INFORMATION TO USERS

This reproduction was made from a copy of a manuscript sent to us for publication and microfilming. While the most advanced technology has been used to photograph and reproduce this manuscript, the quality of the reproduction is heavily dependent upon the quality of the material submitted. Pages in any manuscript may have indistinct print. In all cases the best available copy has been filmed.

The following explanation of techniques is provided to help clarify notations which may appear on this reproduction.

1. Manuscripts may not always be complete. When it is not possible to obtain missing pages, a note appears to indicate this.

2. When copyrighted materials are removed from the manuscript, a note appears to indicate this.

3. Oversize materials (maps, drawings, and charts) are photographed by sectioning the original, beginning at the upper left hand corner and continuing from left to right in equal sections with small overlaps. Each oversize page is also filmed as one exposure and is available, for an additional charge, as a standard 35mm slide or in black and white paper format.*

4. Most photographs reproduce acceptably on positive microfilm or microfiche but lack clarity on xerographic copies made from the microfilm. For an additional charge, all photographs are available in black and white standard 35mm slide format.*

*For more information about black and white slides or enlarged paper reproductions, please contact the Dissertations Customer Services Department.
PLEASE NOTE:

In all cases this material has been filmed in the best possible way from the available copy. Problems encountered with this document have been identified here with a check mark □.

1. Glossy photographs or pages □
2. Colored illustrations, paper or print □
3. Photographs with dark background □
4. Illustrations are poor copy □
5. Pages with black marks, not original copy □
6. Print shows through as there is text on both sides of page □
7. Indistinct, broken or small print on several pages □
8. Print exceeds margin requirements □
9. Tightly bound copy with print lost in spine □
10. Computer printout pages with indistinct print □
11. Page(s) ________ lacking when material received, and not available from school or author.
12. Page(s) ________ seem to be missing in numbering only as text follows.
13. Two pages numbered _______. Text follows.
14. Curling and wrinkled pages □
15. Dissertation contains pages with print at a slant, filmed as received □
16. Other ____________________________

University Microfilms International
MULTINATIONAL CORPORATIONS, FOREIGN AID, AND BASIC NEEDS SATISFACTION IN THE WORLD-SYSTEM: A CROSS-NATIONAL STUDY

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

Dale W. Wimberley, B.A., M.A.

* * * * *

The Ohio State University

1986

Dissertation Committee:
Katherine Meyer
William L. Flinn
William Form

Approved by

Katherine Meyer
Adviser
Department of Sociology
To the memory of

John Seidler
When I applied for admission to the Graduate School at Ohio State seven years ago, I was asked to describe my career goals. What did I intend to do with a graduate degree? My response was, in part, that I wanted to make significant contributions both to basic knowledge in the academic sphere and to the betterment of the world beyond the campus. This dissertation, which focuses on explanations of variation in development in the form of satisfaction of basic human needs — e.g., health, nutrition, and basic education — in the underdeveloped world, represents the initiation of a research agenda which pursues both these goals. Third World development in general has attracted much attention in sociology in recent years and is closely linked to issues that have occupied the discipline since its inception in the nineteenth century (e.g., social change and social inequality). But development is much more than a matter of academic concern. Most of the world's people live in the Third World, and most of these people are quite poor. Other than the threat of nuclear war, there is no more important issue for humankind today than the intolerable conditions of life faced by the majority of the population of the underdeveloped countries.

The causal models of basic needs satisfaction tested in this quantitative cross-national study are rooted largely in the dependency and world-system perspectives. These theories claim that underdevelopment is the outcome of links underdeveloped areas have with
developed areas. A number of cross-national studies based on these perspectives have been published over the last decade, but these have tended to focus on development in the form of economic growth and income inequality, virtually ignoring basic needs performance. Despite the importance of these aspects of development, they do not strike at the heart of underdevelopment as does basic needs satisfaction.

In my mind, the term "development" ultimately implies an improvement in the quality of life of the inhabitants of the Third World, for the poor quality of these lives is the single most important problem of the underdeveloped world. The initial goal of development should be to raise all people to some acceptable minimum level of basic needs satisfaction. Development -- essentially the dependent variable of this research -- is therefore of interest primarily because of its mortal significance for a vast number of human beings. Thus, this study, while it attempts to meet very rigorous standards of scientific research procedure, does not attempt to be "value-free research"; the formulation of the research problem itself is explicitly rooted in the values discussed here. The major purpose of conducting this research is to better inform efforts to improve the satisfaction of basic needs in the Third World.

Any scholarly work reflects contributions by many individuals whose names do not appear on the title page. At the risk of inadvertently omitting someone, and without holding anyone listed accountable for the outcome, I gratefully acknowledge those who have aided me in the production of this study. Those with whom I have had fruitful discussions about this research include Eddy ("E. Helen") Berry, Bob
Jiobu, Doo-Sik Kim, Dave Neal, and Ron Wimberley. I want to express particular appreciation to Suzanne Vaughan, who had the misfortune to have a desk next to mine throughout much of the period this research was in process and who took time to discuss various catastrophes that occurred along the way (often as they rolled off the computer). Nathan Keyfitz and Krishnan Namboodiri provided invaluable advice on calculation of one of the dependent variables. Dick Haller of the OSU Sociology Research Lab helped me through several computer-related problems. Brenda Phillips and Linda Reif gave me important assistance in obtaining portions of the data. Several others made major efforts to assist me in obtaining and using data sets which I ultimately had to exclude from this project: Brian Pollins of the OSU Department of Political Science, John Jenkins of the OSU Polimetrics Laboratory, and David Good of the Harvard Business School's Division of Computer Services.

I especially want to thank the members of my committee. As always, Bill Form played the useful role of devil's advocate, and he brought to his reading and criticism of this study his long experience in comparative research. Bill Flinn and Kay Meyer acted as co-advisers. Kay stepped into the vacancy left on the committee by John Seidler's death (on which more below) and gave indispensable advice on all parts of the study. Similarly, Bill Flinn provided valuable input from the outset of this project. Bill also helped me through many of the less intellectual yet crucial aspects of graduate school; frankly, I am not sure that I would have completed a Ph.D. had it not been for his efforts.
I also wish to gratefully acknowledge two sources of material support for the research reported in this volume. A portion of the cost of this project was covered by an OSU Graduate Student Alumni Research Award. Ohio State's Instruction and Research Computer Center provided the computing funds for the statistical analysis. However, neither The Ohio State University, any of its parts, nor the various organizations (cited in the text) which published the data used here bear any responsibility for the analyses or interpretations presented in this dissertation.

Several people in particular deserve mention for their contributions to my graduate career in general. Bill Conway and Gary Stokley nurtured my early interests in sociology and played major roles in my decision to pursue graduate studies in this discipline. Exactly ten years ago, Bill Conway taught the first course I took in sociology. He also taught a course focusing on Third World development in which I first formally pursued the interests that culminated in this dissertation. To Gary Stokley I owe my first (and a very positive) direct encounter with social research. Ron Wimberley provided me with important direction during the decisive period when I decided to do graduate work in sociology, and he has continued to give valuable advice (though I have not always followed it) throughout my graduate career. Jerry Pankhurst, Kent Schwirian, and Clyde Franklin played various major roles in my progress from first-year graduate student to ABD. But most of all, I am grateful to my wife, Cynthia Wimberley, who has shared this academic struggle with me. Though graduate school is difficult enough for graduate students, it is surely more difficult in many ways for their spouses, who receive none of its immediate rewards but make tremendous
sacrifices during these years of schooling and have little control over the progress of degrees sought over this time. Cynthia's companionship has meant a great deal to me throughout the past six and a half years and has helped me to endure the various hurdles of graduate school.

Finally, I wish to acknowledge a deep debt to John Seidler, to whom this dissertation is dedicated. John probably had a greater intellectual influence on me than any other one person with whom I studied in graduate school. Before his tragic death in May 1985, John was my dissertation co-adviser. He made a variety of important contributions to the early development of this research for which I am very grateful, not the least of which was permitting me to think on my own and develop my own interests in this project. The seminars I took from him were among the most valuable courses I ever had, and these too encouraged me to develop my own thinking. But John was a colleague, friend, and wonderful human being as well as an adviser and teacher. He was an unusually gentle, caring, unselfish, and fair person who always wanted the best for those about him. His students knew they could trust him completely. I often sought him for advice on a variety of problems and greatly valued his views. We had a number of common interests, and we had worked together on a (still uncompleted) research project over the past few years. I had looked forward to continuing this relationship after finishing graduate school. Many nights after his death, I would stop and think of him as I sat at my computer writing this dissertation. The discipline has lost a great scholar, the Department of Sociology at Ohio State has lost a particularly valuable
faculty member, and those of us who knew him have suffered a tremendous personal loss.

There is much more that I could say about John, but let it suffice to state that he was a model of the kind of scholar, teacher, and person I want to be. I think the values which gave rise to this research are much the same values which motivated him in his day-to-day life. It is with deep gratitude and a profound sense of loss that I dedicate this volume to his memory.
VITA

May 3, 1957 ......................... Born - Monroe, Louisiana

1979 .............................. B.A., History and Sociology, Louisiana Tech University, Ruston, Louisiana

1979-1980 ......................... University Fellow, The Ohio State University, Columbus, Ohio

1980-1982 ........................... Graduate Teaching Associate, Department of Sociology, The Ohio State University, Columbus, Ohio

1981 ............................... M.A., Sociology, The Ohio State University, Columbus, Ohio

1981-1985 ........................... Graduate Research Associate, Midwest Universities Consortium for International Activities (MUCIA), The Ohio State University, Columbus, Ohio

1983-1985 ........................... Graduate Teaching Associate, Sociology Research Laboratory, Department of Sociology, The Ohio State University, Columbus, Ohio

1985-1986 ........................... Acting Assistant to the Executive Director, MUCIA, The Ohio State University, Columbus, Ohio

PUBLICATIONS


1983  "If I Should Die before I Wake: Religious Commitment and Adjustment to the Death of a Child." Journal for the Scientific Study of Religion 22 (September): 222-238. (With Judith A. Cook.)
The Small City and Regional Community, Volume 4. Stephens
Point, Wisconsin: University of Wisconsin Press. (With
Donald G. McCloud and William L. Flinn.)

FIELDS OF STUDY

Major Field: Sociology

Studies in:

International Development . . . . William L. Flinn
Research Methods . . . . . . . Kent P. Schwirian
Social Psychology . . . . . . . Clyde W. Franklin, II
# TABLE OF CONTENTS

PREFACE ............................................................... iii  
VITA ............................................................... ix  
LIST OF TABLES .................................................... xv  
LIST OF FIGURES .................................................... xvii  

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. INTRODUCTION .............................................</td>
<td>1</td>
</tr>
<tr>
<td>Purpose, Need, and Hypotheses of the Study ...............</td>
<td>2</td>
</tr>
<tr>
<td>The Development of the Concept of Development ............</td>
<td>10</td>
</tr>
<tr>
<td>Economic Growth and Social Modernization ..................</td>
<td>11</td>
</tr>
<tr>
<td>Criticism and Efforts toward Redefinition .................</td>
<td>18</td>
</tr>
<tr>
<td>Development as Basic Needs Satisfaction ....................</td>
<td>25</td>
</tr>
<tr>
<td>The Basic Needs Approach ....................................</td>
<td>26</td>
</tr>
<tr>
<td>Measurement of Basic Needs Satisfaction ....................</td>
<td>31</td>
</tr>
<tr>
<td>Conclusion ..................................................</td>
<td>35</td>
</tr>
<tr>
<td>Notes for Chapter I ..........................................</td>
<td>37</td>
</tr>
<tr>
<td>II. EXPLANATIONS OF UNDERDEVELOPMENT: A REVIEW OF THEORETICAL PERSPECTIVES .................................................</td>
<td>38</td>
</tr>
<tr>
<td>The Dependency Perspective ....................................</td>
<td>39</td>
</tr>
<tr>
<td>Structuralists .................................................</td>
<td>40</td>
</tr>
<tr>
<td>Marxists ......................................................</td>
<td>42</td>
</tr>
<tr>
<td>The World-System Perspective ..................................</td>
<td>47</td>
</tr>
<tr>
<td>The History of the Capitalist World-Economy ...............</td>
<td>53</td>
</tr>
<tr>
<td>The Structure of the World-System ............................</td>
<td>57</td>
</tr>
<tr>
<td>The World-System and the Quality of Life .....................</td>
<td>68</td>
</tr>
<tr>
<td>Related Perspectives on Multinational Corporations and Foreign Aid .......................................................</td>
<td>69</td>
</tr>
<tr>
<td>Multinational Corporations ....................................</td>
<td>70</td>
</tr>
<tr>
<td>Foreign Aid ..................................................</td>
<td>96</td>
</tr>
<tr>
<td>CHAPTER</td>
<td>PAGE</td>
</tr>
<tr>
<td>-------------------------</td>
<td>------</td>
</tr>
<tr>
<td>V. ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>Mortality and Life Expectancy</td>
<td>234</td>
</tr>
<tr>
<td>Infant Mortality</td>
<td>235</td>
</tr>
<tr>
<td>Child Mortality</td>
<td>238</td>
</tr>
<tr>
<td>Life Expectancy at Age Five</td>
<td>241</td>
</tr>
<tr>
<td>Interaction Models</td>
<td>243</td>
</tr>
<tr>
<td>Nutrition</td>
<td></td>
</tr>
<tr>
<td>Calorie Supply per Capita</td>
<td>247</td>
</tr>
<tr>
<td>Protein Supply per Capita</td>
<td>249</td>
</tr>
<tr>
<td>Interaction Models</td>
<td>251</td>
</tr>
<tr>
<td>Education and Literacy</td>
<td></td>
</tr>
<tr>
<td>Adjusted Primary Enrollment</td>
<td>253</td>
</tr>
<tr>
<td>Adult Literacy</td>
<td>256</td>
</tr>
<tr>
<td>Interaction Models</td>
<td>259</td>
</tr>
<tr>
<td>Summary</td>
<td>259</td>
</tr>
<tr>
<td>Notes for Chapter V</td>
<td>264</td>
</tr>
<tr>
<td>VI. CONCLUSION</td>
<td>266</td>
</tr>
<tr>
<td>Discussion of Findings</td>
<td></td>
</tr>
<tr>
<td>Mortality and Life Expectancy</td>
<td>268</td>
</tr>
<tr>
<td>Nutrition</td>
<td>272</td>
</tr>
<tr>
<td>Education and Literacy</td>
<td>274</td>
</tr>
<tr>
<td>General Remarks</td>
<td>276</td>
</tr>
<tr>
<td>Implications for Theory and Policy</td>
<td>279</td>
</tr>
<tr>
<td>Agenda for Future Research</td>
<td>283</td>
</tr>
<tr>
<td>Conclusion</td>
<td>290</td>
</tr>
<tr>
<td>Notes for Chapter VI</td>
<td>292</td>
</tr>
</tbody>
</table>

APPENDICES

A. Marxist Dependency Theorists  
   Frank  293
   Dos Santos  314
   Cardoso  320
   Notes for Appendix A  325

B. Descriptive Statistics for Relevant Variables  326
APPENDICES

C. Countries Included in Each Portion of the Analysis .......... 332

REFERENCES ........................................................... 336
LIST OF TABLES

TABLE

PAGE

1. Summary of Panel Models .................................... 202


4. List of Countries in the Sample ............................ 218

5. Bivariate Correlations between Dependent Variables, 1980 .................................. 228

6. Bivariate Correlations between Independent Variables .................................. 232

7. Lagged Regression Models of Infant Mortality (N = 73) ........................ 236

8. Lagged Regression Models of Child Mortality (N = 73) .................................. 239

9. Lagged Regression Models of Total Life Expectancy at Age 5 (N = 71) .................. 242

10. Lagged Interaction Models for Mortality and Life Expectancy Indicators, 1980 .................................. 244

11. Lagged Regression Models of Log Calorie Supply per Capita per Day (N = 77) .................................. 248

12. Lagged Regression Models of Log Protein Supply per Capita per Day (N = 77) .................................. 250


14. Lagged Regression Models of the Adjusted Primary Enrollment Ratio (N = 74) .................................. 254

15. Lagged Regression Models of Adult Literacy Rates .................................. 257

16. Lagged Interaction Models for Education Indicators, 1980 .................................. 260
## LIST OF FIGURES

<table>
<thead>
<tr>
<th>FIGURES</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Effects of Dependence and Other Factors on Basic Needs</td>
<td>182</td>
</tr>
<tr>
<td>Satisfaction in Third World Countries</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

I would phrase the intellectual questions of our time -- which are the moral questions of our time -- as follows: (1) Why is there hunger amidst plenty, and poverty amidst prosperity? (2) Why do not the many who are afflicted rise up against the few who are privileged, and smite them?

Immanuel Wallerstein (1979:119)

The above quote summarizes neatly the issues that drew me to the study of Third World development as well as some of the other key sociological problems that have held my interest during the past few years. It was the second issue -- overt class conflict, or its absence -- which initially struck me as a dissertation problem. But in the end, the first issue prevailed. Why do human needs go so thoroughly unmet in most of the population of the underdeveloped world? This is the basic problem underlying this study. Wallerstein's second question, of course, implies a general answer to the first: the privilege of a few comes at the expense of the misery of the many. The present investigation focuses on the influence of certain privileged developed-country interests on the living conditions of Third World inhabitants. That is, the explanation of these peoples' unmet needs is sought in the relationships between rich and poor countries.
This chapter begins by explaining the purpose of and need for this study, followed by a broad statement of the hypotheses to be tested. Next, some space will be devoted to the evolution of the concept of "development," the ultimate concern and general dependent variable of this research. Originally defined as economic growth, development has come to imply the satisfaction of human needs, a more fundamental issue than growth. It is these needs which are the focus of this study. Finally, an overview of the remaining chapters will be given.

