceleration of social, political and economic change which has, not inaccurately, been referred to as "the revolt of Asia." This acceleration can be usefully thought of as an attempt at telescoping into a relatively brief period changes which, in Western history, extended over several centuries. Asia's post-war revolt is thus a complex mixture of changes associated in the West with the Industrial Revolution and the Enlightenment of the 18th century, the intense political nationalism of the 19th century, and the massive

social and technological innovations of the 20th century.

Perhaps the main factor in this process of accelerated social change has been the altered content and importance of human aspirations, both individual and collective. Until very recently in Asia, norms and goals of life were fixed by tradition. The established practices and experiences of village and family life determined the limits of what was desirable and possible for the individual and the group. Traditional behavior patterns were considered best, at least in part because alternatives were thought impossible. Sustained by tradition, static social and economic conditions tended to be accepted as inevitable. The idea of purposive social and economic change was dismissed or discounted as fanciful. In effect, aspiration, based as it is on a belief in the possibility of change, became irrelevant--to the extent that tradition encouraged belief in the impossibility of change, and irreverent to the extent that tradition made change appear undesirable.

Clearly, qualifications need to be added to this interpretation. For one thing, Asian traditions are neither as simple nor as uniform as this implies. Brahman tradition in India, for example, instilled markedly different attitudes toward change and norms in different castes; and these in turn differed from attitudes instilled by the traditions of Burmese culture. Nor is the image we are suggesting one that applied rigorously at a given period and then suddenly disappeared. A loosening of the hold of tradition on Asian society has been underway for many decades. At the same time, the attitudes we have been describing still persist currently, in varying degrees, and, with modifications, are likely to endure. But there has been a decisive change in the process of Asia's recent and continuing revolt. Goals once dismissed as irrelevant because unattainable, are now increasingly regarded--and perhaps overoptimistically so, in some cases--as both feasible and necessary. Aspira-

tions have been and are being stimulated, and have acquired an importance for the individual and the group which, in degree if not kind, is a distinctly new facet of the Asian scene.

The stimuli behind the quickened tempo and heightened importance of new aspirations are not hard to find, though they can be only briefly suggested here. One stimulus in the past generation has been the rapid and remarkable diffusion of information--by mass media, education, and the development of communications facilities--about the dramatic realization of aspirations in other countries--the United States, the Soviet Union and Japan, especially. World War II strongly reinforced this stimulus in Asia. Japan's military occupation of much of Southeast Asia carried with it an effective demonstration that Western technology could be successfully mastered by an Asian country, even to the point of military conflict with the West. Moreover, by abruptly removing the established colonial rulers and providing a wider opportunity for nationalist leaders to exercise authority, especially in Burma and Indonesia, the Japanese occupation, even where it was most oppressive, further weakened the hold of tradition on personal and national motivations.

It is not our purpose here to do more than summarize in a highly abbreviated way themes and interpretations that have been fully dealt with elsewhere.[1] But it is important to stress the relatedness of what we have been saying to the analysis which follows. For the loosening of traditional bonds

---

1. Among the best general references are Cora Du Bois, Social Forces in Southeast Asia, Minneapolis, 1949; Philipps Talbot (editor), South Asia in the World Today, Chicago, 1950; K. H. Landon, Southeast Asia - Crossroad of Religions, Chicago, 1949; Philip W. Thayer (ed.), Southeast Asia in the Coming World, Baltimore, 1953; E. H. Jacoby, Agrarian Unrest in Southeast Asia, New York, 1949; Brian Harrison, Southeast Asia--A Short History, London, 1954; W. H. Elsbree, Japan's Role in Southeast Asia's Nationalist Movements, Cambridge, 1953.

in Southeast Asia is not only a condition of human growth; it is also a far-reaching source of current and potential political instability. With a new belief in the possibility of change and improvement, aspirations have become an extremely important and relevant factor in shaping human motivations and reactions. Where aspirations are thus accredited, failures or delays in their realization evoke resentment, frustration and opposition. In Southeast Asia there is a particular likelihood that realization may be delayed and inadequate because, while aspirations have been and are being continually heightened, the immediately available capacity for realizing them is limited. That these are conditions on which internal and international communism thrives is a generalization as valid as it is familiar. This is not to deny that other conditions as well may contribute to the expansion of a movement uniquely alert to the existence of openings and opportunities. Local military weakness, real or presumed, is a case in point, as the Korean experience illustrates. What we are suggesting is that where the gap between aspirations and reality is wide; where, in other words, the realization of aspirations is seriously retarded, communism can exercise an appeal that makes the use of force unnecessary for its expansion.

The relationship between aspirations and reality is central to our analysis of economic change and political behavior, and we will return to it at greater length. First, however, we need to consider two other aspects of the factual context in Southeast Asia which significantly influence the character and content of aspirations in the region.

The primary goal of Asian aspirations has been political independence. Since 1946, ten of the twelve countries in the region have become independent nations. Of the remaining two, Thailand is something of an historical anomaly whose independence was astutely but precariously maintained throughout a

century of colonial rule in neighboring Burma and Indochina, while Malaya will become a sovereign dominion within the British Commonwealth in August 1957. Except for Viet Nam and Malaya, all are now members of the United Nations. When Malaya becomes independent, European colonial rule in the region will be largely a thing of the past. With a few exceptions,[1] it is fair to say that the major immediate objectives of nationalist aspirations in Southeast Asia have been attained. While the force of nationalist aspirations has thus been somewhat attenuated since the early post-war period, the pride, prejudice and sensitivity of nationalism remain active influences in domestic and international affairs throughout the region.

The second most prominent goal of aspirations is the desire for rapid economic development. To an unusual extent, and for reasons that are historical rather than logical, the anticipation of rapid economic development was and is intimately connected with the political force of nationalism in the particular region we are concerned with. Historically, in the "plural" societies of colonial Asia, there was a direct correspondence between political and economic status. Europeans were in a commanding position politically as well as economically, while the indigenous Asian community tended to be limited no less in its economic than its political status, and the Chinese community generally occupied an intermediate position in both hierarchies. Under these circumstances, it was easy and perhaps natural for Asian nationalists to proceed from observed correlation to attributed causation. A widespread conviction grew among nationalist leaders and followers that political independence, by changing political stratifications, would somehow directly

---

1. The only other European possessions in the area are British Borneo, Portuguese Goa and Eastern Timor, and the Western part of New Guinea held by the Netherlands and claimed by Indonesia.

bring about economic improvement as well. As a result, emergent Asian nationalist movements acquired a distinct and enduring economic orientation. In effect, nationalism in Asia tended to direct individual and group aspirations toward the goal of economic improvement to an unusual extent. This is an important and pervasive fact in current Asian politics, and one whose impact extends across the political and geographic boundaries between SEATO and neutralist countries, or between the "committed" and "grey" areas of Southeast Asia. It is a fact which bears directly on the analytical approach we will develop later.

Given the importance we are ascribing to economic aspirations, what can be said of their content? One way of approaching the question is to consider the major economic characteristics which the countries of the region have in common. These characteristics are at least suggestive of the types of goals toward which economic aspirations are likely to be directed, and of the starting points from which change and improvement must take place.

At the grossest level, average annual per capita income is about $100, typically lower in rural areas.[1] As in other underdeveloped economies, the rural agricultural sector occupies a dominant position. From 50 to 70 per cent of national product typically originates in the agricultural sector, and

---

1. For additional background data, see Economic Survey of Asia and the Far East, Vols. I-V, Economic Commission for Asia and the Far East, Bangkok and New York, 1950-55; Commonwealth Consultative Committee on Economic Development in South and Southeast Asia - (Colombo Plan) - Annual Reports, London, 1952-55; Economic Development of Underdeveloped Countries - Volume and Distribution of National Income, United Nations, New York, 1951; Demographic Yearbook, United Nations, New York, 1954; A Political and Economic Handbook of Eastern and Southern Asia, Institute of Pacific Relations, New York, 1954.

The per capita income figure, like the others cited here is, of course, less significant as a precise magnitude than as a general indicator of the degree of poverty prevalent in Southeast Asia. Since we are interested only in broad characteristics common to the economies of the region, problems which arise from international price differences, varying degrees of inclusiveness and reliability of national income statistics--indeed, all the technical problems which make any attempt at precise comparisons of international income levels extremely dubious--need not concern us here.

between 65 and 85 per cent of the working population is engaged in rural agriculture. Unemployment and underemployment are high, together comprising perhaps 15-20 per cent of the labor force, while the capital stock is relatively small, methods of production tend to be labor-intensive, and both skilled manpower and training facilities are scarce. Labor productivity is consequently low,--usually lower in agriculture than in other sectors of the economy--and the average level of factory wages is around $200 per employed urban worker per annum. Agricultural tenancy is relatively high, though there are important exceptions. In areas like South Viet Nam, Central Luzon and the Sind in West Pakistan, for example, about 50 per cent of cultivated acreage is farmed by tenants, while in most of Indonesia and such states as Uttar Pradesh and Madhya Pradesh in India, a large majority of cultivators own their land.

Currently in most of the countries of the region, and in all of them until very recently, the rate of growth in real national income has barely equalled population growth. Net annual domestic capital formation has typically been below 7 per cent of national income and the annual rate of population growth around 1.5 per cent. The tendency toward unchanging per capita income (and consumption) has thus been at relatively low rates of growth in both aggregate population and income. Low rates of growth in population have, however, occurred at relatively high birth and death rates. Potential population growth is therefore high. With an anticipated lowering of death rates, the additional capital and income required, even to maintain real per capita income, will be substantial.

Throughout the region, welfare indicators show a similar pattern. Per capita food consumption is generally below 2,000 calories per day. Life ex-

pectancy at birth is less than 35 years. The incidence of disease is uniformly high. Literacy is confined to about 25 per cent of the population, except in the Philippines. (Even in the Philippines, there is some question whether the rate is actually higher or the term merely more loosely defined.) Education has typically been restricted to the few, and for the masses is both a new and a valued experience.

C. THE VULNERABILITY FUNCTION

In this setting, how can the relationship between economic change and political behavior be approached? What theoretical framework can we use for exploring this relationship? Difficulties come to mind more readily than answers. Each of these phenomena is extremely complex in itself, and their relationship is still more obscure. There is, moreover, not one relationship but many; while there is interaction between them, there are also exogenous influences affecting both. Admitting these difficulties, we may nevertheless hypothesize that, within the regional context we are interested in, a definite and measurable relationship between economic change and political behavior exists and, given a large number of cases, this relationship will be a significant one.

In pursuing this premise, we may restrict our inquiry to particular aspects of the relationship. We need not consider all the political manifestations that may be associated with economic change. We are, rather, concerned with a particular class of political consequences, namely, what may be termed "extremist" political behavior--committed support for internal and international communism, especially--and its relationship to economic change. While this is a somewhat crude classification, it is warranted by the problem-orientation with which we started. From the standpoint of U.S. foreign policy and foreign

aid allocation more specifically, we can assume that there are many possible political manifestations in sovereign countries which--if related to economic change at all--are of little or no concern to U.S. policy planning. The structure of parliamentary institutions, the federal or unitary character of the state, the centralized or decentralized administration of economic development programs, the blending of statutory and customary law--to take a few widely differing examples--are political manifestations which, though they may be related to economic change, usually have no bearing on U.S. foreign policy decisions. It is only as internal political manifestations veer in an extremist direction, and only as they discernibly influence the contest or conflict in the international arena, that they become of direct relevance to U.S. foreign policy.

Given this focus on extremist political behavior, one condition for an acceptable formulation of the hypothesized relationship follows. On the one hand, an adequate formulation must take into account the common-sense notion that extremist political behavior tends to be associated with poverty.[1] On the other, it confronts the fact that in too many cases to be considered exceptions, poverty has been accompanied by political passiveness while ex-

---

1. See, for example, the discussion of this notion as a basic point of departure for research on the psychology of leftist voting, S. M. Lipset, P. F. Lazarsfeld, A. H. Barton, J. Linz, "The Psychology of Voting: An Analysis of Political Behavior" in Handbook of Social Psychology, Vol. II, Cambridge, 1954, pp. 1134 ff.

tremism has been associated instead with the alleviation of poverty.[1] Consequently, one condition for an acceptable formulation of the relationship we have hypothesized is that it should reconcile, or show the complementarity between, these two conflicting facts--assuming, of course, that both are valid. Stated another way, an acceptable formulation should show that these two apparently-conflicting facts are simply special cases of a more general relationship between economic change and political behavior.