PURPOSE, NEED, AND HYPOTHESES OF THE STUDY

There are two opposing views on the effects of relations between developed and underdeveloped countries. One, represented by the development "establishment," has been labeled the "diffusionist" perspective (Chilcote, 1984; Stevenson, 1980). Advocates of this perspective characteristically "look to government aid programs, financial institutions, and private corporations and assume that progress will evolve through the diffusion or trickling down of capital, technology, and organizational methods from modern capitalist areas to backward areas of the Third World" (Chilcote, 1978:55). This approach is illustrated rather well in recent statements by the head of one of the chief institutions of the development establishment: A. W. Clausen, president of the World Bank (Clausen, 1985). Clausen claims that the developed countries can contribute to the reduction of Third World poverty and its effects in at least two major ways. One is to directly help the poor through such programs as agricultural lending and lending for low-cost housing. Another way the developed countries can help is
to foster economic growth in the Third World by importing the products of the underdeveloped countries and by investing in the Third World (i.e., investment by private corporations, by commercial banks, and by donors of official foreign aid). In general, Clausen and the World Bank -- as well as other international organizations and the field of "conventional" development economics -- tend to view the role of the developed capitalist nations as potentially helpful, or at worst neutral, for Third World development. Interestingly enough, some diffusionists occupy the opposite ideological pole, or, perhaps more accurately, some Marxists are also diffusionists. Bill Warren (1980), for example, sees the advance of capitalism into the Third World as a progressive force bringing industrialization. Marx himself could well be called a diffusionist, seeing the advanced capitalist countries of his day as the image of the future for their colonies and other underdeveloped areas.

A quite different position is taken by advocates of dependency, world-system, and related radical perspectives. This opposing view claims that the relationships between the developed and underdeveloped countries created and still perpetuate underdevelopment, at least for the bulk of Third World populations. Those advocating this perspective argue in varying degrees that the more the underdeveloped countries are linked to the developed countries, the more underdeveloped they become. Andre Gunder Frank (1972), one of the best-known proponents of this viewpoint (though not, perhaps, one of those with the best arguments), claims that trade, foreign aid, and operations of multinational corporations (MNCs) in the Third World have contributed to the
underdevelopment of these "satellite" countries while simultaneously advancing development in the developed, or "metropolitan," countries. Frank states that "all of Latin America's colonial, capitalist history shows that, far from guaranteeing development, [export expansion] develops underdevelopment" (1972:130). Attacking foreign aid as well, he claims that "the more 'external assistance' from the imperialist metropolis, the more underdevelopment for Latin America" (1972:130). He devotes particularly extensive attention to harmful effects of MNCs. Similar conclusions are reached by such scholars as Stephen Hymer (1972) and Cheryl Payer (1982), as well as by more popular authors including Richard Barnet and Ronald Mueller (1974) and Frances Moore Lappe, Joseph Collins, and David Kinley (1981).

The purpose of this research is to empirically test certain elements of these opposing viewpoints. Specifically, this is a cross-national study of the relationships between MNC investment and foreign aid, on one hand, and the satisfaction of "basic human needs" (including health, nutrition, sanitation, safe water, housing, and basic education) in Third World countries, on the other. Panel designs covering periods beginning in the 1960s and ending as late as 1980 will be used to assess these relationships.

Such a study is needed to help fill a large gap in the cross-national research literature on development. It will be shown later in this chapter that, for many scholars of development (including adherents of the diffusionist perspective), "development" is coming to mean first and foremost that basic human needs -- food, water, sanitation, housing, health, basic education, and so on -- are more adequately satisfied.
During the 1950s and 1960s, it was generally accepted that economic growth was the measure of a nation's development. In recent years, however, the emphasis of development specialists and policy-makers has turned increasingly to the reduction of poverty and the satisfaction of basic needs, with economic growth seen as an important means to these ends but no longer as the only goal of development policy.

While a number of cross-national studies have examined the apparent influence of linkages between developed and underdeveloped countries on the development of the latter, these have focused primarily on economic growth as a dependent variable. There have also been many studies of income inequality, though they have been hindered by a scarcity of relatively good income inequality data. (Studies of economic growth, on the other hand, have benefited from international organizations' deep and persistent interest in indicators of growth -- though these measures are not without defects in measurement.) Income inequality has received much emphasis in conceptualizations of development during the last decade or so. But even income inequality does not necessarily translate into basic needs satisfaction, a factor virtually ignored in cross-national development research (much of which is conducted by social scientists who view relations between developed and underdeveloped nations as disadvantageous for the latter).

Why have economic growth and income inequality received so much attention? It is true that money is a means to ends such as extravagant consumption, power, and more money. But for most of the Third World's population, money (its availability being influenced by growth and inequality) is primarily a scarce means to obtain necessities of life.
Undoubtedly, many studies of growth and inequality are motivated by a concern for this fact. Implicit in the cross-national research literature on growth and inequality, then, is the notion that the satisfaction of these necessities is of enormous importance -- a notion that is, no doubt, close to the hearts of many dependency and world-system scholars such as Wallerstein, whose quote opened this chapter. Many of those who have conducted cross-national studies from the dependency/world-system perspective might well agree that economic growth and income inequality are important for the Third World largely because of the presumed effects they have on basic needs performance.

Glenn Firebaugh takes much the same position. In a critique of one cross-national study of income inequality which appeared in the American Sociological Review, he makes the comment:

Why are we interested in cross-national variations in income inequality? In itself, inequality in income may not be as interesting as many sociologists think. Indeed, I suspect that what cross-national studies of income inequality are really interested in (though they usually do not state it explicitly) is inequality in standard of living, or economic inequality. However, the use of income inequality as a proxy for economic inequality can be questioned, since the relationship between income distribution and standard-of-living distribution varies substantially across nations.... And therein lies the potential danger in using income inequality as a proxy for economic inequality: to the (unknown) extent that income inequality understates (or overstates) economic inequality differently across nations, to that same extent the cross-national correlation between income inequality and economic inequality is attenuated. [Firebaugh, 1980:143; second emphasis added]

Firebaugh notes several factors on which the relationship between income inequality and "inequality in standard of living" -- or "economic inequality," by which he seems to mean a concept similar to that of
"basic human needs satisfaction" -- is contingent: (1) fringe benefits received by some employees in some countries which are not factored into measures of income inequality, (2) the degree to which governments pay for such services as education, health care, transportation, housing, and food, and (3) the role of variables other than income in determining purchasing power (e.g., political position in Eastern bloc countries, where many consumer goods are perpetually scarce). He might have added that the prices of specific goods vary across nations and that large quantities of certain goods are not obtained with money in some countries.

It is not my intention to belittle the importance of income inequality as an phenomenon for investigation, nor do I claim that the satisfaction of basic needs constitutes all that is meant by "development." However, an exclusive focus on income inequality, as on economic growth, yields an incomplete picture of development. In any case, whether or not other researchers on this issue agree with Firebaugh's or my contentions, my own position is that if the influence of the developed countries on the Third World is important, it cannot be more important for any issue than for that of basic needs satisfaction.

The little cross-national dependency/world-system research which has used basic needs indicators as dependent variables has tended to concentrate on trade and international political/military ties as explanatory variables. However, much of the dependency, world-system, and related literature -- the basis of this study's hypotheses -- places greater importance on capital flow linkages, such as MNC operations and foreign aid, as the key relations between core (developed) and
peripheral (underdeveloped) areas in the post-war period. MNCs in particular are emphasized by theorists in these radical perspectives. Stephen Resnick, for example, writes that as formal colonialism has disappeared since World War II, "The multinational corporation ... has become the outstanding feature of the new international system that continues the historic dependence of the hinterland on the center" (1975:320). After an exhaustive search of the literature, I was able to locate only a handful of studies which specifically address the relationship between capital flows and measures of basic needs performance. (These are examined in depth in Chapter III.) Some of these are reasonably good studies, though they are far typically less sophisticated than much of the research on economic growth and income inequality, and some have severe defects. However, if only because they are few in number, these studies necessarily leave untouched many issues raised in the much larger literature on capital flows, growth, and income inequality. While the research presented here will hardly resolve the differences between the "diffusion" and "dependency" viewpoints contrasted earlier, it will help to fill major lacunae in the previous cross-national research on dependence and development.

The value of such knowledge is twofold. First, it has theoretical importance: it contributes to the scientific understanding of the role of world-scale social structures in the evolution and persistence of disprivilege, an issue which has attracted much attention among sociologists during the past decade. Second, the results of this investigation are potentially of great practical significance. One should not overdramatize the value of conducting such research in the
absence of more overt actions. However, combined with the results of other research on related issues, these findings could guide Third World governments concerned about the welfare of their populations (to the degree that such concerns exist) in the formulation of policies toward capital flows from the core. Similarly, inhabitants of both underdeveloped and developed countries who want to improve the well-being of Third World peoples can better choose appropriate actions toward actors within these structures of capital flows on the basis of this body of empirically-derived knowledge.

Four hypotheses are to be tested in this study. They are stated here in general terms; they will be derived from the existing literature and stated more precisely in Chapter IV. First, the greater the level of MNC investment in an underdeveloped country, the less basic needs will be satisfied in that country. Second, the greater the level of borrowing from official foreign sources (i.e., foreign aid) by an underdeveloped country, the less basic needs will be satisfied in that country. The next two hypotheses specify a condition under which the effects stated in the first two hypotheses are expected to be stronger: the negative influences of (1) MNC investment and (2) foreign aid are more pronounced in high-income Third World countries than in low-income Third World countries. It is anticipated that all these effects will be more apparent in the long term and might well be reversed in the short term (e.g., zero to three years). Each hypothesis will be examined with several different indicators of basic needs performance as dependent variables. The sample of countries to be analyzed will consist, with a
few exceptions, of all Third World countries for which adequate data are available.

THE DEVELOPMENT OF THE CONCEPT OF DEVELOPMENT

Stated broadly, the phenomenon for which this dissertation seeks an explanation is development. The concept of development has a long history in social thought and sociological theory. It is clearly a variant of the idea of "progress" -- and is infused by the assumption of the inevitability of progress -- that has so permeated modern Western thought (Bury, 1920; Wallerstein, 1983:97).

In the past, sociologists typically associated development with "modernity," as opposed to "tradition." This tradition-modernity dichotomy is reflected in Toennies' (1957) Gemeinschaft and Gesellschaft, in Durkheim's (1933) mechanic and organic solidarity, and in Marx' (1967) feudal-agricultural and urban-industrial societies (Portes, 1973). Bendix (1967) locates the origin of the "modernity" concept in the intellectual influence of the political and economic revolutions of eighteenth-century Europe. Closely related to the notion of modernity is the idea, long prominent in sociological theory, of "social evolution" (Nisbet, 1969).

In economics, progress in general and Third World development in particular have been interpreted to mean "economic growth." Major components of this process include growth in industrial production (reflected in Gross National Product [GNP]) and an increase in the relative size of the industrial labor force.
The section which follows briefly examines conceptualizations of development as economic growth and social modernization, along with links between these concepts. Afterward, some criticisms of these views of development are surveyed, and certain attempts at redefining development are discussed. This examination of the concept of development serves as a prelude to the next major section of this chapter, which presents the conception of development underlying the present research: basic needs satisfaction.

ECONOMIC GROWTH AND SOCIAL MODERNIZATION

Following World War II until the early 1970s, the notion that economic growth represents development was so taken-for-granted that discussions of growth in the underdeveloped world scarcely addressed such issues as, "What is development?" or "Why is economic growth equivalent to development?" Economic growth -- growth in production (or production per capita) of goods and services -- was thought to be the crucial need of Third World countries and was virtually seen as the solution to any other problems in these countries. Therefore, the goal for the underdeveloped countries was considered to be a sustained annual growth rate in GNP of 5 to 7 percent. Development was measured in terms of levels of and growth in real per capita GNP. Development policies thus emphasized industrialization, since it had great potential for high levels of productivity, and gave little attention to agriculture. The existence of poverty in the underdeveloped countries was certainly recognized, but it was held that economic growth "would either 'trickle down' to the masses in the form of jobs and other economic opportunities
or create the necessary conditions for the wider distribution of the economic and social benefits of growth" (Todaro, 1981:68).

Development economists of this era wrote about "characteristics" and "stages" of growth (Kuznets, 1966, 1973; Rostow, 1960) and developed theories to explain it (e.g., Lewis, 1954; Ranis and Fei, 1961), rather than question growth's importance. And while economists devoted their attention to economic growth, sociologists and other social scientists contemplated and analyzed the "modernization" (read "Westernization") of individuals and social structures in the underdeveloped countries. Economists, sociologists, psychologists, and political scientists saw modernization as a means to economic growth, wherein lay much of its importance.

Simon Kuznets, who received the Nobel Prize in Economics in 1971 for his work on "modern economic growth," is one of the most noteworthy proponents of economic growth as development. Kuznets views modern economic growth as the mark of the current "economic epoch," which began in the late 1700s as a product of modern technology, itself a product of modern science. In his Nobel lecture (Kuznets, 1973), he discusses six important characteristics of the growth which has occurred in the developed capitalist countries. The first two characteristics are aggregate trends: (1) high growth rates in population size and in product per capita and (2) a high rate of growth in productivity (the level of output with respect to total inputs). Two more characteristics have to do with structural transformation: (3) high rates of structural transformation of the economy, e.g., employment shifts from agricultural to nonagricultural sectors and even from industrial to service sectors,
growth in the scale of firms, and trends toward more impersonal organization of productive units; and (4) rapid change in social and ideological structures ("urbanization and secularization come easily to mind as components of what sociologists term the process of modernization" [1973:249]). Finally, there are two characteristics associated with the international spread of modern economic growth: (5) the advanced transportation, communications, and other technologies of the developed countries enable them to touch the entire world, making it a unified world for the first time, but (6) the economic growth made possible by modern technology has scarcely begun to be realized in countries where most of the world's population lives.

This geographical limitation of modern growth results from the absence of stable yet adaptable political and social structures in the underdeveloped countries and from priority given political independence and improvement of natives' status in the wake of colonialism and related political restrictions imposed on these countries by the developed nations. The less developed world is also characterized by per capita product levels below those of the developed countries on the eve of industrialization, which even then had distinctly high per capita products. And even though the developed world has accumulated a stock of innovations in technology and in social and political structures which have spurred their own growth, these innovations may be poorly adapted to conditions in the less developed countries. For example, the technology of the developed countries is geared to relatively plentiful supplies of capital, whereas the underdeveloped countries have little capital but large supplies of labor (Kuznets, 1973).
In *Modern Economic Growth* (1966), Kuznets does note certain values underlying his and others' emphasis on economic growth:

Clearly, our very finding of high rates of growth per capita product is contingent upon a scheme of values that recognizes economic products over and above some bare minimum needed to hold body and soul together as something positive.... [This approach to economic growth reflects] the value system of the current economic epoch.... [1966:503]

There is, he says, a quality as well as a quantity of economic growth "in terms of costs and returns based on broader criteria of human welfare than are reflected in the market place, even if modified by government intervention or other noneconomic influences" (1966:503-504). However, such variations in quality are hard to measure.

The same rates and structure of economic growth ... may conceal considerable differences in human costs and gains not reflected in our measures of output and input.... But it would be difficult to translate [such quality differences] into quantitative equivalents that could somehow be combined with the commonly used grosser measures of output and input, income and costs. [1966:504]

A politically influential and perhaps more popular advocate of economic growth as development was W. W. Rostow, whose major work is *The Stages of Economic Growth: A Non-Communist Manifesto* (1960). Rostow, an economic historian, was Director of Policy and Planning in Kennedy's State Department and served as chief advisor on Vietnam and as a primary spokesperson on foreign affairs in the Johnson administration (Frank, 1969). Less cautious than Kuznets about the repeatability of Western development processes, he claims that "it is possible to identity all societies, in their economic dimensions, as lying within one of five
categories: the traditional society, the preconditions for take-off, the take-off, the drive to maturity, and the age of high mass-consumption" (1960:4).

The traditional society is characterized by low levels of productivity associated with pre-modern technology and pre-modern attitudes toward the physical world. The preconditions for take-off first appeared in Europe circa 1700, when the application of modern science led to increased agricultural and industrial productivity. These preconditions have most often been introduced to traditional societies by more advanced societies, however. During this stage, the belief arises that "economic progress" is desirable as well as possible, and the rudiments of various institutions important for economic growth are established.

The take-off stage is "the great watershed in the life of modern societies" (1960:7). In this period, former obstacles to growth (often technological in earlier times, often political more recently) are overcome and growth becomes the "normal condition" of the society. Investment and savings grow, and industrial production, profits, reinvestment, and employment climb rapidly while agriculture becomes modernized and commercialized. At maturity, the fourth stage, an economy applies modern technology not only to "take-off" industries but throughout the economy. The economy "demonstrates that it has the technological and entrepreneurial skills to produce not everything, but anything that it chooses to produce" (1960:10).

In 1960, the United States was well into the fifth stage, "the age of high mass-consumption," and Western Europe and Japan were entering this
During the previous phase income per capita rose sufficiently so that basic food, clothing, and shelter were no longer problematic. Consequently, the fifth stage sees leading sectors of the economy focused on durable consumer goods and services. Application of modern technology to new areas is no longer a major goal, and more resources are devoted to social welfare.