To describe the relationship, let us begin with a concept we shall call an economic index of political vulnerability, denoted by Pe. To denote the value of the index in a set (e.g., a region or country), we shall use the symbol $\overline{Pe}$, and in a specific subset (e.g., country or province, respectively) within the set, we shall use Pe_i. The vulnerability index encompasses two meanings relevant to our problem: susceptibility to the socio-economic appeals of internal communist political parties and organizations; and susceptibility to influence by Soviet and Chinese foreign policies. The second meaning does not exlude the possibility that countries with relatively less vulnerability may be the targets of communist foreign policy, e.g., as recipients of Soviet economic aid, while more vulnerable countries may not be. The statement refers

---

1. De Tocqueville's relevant comments on the French Revolution, though admittedly of untested accuracy, are probably the first and best-known example. Thus, he observed that "in no one of the periods which have followed the Revolution of 1789 has the national prosperity of France augmented more rapidly than it did in the twenty years preceding that event"; and concludes with the suggestion that, apparently, "The French found their position more intolerable the better it became". (See A. de Tocqueville, On the State of Society in France before the Revolution of 1789, London, 1888, pp. 149, 152).

Eric Hoffer extends de Tocqueville's point in his insightful analysis of the appeals of revolutionary movements in general, The True Believer, New York, 1951, particularly pp. 25-32. More recently, one observer suggested that a positive correlation between income and communist voting existed in Sweden's 1952 elections: W. P. Davison, "A Review of Sven Rydenfelt's Communism in Sweden," P-570, RAND, 1954, pp. 27-9.

to the opportunities and potential consequences of communist foreign policy, not its selection of targets.

It should be noted that while our focus here is deliberately on the appeals of communist extremism, the index can be interpreted as expressing something about vulnerability to extremist political changes more broadly. Potentially, if not immediately, in the area we are concerned with, extremist appeals may take forms other than communism; for example, communalism or militarism.[1]

In formulating the relationship between political vulnerability and economic change, we shall be guided by a general behavioral principle that is implied but not specified in the preceding remarks. The principle is that the basic motivation toward the kind of extremist political behavior or sympathy symbolized by Pe derives in large part from the human proclivity for comparing realities or performance with aspirations or norms concerning what is desirable: where a sharp disparity between aspirations and reality is experienced by the individual or the group, susceptibility to extremist political solutions or appeals tends to increase.[2]

---

1. Moreover, one could conceivably extend the concept of vulnerability to the single "committed" communist country in Southeast Asia, North Viet Nam, if, for example, vulnerability were construed as susceptibility to violent overthrow of internal communism, or to divisive influence exerted by the foreign policies of the free world. The behavioral implications of the index in this case might be somewhat problematic. Before there would be any serious manifestations of "deviations" or dissidence, presumably the index of vulnerability would have to reach explosive dimensions.

2. To explore in detail the evidence and reasoning behind this principle would carry us too far afield. For a general discussion of the role and importance of comparisons between aspirations and realities in human motivation, see J. McV. Hunt (editor), Personality and the Behavior Disorders, New York, 1944, Vol. 1, Chapter 10, and the other references contained therein. For some applications to economics, see R. Centers and H. Cantril, "Income Satisfaction and Income Aspiration," Journal of Abnormal and Social Psychology, Vol. 41, 1946, and G. Katona, Psychological Analysis of Economic Behavior, New York, 1951, pp. 91-3. A point of view similar to the one we are suggesting is contained in Hoffer's discussion of the historical appeal of political mass movements,

To develop this principle, we shall define both aspirations and realities largely in terms of economic variables. Our reasons for doing so are twofold. The first derives from the particular regional context we are concerned with. As previously indicated, aspirations have not only acquired a new significance and immediacy in Southeast Asia; they have also been heavily endowed with economic content. As a result, economic aspirations and economic progress toward fulfilling them increasingly and rapidly, play an unusually powerful political role in Southeast Asia currently.[1]

The second reason for defining aspirations and realities largely in economic terms is methodological. Our aim at this point is not to analyze the varying factors affecting or reflecting political vulnerability, but to focus on one group of factors and try to handle this group systematically. We shall focus on the economic factors because they are the ones most directly influenced, or capable of being influenced, by U.S. nonmilitary aid programs. In so doing, we are not implying that vulnerability depends only on economic factors. Rather we are implying that, to the extent that vulnerability does depend on economic factors, the dependence is determined by a relation between what people want and what they have, expressed largely in economic terms.

E. Hoffer, op. cit., pp. 25-28, 30, and in numerous other references to the current political urgency of realizing economic aspirations in underdeveloped areas, e.g., W. A. Lewis, The Theory of Economic Growth, London, 1955, p. 434; M. F. Millikan, testimony in Hearings before the Subcommittee on Foreign Economic Policy of the Joint Committee on the Economic Report, 84th Congress, Washington, D. C., November 1955, pp. 17-18; and Committee for Economic Development, Economic Development Abroad and the Role of American Foreign Investment, Washington, D. C., Feb. 1956, pp. 2-7.

1. Cf. the following statement from The Eastern Economist in its discussion of the appeals of communism in Asia: "Communism has been making its strongest appeal, in those areas of the world which are uncommitted wholeheartedly to a democratic way of life, through its promise of a high rate of economic progress", in "India and the Communist World in 1955", Vol. XXV, No. 26, December 30, 1955, p. 993.

This is why we refer to Pe as an economic index. In excluding a number of political, cultural and military factors from our consideration of vulnerability, we are admittedly limiting the general import of Pe . In the real world, these "other things" will not be equal and in individual cases the inequalities may have a decisive influence on political behavior. However, given a large enough number of cases, one may contend that in Southeast Asia the influence of economic factors on political behavior is likely to be both pervasive and significant.[1] This contention underlies the analytical model we shall elaborate in the remainder of this chapter, and the preliminary test of the model which is presented in the subsequent chapter.

In applying the principle, we shall say that Pe is a function of three variables: economic aspirations; the level of living; and economic expectations. For general reference, we shall denote the variables by A, E, and Ex, respectively. For reference to the average value of the variable in a set (e.g., a region or country), we shall use $\bar{A}$, $\bar{E}$, and $\overline{Ex}$, and for reference to the value in a specific subset (e.g., country or province), we shall use A_i, E_i, and Ex_i.[2] A represents the prevailing[3] economic standards (or goals) which are accepted or believed in by the people of an area. It is the norm

---

1. However, their influence may be more readily discerned in the "neutralist" countries, i.e., India, Indonesia, Burma, and possibly Cambodia, than in the SEATO countries.

2. As other variables are introduced into the discussion, the same notations for average and subset values will be used.

3. For the present, we assume that the distribution (i.e., of aspirations, expectations and levels of living) is normal in the subset population. Consequently, the prevailing or modal value can be identified with the mean.

for judging how economic conditions ought to be, and determines reactions (e.g., satisfaction, acceptance, resentment) to what is actually experienced or expected. E represents the current level of living, conceived in social welfare terms which will be made explicit later. Ex represents the prevailing estimates (reasoned or "felt") of how things will be in the future. It is a calculation or judgment concerning the time-shape of E over a short-term future period. In contrast to A , which is an imperative, Ex is future-indicative.[1]

E and Ex together comprise what we previously called "reality" or "performance." It is, in other words, assumed that the appraisal of reality can be divided into a present and a future component. Outcomes expected in the future have a real present value which, in principle, should permit them to be compared or "traded" with outcomes already realized--provided we know something about the degree of confidence with which they are expected, and the accepted time discount.

Certain characteristics of the function can be inferred from our general principle and from the preceding remarks about the regional context. If we identify extremist political susceptibility with the disparity between aspirations and reality, then vulnerability (Pe) will rise as aspirations (A) rise, and as expectations (Ex) and/or the level of living (E) fall. Conversely, Pe can be presumed to fall as A falls, and as Ex and E rise.

The three variables are not, strictly speaking, completely independent of each other. For example, there may be some tendency for expectations to

---

1. Because the two terms, aspirations and expectations, are frequently used loosely and interchangeably, the distinction intended here should be stressed. For an example of their confusing interchange, see W. Y. Elliott (and associates), The Political Economy of American Foreign Policy, New York, 1955, pp. 50-51, 154.

be affected by aspirations. And it is likely that the actual level of living will affect the standards or norms that prevail in the community; success in attaining or moving toward given aspirations tends to raise the level of aspirations. In other words, the variables are interrelated rather than independent.

Actually, interrelationships among variables presumed for analytical purposes to be independent characterize many economic and social problems. In economic growth theory, for example, we speak of output as a function of capital stock, technology, and other resources, given full employment. Yet, strictly speaking, the first two variables are interrelated rather than independent. At any given time, technology depends to a considerable extent on the size and composition of the capital stock, and vice versa. Considered over a period of time, changes in technology lead to changes in kind and amount of capital, while changes in the stock of capital usually stimulate particular types of innovations in technology. Or, to take an example from quite a different field, we sometimes say that the international power position of a country depends on its economic base and its military strength, although here again the independent variables are related to each other.

While in these, as in other examples that might be cited, the independent variables are thus partly interrelated, each is, at the same time, affected by dissimilar factors to an extent sufficient to make the assumption of independence feasible and useful. The point applies as well to the variables in the vulnerability function. While E may be expected to affect A , there will be sufficient influences on each that will not affect the other, to warrant treating them, and thinking about them, as analytically independent variables.

Using symbols, we can summarize what we have said of the vulnerability function as follows:[1]

(1) $Pe_i = \phi\ (A_i\ ,\ E_i\ ,\ Ex_i)$.

(2) $\frac{\delta \phi}{\delta A_i} > 0\ ;\ \frac{\delta \phi}{\delta E_i} < 0\ ;\ \frac{\delta \phi}{\delta Ex_i} < 0$.

We will consider later the question of a specific form for the vulnerability function (1), consistent with the derivative conditions stated in (2). In any event, it is clear that quantitative significance can be attached to the concept of political vulnerability only if we can measure aspirations (A), the level of living (E), and expectations (Ex). The objection may be raised that these variables are essentially "subjective," and that they depend on feelings and attitudes to such an extent that their measurement by "objective" economic data is dubious. Economic data generally measure what happens and what is, not how people feel. Granting that the variables we are interested in concern feelings and attitudes, and assuming that the same economic phenomena may be accompanied by quite varying feelings and attitudes, how are these variables to be measured?

One answer is to measure aspirations, expectations, and attitudes toward the level of living, by direct sample surveys. We could, presumably, formulate questions to find out what economic norms people profess, how they estimate the short-term economic future and what they estimate it to be, and what they consider the major components of their social welfare. Though the tools of survey research would, in this case, involve some subtle methodological problems, e.g., that of inferring "actual" aspirations from expressed responses, they would nevertheless be relevant and useful for helping to measure the variables we are dealing with.

---

1. It is hoped that those who are bothered by mathematical notations will skip them rather than be distracted by them. Throughout this chapter, the text states verbally what the notations are intended to summarize.

One very practical difficulty with this approach is that such survey data do not now exist, and the operating problems involved in getting them, in Southeast Asia especially, would be considerable and expensive. Recognizing the experimental nature of our inquiry, we shall therefore propose a different approach to give some initial quantitative content to A, E, and Ex, and hence to the vulnerability function. A, E, and Ex are extremely complex functions in themselves. But if we consider each in turn, we will find that there are good grounds for using certain variables--data for which are frequently accessible--as indirect measures of the functions we seek, given the regional context of Southeast Asia and assuming that we are thinking of large numbers of cases rather than exceptions. With such measures for approximating A, E and Ex , we may then be able to formulate and test the vulnerability function in tentative but quantitative terms. It should be emphasized that some of the variables used to determine the aspirations, level of living and expectations functions are likely to be uniquely applicable to Southeast Asia, for reasons we shall indicate. In other areas, somewhat different indicators for these functions would be needed. The point is that while the vulnerability function itself has fairly general validity, the specific approach we will develop for measuring A, E, and Ex has more limited applicability in the particular regional context we are interested in. We turn now to a consideration of the determinants of economic aspirations, the level of living, and expectations.