While development economists such as Kuznets and Rostow devoted their full attention to economic growth, sociologists and other social scientists studied "modernization." Some of these scholars focused on the structural-level phenomenon of "social evolution." The social evolutionists borrowed several ideas contributed by nineteenth-century social evolutionary theories. One of these is "bipolar theories," which condense evolutionary stages into two opposed ideal types (i.e., modernity and tradition in many of the simpler renditions of modernization theory). A second contribution of the older social evolutionary theories is "social differentiation," a linear, unidirectional trend toward societal complexity. Finally, there is the notion of "evolutionary universals," developments so important to evolutionary progress that they are apt to be discovered and adopted by a wide variety of societies (Portes, 1976). In general, the more recent social evolutionists assume that the achievements of the developed countries are necessarily the goals of the underdeveloped world, and that the path to development followed by the developed nations must be the path to development for the underdeveloped nations. Such modernization at the structural level is viewed specifically as an aid to economic growth, and even as a form of development itself.
Eisenstadt (1966), Hoselitz (1960), Parsons (1964), and Smelser (1968) are some of the notable advocates of this view.

Other proponents of modernization emphasized phenomena at the social psychological level. These thinkers sought to identify attitudes and values that mark the modern (in effect, Western) individual and to argue how these characteristics contribute to or constitute development. A long list of such modern traits was developed. The most elaborate study of individual modernity (Inkeles and Smith, 1974) specifies twelve dimensions: (1) openness to new experience, (2) readiness for social change, (3) growth of opinions about politics, the local community, and similar issues, and realization of the existence of diverse opinions, (4) knowledge of facts relevant to the above opinions, (5) a time dimension involving orientation to the present or future instead of the past and acceptance of fixed schedules and punctuality, (6) belief in human efficacy over the environment, (7) orientation to long-term planning, (8) trust that others will meet their obligations and a general belief in the "calculability" of the world, (9) acceptance of technical skill as the basis for distribution of rewards, (10) educational and occupational aspirations, (11) protectiveness of the dignity of weaker and subordinate persons, and (12) understanding of the productive process (1974:19-24). Additional modern traits listed by other authors include (1) participation in organizations and electoral processes, (2) individualism (as opposed to strong family obligations), (3) secularism, (4) a consumption orientation ("desire to own new goods"), (5) preference for urban residence, and (6) geographic mobility (Portes, 1973). These other proponents of individual modernity include
Hagen (1962), Lerner (1965), McClelland (1961), and Rogers (1969). The theme underlying these scholars' work is their reductionist implication "that the value orientations and modes of behavior embodied in modernity somehow aid, promote or lead to the structural transformations associated with development" (Portes, 1973:252-253).

The economic growth and modernization approaches to defining development have two conceptual similarities which have helped lead to their rejection by many contemporary thinkers. First, advocates of these viewpoints have implicitly or explicitly defined "development" as the current state of the Western industrialized nations, and they similarly tend to assume that there is but one (Western) path to development. Second, these perspectives assume -- to the degree that they do not totally ignore this as an issue -- that economic growth and modernization will automatically lead to adequate availability of such basics as food, clothing, and shelter for large portions of Third World populations.

CRITICISM AND EFFORTS TOWARD REDEFINITION

The view of development as social modernization was largely discarded in the 1970s. To a large extent, it was the Western ethnocentricity of the perspective which doomed it. After all, thought many scholars, why should Western attitudes, values, and behaviors necessarily be desired by other peoples? Theoretical and empirical critiques of the supposed links between modernization and economic growth also damaged "modernization theory" (Armer and Isaac, 1978; Portes, 1973, 1976; Portes and Cobas, 1976).
Also important were conceptual developments in economics during this period. Growth, the economists' key variable, still seems relevant to the degree that it is causally associated with improvement in very adverse material conditions. But following a number of development failures in the 1960s, development economics underwent something of a paradigm shift (Streeten, 1979). During the 1950s and 1960s, many Third World nations did in fact meet the commonly-accepted development goal of 5 to 7 percent annual growth in GNP, yet large segments of their populations remained under very poor living conditions which had changed little since the beginning of the First Development Decade declared by the United Nations for the 1950s (Todaro, 1981:68). Consequently, "economic development during the 1970s was redefined in terms of the reduction or elimination of poverty, inequality, and unemployment within the context of a growing economy" (Todaro, 1981:68; original emphasized).

Hollis Chenery of the World Bank sums up the real-world reasons for this upheaval in development economics in a Bank publication:

It is now clear that more than a decade of rapid growth in underdeveloped countries has been of little or no benefit to perhaps a third of their population. Although the average per capita income of the Third World has increased by 50 percent since 1960, this growth has been very unequally distributed among countries, regions within countries, and socio-economic groups. Paradoxically, while growth policies have succeeded beyond the expectations of the first development decade, the very idea of aggregate growth as a social objective has increasingly been called into question. [1974:xiii]

Chenery is not a radical; others were even less optimistic about the proportion of Third World inhabitants who had not benefited and about
the issue of whether they had held their position or in fact faced
deteriorating conditions. But it became obvious even to relatively
conventional development economists that growth in GNP was not
necessarily equivalent to what most people think of as "development."
As Irma Adelman writes,

Implicitly, by concentrating on growth, development economists have
assumed that other goals, such as greater equity, need not be
considered because they are positively correlated with growth....
We [Adelman and Cynthia Taft Morris] found that for the longest
part of the development process -- corresponding to the transition
from the state of development of sub-Saharan Africa to that of the
least developed Latin American countries -- the primary impact of
economic development on income distribution is, on the average, to
decrease both the absolute and the relative incomes of the poor....
Growth alone as a goal ... has been discredited ... in the minds of
most of us. [1975:302, 307]

Dudley Seers (1969), a prominent development economist who is perhaps
to the left of "conventional," was an early strong critic of development
defined as growth and of the view "that increases in national income, if
they are faster than the population growth, sooner or later lead to the
solution of social and political problems" (1969:2). The single,
comprehensive, quantified measure of GNP (i.e., national income) had
been a convenient measure of development for politicians and economists.
However, the 1960s saw social and political disruption in those
countries of the Third World experiencing rapid per capita growth as
well as in those with stagnant economies. Indeed, Seers feels that
particular kinds of economic growth actually caused such social and
political turmoil.

In the face of such critiques by Seers and others, the old
conceptions of development began to collapse, and new definitions of
development were suggested. For example, Portes (1973), a sociologist, defined national development as a combination of three phenomena: (1) large, sustained increases in economic productivity, (2) more equal distribution of national income, and (3) development of a positive, optimistic national self-image combined with a will to forego immediate gratification to further the first two aspects of development. But others suggested more fundamental redefinitions.

Seers was an important figure in this movement. He proposed a conceptualization of development rather different from economic growth or social modernization: "'Development' is inevitably a normative term and we must ask ourselves what are the necessary conditions for a universally acceptable aim -- the realization of the potential of human personality" [1969:2; emphasis added]. Adequate food is one absolute requirement for meeting this goal. The ability to obtain food and other basic needs such as clothing and shelter is dependent on one's income. Income, then, is a major aspect of development, though its importance quickly diminishes as these basic needs are met. Another requirement for the development of personality is a "job," broadly defined to include study, laboring on a family farm, or housekeeping, as well as "paid employment." Dependence on another for survival "is incompatible with self-respect" (1969:3). Along with poverty and unemployment, inequality is another measure of the absence of development. Not only does inequality obstruct the potential impact of economic growth on poverty, but it also contributes to the class and racial prejudices of the dominant groups. Economic inequality thus impairs the personalities of the rich as well as the poor. Progress toward adequate incomes, high
levels of employment, and equality, then, are marks of development.
Increases in per capita income, when concurrent with regress in these other areas, cannot be labeled development. A combined struggle against poverty, inequality, and unemployment is an internally consistent goal, for these phenomena are causally related. Unemployment leads to both inequality and poverty. Inequality is also a cause of poverty.

Other factors often viewed as ends in themselves may also act as means to development. Seers suggests that political liberty, the ability to openly oppose the government, may enhance a society's flexibility in dealing with changing conditions. Education plays a similar role. Availability of secondary and higher education to the poorest can help reduce inequality. Increased availability of education can also enlarge the pool of professionally skilled workers and thereby reduce the salaries necessary for such workers. Reduction of population growth would relieve pressures resulting in unemployment and would raise the wage levels of the unskilled by reducing competition for jobs. Slower population increase would also make it easier for the government to fund social services such as education.

Adequate measures of poverty, inequality, and unemployment may be unavailable for Third World countries, but they are not in principle unobtainable. Seers' ultimate goal, however, is "the realization of the potential of human personality." If the existing measures of poverty, inequality, and unemployment are less than perfect, measures of this psychological variable across the Third World are nonexistent. Indeed, comparable cross-cultural measures of this indicator may be in principle
difficult, if not impossible, to obtain. For the empirical researcher, then, the more concrete measures are more promising.

Like Seers, Michael Todaro sees development and underdevelopment as more than merely economic phenomena. He quotes Denis Goulet (1971:23) with approval:

The prevalent emotion of underdevelopment is a sense of personal and societal impotence in the face of disease and death, of confusion and ignorance as one gropes to understand change, of servility toward men whose decisions govern the course of events, of hopelessness before hunger and natural catastrophe. Chronic poverty is a cruel kind of hell.... [quoted in Todaro, 1981:69]

Therefore, the concept of development must encompass, in addition to the dimensions of economic growth, reduction of inequality, and elimination of absolute poverty, dimensions of change in "social structures, popular attitudes, and national institutions" (Todaro, 1981:70, original emphasized).

Accordingly, Todaro presents three basic components of development. First is an economic component, "the ability to provide basic needs" (life-sustenance), which include food, shelter, health, and protection. A fundamental goal of economic activity must be to enable the greatest possible number of people to obtain these necessities of life. He also proposes two non-economic components. One is "self-esteem," "a sense of worth and self-respect, of not being used as a tool by others for their own ends ... [, of] authenticity, identity, dignity, respect, honor, or recognition" (1981:71). Self-esteem may vary in form across societies and cultures, but, Todaro claims, its essence is universal. The diffusion of "modern" values, however, has widely instilled the idea that the worth of a society is measured in terms of national prosperity
and the idea that the importance of a person is measured in terms of his or her material achievement. Thus, insult has been added to the injury of poverty. The poor are not only poor -- they are despised, and furthermore, they know that they are despised. Todaro's final component of development is "freedom," in the basic sense of freedom "from alienating material conditions of life" and from "servitudes ... to nature, ignorance, other men and women, misery, institutions, and dogmatic beliefs" (1981:71).

Out of such conceptual ferment have grown new semi-official views of development and strategies by which to achieve it. One of these views that appeared in the 1970s was "redistribution with growth," presented in a book by that title (Chenery et al., 1974) which was published with support from the World Bank. In his introduction to this volume, Chenery states that although the benefits of economic growth become more evenly distributed after a period of income concentration early in the development process, the poor still receive small shares of the increase in national income in "developing" countries. He proposes a modified measure of growth in GNP to take this issue into account. Chenery notes that "the growth of GNP is a special case [of a single index of social welfare] in which weights are proportional to the group's existing share in the national product" (Chenery, 1974:xvi), and thus in typical underdeveloped countries the 40 percent with the highest incomes receive three-fourths of the weight in GNP. He suggests a better measure of social welfare, based on national income growth, in which various income groups receive weights either in proportion to their numbers or inverse to their initial income. Growth is critical to social development, but
growth alone is not automatically helpful to the poor. Chenery advocates a shift from a simple growth-oriented development strategy to a poverty-oriented strategy, a strategy which would require direct interventions "such as land reform, the distribution of education, and other public services, and measures to redistribute assets towards the poverty groups" (1974:xvii) in addition to market-based distributional policy instruments. This reorientation of policy and planning in turn called for collection of kinds of data which had not received so much attention in the past. Much of the data analyzed in this study were in fact assembled by the World Bank as a result of this policy shift.

Still, even more fundamental changes in the conceptualization and measurement of development were to be successfully advocated in the late 1970s. By then, even redistribution with growth and the related "employment-oriented approach" of the International Labour Office (ILO) (cf. ILO, 1977:2) were being criticized for their emphasis not of development goals but of means which might -- or might not -- result in attainment of the important goals. The approach which made this critique viewed development in less exclusively economic terms than growth or income distribution. It emphasized instead the satisfaction of "basic human needs."

DEVELOPMENT AS BASIC NEEDS SATISFACTION

An early official manifestation of this trend away from an economic definition of development was the June 1976 World Employment Conference, held under the auspices of the International Labour Office, which
endorsed a basic needs strategy outlined in a report prepared for the conference by the ILO (ILO, 1977). Denying the older economic wisdom that the appropriate target for development policy was rapid growth in production, the ILO report advocated the meeting of basic human needs as the specific goal of development policy. The report proposed changes in internal policies of developing countries and reforms in the international order to attack the basic needs problem.

THE BASIC NEEDS APPROACH

Paul Streeten and his associates (Streeten, 1981; Hicks and Streeten, 1979; Streeten and Burki, 1978; Streeten et al., 1981) are major advocates of basic needs among scholars studying underdevelopment. Streeten describes the basic needs strategy as follows:

The objective of a basic human needs approach to development is to ensure that all human beings should have the opportunity to live full lives. To this end, the approach focuses on securing access to minimum levels of consumption of certain basic goods and services. The basic needs approach ... attaches fundamental importance to poverty eradication within a short period as one of the main objectives of development. It defines poverty not in terms of income, poverty lines, and deciles of the income distribution, but as the inability to meet certain basic human needs on the part of identifiable groups of human beings. Poverty is characterized by hunger and malnutrition, by ill health, by lack of education, of safe water, of sanitation, of decent shelter. A vital aspect of the elimination of poverty, then, consists in securing access to these goods and services by the poor.... [Streeten, 1981:xi-xii]

A basic needs strategy seeks to raise and redistribute production in such a way that these fundamental evils are eliminated (Streeten and Burki, 1978).
This does not mean that older goals of economic growth or its distribution are unimportant. Hicks and Streeten (1979:577) state that "obviously, the rapid growth of output will still be important to the alleviation of poverty, and GNP per head remains an important indicator." Similarly, Streeten and Burki (1978:412) agree with the emphasis placed on increased production among the poor by the ILO's employment-oriented strategy and the World Bank's redistribution with growth proposal, but they argue that these approaches are inadequate to eliminate poverty for several reasons. A major reason is their focus on means rather than ends:

The economic emphasis has tended to lose sight of the ultimate purpose of the policies, which is not only to eradicate physical poverty, but also to provide all human beings with the opportunities to develop their full potential. The demand now is to put man and his needs at the centre of development.... [Streeten and Burki, 1978:412]

Of several features of a basic needs strategy discussed by Streeten and Burki (1978:413-414), three are of particular importance for this study. First, basic needs gives much weight to meeting certain needs of the poorest strata as an ultimate goal. Second, it emphasizes attempts at alleviation of absolute deprivation. Finally, a basic needs strategy includes, in addition to material needs, non-material needs such as "diversity of satisfying jobs, self-reliance, access to power, political freedom, national and cultural identity, a sense of purpose in life and work" (Streeten and Burki, 1978:414). Meeting these non-material needs is in part an end in itself and in part a means to fulfilling basic material needs.
There are certain difficulties in precisely specifying the contents of a "basic needs package," however. First, basic needs differ across regions, climates, cultures, and times; objective criteria do not exist for defining what constitutes the basic needs. One can easily see, for example, that minimum shelter and clothing requirements are quite different for the arctic than for a rain forest. Second, there is a hierarchy of basic needs, from needs required for bare survival, to needs that must be met for continued survival (sufficient food and water, protection from fatal illness, and suitable shelter), to needs required for continued productive survival. At the highest level of the basic needs hierarchy, non-material needs -- such as reduction of relative poverty and individuals' involvement in decisions affecting them -- can be taken into account. What constitutes basic needs in a given circumstance depends on the level of the hierarchy to which one is referring, though "the bulk of the poor in the developing countries live in countries faced with the immediate task of providing goods and services to enable all of their people to survive decently, and some of them to survive productively" (Streeten and Burki, 1978:413). Third, it is difficult to rank individual priorities for these needs. This is because individuals do not compare the values of, say, food and clothing -- rather, they compare the value of an additional unit of food with that of an additional unit of clothing, given the amounts of these goods already possessed (Streeten and Burki, 1978:413). Nonetheless, some essential basic needs can be identified for use in assessing basic needs performance. Hicks and Streeten (1979:577-578) state that the list of
essential basic needs should include food, basic education, health, sanitation, water, and housing.

This study adopts the basic needs approach as a basis for defining what are the important dependent variables in development research. The most serious problem faced by the poor countries is not merely poor economic growth or very uneven distributions of national income, but a lack of the essentials of life for large portions of their populations. Unlike the bulk of research on basic needs, however, this research focuses on political economic explanations of basic needs performance. Political economy has nonetheless been considered an important problem by proponents of a basic needs strategy. Streeten and Burki (1978:414) state that "it is quite clear that a major restructuring in political and economic power relationships within a society is a prerequisite for a genuine pursuit of a development strategy aimed at basic needs."

Given the goal-oriented rather than means-oriented character of the basic needs approach, it poses a phenomenon to be explained (basic needs satisfaction) instead of an explanation of a phenomenon. On one hand, the World Bank and other aid organizations have taken a welfare approach to the provision of basic needs, advocating that these needs be met through direct provision of goods and services (e.g., housing) to the poor. Some have condemned the "basic needs strategy" for this reason, arguing that the approach has promoted a failure to address the more fundamental sources of the problems of underdevelopment (Gauhar, 1982).

There is but one basic need: to replace the present unjust and oppressive economic system with a fair and equitable system. Every step in that direction will be a step toward the provision of better housing conditions, better education and health, and that is
how the basic needs of the people will be satisfied. [Gauhar, 1982:xxiii]

On the other hand, the concept of basic needs satisfaction as the ultimate development goal does not itself imply a welfare solution or an explanation of basic needs performance in terms of the presence or absence of welfare programs. This relatively conservative interpretation of basic needs is not the only possible interpretation; the goals of basic needs can also justify fundamental changes in the relations between developed and underdeveloped nations and the power structures within underdeveloped nations. Ibrahim Samater (1984), who previously was minister of finance and minister of planning for Somalia, holds this view. The attainment of basic needs satisfaction, he argues, requires (among other things) abandoning capital-intensive production technologies used to make consumer goods -- expensive goods for the domestic upper strata and for export -- in favor of production technologies which are labor-intensive, which use domestic materials, and which produce goods needed by the majority of the population at prices it can afford. Agricultural technology must change also, so that small farmers are more productive and landless laborers have more employment. However,

Such implementation would require changes in the property system, in power relations, and in the demand structure that goes with it. But obviously such changes would challenge the interests of the beneficiaries of the present system, i.e., the indigenous ruling classes and the multinational firms which together, in a symbiotic manner, control manufacturing and trade in the third world.... The basic underlying cause [of persistent poverty in the underdeveloped countries] has been that it was not -- and is not -- in the interest of the ruling classes, both at the national and
international levels, to change the existing power structure.  
[Samater, 1984:7-8]  

How does the status quo work against the satisfaction of basic needs? 
The concentration of wealth in a small segment of society leads to a  
concentration of income among its owners. 

Such wealth-owners tend to invest in the capital-intensive modern  
sector producing goods and services dictated by the skewed income  
distribution with its resulting demand structure. This implies low  
growth of employment and hence a decline in the relative (and  
sometimes absolute) income of the urban poor and the rural sectors.  
[Samater, 1984:10]  

The encouragement of this process by the state, the importation and use  
of capital-intensive (i.e., labor-saving) technology, and rapid  
population growth also contribute to the effect of the social structure  
on poverty and unemployment. Viewed from this perspective, the basic  
needs approach is valuable because it encourages development theory to  
take into account the role of the social structure and the means of and  
necessity for structural change (Samater, 1984).  

MEASUREMENT OF BASIC NEEDS SATISFACTION  

Given that basic needs satisfaction is a crucial measure of  
development, how does one measure it? In this section, some potential  
indicators and their merits are examined, and a few general issues in  
choosing indicators are presented: the choice between "inputs" and  
"outputs," the relative merits of single composite indexes and multiple  
separate indexes, generality of application (in terms of relevance to
each country and comparability across all countries), and the importance of sensitivity to distribution issues.

A major issue in the measurement of development is whether to use inputs (roughly, resources expended) or outputs (results) as indicators. By definition, however, basic needs performance is largely a matter of outputs. In addition, the means (i.e., inputs) to desired ends can vary greatly from one country to another, whereas the basic needs goals that might be determined by a variety of peoples seem likely to be rather similar. Inputs also tend to ignore issues of distribution. For example, the number of doctors in a country may be considered as an input, with health the desired result. However, the number of doctors in a country tells nothing about their geographic distribution and availability to different social strata. Infant mortality, life expectancy, and similar output indicators really measure satisfaction of basic needs instead of resources used for achievement of this goal and are, for this reason, more adequate basic needs indicators than, say, the number of doctors. Similarly, literacy is a more ultimate output than the number of students enrolled and thus has certain potential advantages as a basic needs measure. Interestingly enough, outputs are typically inputs as well. For example, better health and higher levels of education are good not only in themselves, but they also contribute to higher worker productivity, which in turn can also enhance the quality of life. In the final analysis, input measures can be of value for the study of causal sequences leading to basic needs satisfaction and, when output measures for a certain dimension of needs fulfillment
are unavailable (or of poor quality), input measures may be important as proxies for outputs (Hicks and Streeten, 1979:571-572).

Much effort has been devoted to the development of composite indexes of social welfare analogous to the common single index of production, GNP (Hicks and Streeten, 1979:577). The Physical Quality of Life Index (PQLI), developed by the Overseas Development Council (Morris David Morris, 1979), is one of the best-known indexes of this type. It is an unweighted combination of standardized measures of life expectancy at age one, infant mortality, and the adult literacy rate. Morris gives several reasons for choosing these indicators. First, he claims that these measures are minimally ethnocentric, avoiding notions that the development of the Third World will closely resemble in outcome that of the developed countries and that all societies define basic needs in the same fashion. Second, the PQLI measures results, not mere inputs. Third, the component measures are sensitive to distribution. Fourth, the PQLI is simple to construct and understand. Finally, the three components of the PQLI permit international comparisons, especially for infant mortality and life expectancy.

However, the PQLI has met with harsh criticism. Hicks and Streeten (1979:576) question the equal weights given the three components of the PQLI, arguing that there is no adequate rationale for assigning weights to such parts of a composite "development" index. They also point out that analysis is virtually as easy to perform with the separate components as with the composite index. Cynthia Taft Morris (1982) also believes that the indicators constituting the PQLI are better left separate, implying that the causal relationships among these and other
measures call for investigation. The PQLI confounds these indicators. These criticisms of the PQLI tend to undermine the case for any composite index of basic needs performance.

Hicks and Streeten (1979:378) suggest several indicators as measures of essential basic needs performance. Health may be measured with life expectancy at birth, education may be measured with literacy rates and primary school enrollment as a fraction of primary school-age population, nutritional needs may be measured by the calorie supply per capita, adequacy of water supply may be measured by infant mortality rates (because of infants' vulnerability to water-borne diseases) and by the proportion of the population with access to potable water, and the adequacy of sanitation facilities may be measured by infant mortality (for the same reason as above) and by the proportion of the population with access to sanitation facilities.\(^5\)

Sheehan and Hopkins' (1978, 1979) empirical examination of basic needs conditions and trends conceptualizes and measures basic needs performance much along the lines advocated by Hicks and Streeten. They use life expectancy, infant mortality, deaths due to infectious and parasitic diseases, doctors per capita, and nurses per capita as health indicators; literacy and primary school enrollment rates as education indicators; calorie and protein consumption per capita as nutrition indicators; the percentage of population with "reasonable access to water" as a measure of water supply adequacy; and persons per room in urban dwellings as a housing indicator. They also include measures of "participation," i.e., the involvement of individuals in determining the social conditions under which they live: "electoral regularity"
(occurrence of a free and competitive election during a given period) and internal security forces as a proportion of the working age population.

The present study uses as dependent variables several of the measures of essential basic needs performance used by the authors cited above. The seven measures chosen may be divided into three categories: (1) mortality and life expectancy, indicated by infant mortality, child mortality, and life expectancy at age 5; (2) nutrition adequacy, indicated by protein and calories available for consumption; and (3) basic education, indicated by primary school enrollments and adult literacy. A more detailed discussion of these variables is presented in Chapter IV. Other aspects of basic needs such as "participation" are not examined by this study.

CONCLUSION

This chapter has presented the research problem on which this dissertation is focused. The guiding theory of this study is rooted in the dependency, world-system, and other radical perspectives which argue that historical relationships between developed and underdeveloped areas have created and perpetuated the underdevelopment of the latter. From these perspectives, hypotheses are derived concerning effects of MNC operations and foreign aid on basic human needs satisfaction in the Third World. Although satisfaction of basic needs -- health, nutrition, housing, basic education, and so on -- is currently widely adopted as a definition of "development," little cross-national research has
addressed this dependent variable. There is apparently no study of the effect of capital flows (e.g., MNC investment and official aid) on basic needs performance. The bulk of cross-national world-system studies of development deal either with economic growth, formerly taken for granted as the single measure of development, or with income inequality, an aspect of underdevelopment that many began to recognize around 1970 but which, like growth, does not determine satisfaction of basic needs.

Chapter II examines a selection of theories which attempt to explain underdevelopment, and Chapter III examines cross-national studies which test these theories. In both these review chapters, particular attention is given to previous contributions that are closely related to the basic needs issue. The implications of this literature for relationships between capital flows and basic needs performance are developed in Chapter IV, and precise, formal hypotheses are stated there. Issues of research design are also addressed in this chapter: nominal and operational definitions of the variables used, data sources, the timing of the panel models, and model estimation techniques. Chapters V presents the data analysis which tests the additive and interactive models implied in the hypotheses stated in the present chapter. Finally, Chapter VI sums up the results of the study and discusses the theoretical and practical implications of these findings. Issues that call for further research are also suggested; these matters make up a research agenda which I will follow after this study.
1. Money is not the only means to obtain basic needs, however. It is partially because possession of money does not determine access to basic needs that economic growth and income inequality do not adequately indicate development. Immanuel Wallerstein, as the next chapter points out, notes that many households in peripheral areas obtain a significant portion of their basic needs through production for direct consumption. For example, they may grow much of their own food. Thus, the supply and distribution of non-monetary resources (including but not limited to land) are important as well.

2. Seers also states that education could serve to make the professional classes aware of sacrifices and attitude changes (for example, attitudes opposed to manual labor and attitudes favorable toward imported consumer goods and technology) required for development. However, there are strong arguments that mass consumption of imported goods -- and mass consumption of "luxury" goods in general -- has a detrimental influence on development (cf. Portes, 1976; Keyfitz, 1982).

3. Some forcefully argue, however, that population growth must be cut by first reducing inequality and poverty (Murdoch, 1980).

4. Chenery explains the situation of the Third World poor as the result of a lack of physical and human capital and a lack of access to the market economy and to capital and other resources.

5. Hicks and Streeten find no satisfactory available measure of housing adequacy.
CHAPTER II

EXPLANATIONS OF UNDERDEVELOPMENT:
A REVIEW OF THEORETICAL PERSPECTIVES

The purpose of this chapter is to summarize some of the most important and relevant theoretical literature within the dependency, world-system, and related perspectives. Special attention is given to portions of this literature directly related to basic needs satisfaction. First, two varieties of dependencistas are examined: the "structuralists," including Celso Furtado and Osvaldo Sunkel, and the Marxists, including Andre Gunder Frank, Theotonio Dos Santos, and Fernando Henrique Cardoso. Second, the world-system perspective of Immanuel Wallerstein and his associates -- which might be described as the North American offspring of dependency theory -- is reviewed. Finally, works of authors who specifically address the effects of multinational corporations and foreign aid are summarized; some of these thinkers place themselves within the dependency or world-system perspective, while others take somewhat different though related radical approaches. Deferred to Chapter III is a survey of cross-national quantitative research on economic growth, income inequality, and basic needs satisfaction, and deferred to Chapter IV is an attempt at synthesis of the theoretical and empirical literature reviewed in Chapters II and III.
THE DEPENDENCY PERSPECTIVE

The dependency perspective, developed primarily in Latin America, explicitly contradicts theories of development which view the role of the developed countries as benign. Dependencia originated with such thinkers as Raul Prebisch, the first General Secretary of the U. N. Economic Commission for Latin America (ECLA), and was further developed by similar "structuralist" dependency theorists such as Celso Furtado and Osvaldo Sunkel (Booth, 1975; Chirot and Hall, 1982; Furtado, 1976; O'Brien, 1975). However, the Marxist varieties of dependency theory have been more influential in North American academic circles and have recently become closely tied to the "world-system" perspective discussed below. Influenced by such neo-Marxists as Paul Baran (1957), dependency theorists including Andre Gunder Frank (1967, 1969, 1972), Theotonio Dos Santos (1970), Fernando Henrique Cardoso (1972; Cardoso and Faletto, 1979), Arghiri Emmanuel (1972), and Samir Amin (1976) developed a perspective which can be viewed as the Third World counterpart of theories, presented by Lenin and other Marxists early in this century, of the imperialism of advanced capitalist countries. Both the Marxist and structuralist versions of dependency take the position that some or even all aspects of the relationships between underdeveloped and developed countries (e.g., investment, foreign aid, trade) are detrimental to the development of the former. However, unlike the structuralists, Marxist dependency theorists explicitly blame the world capitalist system for many of the ills of the underdeveloped countries.
While it is the Marxist dependency theorists who have received the greatest attention in North American academic circles, a non-Marxist "structuralist" variant of dependency theory rooted in the ECLA perspective has persisted. This reformist position has common elements with Marxist _dependencia_, with the notable exception that it does not blame capitalism _per se_ for the ills of the Third World (though it may blame certain elements of the contemporary capitalist economic order). It is a position that "wants national development without the class struggle and independence without revolution" (O'Brien, 1975:24-25). Two of its major representatives are Osvaldo Sunkel and Celso Furtado (O'Brien, 1975).

Furtado, like Prebisch, served as head of ECLA. Also much like Prebisch, he holds that Latin America's integration into the international division of labor resulted in the rise of primary export economies which were to hinder development. The development of these export economies was congruent with rigid social structures and ruling classes opposed to change. The attitudes of the ruling classes, who never recognized that change in the social structure played an important role in development, obstructed development when the export of primary goods collapsed. In recent times Latin America's social rigidities have led to chronic inflation, large fluctuations in exchange rates, and political structures ineffective for addressing such problems (Jackson et al., 1979:8-10; Chirot and Hall, 1982:92).

More recently, Furtado has written that "just as traditional forms of dependence on the outside world were beginning to be overcome, new and
more complex forms have emerged, raising problems that are central to the economic policy of the Latin American countries" (1976:208). An important new form of dependency is technological dependence on multinational corporations. Multinationals have played a major role in the industrialization of Latin America since World War II; the data available indicate that foreign-controlled firms constitute a large portion of major industrial enterprises in such countries as Mexico and Brazil. With the reduced ability of Latin American countries to import goods, and with the adoption of policies designed to intentionally reduce imports further, producers of the products accounting for most of Latin America's imports -- i.e., manufactures -- had tremendous incentives to relocate part of their production to their Latin American markets. Given that virtually the same products that were once imported were now to be manufactured domestically (as Furtado appears to assume), some form of foreign involvement was a necessity for industrialization (a process which required generations in the advanced countries) to develop broadly and over a rather short period. A major reason for the necessity of foreign involvement was that technology was dominated by the industrialized nations and was often carefully guarded, whereas Latin America had almost no domestic resources for research and technological advice. Latin American governments encouraged involvement of foreign firms in the industrialization process, providing them with foreign exchange advantages not available to domestic firms. On the other hand, foreign firms tended to bring in little of the capital which they came to control. For example, during the period 1957–65, U. S.-controlled subsidiaries financed only 17 percent of their expansion from
foreign sources of capital. Foreign firms obtained capital instead from such local resources as bond issues, local bank loans, and undistributed profits (Furtado, 1976:194-208).

Osvaldo Sunkel, like his more radical counterparts, contends that underdevelopment is not merely a stage in the development of an autonomous, isolated society. "On the contrary we postulate that development and underdevelopment are the two faces of the same universal process" (Sunkel, 1971; translated and quoted in O'Brien, 1975:14). This process is reflected in international and intranational polarizations. At the international level, nations are divided into the industrialized and developed countries and the poor, underdeveloped, and dependent countries. At the intranational level, similar inequality exists between groups and activities as well as between geographic areas; the segments of the dependent society linked to the internationalized sector tend to benefit from dependency and develop interests accordingly. Rather than class struggle, then, an intersectorial struggle ensues (O'Brien, 1975).

MARXISTS

It is difficult to briefly summarize the arguments of the Marxist dependenstas, much less the entire dependency perspective. One reason is the heavily historical (i.e., idiographic) character of much of their writings; any brief set of generalizations necessarily does violence to the dependency literature. A second reason for this difficulty is that "there are as many conceptions of dependency as there are authors"
Finally, the strongly ideological thrust of much writing on dependency, very notably that of Andre Gunder Frank, is sometimes associated with obscure and poorly substantiated arguments; some conclusions that given relationships between developed and "dependent" countries are harmful to the latter seem ultimately, and rather tautologically, based on the premise that the advanced capitalist countries have only evil in store for their subordinates.

However, Ronald Chilcote (1974) offers a useful synthesis of the dependency literature. He identifies several Marxist dependency formulations, all of which share these premises:

(1) Underdevelopment is not the original condition of a country, though a nation might initially have been "undeveloped."

(2) Rather, the underdevelopment of some nations is the result of the same capitalist process which led to the development of the advanced nations. (That is, there exists a developed "metropolis" or "center" which extracts the surplus of the underdeveloped "periphery." For example, Latin America provided the raw materials needed by the center for its economic growth.

(3) This dominant-subordinate relationship has persisted over time, though some of the roles have changed hands (e.g., the United States has replaced Great Britain as the major dominant power in Latin America), and export of raw materials to the dominant countries has been somewhat superseded by intervention in the domestic economy by foreign corporations and governments.

(4) An internal version of the international metropolis-periphery relationship exists between urban and rural areas, i.e., the former extracts the surplus of the latter.

Three propositions are rooted in these premises:

(1) While feudalistic social structures still exist in the underdeveloped world, the poverty of rural areas is not due to feudalism but to their link to market forces in the larger (capitalist) economic system. As a result, urban areas and nations of the center grow wealthy at the expense of rural regions.
(2) This rural-urban link is marked by "commerce between landowners and merchants who form an agro-commercial bourgeoisie" (1974:13) which is also governed by the domestic and world capitalist economies. Indeed, in many cases the agricultural, commercial, and industrial elites consist of the same people. Consequently, their interests tend to coincide.

(3) Dominant classes in dependent countries are dependent on the world capitalist system for foreign exchange, foreign capital, and certain manufactures.

Chilcote goes on to identify four distinctive formulations of dependencia. The first of these is the development of underdevelopment, represented by the works of Frank. Frank's main contentions include the following:

(1) Contemporary developed nations were at one time undeveloped, but they were never underdeveloped; development does not happen by means of a series of stages.

(2) Underdevelopment is the outcome of the history of metropolis-satellite relationships.

(3) Capitalism has thoroughly pervaded the underdeveloped countries; therefore, underdevelopment is not the result of "dualism," i.e., the persistence of feudalism alongside capitalism.