D. THE ASPIRATIONS FUNCTION

In developing the aspirations function, we will start with the principle that the level of economic aspirations depends on the amount and kind of information that a region or country is exposed to. When information is widely

diffused, economic aspirations are presumed to rise. In fact, the relationships involved are considerably more complex. Some types of information, for example, will have no effect on economic aspirations, while others may even attenuate aspirations. But in societies like those of Southeast Asia, which are not only economically underdeveloped, but which have been recently freed from the restraints imposed by tradition on the desire for development, the principle has considerable validity. In this context, aspirations are especially sensitized to new experience and information. And much of the information and experience conveyed by modern communications media is likely to stimulate imaginations and evoke the heightened sense of the possible and the desirable on which aspirations depend. It should be stressed that the principle we are asserting is not universal, but rather is distinctly bound in place and time. In other places, and in Southeast Asia at other times, the diffusion of information is perhaps as likely to allay as to arouse economic aspirations. However, given these limitation, the principle is useful.

In applying it, we shall use three variables as indirect measures of the level of economic aspirations: (1) per capita operating expenditures on education and educational services; (2) literacy; and (3) contact and comparison by members of a subset with levels of living different from their own. The first two variables constitute rough, general measures of the amount of information to which the area is exposed. While other indicators might be used as well,[1] the data for the two variables chosen have the advantage of greater accessibility. The third variable refers to a particular kind of

1. For example, such indicators as newspaper circulation, size of the radio audience, and the urban-rural distribution of the population.

information, namely that arising from intergroup comparisons of living levels within the larger region or set of which the particular area or subset is a part. In the remainder of this section, we shall consider the variables in the aspirations function in detail.

Let us denote per capita expenditures on education and educational services by D. If we think of total educational outlays as divided between investment and consumption outlays, or overhead and operating outlays, D measures the consumption or operating segment, public and private. We are, in other words, reasoning that it is through active contact and interaction among students, teachers, and teaching materials--in effect, through the learning process rather than the formation of educational capital--that new information and experience are conveyed and aspirations stimulated. As an approximation, the extent of this stimulus can be considered to depend on the magnitude of the operating segment of total educational outlays, i.e., salaries of teachers, tutors and educational administrators, purchases of books and other teaching materials, etc.[1]

---

1. Further refinements in the measurement of D might be introduced. For example, within operating costs a distinction might be made between outlays on primary education and on secondary or higher education, and between technical and general education, on the grounds that the latter of each of these pairs is likely to have a more direct impact on aspirations per unit of outlay. Hence, D might measure only this "aspirations-oriented" portion of total operating costs, or, alternatively, give greater weight to it relative to other operating costs. In the model (and data) we use, we omit this refinement. Implicitly we assume that either the ratio between this portion and other operating costs is constant for all subsets, or that the rate of substitution between the two cost components is close to unity. If D_i' and D_i'' are the two parts of total educational operating costs in a subset, D_i, and k is a constant, and if either

$$\frac{D_i'}{D_i''} = k \quad \text{(for all } D_i\text{'s)},$$

or

$$\frac{\delta A_i}{\delta D_i'} = \frac{\delta A_i}{\delta D_i''},$$

there is no need to make the distinction between the kinds of educational operating outlays.

By contrast, the investment segment of educational outlays (e.g., outlays for new schools, libraries, dormitories, etc.) will raise expectations--that is, estimates of future consumption--without appreciably affecting aspirations. It is only as the social capital created by such investment is used, and the stream of consumers benefits from educational capital actually starts to flow, that hopes will be kindled and aspirations raised. More specifically, the construction of a school creates visible evidence of benefits to be realized in the future; it carries with it, and in Asia with the particular force of the unfamiliar, the promise of a rosier future. In our terminology, it raises expectations. As we have suggested, it is the actual operation of the school which will raise aspirations. D , therefore, represents only the consumption or operating segment of total educational outlays.

Whether we are comparing variations over time or variations among several subsets at a given time, it should be clear that we are interested in real resources devoted to education. In inter-temporal comparisons, the D_i's, denoting the subset values of D, must, therefore, be in terms of constant prices. In inter-regional comparisons, the D_i's must be adjusted (e.g., for real rather than nominal exchange rates) to assure constant unit values.[1]

In principle, D should include an allowance for depreciation of educational plant and durable equipment. In practice, we will neglect this allowance, partly because of data limitations, and partly because the useful

---

1. To avoid repetition it should be assumed that the need for constant unit values applies to all other variables which are originally expressed in monetary terms. Because some of the variables in the model are not in monetary units, as well as for other reasons discussed later, we will subsequently convert all the subset variables to index numbers based on the set mean, see infra pp. 67-68.

life of most educational capital is long and the necessary allowance small relative to direct operating outlays.

However, time enters into the measurement of D in another way which cannot be neglected. What we want to measure with D is not a single (i.e., annual) sum of operating outlays on education, but a flow over time. If, as we have suggested, the learning process affects aspirations, and if we use educational operating expenses to measure the extent of this process in a given subset, then, D is a cumulative function of time, within certain limits. As between two areas with the same annual operating educational expenses, we should expect higher aspirations to prevail in the one which has maintained (or exceeded) the annual rate over a longer period. In an area which has maintained the annual rate for, say, five years, we should expect higher aspirations than in a subset which has only just attained this rate, both because the learning process will have permeated more thoroughly in the first case, and because, with the passage of time, more of the beneficiaries will attain an age when their aspirations act directly on political vulnerability, rather than simply conditioning the level of aspirations in the community as a whole.

Yet there will probably be limits to the time period relevant for calculating D . Perhaps especially in the fluid social context of Asia, education tends to be a rapidly contagious influence. It is thus not clear that the "aspirations-effect" of a given rate of operating outlays will be less marked if maintained over, say, twenty years than thirty years. D will thus be a discontinuous function of time, but precisely where one expects the discontinuity to occur is, at this stage, probably more a matter of intuition than analysis. As a reasonable guess, we would suggest that, in the region we are focussing on, the discontinuity is likely to appear at somewhere around

fifteen years.

Thus, if t is the year we are concerned with, we can say that

$$D_i = D_{i_t} + D_{i_{t-1}} + D_{i_{t-2}} \cdots D_{i_{t-n}}$$

or

$$D_i = \sum_{a=o}^{n} D_{i_{t-a}} \tag{3}$$

with n perhaps between ten and twenty years.

Besides the technical problems of measuring D, several important conceptual issues connected with its use in the aspirations function warrant consideration. Essentially what we have suggested is that from the standpoint of its broad political impact, education is a special and perhaps unique kind of consumption in the current Asian context. Like other forms of consumption, education provides "welfare", and meets "felt" needs. It thus contributes to the level of living, E, and to expectations, Ex, which we will discuss later. But unlike other kinds of consumption, or at least to a greater extent, the educational experience vitally affects aspirations, as well. These effects will admittedly be subtle and varying. If the content of education is traditionalist, for example, aspirations may tend to be stifled. And beyond a certain point, whether traditionalist or "modernist", education may either diminish aspirations or redirect them in ways which will not affect political vulnerability or may actually reduce it. How, then, does the approach we are adopting meet these objections?

In using D as a measure of economic aspirations, we are contending that, while the relationship between educational outlays and aspirations is, in general, complex and varying, in Southeast Asia, currently, it has the characteristic that increased outlays lead to heightened aspirations. Coming

to most people as an essentially new experience, in the wake of the tradition-shattering impacts of World War II and the post-war decade, education seems likely in the short-run to give content and stimulus to awakening aspirations.[1]

There is another implication of the argument which should also be faced. If education raises aspirations, and higher aspirations raise the vulnerability index, the conclusion seems to follow that economic development--and, by extension, foreign economic aid--should seek to minimize the growth of educational services in the Asian countries. On strict ceteris paribus grounds, and given the assumption that vulnerability minimization is the only objective, the conclusion follows from the logic of our argument. In practice, i.e., when decisions have to be made, other objectives will enter into the decisions. Moreover, the excluded factors will not be equal and, frequently, may dominate the aspirations effect of D. For example, an expansion of educational services may be a commitment already explicitly made and publicized by a politically-acute government in response to popular demands. It may thus be a constraint, rather than a variable, in development planning. Burma, and the prominent place it has already assigned to mass education in its eight-year development plan, is a case in point.

Still more fundamental is the fact that, regardless of its effect on aspirations, a substantial expansion of educational services in Asia is essential for technological innovation, for higher labor productivity--in fact, for any sustained economic development and for any appreciable rise

---

1. Stated formally, the contention is that, within a certain range, aspirations are an increasing function of education. Beyond this range, the function may be monotonic decreasing, but this need not presently concern us since, in the context we are interested in, we are likely to be within the range.

in levels of living. We have already indicated, too, that education is itself a part of the level of living and that new educational capital exerts an important influence on expectations. From the standpoint of programming economic development and foreign aid, these considerations may more than compensate for the short run risks involved in raising aspirations through increased educational outlays. Without laboring the point, it should be clear that we are dealing here with extremely complex interactions, and that applying this conceptual framework requires particular care to avoid premature policy conclusions.

The second variable we use in the aspirations function, literacy, can be denoted by L, the fraction of the total subset population able to read and write. In general, the influence of literacy on aspirations, and the reasoning behind its use in the function, follows the discussion of D fairly closely. We impute to both L and D a measurement of exposure to information and perceptions extending beyond what is directly experienced in a subset's physical environment, and thereby tending to stimulate a new and higher sense of the desirable and the possible. As in the case of D , and by similar reasoning, we may assume that, among different geographic or temporal subsets, higher literacy implies greater exposure and hence higher aspirations. Inasmuch as L and D relate to a basically similar influence on aspirations, we use their arithmetic average, $\left(\frac{D + L}{2}\right)$, in measuring aspirations.

One may argue that L is only a gross measure of what we are interested in, and that it might be preferable, for example, to look at the fraction of the total subset population with a secondary school or higher education. This is the group which, in Asia as other underdeveloped areas, usually articulates and leads the aspirations of the population. Consequently, differences in

the relative size of this group might be a better indicator of enhanced aspirations in the subsets than differences in rates of literacy. Later we will give further consideration to this general point, but we will continue to use the literacy measure, rather than the "educational standards" indicator, on the grounds that the two are likely to be closely correlated, and the relatively greater accessibility of data on L makes its use presently more convenient. However, future work on the model might profit from use of the educational standards indicator in the aspirations function in place of, or in addition to, L .

From the standpoint of data accessibility, there is some reason to rely on L rather than D . Educational operating outlays in any single year may represent a significant change from previous years whose impact on aspirations will be felt subsequently, and then only if the outlays are maintained. Hence, we need a time series to arrive at D . By contrast, we can safely assume that changes in literacy are much more gradual and that, in any subset, the figure for a single (recent) year can be considered to represent the cumulative influence on aspirations which we are seeking. On the other hand, from the standpoint of data reliability, L may be inferior to D . The definition of literacy in Asian censuses tends to be vague, and the precise meaning and comparability of the data dubious. Using both L and D may reduce the inadequacy of each alone as an indicator of aspirations.

The third indicator of aspirations relates to the effect of contact and comparison by members of a subset with levels of living different from their own. As literacy and education provide new mental experiences, direct contact provides new visual experiences of what is desirable and possible. Consider a number of groups or subsets within a more or less homogeneous context or

set. The argument is that contact among the groups leads to comparisons of levels of living. The comparisons, in turn, yield a kind of information that is of particular relevance to the generation of aspirations. Keeping up with the Joneses is a more recent but not fundamentally different phenomenon in Asia than elsewhere.

As one among many relevant observations that might be cited from Asian sources on the effect of contact with higher levels of living, a recent comment by the Indonesian representative to the United Nations Economic and Social Council is interesting:

> "Through modern means of communication, they (i.e., the people in the underdeveloped countries) have become increasingly aware of the divergencies between their incomes and that of the people of the more industrialized areas of the world. Hence, there is a growing impatience when their desires remain unfulfilled, desires which are material as well as spiritual in character. This situation prevails in all underdeveloped countries but perhaps it is strongest in the areas where the people have recently won their freedom and independence."[1]

Essentially, we are dealing here with the same type of phenomenon which Duesenberry calls, in a different context, the "demonstration effect."[2] He suggests that the consumption function in the U.S. (i.e., the relation between consumption and income), depends not on the absolute level of income, but--

---

1. Report on Indonesia, Embassy of Indonesia, Washington, D. C., November 1955, p. 14.

2. J. S. Duesenberry, Income, Saving and the Theory of Consumer Behavior, Cambridge, 1949, pp. 1-5, 25-32. Duesenberry uses the demonstration effect to reconcile data from family budget studies in the U.S., which show that at any time the average consumption function tends to be lower for higher personal income classes, with aggregative time series data, showing a tendency for secular stability in the consumption function at higher levels of national income.

Nurkse's extension of the demonstration effect to the international economy is also relevant. Ragnar Nurkse, Problems of Capital Formation in Underdeveloped Countries, Oxford, 1953, pp. 61-75.

to a significant extent--on interpersonal comparisons: that is to say, on the frequency with which individuals come in contact with consumption levels superior to their own. If all incomes rise, such contact will become more frequent. Hence the consumption function for a given income bracket at different times in a period of rising incomes will tend to be higher at the later time, even though the consumption function at any single time will be lower the higher we go in the income scale.[1]

In the present case, we suggest that aspirations depend in part on intergroup contact, and on the resulting comparison of observed levels of living. But even if one accepts a functional relationship of this sort, the problem of defining it more precisely remains. Duesenberry's approach is to consider the frequency distribution of various income classes and to assume that the probability of contact with superior incomes depends on position in the distribution.[2] The same position on the distribution over time indicates the same frequency of contact with higher incomes and hence, in Duesenberry's model, the same average consumption function despite changes in the absolute level of income.

There are several difficulties in applying this approach to the aspirations function. For one thing, frequency of contact will presumably be affected by a number of factors apart from a subset's position on the frequency distribution of levels of living in the entire set. It would, for example, be desirable to consider what might be termed a "geographic factor" in estimating contact frequencies within the set. Thus, the members of two subsets, both at the same position on the frequency distribution, might contact

1. Duesenberry, op. cit., 47-58.
2. Ibid., pp. 50-54.

other levels of living more or less often, depending on their respective geographical and topographical situation, on transportation and communications facilities, and on the rural-urban composition of the subset population. The incidence and influence of such communications barriers on contact frequencies--and hence on aspirations--is likely to be much greater in Asia than in the U.S., for instance, and hence the desirability of including the geographic component should be correspondingly greater in our present model.

Similarly, frequency of contact with higher levels of living will be affected by the extent to which the subset is an "open" or "closed" economy. Trade, foreign investment, tourism, economic relations with areas outside the set generally, will tend to affect frequency of contact. We would also expect such open-economy indicators to have a greater influence on aspirations in Asia than on the consumption function in the U.S., because in the former case we can safely assume that contact with the international economy will generally be contact with substantially different (i.e., higher) levels of living.

Moreover, it is questionable whether the aspirations effect of contact with different levels of living is accurately reflected by the frequency of such contact alone. In an established feudal context, for example, contact may be frequent and yet not affect aspirations. By contrast, in the dynamic social situation in Southeast Asia currently, the effect of contact may depend as much on the size of the difference between the individual or group levels of living involved, as on the frequency of contact.

There is yet another difficulty in applying this variable to the aspirations function. It is fairly evident that contact with <u>superior</u> levels of living will raise aspirations, but it is less clear what the effect will be of contact with <u>inferior</u> levels of living. How, for example, will contact

affect the aspirations of a group that is already enjoying a relatively higher level of living?

The preliminary approach we adopt takes these difficulties only partly into account. It is based on the premise that within a reasonably homogeneous set, the average level of living represents a rough standard of comparison in the determination of aspirations. It can also be considered the most typical (frequent) level of living which the members of a subset will encounter in their contact with the rest of the set. The effect of inter-subset contact and comparison will then depend on the difference between the average level of living in the entire set, $(\bar{E})$, and the level in a subset, (E_i). As this difference, $(\bar{E} - E_i)$ increases, aspirations are presumed to rise, and conversely.

We thus assume the aspirations function is also effected by negative values of $(\bar{E} - E_i)$. If the level of living in a subset exceeds the average in the set (i.e., $\left(\bar{E} - E_i\right) < 0$), we expect that the effect of contact outside the subset will be to attenuate aspirations. Larger negative values for $(\bar{E} - E_i)$ imply more frequent contact with lower levels of living, and, according to our reasoning, a lowering of what otherwise would be the accepted standards or aspirations. Whether this type of influence actually occurs is by no means clear. We might, instead, take the position that the contact phenomenon only influences aspirations when $(\bar{E} - E_i) > 0$. For the present, however, we assume that aspirations are affected by negative as well as positive values of $(\bar{E} - E_i)$. Our grounds for doing so are that, even if frequent contact with lower living levels, acting alone, is not as likely to lower aspirations as contact with higher living levels is to raise aspirations, frequent contact with lower levels (i.e., $\left(\bar{E} - E_i\right) < 0$) is at least likely

to counter the inflating effects of other influences--for example, literacy and education--on aspirations. Inasmuch as these influences will normally be acting jointly, the transitivity assumption is a convenient one to make.

With the symbols we have used in this section, we can summarize the discussion of aspirations as follows:

$$(4) \quad A_i = f\left(D_i, L_i, (\bar{E} - E_i)\right)$$

$$(5) \quad \frac{\delta f}{\delta D_i} > 0 \; ; \; \frac{\delta f}{\delta L_i} > 0 \; ; \; \frac{\delta f}{\delta(\bar{E}-E_i)} > 0 \text{ , or } \frac{\delta f}{\delta \bar{E}} - \frac{\delta f}{\delta E_i} > 0 \text{ .} \quad \underline{1/}$$

E. THE LEVEL OF LIVING FUNCTION

The level of living is a more common, but no more precise term, than economic aspirations.[2] In relating it to the vulnerability model, we proceed from the following principle: as the measure of what we have referred to as present economic conditions or "realities," the level of living, E, can be considered to depend on two different types of welfare components, a "consumption" component and a "status" component. The consumption component--the net current use of goods and services by consumers--is clear enough. Neglecting savings, we make the simple and convenient assumption that "it is only consumption which contributes directly to current welfare."[3] As

1. Since $\frac{\delta f}{\delta \bar{E}} > 0$ and $\frac{\delta f}{\delta E_i} < 0$,

$$\frac{\delta f}{\delta \bar{E}} - \frac{\delta f}{\delta E_i} > 0.$$

2. cf. Report on International Definition and Measurement of Standards and Levels of Living, United Nations, E/CN. 3/ 179, New York 1954, especially pp. 1-6 and 26 ff.

3. J. R. Hicks, "The Valuation of Social Income," Economica, Vol. 7, 1940, p. 123.

specific measures of the consumption component in the level of living function, we use per capita consumption (C), urban wage rates (W), and volume of unemployment as a fraction of a subset's total labor force (U).

By "status" component, we mean that different feelings of satisfaction or well-being are associated with any given income, depending on the "status" or "prestige" concomitants of that income. To the extent--and it is a significant one--that status, prestige and self-respect are affected by the economic environment, we want to allow for them in quantifying the level of living. We use a single indicator for the status component: ownership of land by agricultural cultivators, defined as the ratio of land owners to total cultivators, and denoted by O .

The status and consumption components of the level of living are independent of each other. A change in one may be accompanied by a rise, fall or stability of the other. There will be a rate of substitution between the two components at any given level of living. We will return to this later in discussing O . Let us first examine in more detail the consumption components of E .

The first measure, per capita consumption (C), refers either to individual budget figures on consumer outlays, supplemented by data on output of current services by government, or to aggregate expenditure figures showing the consumption share of total outlays—both expressed on a per capita basis. It may be suggested that we err in excluding savings and that we should use per capita income, rather than consumption alone, as a measure of the level of living. Certainly it is reasonable to argue that voluntary savings do contribute directly to current welfare, for example, by providing insurance and security for the future. In reply, we would contend that the same recognized benefits cannot be imputed to involuntary as to voluntary savings.

Moreover, in South and Southeast Asia, voluntary personal savings are relatively small, while involuntary savings, notably by and through government, are a relatively large share of total savings. Since we intend E to refer to benefits or welfare realized currently, and since it is difficult to separate the small voluntary savings from the relatively larger involuntary portion, it seems preferable to use per capita consumption, rather than per capita income, as the relevant measure.

In using per capita consumption, we are faced with the problem of the distribution of consumption benefits. Average per capita consumption may be equal in two subsets although the fraction of the population at or near the average may be very different in the two cases. Extreme values may account for the mean in one case, while the mean itself may be typical in the other. Given our interest in political vulnerability in the particular context of Southeast Asia, the proposition may be suggested that the level-of-living equivalence of a given C_i, denoting the value of C in a subset, should be considered higher where the C_i value is the typical value, i.e., at or close to the mode, than where it is not. The proposition involves a judgment that individual welfare functions, in the area and in the politically-oriented terms we are using, have the classical characteristic of diminishing marginal utility. Hence, the level of living in a subset, to the extent that it affects political vulnerability, will be raised if consumption extremes are reduced.

It is clear that this hypothesis, in forsaking Pareto for Marshall,[1] wrongly assumes interpersonal comparability and equality of "utility" functions. In reply, it might be argued that there is perhaps more justification

1. Alfred, not George.

for this assumption in terms of our particular problem orientation, than there otherwise would be. In the Asian context, it seems likely that consumption and income inequalities have been greater than in the West.[1] With the onset of rapid social change, economic egalitarianism has, in consequence, acquired special political force. Stated differently, and within certain limits, for a given level of consumption, C_i, the "felt" level of living tends to be higher, in this particular regional context, where the variance is less. In any event, the hypothesis is offered mainly for heuristic reasons. Since we do not know the operative limits, and since data on the variance in the distribution of consumption within the subset are not available, it will not be incorporated in the level of living function.[2]

---

1. Although statistical confirmation of the point is hard to find, see, for some relevant testimony, W. A. Lewis, The Theory of Economic Growth, op. cit., pp. 226-7, and Simon Kuznets, "International Differences in Capital Formation and Financing", in Capital Formation and Economic Growth, Princeton, 1955, pp. 48-9.

2. An attempt to do so might, for example, involve adjusting per capita consumption to allow for the degree of inequality in distribution. If $\sigma^2_{C_i}$ is the variance and C_i is average per capita consumption in a subset, we can indicate adjusted per capita consumption, C_i', by the expression:

$$C_i' = C_i - \lambda\sigma^2_{C_i}$$

The value of the constant, λ, will depend on the shape of the utility function in the subset.

An alternative approach to the problem of distributive inequalities would be to adjust the aspirations function, rather than the level of living function, to allow for the variance in C_i (or E_i). This would follow logically from the discussion of intersubset contact and comparison as a factor affecting aspirations, cf. supra pp. 36-41. The argument would be that for any level of living in a subset, interpersonal comparisons within the subset will tend to raise aspirations depending on the dispersion about the average level of living. On this basis, the aspirations effect of intersubset comparisons of levels of living might be adjusted to allow for the effect of interpersonal comparisons within a subset. The allowance would correct the intersubset indicator, $(\bar{E} - E_i)$, for the variance in E_i. Thus, aspirations, A_i', as a function of intersubset and interpersonal level of living comparisons, could then be expressed as:

$$A_i' = a\left[(\bar{E} - E_i) + \lambda\sigma^2_{E_i}\right]$$

The second consumption component is urban wage rates, (W). By W we mean average wages per worker per specified work period. For a subset with a higher W_i, consumption and the level of living tend to be higher. In intersubset comparisons, we need not worry about adjusting W_i for variance. In this case, given a reasonably well-organized urban labor market, we can assume more of a tendency for real wages to cluster closely around the average than we can for average per capita consumption.

The question may be raised why we include wage rates among the consumption components at all if we already propose using per capita consumption. In general, in the region we are concerned with, per capita consumption and wage rates will be closely correlated. They may differ only in that they measure the level of living from two different standpoints: expenditure and income. To the extent that they diverge, e.g., if wages prove to be more rigid than employment (and consumption), it may be contended that per capita consumption will be a better, because more inclusive, indicator of the level of living.

In part the answer to this objection is that the two measures can be used as a cross-check, since there is reason to expect incompleteness in both types of data in the Asian context, but no reason to expect systematic bias in either. There is, however, additional justification for using wage rates in the present model. In Southeast Asia somewhere between 65 and 85 per cent of the population derive their livelihood from rural agriculture. Aggregate consumption figures, which are usually the only data available, will therefore tend to reflect per capita consumption in the dominant rural agricultural sector more accurately than in the smaller urban sectors. For measuring per capita consumption in the urban areas where the other sectors, e.g., commerce, construction, public utilities, and manufacturing, are concentrated, urban wage rates are a more reliable guide. While the segment

of the population deriving its support from the urban sectors is relatively small, its importance in articulateness, influence and political activity is disproportionate to its size. In most of Asia, it is from this segment that the leadership and active membership of political parties and organized interest groups are derived. And it is in this segment that the formation and expression of public opinion tends to be concentrated.