(4) Metropolis-satellite relationships exist within as well as between countries.

(5) The satellites' dependency on the metropolis inhibits their development; the weaker the links between a satellite and metropolis, the greater the economic growth of the satellite.

Frank's dependency perspective has met with several major criticisms. First, it is argued that classes play a crucial role in underdevelopment, and that Frank underemphasizes and inadequately examines this role. Second, Frank views dependence as a condition imposed on the satellites by the foreign metropolis, rather than a fundamental internal feature of a satellite. Third, Frank's position is
static and fails to reveal how the nature of dependency has changed even as it has persisted. Fourth, "dependency" is a poorly-defined concept in Frank's work. Finally, Frank's logic is poor. Although Frank (1972) has attempted to answer such attacks, the criticism continues (Chilcote, 1974:13-14). (An extended discussion of Frank's contributions, as well as those of Dos Santos and Cardoso, is presented in Appendix A.)

A second major variant of dependency theory is the new dependency, associated with Dos Santos (1970) in particular. In earlier eras, relationships between center and periphery were characterized by "colonial dependency" and "financial-industrial dependency." Since World War II, these relations have been increasingly marked by "technological-industrial dependency," distinguished by the role of MNC investment. Under this condition, industrialization has been constrained by the balance of payments, and particularly by the ability of exports -- typically produced by oligarchy-controlled traditional sectors -- to generate foreign exchange for the purchase of capital imports. On the other hand, foreign interests (also linked to the oligarchies) control the marketing of exports. Balance of payments deficits tend to result from monopolistic international trade, remitted profits, and dependence on foreign private capital and foreign aid (Chilcote, 1974:15-16).

Another dependency perspective is that of dependent development, advocated by Fernando Henrique Cardoso (1972). Cardoso claims that development (of a particular, limited form) and dependent capitalism go hand in hand. He accepts the idea that contemporary imperialism is different in form from that examined by Lenin early in this century:
capital accumulation now results primarily from corporate control, not financial control, and MNC investment in the periphery is shifting from the primary to the secondary sector. The subsidiaries of MNCs in peripheral countries typically combine government and private domestic capital with foreign private investment, but they are ultimately controlled by foreign interests. The development associated with these phenomena has been beneficial primarily for the upper strata (Chilcote, 1974:17).

A final type of dependencia listed by Chilcote is "dependency and imperialism," which develops the idea of an imperialism-dependency relationship suggested by Lenin. (Imperialism here refers to political or economic domination of one country by another.) The form of imperialism which used direct control over colonies, prominent in the late nineteenth century, has recently given way to "modern imperialism" in which the colonial empires have disintegrated. Some authors stress the necessity of imperialism for economic growth in the capitalist metropolis, while others emphasize the negative impact of capitalist trade and investment on peripheral economies. Non-Marxist as well as Marxist approaches are found in their writings. These thinkers include Benjamin Cohen (1973), Susanne Bodenheimer (1970), Johan Galtung (1971), Paul Baran and Paul Sweezy (1966), and Harry Magdoff (1969); Cardoso (1972) has also contributed to the imperialism-dependency literature (Chilcote, 1974:18-20).

While there are differences between and within these perspectives, there are also some commonalities of particular importance for the present study. One of these is that the rise of the monopolistic
multinational corporation and its dominant role in the industrialization of the periphery have been closely related to changes in the nature of dependency; MNCs have provided the production technology wanted by certain elements of peripheral societies, but at a high price. A related notion is that while such limited segments — especially the wealthier and more powerful segments — of peripheral societies might have benefited from these dependent relationships, dependence has contributed to the existence and persistence of underdevelopment for the majorities of the populations of Third World countries.

THE WORLD-SYSTEM PERSPECTIVE

Much like dependencia, the "world-system" perspective developed out of a critique of the "modernization" school, which assumed that underdevelopment is a product of internal conditions of independent nations and argued that underdeveloped nations would follow the same path to development earlier taken by Great Britain, the United States, and the other presently developed nations. The dependency theorists had already asserted that the developed nations had achieved their privileged position through exploitation of the underdeveloped nations. This position implies that the division of the world into developed and underdeveloped nations, or core and periphery, is the result of a single system of economic processes. While this system as a whole was not a major concern for the dependentistas, it was made explicit by and became a major thesis of proponents of the world-system perspective. The latter group of thinkers hold "that a single capitalist world-economy has been developing since the sixteenth century[,] ... that its
development has been the driving force of modern social change," and that "the core-periphery relation itself is central to [the world-economy's] operation and development" (Hopkins, 1979:23, 32).

The one name most identified with the world-system perspective is that of Immanuel Wallerstein, whose major works include The Modern World-System I (1974), The Modern World-System II (1980), and two collections of articles and other papers, The Capitalist World-Economy (1979), and The Politics of the World-Economy (1984). A short and readable presentation of many of his ideas is presented in his Historical Capitalism (1983). His associates have also contributed substantially to the writings based on his perspective.

Wallerstein has claimed that three kinds of social systems have existed over human history: "mini-systems" and two kinds of "world-systems." These world-systems will be succeeded by an as yet nonexistent socialist world government. One may distinguish among the types of systems by determining whether they have single or multiple cultures and political systems. Mini-systems comprise single cultures. World-systems, on the other hand, encompass multiple cultures and occur in two forms: world-empires and world-economies. (Contrary to one denotation of "world," world-systems are not necessarily social systems that encompass the entire earth.) World-empires are characterized by single political systems, while world-economies are distinguished by multiple political systems (Wallerstein, 1979:3-5). (In an important sense, world-empires are also world-economies. Nevertheless, Wallerstein assigned the term "world-economy" to a world-system having
multiple cultures and political systems "for convenience and for want of
a better term" [1974:348].

Any social system is defined by its possession of a "single division
of labor," which in turn is defined as a "grid of exchange
relationships" in which

Economic actors operate on some assumption (obviously seldom clear
to any individual actor) that the totality of their essential needs
-- of sustenance, protection, and pleasure -- will be met over a
reasonable time span by a combination of their own productive
activities and exchange in some form. The smallest grid that would
substantially meet the expectations of the overwhelming majority of
actors within those boundaries constitutes a single division of
labor. [1979:14]

The important exchange relationships, then, are not limited to goods and
services one usually thinks of as physical needs. For example, an
agrarian community linked to a world-empire merely by payment of tribute
was a part of that system, since it had an exchange relationship
(through which it obtained protection) with other parts of the empire.
Nonetheless, the exchanges which link parts of a world-system are
essential exchanges, not luxury exchanges. (Wallerstein admits that the
difference is subjective, varying with social structure, culture, and
time, but he also contends that not every exchange should imply a system
[1979:14].) A region with which a system has only such limited
exchanges is in the system's "external arena." Each system exports to
the other system products its members deem to be of little value as
payment for imports its members consider valuable.

It is the modern world-system -- the capitalist world-economy -- that
is the object of nearly all of Wallerstein's attention. This system
came into existence in Europe during the late fifteenth century and now encompasses the inhabited regions of the earth. Prior to its emergence, world-economies were quite unstable and either collapsed or were transformed into world-empires. Historical instances of world-empires include the empires of China and Rome. However, the expansion of world-empires was severely limited by "the fact that the economic factors operate within an arena larger than that which any political entity can totally control" (Wallerstein, 1974:348). Mini-systems existed only in simple agricultural societies and hunting and gathering societies. Neither mini-systems nor world-empires exist today (Wallerstein, 1974, 1979).

A fundamental property of the capitalist world-economy is its "production for sale in a market in which the object is to realize the maximum profit" [1979:15]. Under such a world-economy, production increases until any further increase is unprofitable, while individuals develop new production techniques that increase the margin of profit. Capital -- accumulated wealth, or "accumulations of the efforts of past labour which have not yet been expended" (1983:13) -- has existed in all historical systems. What distinguishes the capitalist system is that, in it, capital is used to further the primary goal of self-expansion. The goal of the possessor of capital to obtain yet more capital, the social relations essential to the fulfillment of this goal, and a high degree of priority given this goal over time mark a system as capitalist (Wallerstein, 1983:14).

Prior to modern times, the accumulation of capital was rarely feasible. Even if one had wanted to accumulate capital as an end in
itself, many of the prerequisites were missing: the ability to accumulate capital in the form of money, availability of (free) labor for the work required, existence of a distribution system for goods produced, and the existence of willing buyers who could afford the goods. In the end, a profit was required, i.e., the selling price had to exceed total costs by a margin greater than that required for subsistence. This "circuit of capital" was difficult to finish before the existence of the capitalist world system because these elements were not "commodified" to the degree necessary. That is, processes of exchange, production, distribution, and investment did not take place in a "market" (Wallerstein, 1983:13-15).

Wallerstein specifically disputes the notion that the capitalist world-system includes multiple modes of production, as argued by Laclau (1971) and others. The "feudal forms" which persist in, for example, Latin America do not reflect the existence of a feudal rather than capitalist mode of production. Far from being evidence of a non-capitalist mode, laborers not paid primarily in wages (i.e., laborers who are not proletarianized) are an integral part of the capitalist system, a part without which the system could not survive in its present form (a point which will be discussed in greater depth below). A capitalist, feudal, or other mode of production is a property of a totality, and, for Wallerstein, the totality -- the appropriate unit of analysis -- is the world-system. Nations or other smaller units do not have separate modes of production.

Similarly, there is no separate socialist world-system. "Socialist" nations are a part of the capitalist world-economy, which is the only
world-system in existence. True socialism requires the creation of a socialist world-system, based on a socialist world-government. Mere state ownership of businesses does not prevent them from operating according to capitalist principles, i.e., the pursuit of more efficient production as a means to gain more of the world-economy's surplus. Two effects of the absence of private ownership of the means of production in these countries have been "an internal reallocation of consumption" and a weakening of "the ideological justification [of] world capitalism" (by demonstrating the weakness of capitalists and the lack of necessity for private ownership for rapid industrialization). However, a consequence of this wider sharing of the world-economy's surplus is the cooptation of these oppositional movements, which has reproduced the hierarchical world-economy (1979:33-35).

The shortcomings of socialist states, he claims, are due to their inclusion in the capitalist world-economy. The absence of political liberties and the survival of labor exploitation, racism, and sexism in these states are due primarily, not to the nature of a socialist system, but to the peripheral and semiperipheral statuses of these countries in the world-system. Socialism should not be judged, then, on the basis of its partial implementation in these states (1983:107-110).

The assumption that the world-system is the appropriate unit of analysis also has important implications for the nature of class conflict. Classes must be understood as components of the world-system itself, not of individual states, since they "are usefully defined as groups that have a common relationship to the economy" (Wallerstein, 1984:8). This is not to say that classes in the world-system have
always been conscious of themselves at the system level, or even self-conscious at all. Classes *an sich* (potential classes) are classes of the world-economy. However, since class consciousness is political in nature and since the most effective political structure is the state, classes *fuer sich* (self-conscious classes) strongly tend to be associated with particular states (implying a great deal of false consciousness in the classes of the world-system). In the modern world-system, the bourgeoisie has been self-conscious and has been the predominant and "universal" class. The class conflict which has occurred in the world-economy has generally taken place between this class and all the remaining strata. The bourgeoisie emerged as a class conscious of itself in opposition to "those who spoke for the maintenance of traditional rank distinctions" (1974:351). Increasingly, the bourgeoisie has been opposed by a self-conscious class of workers. In general, the bourgeoisie has been more conscious of itself as a class of the world-economy than have workers, but, Wallerstein has claimed, workers too are beginning to be conscious of themselves as a class that extends beyond state boundaries (Wallerstein, 1984:8-11, 1974:351-353; Hopkins and Wallerstein, 1981:249-258).

**The History of the Capitalist World-Economy**

Wallerstein (1979:25-36) distinguishes four stages in the history of the capitalist world-economy. In the first stage (ca. 1450-1640) this world-system emerged in Europe. The possibility of such a development existed because of a confluence of long-term trends, a cyclical crisis, and climatic changes which caused problems that required the formation
of a division of labor covering a larger area for their solution. More importantly, attempts by the Hapsburgs and the French monarchs to turn the new European world-economy into a world-empire failed by the mid-1500s. Afterwards, states within this world-economy quickly sought government bureaucracies, standing armies, cultural homogeneity, and economic diversity. By the end of this stage, northwestern Europe had become the core, Spain and the north Italian city-states had become the semiperiphery, and northeastern Europe and the Spanish and Portuguese colonies in the Americas had become the periphery. (Wallerstein's concepts of core, periphery, and semiperiphery are discussed in greater depth in the next section.)

Stage two (ca. 1650 to the late eighteenth century) began with a recession in the entire world-economy. The resulting reduction in surplus permitted the survival of only one core state. The struggle to be first took the form of mercantilism (partial withdrawal from the system by empires within the world-economy). England replaced the Netherlands, the previous hegemonic power, and outdistanced France, the next strongest power. The European world-economy was consolidated, and England rose to a position of hegemony.

Industrial capitalism became dominant over agricultural capitalism in stage three (ca. late eighteenth century to 1917). Industrial production both made possible and made necessary the growth of the world-economy to include the entire world. This expansion became possible because of advances in military technology and transportation technology (i.e., inexpensive shipping). Expansion was necessary because the kinds and quantities of raw materials needed for industrial
production could not be obtained within the original, smaller world-
economy. Other world-systems (e.g., that in Russia) were destroyed, and
surviving minisystems were absorbed. Russia entered the system as a
semiperipheral state (due to its inferior state machinery and industry),
Spain's semiperipheral role ended with the independence of the Latin
American countries (which remained in the periphery), and Asia and
Africa were brought into the world-economy's periphery (though Japan
rapidly gained semiperipheral status). The United States and Germany
each comprised what had been peripheral and semiperipheral areas. Early
in this stage, the core (Britain) exchanged manufactured goods for the
agricultural goods of the periphery and sold semiperipheral countries a
large portion of the manufactured products they used. In the late
nineteenth century, though, the semiperipheral states' mercantilism
directly eliminated part of Britain's market and competed with Britain
for peripheral markets. The division of labor then changed such that
the core would sell capital goods (i.e., machinery used in
manufacturing) and goods used in creating infrastructure (especially
railroads). With the increase in manufacturing came the appearance, for
the first time, of a sizable urban proletariat and, subsequently,
organized opposition to capitalism. The idea of the welfare state was
first proposed by core bourgeoisies at this time, due in part to the
threat of class conflict and in part to the lack of demand for all the
goods by then being manufactured.

The fourth stage (ca. 1917 to the present) is a period of both
revolution and the consolidation of the capitalist world-economy. The
Russian Revolution put in power a regime which used mercantilism to
reverse Russia's decline toward peripheral status, so that at the conclusion of World War II, Russia regained a solid place in the semiperiphery and established a foothold on the path toward membership in the core. Britain obviously fell from its early nineteenth-century position of hegemony, to be replaced by the United States, especially during the two decades after World War II. U. S. economic growth during this period was rapid, but markets were relatively scarce due to the Chinese Revolution and the Cold War closure of eastern Europe. In response to this dilemma, the Marshall Plan assisted in the "reconstruction" of western Europe, U. S. economic ties with Latin America became stronger than ever as British and German ties disintegrated, and the U. S. pressed for the independence of Africa and south Asia (in part so that the U. S. could avoid the cost of dealing through western European intermediaries). However, the cost of imperium proved too high for the United States, just as it had for Britain and the Hapsburgs. There are several reasons for this failure of U. S. hegemony: arms expenditures by the Soviet Union offered the U. S. S. R. long-run benefits while competing expenditures by the U. S. merely permitted it to maintain its military forces; the post-war economic recovery of western Europe made its states as strong in combination as the U. S.; and opposition from the Third World (e. g., Vietnam) contributed to a division of labor which seemed likely to distribute surplus more equally among the core areas. An important consequence of the end of U. S. hegemony was an increase in the freedom and power of multinational corporations.
THE STRUCTURE OF THE WORLD-SYSTEM

Wallerstein (1978) divides the world-system into core areas, peripheral areas, and semiperipheral states. Admitting that he himself has used "core," "periphery," and "semiperiphery" as vague modifiers, he states that the core and periphery are economic areas which do not completely coincide with state boundaries, while the semiperiphery refers to certain states which serve to perpetuate the economic relationship between core and periphery. Core and periphery exist only in relation to each other, their relationship being characterized by unequal exchange, a concept Wallerstein borrows from Arghiri Emmanuel (1972). By unequal exchange, Emmanuel referred to a process in which the resulting distribution of surplus is unequal between two bourgeoisies, one within the periphery and one within the core. Stated very simply, the core bourgeoisie receives surplus from the peripheral bourgeoisie, which in turn receives the surplus from initial producers. The flow of surplus is in the direction of the core, and the surplus is disproportionately accumulated by the core. Peripheral areas are areas in which the bulk of economic activities are "peripheral activities." "Core activities" are more predominant in core areas, though peripheral activities also exist in the core. The semiperiphery, on the other hand, contains approximately equal amounts of core and peripheral activities. "The model of a semiperipheral state is the one that exports the peripheral products to core countries and core products to peripheral areas of the world-system and does both in roughly equivalent degrees" (Wallerstein, 1978:222). A semiperipheral state has a more
purely political role, as well: an important consequence of its existence is that the "core states" are not confronted with untempered opposition by "noncore states," since the semiperiphery in the middle exploits the periphery while it is simultaneously exploited by the core.

Though the key concepts of core, periphery, and semiperiphery can only be explained in terms of both the economy and the state, much of Wallerstein's and his associates' writing on the structure of the world-system can be divided into discussion of economic structures per se and of the state-system, with the state-system being generally subordinate to the economic sphere. Certain features of these two aspects of the structure of the world-system are discussed separately below.

Economic Structure

One of the most theoretically important features of the world-economy is a system of "commodity chains," the system through which the extraction of the periphery's surplus by the core occurs (Hopkins et al., 1977:128 ff.; Wallerstein, 1983, 1984). These chains begin with workers producing some product (not necessarily a consumer good) and end with the consumer who buys a finished product. Commodity chains, which are linked together into a network, resemble in form complex river systems of main streams, tributaries, tributaries of tributaries, and so on. For example, an article of clothing requires for its production thread, cloth, machinery, and labor. These items themselves must be produced with the use of yet other items, which must also be produced, and so on. The labor of the many workers producing such products constitutes part of the cost of those items. A small number of capitalists receives part of the margin between total production costs
and total income from sale of the product to the consumer (Wallerstein, 1983:16). Commodity chains typically originate in peripheral areas and terminate in core areas. During the history of the capitalist world-economy, these commodity chains have formed a geographically expanding and increasingly hierarchical division of labor across space. Production requiring greater levels of human skill and capital-intensive production tends to be found in the core areas of the world-economy. Since capital (including human capital) receives disproportionate rewards relative to labor, the hierarchy tends to reproduce itself. The result of this hierarchization has been a growing polarization between core and periphery in terms of the distribution of real income, quality of life, and capital accumulation. Minor initial differences, arising from a variety of sources, were amplified over the history of the modern world-system, particularly by the use of force in the setting of prices. (There is a "tipping mechanism" as well for the state: the revenues made possible by a state's strength enables it to obtain a larger and more effective civil bureaucracy and army, which in turn enables it to collect larger revenues [1974:356].) The capitalist world-economy has been unique in that this mechanism of maintaining unequal exchange is hidden by the ostensible division between the world-wide economy and the political system comprising apparently sovereign states, each one able to independently determine political choices inside its boundaries and each able to resort to military force to maintain its authority. The more important commodity chains ordinarily cross the boundaries of these states (1983:30-31; 1974:350).
Unequal exchange is also facilitated by the presence of both wage and nonwage labor in the world-economy -- indeed, in contrast to a more orthodox Marxist definition of capitalism as a mode of production characterized by wage labor, this mixture is a fundamental element of the capitalist system for Wallerstein. The Marxian proletarian is most nearly like Wallerstein's "full-life-time proletarian," "complete proletarian," or, more simply, "proletarian," though Wallerstein considered the household, which shares a common income and store of wealth, to be the more appropriate "unit of rational calculation in terms of remuneration and expenditure" (1983:23). The complete proletarian household receives a high proportion of its income from wages. These households are a minority in the world-economy, however. Much more common is the "part-life-time proletarian household," the "incomplete proletarian household," or simply the "semiproletarian household," which receives a minor portion of its lifetime income from wages. The remainder of these households' income comes from work their members do themselves (e.g., subsistence farming, cooking) and from gifts (e.g., income a cousin shares with his family, income a parent uses to support his or her children). Since subsistence activity generates no surplus for extraction by capitalists, it is not remunerated with wages. In the capitalist world-economy, a division of labor by sex and age has developed with respect to subsistence and "productive" (i.e., surplus-producing) activity. Furthermore, ethnicity has played a large role in assigning laborers to either proletarian or semiproletarian status. Members of semiproletarian households can rationally accept lower wage rates than members of proletarian
households, since much of the costs of their survival and reproduction are met by their subsistence activity.

For identical work at identical levels of efficiency, the wage-worker located in a household with a high percentage of wage income ... had had a higher monetary threshold below which he would have found it manifestly irrational for him to do wage work than a wage-worker located in a household that has a low percentage of wage income.... [Wallerstein, 1983:26]

The basis of this difference between proletarian and semiproletarian households lies in the fact that a member of the former household type, which relies heavily on wages for its reproduction, cannot rationally accept employment at wages insufficient for this purpose. On the other hand, a member of a household which does not depend largely on wages for survival may well find it rational to take employment at a wage rate below that required for reproduction of his or her labor over the period of time worked, so that needed cash can be obtained or less remunerative uses of time can be avoided. It is to the advantage of an employer, then, to employ members of semiproletarian households, who can accept lower wages than members of proletarian households. This practice has indeed predominated in the capitalist world-economy (1983:23-28; 1978:224-227).

Subsistence households have been forced to become semiproletarian households over the history of the modern world-system by such means as seizure of land and other means of production of subsistence, by overt coercion, and by taxation. This transition to semiproletariat marks the entry of a household into the world-economy and results in a decrease in real income and material well-being. At the macro level, this change is reflected in the process of "peripheralization," similar to the process
Marx called "pauperization." The fact that the portion of the earth's population in semiproletarian households has been growing over the history of the capitalist world-economy thus has dismal implications for the overall quality of life of humankind, as will be discussed in greater detail in a later section. On the other hand -- assuming unskilled households which therefore receive no more than the minimum wage necessary for survival and reproduction -- the transition from semiproletarian to complete proletarian results in an increase in real income and material well-being, in contradiction to Marx and Engels (Wallerstein, 1978:225-227; Hopkins et al., 1977:134-136).

Proletarianization, i.e., the trend of the conversion of households to complete proletarian status, has proceeded only because, in recurring periods of economic stagnation, workers have tended to press capitalist employers particularly hard for higher wages while at the same time some capitalists have believed that such a change in the structural relations of production in their firms would give them competitive advantages. This process has resolved the very crises of stagnation which brought about such transitions (Wallerstein, 1983:33-37).

Elsewhere, Wallerstein (1984) describes the world-economy as a network of commodity chains, or linked processes of production. Any process in such a chain is articulated -- forward and backward -- with, and dependent on, other productive processes in the chain. These various production processes usually require physical transportation of commodities between them, and frequently the transfers of "rights" to commodities in a chain are made by autonomous organizations, in which case we talk of the existence of "commerce." Commerce is frequent, but far from universal, as the mode of linkage, and is in no way essential to the functioning of a
commodity chain, except at the very end when the final consumable product is sold to the final consumer. Both the great merchant companies of the seventeenth and eighteenth centuries and the contemporary multinational corporation have been structures that eliminated much (though seldom all) of the commerce in the interstices of given commodity chains. [1984:2-3]

Unequal exchange between core and periphery consists of an exchange of products in which a product going in one direction costs more to produce than a product equal in price moving the other direction -- i.e., the margin of profit is smaller for one area (the periphery) than for the other (the core). While this process would begin due to the relative scarcity of the product of the core (perhaps itself an artificial condition created by force), it would be magnified by certain mechanisms. First, vertical integration of links in a commodity chain facilitates the transfer of surplus from the periphery (as when links traversing a boundary between core and periphery are controlled by a multinational corporation). Second, the accumulation of surplus in the core contributes to its mechanization, allowing core producers to produce old products at lower prices and create new, scarce products. Finally, and very importantly, the net flow of capital to core areas has resulted in their economic capacity and political will to build strong state-machineries with relatively powerful military forces. These strong states could perpetuate the weakness of states in peripheral areas and press them to maintain or increase specialization in productive activities near the origins of commodity chains, to use labor which is paid relatively low wages, and to promote the sort of households (i.e., semiproletarian households) required for the subsistence of these laborers (1983:31-32).
When such commodity chains exist -- as they do in the capitalist world-economy -- the rate of capital accumulation for all capitalists combined is a function of the size of the margin between production costs and sale price. However, the rate of accumulation for individual capitalists is a function of competition processes. This difference between the aggregate and the individual creates fundamental contradictions in the capitalist world-system. First, although it is in the interest of the capitalist class to reduce production costs, such changes often benefit some capitalists relative to others; thus, the capitalists who would suffer under these circumstances prefer a larger share of a smaller margin to a smaller share of a larger margin. Second, the continued accumulation of capital, commodification of production processes, and production of commodities require a growing number of ultimate purchasers. However, the redistribution of profit to increase the number of consumers frequently narrows the profit margin, while reduction of production costs often restricts increases in the number of purchasers. The individual capitalists therefore act in contradictory ways, seeking to reduce their own production costs (e.g., labor costs) but striving to increase the number of purchasers (implying higher labor costs for at least some capitalists) (Wallerstein, 1983:17).

The State-System

The modern world-system is characterized by a certain kind of relationship between the economic and political systems. As the result of its single economy and multiple states, the world-system has two kinds of conflictual relations in the world-system: core and peripheral
economic areas, and dominant and dominated states. The two forms of conflict are related; core areas are closely linked to dominant states and peripheral areas are closely linked to dominated states. Furthermore, the "state-system" serves to perpetuate the single economy of the world-system. Nonetheless, these two conflict relations are distinct (Hopkins et al., 1977:127 ff.).

"Imperialism," defined as the use of political power by stronger states against weaker states (typically, by core states against peripheral or semiperipheral states) with the intent of influencing market forces, has been a persistent feature of the modern world-system. Imperialism has existed in two variants: colonialism, the direct imposition of political power on another area, and "informal empire," the indirect wielding of political power against weaker states (Hopkins et al., 1977:120-121).

Conversely, there tends to be a balance of power among the stronger states. One form of this balance is that of a pair of alliances of roughly equal power. The other major form is "hegemony," in which "no second power or combination of second powers seems capable of challenging effectively the economic supremacy of the strongest core power" (Hopkins et al., 1977:121). The hegemonic state, unlike a world-empire, exercises its power primarily through the market — through productive, commercial, and financial superiority over other states — though political, military, and cultural dimensions play a part as well. Instances of hegemony have been rare and are rather temporary. As was discussed earlier, there have been only three cases in the modern world-system (Hopkins et al., 1977:121, 130-132).
Wallerstein examines the role of the state in capitalists' extraction of surplus from direct producers. The use of force against laborers is the principal mechanism for minimizing the cost of labor to the capitalist. The three major variants of such appropriation are (1) forced labor, under which the direct producer is paid partly or wholly in kind; (2) wage labor; and (3) petty proprietorship, under which the direct producer is indirectly forced -- for example, through debt -- to sell a product for less than its market value. In each case, law governing unequal contractual property rights and enforced by the state plays a crucial role in the maintenance of surplus extraction (Wallerstein, 1984).

The state also plays a major role in conflicts between capitalists. A dominant state may serve a core area by imposing conditions under which core products are scarce relative to periphery products, facilitating unequal exchange. In general, entrepreneurs seek to use the state to alter market processes when those "natural" processes do not maximize their profits (Wallerstein, 1979:17, 25; 1984:3-4).

State machineries affect the distribution of economic tasks by "interfering" in the natural flow of the world market mechanism -- to create or destroy monopolies, to subsidize or render more expensive productive activities, to destroy or protect produced goods. [Hopkins et al., 1977:129]

Since every entrepreneur survives through successful competition against other entrepreneurs, capitalists use the power of the state to give them competitive advantages. The alternative could be removal from the ranks of these competitors altogether (1983:62-63).
There are four elements of state power in the modern state-system which influence the operation of the capitalist world-economy (Wallerstein, 1983:48-56). First, the doctrine of territorial jurisdiction within mutually exclusive borders gives the state control over movement of goods, labor, and capital across its frontiers. The second element is the state's prerogative to specify "the rules governing the social relations of production within their territorial jurisdiction" (1983:51). The third major element of state power is the power of taxation. Fourth, the power of state-machineries varies greatly, being a function of their abilities to aid capital accumulation within their borders relative to other states; these capabilities are reflected in capacity for defense against military force and the capacity to legislate various advantageous domestic regulations while impeding other states from doing so.

It is important to remember that states are not identical with economic areas. First of all, states, like other organizations, have an existence independent of that of those who help to create them, e.g., capitalists. States are not puppets. The officials who manage the state have interests linked to the strength of the state itself, though this strength may not be in the interests of entrepreneurs. Also, the "constitutional compromises" with other interests which were necessary to create a strong state limit the powers of officials, including their ability to assist capitalist interests (Wallerstein, 1979:20). The state-system also diverges from the economy per se in that, while a state may be identified "as being primarily core, semiperipheral, or peripheral, in the sense that the state's political structures tend to
be determined by the needs of the predominant zones" (Hopkins et al., 1977:129), more than one type of economic area frequently exists within a given state (Hopkins et al., 1977:129).

THE WORLD-SYSTEM AND THE QUALITY OF LIFE

Hopkins et al. (1977) claim that semiproletarianized households are worse off materially than either fully subsistence households or fully proletarianized households. The secular trend of growth in members of semiproletarianized households as a proportion of the world-system's population has the result that "the long-term level of well-being of the world-system's and total globe's work forces has been declining" (1977:136). This trend is not necessarily inconsistent with improvement in the material welfare of fully proletarianized workers in the core, who have never constituted a majority of the world-economy's work force.

Wallerstein makes this and related arguments in some of his sole-authored works. He contends that an area's transition from external arena to periphery results in a reduction of real income among direct producers, i.e., a process of immiseration (1978:230). He denies the common Marxist belief, shared with bourgeois liberals, in an "evolutionary model of progress," disputing that "liberty, equality, and fraternity" have increased over the past millenium. In fact, Wallerstein argues that capitalism has produced a reversal in these areas, concluding, "I wish to defend the one Marxist proposition which even orthodox Marxists tend to bury in shame, the thesis of the absolute (not relative) immiseration of the proletariat" (Wallerstein, 1983:100-101). It is true, he admits, that workers in industry, at least many of
them, are better off materially than they were, for example, two centuries ago. Nevertheless, such workers are only a minority of the world’s labor force. The vast majority live under worse conditions than their predecessors half a millenium ago. They are fed more poorly, and, though their rate of infant mortality has improved as a byproduct of public health measures taken for the benefit of the upper strata, their life-expectancy at age one is probably lower. "They unquestionably work harder -- more hours per day, per year, per lifetime. And since they do this for less total reward, the rate of exploitation has escalated very sharply" (1983:101).

In short, the satisfaction of basic needs for the bulk of the world’s population has deteriorated over time as more of that population has been drawn into the capitalist world-economy. This is indeed a bold assertion, and one that may never be possible to demonstrate empirically. However, the related propositions that semiproletarian households are worse off than other households and that the peripheral status of an area has a negative impact on the welfare of its inhabitants may be more easily examined empirically.

RELATED PERSPECTIVES ON
MULTINATIONAL CORPORATIONS AND FOREIGN AID

A number of authors have devoted special attention to the effects of multinational corporations or foreign aid in the Third World. These scholars generally provide more detailed, specific analyses of MNCs, foreign aid, and the underdeveloped countries than do the dependency and
world-system theorists discussed above. While their works are not always written within an explicit dependency or world-system framework, in many cases their emphases are quite congruent with these perspectives. These materials help to provide a rationale for the often abstract statements made by the world-system and dependency theorists discussed above.

MULTINATIONAL CORPORATIONS

Hymer

Stephen Hymer is one of the most prominent radical thinkers represented in the literature on the multinational corporation. He was not a dependentista or world-system theorist, but his ideas are quite congruent with these perspectives. Having begun his career as a fairly conventional economist, he became progressively more radical until his death in 1974 (Hymer, 1979). One of his most important works on MNCs and the Third World is "The Multinational Corporation and the Law of Uneven Development" (1972). In this essay, Hymer attempts to show the relationship between "two laws of economic development," the Law of Increasing Firm Size and the Law of Uneven Development.

Hymer writes that, beginning with the Industrial Revolution, the "representative firm" has tended to grow in size and complexity, progressing through a series of types of firms: the workshop, the factory, the national corporation, the multi-divisional corporation, and finally the multinational corporation. The ancestor of the modern MNC is not the international merchant firm of centuries past (e.g., The British East India Company), but the small workshop run by the early
capitalist. A capitalist (a person "with sufficient funds to buy raw materials and advance wages" [1972:116]) was able to bring together in one workshop a number of workers and thus benefit from higher levels of productivity made possible by cooperation and division of labor. Reinvestment of profits increased the capitalist's total capital, promoting additional division of labor as well as the use of machinery in production. Productivity exploded. Before capitalism, "the division of labor was hierarchically structured at the macro level, i.e., for society as a whole, but unconsciously structured at the micro level i.e., the actual process of production" (1972:116, emphasis in the original). The capitalist system, conversely, was marked by consciously coordinated production and hierarchical, authoritarian relations at the factory level, and by an unconscious, anarchical, competitive process at the market level (though the state provided some coordination beyond the market). This new system was ideally suited for high per capita productivity.

Hymer traces the development of the firm in the United States, since it is in the U. S. that this development has progressed farthest. The single-function Marshallian firm, in which one owner or a small family group directly managed all operations, predominated in the late nineteenth century. But national firms -- firms with operations scattered across the continent -- required a new form of administration. The solution was to establish multiple field offices to administer local activities and a head office to administer the field offices. This was the first stage of vertical division of labor within management. As administrative functions were organized into separate departments (e.g.,
finance, purchasing, sales) in a horizontal division of labor, the modern corporation was created.

The rise of the multi-divisional corporation was linked to particular changes in the U.S. market. At the turn of the century, the technical problem of how to mass-produce goods at low cost had been solved to a large degree. The issue of what to produce, and for whom, was yet to be determined. There were two basic options. The first was to produce basic consumer products for consumption on a wide scale. The second option was ongoing innovation in product design for a relatively small market. It is the latter path that was followed, a path that involved increasingly more capital-intensive production. Under the first alternative, workers' incomes would have been constant, more and more basic consumer goods would have been produced for more and more consumers, and the national labor force would soon have been depleted, the last development requiring either that capital migrate to other countries or that labor from other countries migrate to the industrial country. The choice of a growing capital-to-labor ratio entailed the development of a dualism "between a small, high wage, high productivity sector in advanced countries, and a large, low wage, low productivity sector in the less advanced" (1972:119-120). The continual change in the composition of production required by sales to a smaller, higher-income market, along with the fact that as consumers become richer they consume not more units of the same goods but proportionately more new goods (Engels' Law), meant that products would exhibit life-cycles, with initially rapid sales growth rates which decline over time. Consequently, any firm that produced a single product would see its
growth follow this non-proportional growth in demand for its product; rapid growth would occur early and then taper off, perhaps to a complete stop. Developing and marketing new products became a critical problem for the firm.