Though the point is important and valid in the context we are concerned with, it can as readily be overstated as ignored. To strike the proper balance requires a nice exercise of judgment in this case, no less than in the design of conceptual models of real-world processes, generally. In an effort to approach this balance, we will give urban wage rates a weight equal to per capita consumption in the measurement of the level of living.[1]

The third indicator of the level of living is, unemployment (U), measured as a fraction of the labor force. In general, we can assume that increased unemployment implies lowered output and hence lower per capita consumption. The question arises, however, whether what we want to measure is unemployment, or underemployment as well. If we think of underemployment as referring to the share of the labor force which, though not classified as unemployed, could be withdrawn from present employment without lowering output, then it is clear that underemployment is also of direct relevance for measuring the level of living. As between two subsets, income and consumption will tend to be higher where underemployment, as well as unemployment, is lower.

In fact, underemployment in Southeast Asia is widespread. In varying degrees and in various ways, working habits and social institutions have

---

1. Thus, we will assume that

$$\frac{\delta E_i}{\delta C_i} = \frac{\delta E_i}{\delta W_i}$$

been progressively--or retrogressively--adapted to stretch out the limited supply of employment opportunities in the rural agricultural economies of the region.[1] As would be expected under these circumstances, unemployment statistics which exclude underemployment are likely to be misleading as well as inaccurate. For example, in India's most populous state, Uttar Pradesh, unemployment in 1951 was officially reported as only .1 per cent of the estimated active labor force of nearly 27 million persons. For the entire country, only 700,000 people were reported unemployed at the end of 1955.[2] It is, consequently, important to include underemployment in level-of-living comparisons between subsets. If U_i is officially-reported unemployment in a subset, R_i a measure of underemployment, and F_i the total labor force, then the adjusted unemployment measure, U_i', can be expressed.[3]

$$(6) \quad U_i' = \frac{U_i + R_i}{F_i}$$

Besides being a consumption indicator, U_i' is also relevant to the status component of the level of living. If, for example, per capita consumption is equal in two cases, but unemployment differs (due, for example, to differences in labor productivity), we may expect that the sense of status

---

1. Harvesting rice, by cutting each stalk separately with a knife instead of using a sickle, is one example. See Karl Pelzer, Pioneer Settlement in the Asiatic Tropics, New York, 1945, p. 202.

2. The official designation is "applicants for work." See United Nations Monthly Bulletin of Statistics, May, 1956, p. 19.

3. Resolution of the definitional problem by no means resolves the measurement problem. While reported unemployment figures alone are likely to be misleading, it is extremely difficult to measure underemployment. For the present, we retain U_i' in the model because of its importance and relevance, even though we lack data on R_i.

will be higher where there is less unemployment, and consequently, the level of living--in our terms--will be higher in this case. The incidence of unemployment will, in other words, in itself tend to diminish the status value accompanying any given level of per capita consumption. However, the status effects of the unemployment measure will probably be more limited in Asia than in Western societies. Where, as in the rural sector of the Asian economies, unemployment is shared through the kind of work stretch-outs we have referred to, it tends to be a socially-accepted fact of economic life. To the extent that U_1' is a measure of underemployment, it will therefore not give rise to the same status and prestige repercussions in Asia that we would expect in urban, industrialized economies.[1]

In the region we are concerned with, a more inclusive and reliable measure of the status component is ownership of agricultural land. Needless to say, the measurement of differential status is a difficult and hazardous venture. Sociologists have approached it by devising occupational prestige scales in which the ranking of occupations is determined by interviewing a sample of the population. Among the industrialized countries, considerable similarity has been found in the resulting prestige scales.[2] While the data available on the underdeveloped countries are less adequate, it is generally accurate to say that in Southeast Asia agricultural cultivators owning land enjoy uniformly higher prestige and status than non-owners.[3] If we think of the

---

1. But within the urban, westernized sector, accurate measures of unemployment, expressed as a fraction of the urban labor force, might be a useful status indicator.

2. A. Inkeles and P. H. Rossi, "National Comparisons of Occupational Prestige," American Journal of Sociology, January, 1956, p. 332.

3. Compare the prestige ranking of a small sample in a Thai village. L. Sharp and associates, Siamese Rice Village--A Preliminary Study of Bang Chan 1948-1949, Cornell Research Center, Bangkok, December 1953, pp. 105-107.

agricultural population as divisible into three occupational classes--owners, tenants, and wage laborers--we can say that where the incidence of ownership, expressed as the ratio of owners to total agricultural population, is higher, the status value of any given income or consumption level will tend to be higher.[1] If we let O signify this ratio, the level of living will vary directly with O .

It follows that the marginal rate of substitution between the status component, O , and consumption, C , will be negative, i.e., at a constant level of living, a rise in C implies a fall in O , other things equal. We cannot say, a priori, precisely what the rate of substitution will be. For the moment we assume it is at or close to unity. If both are expressed as index numbers, a given rise in C is assumed equivalent to a commensurate fall in O .

Admittedly, land ownership is only a partial status indicator. In some cases, quite a different type of measure might be more appropriate. In India caste would be an example, though by no means a simple one to work with either conceptually or statistically.[2] Moreover, O doesn't reflect the status implications of urban occupations. Yet in areas like Southeast Asia, where the bulk of the population is agricultural and rural, it may be

---

1. The Census of India (1951) divides the agricultural population, inclusive of dependents, into four classes: (1) cultivators of land wholly or mainly owned; (2) cultivators of land wholly or mainly unowned; (3) cultivating laborers; and (4) non-cultivating owners. Typically, (4) is small relative to the others. In all of the Indian states, it is under 3% of the total. In the classification we are using, O includes both (1) and (4). If T denotes the fraction of the agricultural population comprising tenants and wage laborers, then $O = 1 - T$. See Census of India, Vol. II, Part II-B, Allahabad, 1952, pp. 4-15, for a discussion of the classification system used in the Indian census.

2. Low caste is perhaps less significant than intercaste rivalries and distinctions among the higher castes. One commentator considers it the dominant influence on certain political events in India. See S. S. Harrison's paper on "Caste and the Andhra Communists," American Political Science Review, June 1956, pp. 378-404.

presumed to be a more inclusive status measure than in more industralized and urbanized areas.

We may summarize our discussion of the level of living function, E_i, as follows:

(7) $E_i = g\,(C_i' , W_i , U_i' , O_i)$

(8) $\frac{\delta g}{\delta C_i} > 0 \; ; \; \frac{\delta g}{\delta W_i} > 0 \; ; \; \frac{\delta g}{\delta U_i'} < 0 \; ; \; \frac{\delta g}{\delta O_i} > 0$

F. THE EXPECTATIONS FUNCTION

As already suggested, we regard economic expectations, Ex, essentially as a forecast of the time-shape of the level of living, E. In the Asian context, granting the impatience for economic improvement to which we have previously alluded, it can be presumed that the relevant time period will be fairly short, say between five and ten years, and beyond this limit, improvements in the level of living are not likely to be considered in the formation of current expectations.

It is clear that the factors influencing economic expectations are numerous, varying among cases, and, to a considerable extent, qualitative. The problem concerns not only whether people formulate their expectations "rationally," but--if they do--how they combine and weigh such heterogeneous factors as current economic indicators, confidence in government and government plans, the personal ability and integrity of public leaders, and the designs or whims of nature. Depending on the assumptions he makes concerning these factors, even the rational forecaster will confront a large number of widely differing possibilities, as well as varying subjective probabilities associated with them, in making the judgments we have referred

to as economic expectations. Moreover, whether forecasts then proceed by expected-value calculations, by choosing the minimum (or maximum) among the possible outcomes at each period, or by a unique "best guess" determination for each period, is by no means clear. In a field where imperfect knowledge makes generalization hazardous, we will simplify the problem by suggesting two principles which seem reasonable and relevant for the measurement of Ex.

The first is that expectations are strongly affected by experience. More precisely, judgments about the future time-shape of E are, to a significant extent, arrived at by projection of the rate of change in E in the recent past. The hypothesis may be presumed to have particular relevance in the regional context we are concerned with. Where a widespread emphasis on rapid economic improvement has been stimulated by national independence, it is likely that people will be disposed to judge what they can expect in the future (e.g., from governments, development programs, leaders, etc.) by what they have actually experienced in the recent past, rather than by non-economic evidence of possible future improvements. We will therefore assume that economic expectations will depend on the experienced time rate of change in both the consumption and status components of the level of living. As between two subsets, we hypothesize that expectations will vary directly with the time rate of change in the level of living.

The second principle is that expectations-formation is related to capital formation. In part, people base their estimates of the future time-shape of E on tangible evidence of economic growth <u>other</u> than what has already resulted in direct consumer benefits. One important and

general evidence of this kind is the creation of productive capital to which the expectation of future benefits is attached. The uninstructed, and perhaps illiterate, Asian frequently tends to adopt--even if he doesn't know--the classical theory of capital in arriving at judgments about expected future economic outcomes: he tends to view visible capital as "stored-consumption" which will yield a flow of benefits in the future. He will, to some extent, attribute to the construction of a school or a hospital in the present, the availability of services and benefits to him in the future. Where he sees evidence of the drilling of irrigation wells or the digging of drainage canals on his property or in his village, he will expect higher productivity, income and consumption in the future--at least he will if the activities of the agricultural extension service have been successful.

Economic expectations will be affected by the kinds of capital as well as by the amounts. We must assume that it is the tangible evidence of capital, rather than a general theory of capital, that has the expectations-effect we are suggesting. If the Asian confirms Böhm-Bawerk to some extent, he certainly reads him to no extent. If new capital takes forms he doesn't see (e.g., foreign assets), or doesn't understand (e.g., inventories), it presumably will not affect his expectations.

For this reason, it is preferable to use, as the investment measure of expectations, a combination of the real investment figures for certain specific sectors rather than aggregate investment for the economy as a whole. The sectors chosen should be those in which capital formation is likely to be generally visible and intelligible to people who, though perceptive, are not inclined to think in complex terms of interindustry-flows and roundabout-methods-of-production. While the choice will be

somewhat arbitrary, we suggest that the investment measure of expectations can be expressed as the sum of current net per capita investment in electric power, transportation facilities, agriculture (i.e., irrigation, drainage and flood control), and social services (i.e., health and education). If we call the resulting per capita investment measure in a subset I_i, then Ex_i will vary directly with I_i.

To combine the two hypotheses, we can summarize our discussion of economic expectations as follows:

$$(9) \quad Ex_i = h\left[\frac{d\,E_i}{dt}, I_i\right].$$

$$(10) \quad \frac{\delta h}{\delta\left[\frac{d\,E_i}{dt}\right]} > 0 \; ; \; \frac{\delta h}{\delta I_i} > 0 .$$

G. A SUMMARY OF THE MODEL

The model we have outlined can be summarized by recapitulating the functions and the partial derivative conditions of the preceding sections, using the following terms:

Pe = index of political vulnerability

A = economic aspirations

E = level of living[1]

Ex = economic expectations

D = educational operating outlays per capita

L = literacy

---

1. $\bar{E}$ refers to the mean level of living in the set as a whole.

C = average per capita consumption

W = industrial wage rates

U = unemployment

R = estimated underemployment

F = total labor force

U' = unemployment, adjusted for underemployment, expressed as fraction of total labor force

O = land-owning cultivators as fraction of total agricultural population

$\frac{d E}{dt}$ = time rate of change in level of living

I = per capita investment,

and with the subscript, i, denoting a subset or group within the set.