The multi-divisional corporation provided an answer. This organizational form emerged after the First World War and was embraced by most large U. S. corporations during the period of rapid economic growth after the Second World War. Corporations were differentiated into multiple divisions associated, respectively, with multiple product lines and administered by separate head offices. The general office was introduced to administer all division head offices. Now divisions could be added or abandoned to meet the demands of changing markets, and the specialization of the general office in strategy made for improved planning, use of capital, and goal-determination. Chandler and Redlich (1961) describe the general office, the head office, and the field office in more abstract terms as Level I, Level II, and Level III, respectively. The development of the firm reflects a centralization and perfection of the accumulation of capital. Level I is devoted to the deliberate planning of corporate capital growth. Since this level controls the allocation of financial and personnel resources to lower levels of the corporation, it has the power to see these plans largely implemented. Level I became a separate entity only with the advent of the multidivisional corporation.

Once U. S. firms became national corporations, many started operations in foreign countries. Their organizational structure and financial might made such a move possible, while their size and
A significant oligopolistic character provided a reason. Corporations entered foreign countries to obtain secure sources of raw materials, to gain control of sales of their products so as to increase returns from "their technological discoveries and differentiated products," and to preempt similar moves by competitors. Large amounts of direct foreign investment occurred around 1900, in the 1920s, and in the 1950s and 1960s. Hymer foresees increasing multinationalization of American, European, and Japanese firms.

Hymer combines Chandler and Redlich's scheme with "location theory" to identify a "correspondence principle" which links centralized control within single corporations to centralized control of the international economy as a whole. Given that a few hundred very large U.S., European, and Japanese MNCs become the dominant type of international firm and dominate a large proportion of industry throughout the world, one can expect a particular spatial distribution of the three levels of administration. Level III activities should become widely distributed over the world in response to local markets and supplies of labor and raw materials. Level II activities will be much more concentrated in large urban centers due to their requirements for white-collar workers, information, and communication. Level I activities, which "must be located close to the capital market, the media, and the government" (1972:124), must be much more concentrated than even Level II operations. These strategic planning activities will almost certainly be located in the major cities of the developed world, e.g., New York, London, Paris, Bonn, Tokyo. Thus, a geographical hierarchy of power and
capital accumulation is expected as a by-product of the success of the MNC in the international economy.

A corresponding hierarchy of income and consumption will develop, since residents of the large urban areas will tend to be the best paid. New products will be designed with this market in mind, according to "trickle-down" or "two-stage" marketing, and the rich will determine in disproportion to their numbers the kind of products that will be produced. MNCs will rapidly extend the trickle throughout the world. Since product development involves fixed costs, it is declining demand rather than rising costs that restricts production; marginal profit from sales in the Third World can thus be quite high, rendering these markets important for MNC profits out of proportion to their size.

The alternative to the MNC is national planning, in Hymer's view. MNCs are private organizations which join together a limited number of industries in many nations. National planning is the MNC's opposite: it involves a public organization which joins a large number of industries within one polity. National planning is more conducive to development than is reliance on MNCs because it circumvents wastes of oligopoly (e.g., multiple products which are essentially identical), places all decision-making in a single location (giving the labor force structure in that location a full range of occupations), and, in general, facilitates local control over economic decisions.

Multinationals, on the other hand, tend to undermine development in several ways. First, the MNC system renders virtually impotent any national strategy of increased education to produce, in turn, a greater stock of human capital and a better standard of living. The
administrative hierarchy imposed by the MNC minimizes demand for highly-educated workers in the Third World. Under these circumstances, education may merely lead to emigration. But even migration to more developed countries has quite limited potential, due to employment discrimination in these countries. In particular, ethnic diversity declines toward the top of the MNC hierarchy. Very few nationals of Third World countries can expect to move beyond day-to-day management of activities in their own countries, where their cultural backgrounds make them valuable to the multinational. Second, the nature of MNCs places a constraint on potential tax revenues which could be used for infrastructure and related services (e.g., education, health) that could improve the productivity of local labor and consequently possibilities for economic growth. The MNC's ability to disguise profits with adjustments of "transfer prices" and its ability to leave a country altogether limit the power of the state to tax it. Third World governments (much like local governments in developed countries) cannot easily recover more taxes from MNCs than they spend on the services (e.g., infrastructure) MNCs use. On the other hand, the national government of a developed country where a multinational is based can tax the entire corporation's profits plus the large salaries of its upper-level management. Third, the ability of the Third World state to implement other, non-tax policies are limited by the presence of MNCs. This situation is due partly to the fact that MNCs channel the "laws, politics, foreign policy and culture" (1972:129) of developed countries into the underdeveloped countries. For example, since the subsidiaries of U.S. multinationals are legally the property of these MNCs, the
Third World subsidiaries may be held subject to U. S. laws (e.g., anti-trust laws), but the parent firm is not likewise subordinate to the host country government.

Hymer sees fragile future prospects for the multinational corporate system. The growth — and indeed, the persistence — of the modern sector under this system is threatened by such Third World problems as foreign exchange shortages, insufficient support services such as education, urban food shortages, and a majority which, excluded from the benefits of the MNC, might revolt. Hymer urges a socialist solution to the problems of underdevelopment. In a statement partially foreshadowing the basic needs approach formulated after his death, he describes the goal of this solution:

What is needed is a complete change of direction. The starting point must be the needs of the bottom two-thirds, and not the demands of the top third. The primary goal of such a strategy would be to provide minimum standards of health, education, food and clothing to the entire population, removing the more obvious forms of human suffering. [1972:134]

Mueller

Like Hymer, Ronald Mueller (1979) studies the relationship between persistent underdevelopment in the Third World and the rise of the multinational corporation during the postwar era. He defines the MNC as a company with its parent headquarters located in one country and subsidiary operations in a number of other countries. The central characteristic of a multinational corporation is that it seeks to maximize the profits not of its individual subsidiaries, but rather of the center parent company. [1979:151]
Mueller examines the effects of MNCs on their Third World hosts in three areas in which MNCs are often held to be beneficial for development: contributions of technology, financial inflows, and reduction of balance of payments problems. These are discussed in turn.

Acceptance of Western consumption values as the reason for economic growth in the underdeveloped countries has necessitated adoption of Western technology which can produce these consumer goods. Thus, patents granted by underdeveloped nations tend to go overwhelmingly to foreigners. Furthermore, ownership of these patents is highly concentrated, giving oligopoly power to the holders. "In Colombia, for instance, in the pharmaceutical, synthetic fiber, and chemical industries 10 percent of all patent-holders own 60 percent of all patents, and these 10 percent are all foreign MNCs" (Mueller, 1979:154). However, the technology brought in by the MNCs -- the primary source of technology in the Third World -- has negative consequences for employment and income distribution and is provided at excessive cost. MNCs introduce technology which is designed for use in the developed countries, where capital is relatively plentiful and labor is relatively scarce. In the underdeveloped world, the opposite conditions hold. Thus, MNCs tend to use capital-intensive production techniques despite an overabundance of labor. A study cited by Mueller found that, among manufacturing firms in Latin America, MNCs employ about half as many workers as local firms for each unit of sales. And, while manufacturing more than doubled its share in the national products of the Latin American countries during the period 1925-1970, the proportion of the work force employed in manufacturing fell slightly over this period.
Mueller concludes that MNCs eliminate "many more jobs than they are creating" (1979:160). Accordingly, the introduction of MNC technology skews income distribution. Given the legal underpinnings of capitalism, the owners of capital reap the income it produces. If only a very few people own capital and the production techniques used result in more income produced by capital than by labor, the level of income inequality will be great. Furthermore, with the tendency toward increasingly capital-intensive production techniques, this distribution grows more unequal as long as capitalist legal institutions are not changed. Empirical research has shown that the wealthiest 5 percent of Third World populations gain substantial increases in income with respect to the poorest 40 percent, both relatively and absolutely, under rapid industrialization such as that experienced in Latin America. Mueller's conclusion is that MNC technology transfers have benefited the rich minorities while harming the poor majorities in the underdeveloped world. Finally, the technology exported to the Third World by MNCs tends to be highly overvalued. Since technology transfers make up a major component of MNC investment in Third World subsidiaries, this overvaluation greatly increases the apparent level of investment, consequently reducing the apparent rate of profit. "Low profits" in turn minimize taxation, increase the amounts which can be repatriated from countries which limit repatriation, and minimize charges by local inhabitants that the MNC is exploitative. In brief, the use of technology from MNCs increases income inequality (in both relative and absolute terms) and facilitates outflows of capital.
It is commonly assumed that Third World countries lack both sufficient savings for investment and the potential to accumulate such savings, particularly savings of foreign exchange needed to import technology for development. MNCs are often seen as sources of this foreign capital. However, the assumption that MNCs bring foreign savings into underdeveloped nations is incorrect. Data for Latin America during the period 1957-1965 indicate that U. S. MNCs obtained only 17 percent of their gross investment from the U. S. Virtually all the remainder was from reinvested earnings, depreciation, and capital markets within the host country. Local capital markets supplied almost half again as much investment as U. S. sources. In general, subsidiaries of MNCs have an advantage over local firms for purposes of borrowing from local financial institutions: they are backed by the credit-worthiness and financial resources of their parent firms, which are vastly superior to those of small domestically-owned enterprises and therefore are much more attractive to risk-averse, profit-maximizing lenders. The position of the MNC subsidiary is even stronger when the "local" lender is a multinational bank (e.g., the Bank of America). Such banks often hold substantial fractions of private deposits in Third World countries. The interests (not to mention ownership) of these banks are interlocked with those of the MNCs. The data cited by Mueller indicate that while 83 percent of MNC investment is obtained locally, only 21 percent of the profit it generates remains in the country. In addition, a substantial fraction of MNC finance capital is used not to create new enterprises but rather to buy out existing domestic firms.
Thus, MNCs contribute not to financial inflows into underdeveloped countries, but rather to financial outflows.

Similarly, Mueller argues that MNCs aggravate the balance of payments problem for Third World countries. Latin America already had a very serious debt problem in the 1970s; the shortfall of exports compared to imports was growing, and other foreign debt was rising rapidly. The transfer of capital out of underdeveloped countries by MNCs, just discussed, is one way in which MNCs contribute to the problem. MNCs also tend to restrict exports by means of technology licensing agreements made with their subsidiaries and with domestically owned firms. A study of technology transfer contracts in Latin America found that most such agreements prohibit export of products made with the technology provided by the MNC. In many other cases, the exports permitted are of such a limited nature as to be negligible. Furthermore, despite their supposed technological advantages, Latin American subsidiaries of MNCs are generally no more successful at exporting their products than are domestically owned firms.

MNCs often manipulate "transfer prices" on products exported from one subsidiary to another to minimize tax liabilities and thus maximize the profits of the parent firm. These transfer prices can differ considerably from the market prices for the same goods. In some instances, MNCs undervalue products exported to other subsidiaries they hold.

For example, if a subsidiary exporting in country X is faced with higher corporate tax rates than the importing subsidiary of the same parent in country M, then the parent will pay less total taxes for both subsidiaries and earn more total net profits by directing
the exporting subsidiary to undervalue its exports. [Mueller, 1979:168; emphasis in the original]

Alternatively, the goods may be shipped first to a "tax-free port," or "tax haven" (e.g., Panama), where the price can be raised before shipment to the next subsidiary. The total tax liability of the parent corporation is thereby minimized, and a source of tax revenue that could be used to improve the welfare of Third World populations is reduced (though Mueller may be too optimistic about the possibilities for such use of tax revenues in many underdeveloped countries, given the inclinations of their governments). Similarly, imports of intermediate and capital goods by subsidiaries and licensees in the Third World -- often from the same MNCs which provide basic production technology, required as a result of "tie-in clauses" -- are often overpriced. Research on imports into Latin America in 1968 found overpricing as high as several hundred percent. One study included import overpricing, along with reported profits, royalties, and fees, in calculations of the 1968 annual rate of return on investment for 15 Colombian drug subsidiaries wholly owned by MNCs; the average rate of return thus calculated was 136 percent, compared to only 6.7 percent reported to domestic tax authorities. Even these data must underestimate true rates of return, since they do not take into account export underpricing or overvaluation of investment. Reported rates of return for all manufacturing subsidiaries of MNCs in Colombia from 1960 to 1968 averaged 6.4 percent. Mueller cites one economist who finds these rates implausible in the face of continued entry by MNCs, while national enterprises report higher rates of return and interest rates in
financial markets which ranged from 16 to 20 percent. In summary, MNCs increase balance of payments shortfalls (or at least do not improve them, despite the MNCs' use of national resources that might otherwise be used to increase exports) through decapitalization, restriction of exports from subsidiaries and subordinate "independent" firms, export underpricing, and import overpricing.

Moran

An article by Theodore Moran (1978) identifies three claims by dependency theorists about relationships between MNCs and underdeveloped host countries, and it points out similarities and differences between dependency and other perspectives on these issues. The non-dependency viewpoints Moran considers include "theories of oligopolistic competition among multinational corporations, theories of 'bureaucratic politics' in the formulation of US foreign policy and theories of 'transnational relations'" (1978:80).

The first major dependency proposition given by Moran is that host countries benefit little in comparison to the MNCs:

The benefits of foreign investment are "poorly" (or "unfairly" or "unequally") distributed between the multinational and the host, or the country pays "too high" a price for what it gets, or the company siphons off an economic "surplus" that could otherwise be used to finance internal development. [Moran, 1978:80]

Moran notes that other perspectives do not necessarily deny this proposition, but they at least qualify it. Stephen Hymer had suggested that MNCs make foreign investments because they control skills or techniques, not otherwise obtainable by domestic firms, which the MNCs find profitable only if they retain direct ownership. The uniqueness or
rarity of these skills or techniques gives the MNC the potential to collect "oligopoly rents." Some authors have emphasized the role of relative bargaining power between MNCs and host nations in the determination of these prices received by MNCs. Several sets of hypotheses have been suggested to explain relative bargaining strength. First, the characteristics of a given project can influence negotiating power; corporations are favored when the potential project entails "low fixed investments, low fixed costs, changeable technology, [and/or] complex marketing" (1978:82). Second, certain properties of the host country are presumed to play an important part in bargaining power. Large domestic markets, rapid economic growth, politically mobilized populations, experienced government bureaucracies, and domestic alternatives to foreign investment all provide advantages to the host nation. Finally, external factors — i.e., properties of the world economy itself — influence relative bargaining power. The position of the MNC is enhanced by high levels of uncertainty in investments and by low levels of competition among MNCs. These views differ from those of dependencia in several respects: they imply that whether the investor is capitalist or socialist makes no difference for the final result, and they imply that the growth of MNCs of diverse nationalities favors host countries by providing more alternatives. However, Moran considered certain assumptions of these ideas problematic. These non-dependency views ignore the distinction between the ability of host country governments to drive hard bargains and their will to do so, and they ignore potential distortions in the local economy which MNCs may cause.
A second major proposition about MNCs in the Third World which is proposed by dependency theorists is precisely that "multinational corporations create distortions within the local economy" (1978:85). Some of the more important distortions are that (1) MNCs block development of the domestic economy by displacing domestic enterprises from the most promising sectors of that country's economy, (2) MNCs improperly use capital-intensive production technology where labor is plentiful, contributing to unemployment, (3) the presence of MNCs produces a more unequal distribution of income, and (4) MNCs change consumer tastes and corrupt domestic culture.

Some non-dependenstistas as well as the dependency theorists suggest that MNCs displace local firms from the most "dynamic" sectors of the economy. Stephen Hymer, Charles Kindleberger, Raymond Vernon, and others claim that MNCs focus their investment in industries where barriers to entry are greatest (e.g., where economies of scale are greatest, where research and development costs are highest). It is these sectors that are most promising. According to this view, local firms may initially control certain advantages (e.g., important contacts) needed by an MNC, and thus the MNC will often enter the country through a merger with a domestic firm. However, if and when the MNC finds that the subsidiary's potential is larger than mere domestic sales, it will seek to link the subsidiary into its other, foreign operations such that the profit-making potential of the parent firm as a whole is optimized. Domestic investors, whose interests lie in the profit-making potential of the domestic firm, obstruct this goal and therefore tend to be bought or forced out by the MNC. But advocates of
this idea who also support the "product cycle model" (e.g., Raymond Vernon) argue that domestic competition is likely to develop and to be triumphant in the end. Local firms linked to the MNC or agencies of local government can begin to perform the same activities as the multinational as markets are developed, the viability of the activity is shown, and risks are lowered.

The dependency proposition that MNCs use inappropriate capital-intensive production techniques appears to conflict with the notion of the profit-maximizing firm. However, several hypotheses proposed by non-dependency scholars provide some explanations for this anomaly. First, it is suggested that MNCs considering the establishment of a plant in a Third World country compare the marginal cost of a known technique with the total cost of developing another technique that makes optimal use of locally-available factors of production; MNCs do not compare the marginal costs of the two techniques. Because MNCs are based in the industrialized nations and their (capital-intensive) production techniques have been designed in these countries, it can be to their advantage to transplant capital-intensive techniques to labor-plentiful countries. There is some empirical evidence for this position, though important exceptions have been discovered. When profits generated by the subsidiary depend heavily on the maintenance of low prices for sales in a local market, labor-intensive production is more common. Also, MNCs which produce goods "offshore" for sale in highly competitive developed-country markets tend to set up more labor-intensive phases of production in the underdeveloped countries. A second hypothesis is that MNCs use capital-intensive technologies
because this practice permits them to export greatly overvalued capital equipment to their subsidiaries, enabling them to earn apparently low rates of profit (facilitating evasion of restrictions on profits or remittances) and to claim greater levels of depreciation for host-country tax purposes. Third, it has been proposed that the true costs of labor-intensive production may actually be quite high due to the scarcity of supervisory skills.