For the vulnerability function and its derivative conditions, we then have:

$$Pe_i = \phi (A_i , E_i , Ex_i) \tag{1}$$

$$\text{with } \frac{\delta \phi}{\delta A_i} > 0 ; \frac{\delta \phi}{\delta E_i} < 0 ; \frac{\delta \phi}{\delta Ex_i} < 0 . \tag{2}$$

The aspirations function is:

$$A_i = f (D_i , L_i , \bar{E} - E_i) \tag{4}$$

$$\text{where } D_i = \sum_{a=o}^{n} D_{i_{t-a}} , \tag{3}$$

$$\text{and } \frac{\delta f}{\delta D_i} > 0 ; \frac{\delta f}{\delta L_i} > 0 ; \text{ and } \frac{\delta f}{\delta (\bar{E}-E_i)} > 0 . \tag{5}$$

The level of living function is:

$$E_i = g (C_i , W_i , U_i' , O_i) \tag{7}$$

$$\text{where } U' = \frac{U_i + R_i}{F_i} , \tag{6}$$

$$\text{and } \frac{\delta g}{\delta C_i} > 0 \; ; \; \frac{\delta g}{\delta W_i} > 0 \; ; \; \frac{\delta g}{\delta U_i} < 0 \; ; \text{ and } \frac{\delta g}{\delta O_i} > 0 \; . \tag{8}$$

And the expectations function is:

$$Ex_i = h \left[\frac{d E_i}{dt} , I_i \right] \tag{9}$$

$$\text{with } \frac{\delta h}{\delta \left[\frac{d E_i}{dt} \right]} > 0 \; ; \; \frac{\delta h}{\delta I_i} > 0 \; . \tag{10}$$

The derivative conditions [(2), (5), and (8)] constrain, but do not define the functions in the model. Consistent with these conditions, the specific forms we use for the functions are frankly experimental. For the vulnerability function, (1), we might, for example, use a sum or a quotient. Either one, with appropriate signs, would be consistent with the given conditions. Tentatively, we reject the sum on the grounds that it would not allow for differences in the absolute size of the independent variables among the subsets.[1] The form of the vulnerability function which we use

---

1. If the variables are in the first degree, as we presently assume, and the function were in the form of a sum, a given change in one variable would have the same effect on vulnerability in any subset regardless of the absolute value of the variable; i.e., the partial derivatives would be constants. If $\phi (A_i , E_i , Ex_i) = A_i - (\alpha E_i + Ex_i) = Pe_i$

then
$$\frac{\delta Pe_i}{\delta A_i} = 1$$
$$\frac{\delta Pe_i}{\delta E_i} = -\alpha$$
$$\frac{\delta Pe_i}{\delta Ex_i} = -1$$

In contrast, from the standpoint of the aspirations-realities principle discussed in the text (<u>supra</u> pp. 22-23), we would expect a given change in one of the variables to have a greater effect (negative or positive) on vulnerability for lower absolute values of the variable. More specifically, a given rise in per capita consumption is likely to have a greater effect on vulnerability if the rise is from an initially low level than from a higher level. The aspirations-realities comparison, underlying the vulnerability function, implies proportionality.

instead is:

$$\phi\ (A_i\ ,\ E_i\ ,\ Ex_i) \ =\ A_i\ (\alpha\ E_i + Ex_i)^{-1} \ =\ Pe_i \quad . \tag{1a}$$

For the aspirations, level of living and expectations functions, we assume that, within the range and the region we are interested in, the functions are linear and the independent variables in each function have unit coefficients, except for D_i and L_i where the arithmetic mean is used. On these assumptions:

$$f\ [D_i\ ,\ L_i\ (\bar{E} - E_i)] \ =\ \frac{D_i + L_i}{2} + (\bar{E} - E_i) \ =\ A_i \quad ,^{1/} \tag{4a}$$

$$g\ (C_i\ ,\ W_i\ ,\ U_i'\ ,\ O_i) \ =\ C_i + W_i - U_i' + O_i \ =\ E_i \quad , \tag{7a}$$

and

$$h\left[\frac{d\ E_i}{dt},\ I_i\right] \ =\ \frac{d\ E_i}{dt} \ +\ I_i \ =\ Ex_i \tag{9a}$$

Admittedly, the assumptions about weighting and linearity are in considerable part a counsel of expediency. As more work is done with the model, and we get a better idea of relative weights and possible non-linearities, the simplifying assumptions we have made can be modified, and the experimental model adjusted accordingly.

---

1. Since D_i and L_i measure the same, or a closely similar, influence on aspirations, we use their arithmetic average in the function.

Chapter 3

A PRELIMINARY TEST OF THE MODEL[1]

A. THE TEST DESIGN

We have used the concept of political vulnerability to present an experimental model of the complex relationships existing between economic change and political behavior in the real world, or, more accurately, in a particular part of the real world. Yet neither the concept nor the model exactly corresponds to any directly observable reality. They are abstractions from reality. Like concepts and models generally, their purpose is to facilitate description, explanation, and, hopefully, prediction about the real world, rather than to reproduce it. To test the framework we have presented, we need to find out whether, and to what extent, conclusions that can be inferred from it correspond to behavior that can be observed and measured independently of it.

The test we use is based on several premises. The first is that the vulnerability index, as we have defined it and in the region we are concerned with, measures actual or potential extremist political behavior. The second is that one independent measure of extremist political behavior is the voting strength of Communist and directly-allied political parties in elections where these parties are organized and "legal," in the sense that their activity is not prohibited by law. If the two premises are valid, we would expect the vulnerability index, Pe_i , to be closely

---

1. I am greatly indebted to another Marshall, this time Andrew W. of RAND, for his assistance in preparing this chapter. Besides providing invaluable advice generally, he has written the discussion of "The Statistical Model," in Section D.

related to communist voting strength. We will denote the latter, expressed as a percentage of the total vote in a given subset, as V_i.

To apply the test, we use Indian data because they are more readily available and generally more reliable than comparable data for other Southeast Asian countries, and because the Communist Party and affiliated organizations have been, for the most part, overtly active throughout the country. Consequently, electoral data can be considered a valid and independent measure of political extremism. The subsets in the test are the six geographic regions into which India has been divided for the National Sample Survey. For each subset we calculate the share of the total vote received by the Communist Party of India and directly-allied parties in the Parliamentary elections of 1951-2, i.e., we derive V_1 , V_2 ,..., V_n. We then calculate vulnerability indices for the same subsets: Pe_1 , Pe_2 , ..., Pe_n , according to the model. The test consists of fitting a regression of the V_i's on the Pe_i's, and calculating the correlation coefficient for the two series. The regression and the correlation coefficient are then tested for significance as described below.

We turn now to a summary of the data in Sections B and C. The statistical model used for the test is described in Section D, and the results are discussed in Section E.

B. THE ELECTORAL DATA

India's first national Parliamentary elections were held between the end of October 1951 and the end of February 1952. Over 100 million valid votes were cast by nearly 50% of the eligible electorate. Among all parties participating, the Communist Party received the fourth largest number of votes and won the second largest number of Parliamentary seats, though in both respects it ran far behind the dominant Congress Party.

To calculate the communist and its allied vote, the official electoral returns for each state were grouped into the six National Sample Survey regions. There are a few exceptions to the general adequacy of the available data. In Travancore-Cochin, the Communist Party was banned, and Party candidates ran as "independents." In Bombay State, communist candidates ran on a "Joint Front" ticket, and the votes received by the smaller allied radical parties were not fully reported in the available data. In these two cases, it was necessary to interpolate to get communist voting figures. These results were checked to assure consistency with press reports and with votes received by other parties. The figures summarized in Table I can be accepted as reliable. The V_i's appear, appropriately, in the fifth column from the left opposite the rows marked A-F. Table I also shows the returns from the State Assembly elections for comparison with the Parliamentary figures. They indicate, as would be expected, a pattern closely similar to the Parliamentary data, though only the latter are correlated with the vulnerability indices in the test.

C. DATA FOR THE VULNERABILITY MODEL

Calculation of the vulnerability indices is based on the model summarized in Section G of the preceding chapter. In several respects, application of the model necessitated further simplification to accord with limitations of data and time. As already noted, for the vulnerability function we use (1a), (supra p. 56):

$$Pe_i = A_i \, (\alpha \, E_i + Ex_i)^{-1}$$

α is obtained from a regression equation discussed in Section D below. For the aspirations function, we use (4a). In applying (4a) to the data,

TABLE I. RESULTS OF INDIA'S NATIONAL ELECTIONS, 1951-52

Regions and States	PARLIAMENTARY ELECTIONS (1) Vote Polled by C.P.I.	(2) Vote Polled by Other Radical Parties[1]	(3) Total Vote Polled by All Radical Parties	(4) Total Valid Votes Cast	(5) Percentage Vote Received by All Radical Parties (V_1)	STATE ASSEMBLY ELECTIONS (6) Vote Polled by C.P.I.	(7) Vote Polled by Other Radical Parties[1]	(8) Total Vote Polled by All Radical Parties	(9) Total Valid Votes Cast	(10) Percentage Vote Received by All Radical Parties
A. North India										
1. Uttar Pradesh	59,669	85,456	145,125	17,074,957	.850	155,869	142,623	298,492	16,791,139	1.778
B. East India	1,080,525	693,964	1,774,489	24,176,742	7.340	1,246,633	830,810	2,077,443	23,374,015	8.888
2. Assam				2,647,127		69,431	10,133	79,564	2,448,890	3.249
3. Bihar	39,272	133,320	172,592	9,901,452	1.743	108,671	117,277	225,948	9,544,439	2.367
4. Manipur	13,178		13,178	151,467	8.700	[illegible],298		5,298	139,332	3.802
5. Orissa	211,303		211,303	3,705,393	5.703	206,939	82,828[7]	289,759	3,670,275	7.895
6. Tripura	96,468		96,468	157,371	61.300	55,333	2,775	58,108	128,382	45.262
7. West Bengal	720,304	560,644	1,280,948	7,613,932	16.824	804,961	617,797	1,418,758	7,442,697	19.062
C. South India	1,853,623	1,207,515	3,061,138	26,307,225	11.636	2,618,425	1,066,013	3,684,438	26,206,360	14.059
8. Coorg				63,813		[illegible],386		1,386	87,871	1.577
9. Madras	1,780,301	350,257	2,130,558	19,928,519	10.691	2,591,923	155,840	2,747,763	19,974,801	13.756
10. Mysore	73,322		73,322	2,824,427	2.596	21,116		25,116	2,745,515	.915
11. Travancore-Cochin		857,258[2]	857,258	3,490,466	24.560		910,173[2]	910,173	3,398,173	26.784
D. West India	111,138	129,332	240,470	12,410,577	1.938	137,854	100,137	237,991	12,192,567	1.952
12. Bombay	111,138[3]	129,332[4]	240,470	11,528,291	2.086	134,063[3]	98,516[4]	228,579	11,123,388	2.055
13. Kutch				119,580					115,414	
14. Saurashtra				762,706		[illegible],791	1,621	9,412	953,765	.987
E. Central India	1,421,542	34,137	1,455,679	14,876,314	9.785	1,150,595	87,291	1,237,886	15,096,451	8.200
15. Bhopal				169,457		[illegible],424		424	226,190	.187
16. Hyderabad	1,367,404[5]		1,367,404	4,854,862	28.166	1,084,111[5]		1,086,111	5,202,142	20.878
17. Madhya Barat	24,716		24,716	1,953,571	1.265	39,600		39,600	1,987,622	1.992
18. Madhya Pradesh	29,422	34,137	63,559	7,192,591	.884	24,460	87,291	111,751	6,997,489	1.597
19. Vindhya Pradesh				705,833					683,008	
1 North West India[6]	292,241	202,801	495,042	11,051,503	4.479	307,623	295,666	603,289	10,523,748	5.733
20. Ajmer	25,128		25,128	178,999	14.038	[illegible],494		3,494	234,788	1.488
21. Delhi				655,900		[illegible],591	810	3,401	521,776	.652
22. Himachal Pradesh				223,189					179,475	
23. PEPSU		85,522	85,522	1,475,112	5.798	61,238	82,656	145,894	1,354,835	10.768
24. Punjab	261,623	117,279	378,902	4,992,339	7.590	221,119	210,869	431,988	4,974,234	8.685
25. Rajasthan	5,490		5,490	3,525,964	.156	17,181	1,331	18,512	3,258,640	.568
TOTALS	4,818,738	2,353,205	7,171,943	105,897,318	6.773	5,616,999	2,522,540	8,139,539	104,184,280	7.813

Sources: Indian Press Digests, Berkeley, 1952, Vol. IV, No. I, Tables IV, V.

M. R. Masani, The Communist Party of India, New York, 1954, pp. 158 ff.

Press Information Bureau election statistics, Government of India, New Delhi (from Office of Intelligence Research, Department of State, Washington, D.C.).

1. Radical parties are regarded as those firmly allied with or dominated by C.P.I. in 1951, and/or explicitly committed to violent measures in their party program. The following parties are included: Forward Bloc (Marxist), Forward Bloc (Subhasist), Kerala Socialist Party, Kisan Kamgar Paksha, Revolutionary Socialist Party of India, Revolutionary Socialist Party of Uttar Pradesh, United Front of Leftists (including C.P.I. "independents" as well as Kerala Socialist Party and Revolutionary Socialist Party in Travancore-Cochin only), Lal Communist Party, Revolutionary Communist Party of India, Bolshevik Party and Independent People's Party.

FOOTNOTES TO TABLE I (Continued)

2. Because the Party was banned in Travancore-Cochin, communist candidates ran as "Independents" in a "United Front of Leftists." Votes received by the United Front were not shown separately in the data consulted. The figures were estimated by assuming the same ratio between seats won and votes received for the United Front and the Congress Party. Nationally, as well as in Travancore-Cochin, both Congress and communist candidates received a higher proportion of Parliamentary seats than of votes.

3. Includes votes received by the Joint Front.

4. Voting regulations required that candidates polling less than 12-1/2% of the votes cast had to forfeit their candidacy deposit. The figures for Bombay were estimated by multiplying the number of radical-party candidates, who lost the election but did not forfeit, by 12-1/2% of the votes cast.

5. The C.P.I. was banned in Hyderabad and communist candidates ran as the "People's Democratic Front." The figure is the vote received by the Front.

6. Excluding Bilaspur where no elections were held.

7. Estimated from the same assumption stated in (2) above.

D_i (per capita outlays on education) presents some difficulties, which we will return to later. For this reason we will also try an alternative form of the aspirations function, A_i' without D_i. Eliminating D_i, we have:

$$A_i' = L_i + (\bar{E} - E_i) \tag{4b}$$

This will require an additional set of calculations for the various parts of the test.

The data we have been able to obtain on unemployment and underemployment are too fragmentary and unreliable for use in the model. Consequently, for our present experimental purposes, we reduce the level of living function to:

$$E_i = C_i + W_i + O_i \tag{7b}$$

There is reason to believe that unemployment and underemployment may be closely correlated with C_i, as previously noted. Hence, we can infer that the exclusion of U_i' is not likely to affect the results appreciably.

Data limitations require a similar modification in the expectations function. Investment figures for the individual sectors required for I_i are not available. However, there is some reason to believe that, if we had investment data for the Indian regions, they would be closely correlated with the rate of change in the level of living for the time period we are concerned with.[1] Hence, it is probably safe to assume that

---

1. In 1951, before the effective launching of the First Five Year Plan, no sharp change, from the pattern of previous years, appears to have occurred in the relative rates of real investment as among the various Indian regions. If the time rate of change in a subset's level of living at a given period (t) is considered to be a function of investment in an earlier period, (t - n), and if relative real investment among the subsets has not changed from the earlier period, then the rate of change in subset

exclusion of I_i will not materially affect the results in this case. In our preliminary test of the model, we therefore define the expectations function in terms of the rate of change in the level of living only:

$$Ex_i = \frac{d\ E_i}{dt} \tag{9b}$$

From (7b), it follows that:

$$\frac{d\ E_i}{dt} = \frac{d\ C_i}{dt} + \frac{d\ W_i}{dt} + \frac{d\ O_i}{dt}$$

We lack a time series for land ownership (O_i), and hence can't derive $\frac{d\ O_i}{dt}$. However, it is likely that in the period with which we are concerned (1950-51), changes in land ownership were not very great.[1] Assuming that $\frac{d\ O_i}{dt} = 0$, we can therefore say, as an approximation, that:

$$\frac{d\ E_i}{dt} = \frac{d\ C_i}{dt} + \frac{d\ W_i}{dt} = Ex_i \quad , \tag{9c}$$

which is the form of the expectations function used in calculating the vulnerability indices.

The data and sources used in the model are summarized in Table II below.

---

level of living can also be expressed as a function of current investment.

If, for a subset, $\frac{d\ E}{dt} = f\ (I_{t-n})$,

and if $I_{t-n} = k\ I_t$ (for each subset)

then $\frac{d\ E}{dt} = f\ (k\ I_t)$.

Under these circumstances, which seem applicable to the data we are using, we do not need I_i , except as a check on $\frac{d\ E_i}{dt}$, to derive the expectations estimate, Ex_i .

1. The effects on ownership of the Bhoodan or "land gift" movement, and of land reform measures in the States, probably weren't significant until two or three years later. Cf. S. Thirumalai, Post-War Agricultural Problems and Policies in India, New York, 1954, pp. 132-144.

TABLE II. SELECTED ECONOMIC AND SOCIAL DATA FOR STATES AND REGIONS OF INDIA

	(1) Literacy, 1951 (% of Total Population)[1]	(2) Per Capita Consumer Expenditure on Education, 1951 (annual rate in rupees)[2]	(3) Per Capita Consumer Expenditure in Rural Areas April-Nov. 1951 (annual rate in 1949-50 rupees)[3]	(4) Average Annual Wages of Factory Workers, 1951 (rupees)[4]	(5) Land Ownership, 1951 (% of agricultural population owning land)[5]	(6) Rate of Change in Per Capita Consumer Expenditure in Rural Areas, July 1949-Nov. 1951 (rupees per month)[6]	(7) Rate of Change in Factory Wages, 1950-1951 (rupees per month)[7]
North India	10.8	1.08	264.16	960.4	85.4	3.11	2.25
Uttar Pradesh	10.8	1.08	264.16	960.4	85.4	3.11	2.25
East India	16.7	1.32	242.98	1006.1	69.1	1.71	7.02
Assam	18.1			1017.9	80.2		0
Bihar	11.9			1241.5	--		15.20
Manipur	--			--	--		--
Orissa	15.8			762.4	77.0		3.86
Tripura	--			--	--		--
W. Bengal	24.5			942.3	57.5		5.40
South India	22.7	1.56	224.28	664.9	59.7	1.13	6.14
Coorg	--			--	63.8		--
Madras	19.3			664.9	56.9		6.14
Mysore	20.6			--	63.6		--
Travancore-Cochin	45.8			632.1	50.1		--
West India	23.5	1.32	269.20	1270.5	69.5	.85	8.33
Bombay	24.1			1270.5	69.5		8.33
Kutch	--			--	--		--
Saurashtra	--			--	--		--
Central India	11.5	1.56	244.53	862.0	65.8	2.46	-6.23
Bhopal	--			--	--		--
Hyderabad	9.2			--	64.0		--
Madhya Barat	--			--	--		--
Madhya Pradesh	13.5			862.0	67.2		-6.23
Vindhya Pradesh	--			--	--		--
Northwest India	12.5	1.80	332.39	962.4	66.2	.97	7.58
Ajmer	--			694.	86.7		2.85
Delhi	30.4			1292.6	73.0		19.21
Himachal Pradesh	--			--	91.8		--
PEPSU	7.0			--	70.0		--
Punjab	16.5			756.	63.4		-1.27
Rajasthan	8.4			--	63.5		--
All-India	16.7	1.40	254.66	1035.6	69.8	1.84	5.73

(Footnotes attached)

FOOTNOTES TO TABLE II.

1. The regional figures are calculated from National Census data for the major states. Regional and all-India figures are calculated by using state populations as weights. Census of India 1951, Vol. VI, Part I-A, pp. 133-135; Vol. VIII, Part I-B, pp. 130-131; Vol. X, Part IIA, p. 170; and Vol. IV, Part II-B, p. 400 (collective figures for Bombay, Saurashtra and Kutch).

2. The series is from the Third Round of the Sample Survey (Aug.-Nov. 1951), except for North India which is from the Second Round (April-June 1951). Inspection of the data suggests that the Third Round figure for North India is substantially in error. National Sample Survey, Number 2, Delhi, Dec. 1953, pp. 15, 18-24, and Number 3, Jan. 1954, pp. 27-34.

3. Rupee figures have been deflated by Indian general wholesale price index for 1951 calculation 1949-50 base, in order that the rate of change in consumer expenditure (column 6) will be in real terms. Expenditures for the period April-Nov. 1951 represent the mean of consumer expenditures in the Second Round (April-June, 1951) and Third Round (Aug.-Nov. 1951). National Sample Survey, Number 2, op. cit., pp. 18-24, and Number 3, op. cit., pp. 26-34.

4. Regional and all-India figures are calculated from wage data for the major states, using factory employment in 1951 as weights. In Central India, only the data for Madhya Pradesh were available. However, most of the factory employment in Central India is in that state. No factory employment data were available for Travancore-Cochin, so its wage figures could not be used. Indian Labour Gazette (cited in The Eastern Economist, Oct. 14, 1955, p. 612) and India--A Reference Annual, Delhi 1955, p. 432, 440.

5. Calculated from National Census data for occupational classes I (cultivators of land wholly or mainly owned) and IV (non-cultivating owners), including dependents, in the major states. The available data did not include Bihar. Census of India 1951, Vol. II, Part II-B, pp. 31-43; Vol. VIII, Part I-B, p. 21; Vol. X, Part I-A, pp. 106-08; Vol. III, Part I, pp. 38-41; Vol. VI, Part I-A, p. 344; Vol. IX, Part II-A, pp. 214-15; Vol. XIII, Part I, p. 6; Vol. IV, Part II-B, pp. 25-60; Vol. VII, Part II-B, pp. 2-25. Regional and all-India figures are calculated by using agricultural population in the major states as weights.

6. Per capita consumer expenditure in the period July 1949-June 1950 is from the First Round of the Sample Survey. National Sample Survey, "General Report Number 1", Delhi, Dec. 1951, pp. vi-xiii. If C_o and C_1 represent consumer expenditures in rupees of constant value in periods t_o (July 1949-June 1950) and t_1 (April-November 1951), then the average monthly rate of change in consumer expenditure is given by: $\frac{C_1 - C_o}{t_1 - t_o}$.

7. Wages for 1950 are from the same sources mentioned in footnote 5 (above). Employment figures for 1951 are used as weights in calculating rates of change for the six Indian regions and for the country as a whole.

The data on literacy, [column (1)], and land ownership, [column (5)], are from the 1951 Census of India, and those on factory wages, [column (4)], are from the official statistics of the Labor Ministry. They are believed to be reliable. For these three series, the regional figures are derived from data for the major states within the regions using total population, agricultural population, and employment, respectively, as weights to get the regional estimates. The other data, from the first three rounds of the Indian National Sample Survey, are more difficult to evaluate. Standard errors for the survey rounds have not yet been published. However, the results seem to check with rough qualitative information (e.g., on relative consumption levels in different parts of India), and the sample design shows considerable sophistication.[1] Unfortunately, the Sample Survey results can't be evaluated more precisely at this time, except to observe that they are the best data of this type currently available for India or for any other country in Southeast Asia.

Among the Sample Survey data, consumer expenditure on education (column 2, Table II) warrants special comment. It will be recalled that we defined operating expenditures on education and educational services, D_i, as the sum of expenditures over a period of n years, with perhaps $10 < n < 20$. [equation (3)][2] However, the Sample Survey data cover only 1951, so that, in effect, we are obliged to set $n = 1$. In the present case, the results are probably not materially affected by this procedure. In 1951 the pattern of educational outlays in the Indian regions was not

---

1. The National Sample Survey, Number 5, Technical Paper on Some Aspects of the Development of the Sample Design, pp. 1-54, Department of Economic Affairs, Ministry of Finance, Government of India, New Delhi, March 1955.

2. Supra, p. 33.

significantly different from earlier years. It is only after 1951, under the influence of the Five Year Plan, that this pattern altered. Consequently, the relative expenditure figures for 1951 can be considered a reasonably good approximation of the pattern of previous years.

However, D_i raises some other difficulties. The Survey data only cover the direct consumer-outlay component of educational expenditures, e.g., school and teacher fees, purchases of books, stationery, etc. While these outlays may comprise a relatively higher share of total operating outlays than in countries with more extensive systems of public education, it is clear that omission of the states' operating outlays, which don't enter into the consumer budget studies of the Survey, limits the validity of the results for our present purposes. We, therefore, make a separate calculation of Pe_i, based on the other variables in the aspiration function besides D_i, as shown in equation (4b), supra p. 62.

The data used in the vulnerability model present a general problem of differing units and orders of magnitude. Not only are some of the variables expressed in rupees and others in percentages, but even among those expressed in the same terms, there are wide differences in orders of magnitude, i.e., mean values for some of the variables differ by factors of several hundred. Given the linear form of the aspirations, level of living and expectations functions, this presents difficulties since we are interested in according equal weight to the independent variables in the sense of an x% change in any independent variable implying a y% change in the dependent variable. To meet the problem, we treat the independent variables in the model as index numbers based on the India-wide mean as 100. In the actual computation of the vulnerability indices, the variates shown in Table II are replaced by the corresponding relatives,

i.e., a variate, x_i, becomes instead $\frac{x_i}{\bar{x}} \cdot 100$, where $\bar{x}$ is the mean of the series.[1] The resulting indices for the independent variables are shown in Table III, and for the aspirations, level of living and expectations functions in Table IV.

D. THE STATISTICAL MODEL

In this section we describe the statistical model used in analyzing the voting data and the vulnerability indices. As in many applied statistical problems, one is reduced to plausible and reasonable expedients since a completely correct statistical analysis is not possible.

The statistical model we apply is:

$$V_i = Pe_i(\alpha, K) + u_i ; \qquad i = 1, \ldots, n$$

$$= \frac{K A_i}{\alpha E_i + Ex_i} + u_i$$

The random disturbances, the u_i's, are assumed to have mean zero and standard deviation σ and to be uncorrelated, i.e., $E(u_i) = 0$, $E(u_i^2) = \sigma^2$, $E(u_i u_j) = 0$. For purposes of testing the explanatory power of the index, Pe, we make the added assumption that the u_i's are normally and independently distributed.

In analyzing the data, our method is to take the regression of the V_i's on the $Pe_i(\alpha, K)$'s, using a least-squares type of procedure to estimate the best values of the parameters α and K. Because the true

---

1. Because of this procedure, comparisons of vulnerability indices in different sets, or between subsets in different sets, can only be made by reference to the original means on which the relatives are based.

TABLE III. INDEX NUMBERS OF SELECTED DATA FOR REGIONS OF INDIA

	Literacy, 1951 (L)	Per Capita Consumer Expenditure on Education, 1951 (D)	Difference Between All-India and Regional Level of Living Indices $(\bar{E}-E_i)$[1]	Per Capita Consumer Expenditure in Rural Areas, April-Nov. 1951 (C)	Average Annual Wages of Factory Workers, 1951 (W)	Land Ownership, 1951 (O)	Rate of Change in Per Capita Consumer Expenditure, July 1949-1951 $\left(\frac{d\,C}{dt}\right)$	Rate of Change Change in Factory Wages 1950-1951 $\left(\frac{d\,W}{dt}\right)$
North India	65	77	-19	104	93	122	169	39
East India	100	94	9	95	97	99	93	123
South India	136	112	62	88	64	86	61	107
West India	141	94	-29	106	123	100	46	145
Central India	69	112	27	96	83	94	134	-109
Northwest India	75	129	-19	131	93	95	53	132
All-India	100	100	0	100	100	100	100	100

Sources: See references for the corresponding series in Table II.

1. $(\bar{E} - E_i)$ is derived from the level of living indices shown in Table IV, column (2), where $\bar{E}$ represents the all-India index (= 300), and E_i is the index for the regional subset.

TABLE IV. INDEX NUMBERS OF COMPONENT FUNCTIONS IN THE VULNERABILITY MODEL

	(1) Index of Economic Aspirations[1] (A)	(2) Level of Living Index[2] (E)	(3) Index of Economic Expectations[3] (Ex)	(4) Alternate Index of Economic Aspirations[4] (A')
North India	52	319	208	46
East India	106	291	216	109
South India	186	238	168	198
West India	88	329	191	112
Central India	117	273	25	186
Northwest India	83	319	185	158
All-India	100	300	200	100

Source: Tables II and III.

1. $A_i = \frac{L_i + D_i}{2} + (\bar{E} - E_i)$

2. $E_i = C_i + W_i + O_i$

3. $Ex_i = \frac{d\,C_i}{dt} + \frac{d\,W_i}{dt}$

4. $A'_i = L_i + (\bar{E} - E_i)$

least-squares equations are difficult to solve, we have adopted the reasonable procedure of obtaining a least-squares fit subject to the constraint that the means of the V_i's and Pe_i's are equal, i.e., $\bar{V} = \bar{Pe}$. The computing procedure was as follows: For a set of α's, ranging over the interval in which the minimum sum of squares was considered likely to be found, the values of the $Pe_i(\alpha, K)$'s were computed for each α, with each K chosen as a function of α so that $\bar{Pe}\ (\alpha, K) = \bar{V}$. Then the sum of squares

$$\Theta\ (\alpha) = \sum_{i=1}^{n} [V_i - Pe_i\ (\alpha, K)]^2$$

was computed and graphed as a function of α. From this graph the minimizing value of α, and therefore of K, was estimated.

The hypothesis we wish to test is that the vulnerability index, Pe, has some explanatory power vis-a-vis the voting data. A test statistic that is plausible in this case is the following:

$$F_{n-1,\ n-2} = \frac{\frac{1}{n-1} \sum_{i=1}^{n} (V_i - \bar{V})^2}{\frac{1}{n-2} \sum_{i=1}^{n} [V_i - Pe_i\ (\alpha, K)]^2}$$

Under the null hypothesis of no explanatory power of the index Pe, this statistic should be distributed nearly as F with $n-1$ and $n-2$ degrees of freedom. The $n-2$ degrees of freedom assigned to the denominator reflect an allowance that should be roughly correct of the loss of one degree of freedom for the fitting of α. On the other hand, if the index does explain much of the variation in the V_i's then the numerator will be larger than the denominator and large values of F will result. Thus, we should choose as our region of rejection for the null hypothesis the set where $F_{n-1,\ n-2} > F_o$. The F_o therefore

defines the significance level of the test. For levels of significance of 10%, 5%, and 1%, we have respectively for F_o (for n-1 = 5 and n-2 = 4) the values 4.05, 6.26, and 15.5.

While this is probably the best test we can use for the vulnerability index, the sample correlation coefficient, r , of Pe_i and V_i is also calculated and tested for significance, and a confidence interval for this correlation coefficient is constructed. An adjustment of the loss of one degree of freedom for the fitting of α is again made in this case. The correlation analysis requires additional assumptions in order to be valid. In contrast to the assumptions required in the regression analysis, namely that the u_i's be normally distributed and independent, the use of the sample correlation coefficient as a test statistic, or in the construction of a confidence interval, requires that the V_i's and Pe_i's be normally distributed and independent pair by pair. Since the latter assumptions are less credible than those underlying the regression, the correlation coefficient is probably a less suitable test statistic. Nevertheless, the correlation coefficient has descriptive value because its square represents the proportion of the variation in the V_i's attributable to the Pe_i's . For this reason, and also because it is generally familiar, we include it in the test.

E. RESULTS OF THE PRELIMINARY TESTS

From the component functions in Table IV, vulnerability indices for the six regions were computed according to the regression procedure described in the preceding section. For reasons already indicated, two sets of indices were computed: one, including per capita educational expenditures in the aspirations function (A_i), and the other excluding

it (A_i'). Table V shows the vulnerability indices for the fitted values of α and K.[1]

TABLE V. ECONOMIC INDICES OF POLITICAL VULNERABILITY, Pe (α, K)[1/]

	Trial I (α = 1.33, K = 29.52)	Trial II (α = .5, K = 15.98)
North India	24	20
East India	52	48
South India	113	110
West India	41	50
Central India	89	95
Northwest India	40	37
All-India	49	46

Source: See Table IV.

1/ Trial I is computed from $Pe_i = K A_i (\alpha E_i + Ex_i)^{-1}$ and Trial II by substituting A_i' for A_i.

As already noted, the hypothesis we wish to test is that vulnerability indices computed according to the model (the Pe_i's in Table V), are of value in explaining communist voting in India in 1951-52 (the V_i's in Table I). As noted in Section D, the main test is based on the regression of the V_i's on the Pe_i's. A secondary test is made using the correlation coefficient. Results of the tests are shown in Table VI.

---

1. The indices computed with the other values of α are used in a sensitivity test which we will return to below (infra, p. 76, footnote 1).

TABLE VI. VULNERABILITY INDICES AND VOTING PATTERNS--SIGNIFICANCE LEVELS, CORRELATION COEFFICIENTS, AND CONFIDENCE INTERVALS

	Significance Level of the Regression $\sum_{i=1}^{6}\left[V_i - Pe_i(K,\alpha)\right]^2$ *	Sample Correlation Coefficient	Significance Level of Sample Correlation Coefficient**	Confidence Interval for Population Correlation Coefficient*** ($p = .10$)
Pe_i (Trial I, with A_i, and $\alpha = 1.33$)	6%	.9403	2%	$.5227 < \rho < .9940$
Pe_i (Trial II, with A_i', and $\alpha = .5$)	10%	.9005	4%	$.3004 < \rho < .9899$

* Calculated from distribution of F,

where $$F'_{n-1,\, n'-2} = \frac{\frac{1}{n'-1}\sum_{i=1}^{6}(V_i - \bar{V})^2}{\frac{1}{n'-2}\sum_{i=1}^{6}\left[V_i - Pe_i(K,\alpha)\right]^2}$$, and $n' = 6$

** Calculated from distribution of t, where

$$t = \frac{r}{\sqrt{1-r^2}} \cdot \sqrt{n'-3}, \quad \text{and} \quad n = n'-3.$$

*** Interval for population correlation coefficient, ρ, calculated from z-transformation, where

$$z_r + \frac{z_{\frac{1}{2}p}}{\sqrt{n'-4}} < \zeta < z_r + \frac{z_{1-\frac{1}{2}p}}{\sqrt{n'-4}}, \quad \text{and } z_\rho = \zeta$$

(N.B. Each of the asterisked calculations makes an allowance of the loss of one degree of freedom for the fitting of α).

On the basis of Table VI, the null hypothesis, i.e., that the regression, Pe_i, has no explanatory value for estimating communist voting, is rejected at the 6% and 10% levels of significance, depending on whether the Pe_i's are calculated with or without D_i (Trials I and II respectively). Viewed from the correlation standpoint, the null hypothesis asserts that the population correlation coefficient, ρ, is zero. On the basis of Table VI, the $\rho = 0$ hypothesis is rejected at the 2% and 4% significance levels, again depending on whether D_i is included or excluded. The Table also shows that the 90% confidence interval for the population correlation coefficient is between .5227 and .9940 where A_i is used in the model, and between .3004 and .9899 where A_i' is used instead.

It is clear from Table VI that exclusion of educational outlays (D_i) from the model lowers the significance level in both tests. The reason is that D_i is more closely correlated with the V_i's than is the literacy series (L_i) for the six regions. Consequently, eliminating D_i from the aspiration function weakens the regression's predictive value, with the data we are using.[1]

Finally, a partial test was made of the sensitivity of the results shown in Table VI to changes in α, by computing vulnerability indices using values for α other than the minimizing value. The test indicates the results are not significantly affected by changes in α over a

---

1. In this connection, it is interesting to consider the relation between each of the separate variates in the model and the voting series. For this purpose, rank correlation coefficients, as well as product moment coefficients, for the V_i's and each of the variates in Table III (supra, p. 69) were computed. The results were insignificant for six of the variates in Table III, and significant for only two, land ownership (O_i), and the intersubset or "demonstration" variate ($\bar{E} - E_i$).

relatively wide range.[1]

The results thus give some support for the hypothesis that the vulnerability index has explanatory power with respect to the voting data. However, it should be evident from what has already been said that the methods used and the results obtained are primarily of experimental interest and cannot be treated as conclusive. The character of some of the available data, as well as the unavailability of other data and the limitations of the statistical tests, preclude conclusiveness. However, at this stage, our aim is not to be conclusive, but rather to demonstrate how the proposed conceptual framework, relating economic change to political behavior, can be applied, using fairly familiar data; and to suggest that the results obtained are of sufficient experimental interest to warrant further testing in other cases,[2] as well as consideration of whether and how the vulnerability model might have relevance to the problem of U. S. aid allocation in Southeast Asia.

---

1. $\Theta(\alpha)$ was graphed against α, on a logarithmic scale, where $\Theta(\alpha) = \sum_{i=1}^{6} [V_i - Pe_i(\alpha, K)]^2$. The resulting curve was nearly horizontal within the range $1 < \alpha < 10$ where Pe_i included D_i, and within the range $.3 < \alpha < 2$ where Pe_i excluded D_i. A similar result is obtained if the correlation coefficient, r, is plotted against α.

2. It is hoped that data for Burma and/or Indonesia may provide a basis for additional testing of the model.