The third economic distortion claimed by dependency theorists to be caused by MNCs is the skewing of the domestic distribution of income. This is opposite the "neo-classical" prediction that direct foreign investment has a leveling effect on income distribution through net creation of employment, increased demand for labor, and reduced returns to capital. However, Moran points out that several assumptions are important to these outcomes: "that the foreign investment adds to total domestic investment, that there is full employment, and that foreign and domestic producers utilize technologies that are equally labor-intensive" (1978:90). As the above discussion suggests, these assumptions are rather questionable. MNCs may not contribute to the local stock of capital due to borrowing of local capital and preemption of domestic investment in the most dynamic sectors of the economy (pressing domestic capital to seek foreign investment outlets). Where there is long-term unemployment and/or underemployment (as is typically the case in the Third World), capital-intensive investment "may merely bid up the wages for a small domestic labor elite while consigning a greater number of workers to the ranks of the marginados" (1978:91).

The use to which the government puts any revenues from taxation of MNC
subsidiaries will also influence income distribution: uses such as welfare may level incomes, while subsidies to the wealthier classes or to the military may increase income inequality.

The dependency proposition that MNCs change consumer tastes and corrupt domestic culture is implicitly supported by the product cycle model. The product cycle model argues that MNCs develop local markets for their products and that these products and the means of marketing them are linked to the nature of demand in the firms' home countries. On the other hand, domestic enterprises which profit from high levels of consumption might well introduce the same norms and advertise them just as effectively.

The third and final major dependency proposition about MNCs which Moran presents is that MNCs distort political processes in the Third World through several means: cooptation of host country elites, use of pressure on home country governments to in turn pressure host country governments to treat MNCs favorably, and "structuring the international system" to their own advantage and to the disadvantage of host governments. With regard to cooptation of elites, Moran suggests that both dependency and non-dependency theorists would agree that there is, at least in some cases, a conservative partnership among MNCs and Third World business, agricultural, and government elites, if only because radical social change threatens all of these actors.

Several hypotheses based on non-dependency writings imply that these relationships are somewhat delicate, however. First, the involvement of MNCs in the domestic economy is in opposition to interests of several domestic groups: MNCs create more competition for domestic business,
limit implementation of economic policy for government officials, and pose a threat to national sovereignty for political leaders (who can use this threat for political gain). Second, local elites may use the multinationals as scapegoats when they are faced by political pressures. Third, there are potential conflicts among MNCs. Moran suggests that (1) producers of products for internal sales would support redistribution of income so that demand for their products would increase, enabling them to improve economies of scale as well, (2) producers of products for export would support minimization of costs for locally obtained factors of production, including labor, and (3) MNCs in the extractive sector, where production tends to be for export and is capital-intensive, would be relatively unconcerned about changes in the social structure and might well support such changes if a more stable environment would result.

Turning to the issue of MNC influence on host governments through the governments of their home countries, Moran claims that much of the existing evidence undermines this thesis of dependency theory. While some U. S. legislation (e.g., the Hickenlooper amendment, which requires a cutoff of foreign aid to countries that expropriate property of U. S. nationals without promptly providing adequate compensation) and certain diplomatic actions by the U. S. reflect such influence by multinationals, these efforts have often proven unsuccessful and counterproductive. A 1970 survey of U. S. investors in Latin America found that three-fourths of the respondents supported the repeal of the Hickenlooper amendment, though only a slim majority of companies with investments in extractive activities supported the amendment. However,
some advocates of the "bureaucratic politics" perspective on political relationships between the developed and underdeveloped countries concur with dependency and other radical perspectives in claiming that, in the end, "U.S. interests" are equivalent to business interests. Although radical theorists argue that this is the outcome of elite links between business and the highest levels of government, the bureaucratic politics theorists suggest that relations with Latin America receive little attention at upper levels of the U.S. government, permitting the U.S. groups with the best organization and the strongest interests in Latin America — i.e., business groups — to have considerable influence on development of policy through Congress. Other thinkers, though, have argued that differences among various kinds of MNCs create an environment of countervailing interests in which U.S. government policy makers can make their own opinions prevail. Nonetheless, while the above suggests that there is considerable latitude for action by host country governments in the face of alliances between MNCs and their home governments, it still seems unlikely that the U.S. government would stand idly by if massive upheavals in the underdeveloped countries threatened the interests of a number of U.S. investors.

Finally, the dependency proposal that MNCs manipulate the international system to their advantage against "economic nationalists" is supported by recent non-dependency research in two areas. First, beginning in the mid-1960s, some firms with large investments in underdeveloped countries have reduced their risks by raising capital from others, e.g., customers and lending institutions. This practice has linked a large number of groups in the developed countries with a
common interest against nationalization of foreign operations. Thus, expropriation could entail fierce opposition and retaliation from interests in a number of countries. Second, MNCs have recently sought to increase their power with respect to Third World governments through management of vertical integration. Some firms which obtain raw agricultural and mineral products (e.g., bananas, aluminum) from underdeveloped countries have diversified their sources of supply, in some cases divesting themselves of the supply segments of their operations and creating a number of competing suppliers. Expropriation under these conditions leaves only the most competitive segment of production for taxation by host governments.

Moran thus shows that several other strands of inquiry have importance for issues raised by the dependency perspective. In a number of cases, these theories and research complement and support dependency theory. In other instances, of course, these approaches suggest the existence of limitations or inaccuracies in dependency. Moran's survey is also a valuable attempt to formally summarize dependency propositions about MNCs and underdevelopment.

George

A rather different connection between MNCs and development is suggested by Susan George (1977, 1979). George argues that multinational agribusiness firms, by distorting in various ways the structure of domestic agriculture in the Third World, prevent food from being grown for consumption by the masses of the local population -- a claim with special relevance for the present study. If the claim is accurate (and George produces a number of examples to back her
generalization), this is a particularly important phenomenon; unlike the arguments on MNCs and underdevelopment presented above, here the relationship between MNC operations and basic needs satisfaction is very direct. Agribusiness has other detrimental effects also, some of which are suggested by authors reviewed above. It "is capable of destroying everything it touches: local employment patterns, local food-crop production, consumer tastes, even village and traditional family structures" (1977:133). While spokespersons for agribusiness claim they have the answer to the world hunger problem, their motivation is to be found in profits, not in feeding the poor, and the results of their activities in the underdeveloped countries show it.

The agribusinesses which pose the greatest threat to Third World nutrition "are the ones that use a 'host' country's land and labor for producing food -- rarely to satisfy local needs, almost always for export to the developed countries' markets that will pay the most for their produce" (1977:133). In many instances, highly productive land previously used or potentially usable for food production (quite possibly by the poor themselves) for local consumption is controlled by foreign agribusiness. Thus, Latin America, Africa, and South Asia grow luxury foods for sale in the U. S., Europe, and Japan, respectively. The Sahel nations (best known in recent years for their famines) and Central America have become major beef exporters. Soybeans grown in Brazil displace food crops, as does sugar cane grown on land controlled by U. S.-based Gulf and Western in the Dominican Republic. Animal food producers also use a great deal of land that could be used to grow food for poor local inhabitants;Ralston Purina, for example, often grows
soybeans and other crops for local processing in its own plants, and then uses the product in its own local chicken industry (George, 1977, 1979).

Not all the harm caused by agribusiness MNCs is tied to the mere ownership of agricultural land that could be used to grow food for domestic consumption. In Brazil, for example, subsistence farmers have been dispossessed from Amazonian lands, which were then turned over to MNCs (with tax rebates) by the government of Brazil; these newly-landless peasants now serve as a cheap source of labor for new foreign-owned cattle ranches there. And in an increasing number of cases, the MNCs do not directly own the land involved, but control it through other means; this practice can permit elimination of a wide array of risks while preserving profitability. For example, in Indonesia, the Philippines, and the Ivory Coast, land is held by government agencies for use by MNCs. The pre-revolutionary government of Iran displaced thousands of small farmers to lease their land to multinational agribusinesses. In many other instances, agribusinesses have channeled their gross incomes proportionately more to profits by the use of large-scale capital-intensive farming and thus the elimination even of low-wage employment. Conversely, there is evidence that agribusiness will continue to deal directly with small producers because they are willing to supply their own and their family's labor for almost nothing. This will be especially true for the peasant who has enough land for self-provisioning and who can raise a cash crop on the land left over: whatever he makes for the cash crop, it is still, so to speak, money in the bank. [1979:54; emphasis in the original]
These are Wallerstein's "semiproletarians," discussed earlier in this chapter. Sometimes, foreign agribusiness may be involved only at the level of buying export crops to sell abroad (an operation in which it frequently has monopoly control) or at the level of providing processed inputs such as inorganic fertilizer (George, 1977).

Attempts by agribusiness to profit from sales of their products in the Third World have also proven harmful. Their food products are typically highly processed, and therefore are both more profitable and much more expensive than locally produced raw agricultural products. Where agribusinesses have succeeded in changing the tastes of the poor to create demand for their products, disaster has followed. A well-known instance is Nestles' marketing of infant formula. Nestles used a variety of techniques to persuade Third World mothers of the superiority of formula-feeding to breast-feeding, but the inability of these mothers to afford adequate quantities of formula and the lack of sterile facilities to prepare it have led to increases in infant malnutrition and large numbers of infant deaths. In other cases, expensive junk foods are promoted which tend to displace useful food. Coca-Cola is often bought by poor families for consumption by the father, leaving too little money to buy food needed by the children (George, 1977). While some of these goods are produced outside the country of sale (and are thus a matter of trade rather than of direct investment, the latter issue being of more concern in the present study), others are processed within the consuming country by foreign firms.

At a more general level, agribusiness multinationals are harming the underdeveloped countries by introducing the "U. S. food system," though
they often depend on infrastructure and labor skills developed with foreign aid from various bilateral and multilateral sources. Private foundations such as the Rockefeller Foundation have also played an important role. George claims that the high-technology U. S. food system has become a model toward which other nations are "advancing."

There is a concentrated effort on the part of the agents of the capitalist world system ... largely though not exclusively multinational corporations, to introduce the food system model they have devised at home to the underdeveloped nations. This is ... being done ... in order to dominate [Third World food systems] more effectively, so that the "periphery" may better serve the needs of the "center." [1979:22]

But this model is detrimental to the underdeveloped world, "in particular because it perpetuates and reinforces hunger and malnutrition" (1979:22), and because of related effects such as "higher food prices, highly concentrated land holdings, reduction in real wages for those lucky enough to have work, and rural migration" (1979:40).

Again, much of the food produced under this system in the Third World goes to feed inhabitants of the rich nations. On the opposite side of production, foreign firms provide many of the (expensive) inputs — fertilizers, pesticides, seeds, technical expertise, and so on — required by this system. Among the fundamental characteristics of the U. S. food model are that it is oriented toward the market and that it evolves such that more and more (profit-generating) inputs and processing procedures are used to produce the same amount of food for consumption. As shown above, the U. S. food system simultaneously displaces local food systems which would do a much better job of
providing adequate, appropriate nutrition at prices affordable by the masses (George, 1979).

Susan George does manage to identify one agribusiness project (of many she investigates) which seems to benefit the local population: the Mumias sugar cane farming and processing complex in Kenya in which the British firm Booker McConnell is involved along with the Kenyan government. The project was also assisted by British bilateral aid, the World Bank, and the East African Development Bank. But even this case "is a further argument that multinational agribusiness must be controlled, for when it is, it has a contribution to make" (George, 1977:158). Overall, George sees multinational agribusiness in its present form as a serious threat to the well-being of the poor in underdeveloped countries. Many of the points she makes about the links between multinational agribusiness and Third World living conditions are echoed by Michael Perelman (1977).

FOREIGN AID

Lappe, Collins, and Kinley

Writing for a popular audience, Frances Moore Lappe, Joseph Collins, and David Kinley of the Institute for Food and Development Policy (Lappe et al., 1981) take a view of foreign aid neatly summarized by the title of their book: Aid as Obstacle. They comment that, "When many Americans hear the word 'aid,' immediately they imagine a 'project' somewhere in Africa or Latin America where a child who was starving yesterday is now eating" (1981:121). But Lappe et al. argue that
foreign aid for "development" in reality leads to worsened conditions in the Third World. First of all, bilateral official aid from the U.S. goes almost entirely to a few countries selected on the basis of their strategic importance (about half of proposed U.S. bilateral economic assistance for 1980 was for ten countries). Relatively little of this aid goes to the poorest underdeveloped countries. Furthermore, the recipients of U.S. aid tend to be repressive governments with little concern for the needs of the poor. Multilateral institutions such as the World Bank are no better than U.S. government agencies, and their lack of political accountability sometimes makes them worse. They, too, tend to favor the interests of multinational corporations and the positions of governments influenced by MNCs. The vast majority of aid helps not the poor majority but the rich minority and, in some cases, multinational corporations with operations in the recipient country. Indeed, a great proportion of aid goes for purposes which directly harm the poor, such as electrification (which can power machines that take the place of many laborers). Sometimes, aid for such uses is made to appear more appropriate by placing it in a category with such favorable connotations as USAID's "Food and Nutrition" program. Lappe et al. reject the notion that the benefits of aid directed at the non-poor later "trickle down" to the poor.

Even food aid is typically harmful. For example, the U.S. Public Law 480 ("Food for Peace") program enables the U.S. Government to sell surplus commodities at a low price to Third World governments, which usually sell it on the domestic market. Revenues go to meet the expenses of running the government (including the police and the
military), and who gets the food is determined by who has enough money
to buy it. Simultaneously, this food tends to be cheaper than
domestically produced equivalents, drives down prices paid domestic
farmers, and thus reduces domestic production. One result is dependence
on the U.S. for food. Land thus taken out of production for local food
sales may be used to grow crops or raise livestock for export. At one
time, much of the local currency generated by P.L. 480 sales could be
lent at low interest to U.S. corporations for use in their operations
in the country concerned. P.L. 480 grain is even used as animal feed
by subsidiaries of U.S. MNCs.

In short, Lappe and her colleagues claim that, even if it were
carefully and conscientiously designed by the donor to improve the
conditions of the poor in the recipient country, aid to countries marked
by great inequalities nearly always only exacerbates an already terrible
situation.

U.S. foreign assistance fails to help the poor because it is of
necessity based on one fundamental fallacy: that aid can reach the
powerless even though channeled through the powerful. Official
foreign assistance necessarily flows through the recipient
governments, and too often (particularly in those countries to
which the United States confines most of its aid) these governments
represent narrow, elite economic interests.... The influx of such
outside resources into those countries where economic control is
concentrated in the hands of a few bolsters the local, national and
international elites whose stranglehold over land and other
resources generates poverty and hunger in the first place. [Lappe
et al., 1981:10-11; emphasis in the original]

And, as was mentioned above, Lappe et al. consider multilateral aid
equally bad. Even aid from private organizations escapes such pitfalls
only rarely, and then with incredible difficulty. Lappe and her
colleagues tentatively conclude that food aid or logistic support for
food distribution during short-term emergencies (e.g., severe drought) should be continued, though with recognition by its administrators that it is apt to be counterproductive even then unless extraordinary precautions are taken. However, all other official assistance should be terminated. One of the most important actions that residents of the developed world can take to help the hungry of the Third World is not support for foreign aid, but rather opposition to the economic and foreign policies which help to perpetuate the power inequalities underlying their condition.

Hayter

Teresa Hayter (1971), the author of one of the better-known critiques of foreign aid, claims that any improvements in the welfare of Third World inhabitants "which may arise through aid are incidental to its main purposes, and must be balanced against its generally negative effect" (1971:9). She studies the use of "leverage" (an institution's use of its power to deny or provide foreign aid to manipulate "the general economic policies of developing countries in specific directions" [1971:17]) by the U. S. Agency for International Development (AID), the World Bank, and the International Monetary Fund (IMF). Hayter focuses on specific uses of leverage with Latin American governments.

In its general role as preserver of the capitalist system, aid ... can be used in an attempt to build up social and economic systems considered to be durable and resistant to revolutionary change.... Aid can ... be used in an attempt to secure, by attaching specific conditions, the smoother functioning of the system, and thus to ensure that debts are repaid, that profits can be remitted abroad and that restrictions on imports can be removed; it can also be used to avert disruptive crises. [Hayter, 1971:10-11]
If an aid agency dislikes a given country's economic policies, it can refuse new aid or curtail or discontinue existing aid; if an agency supports a country's present policies, it can give aid to assist the country in pursuing these policies; and if an aid agency finds many aspects of a country's policies satisfactory but some not, the agency may develop new policies which must be adopted as a prerequisite for aid. In the last instance, the resulting policy changes are apt to have a strong influence on other governments which desire aid. The use of leverage is a normal practice of the three major institutions listed above.

In general, leverage serves to support capitalist interests in the Third World. The aid agencies use leverage to promote dependence on market processes, regard for private property (particularly foreign private property, including foreign private investment), unrestricted international trade (in its current form), and regular payment of principal and interest on foreign debts.

There is something of a "hierarchy of concerns" pursued by the AID, the World Bank, and the IMF, Hayter argues. Their foremost concern is financial and monetary "stability" (considered to be a prerequisite for economic growth), which tends to serve the capitalist interests just noted. Stabilization programs which are frequently demanded of potential aid recipients include such measures as loosening of import restrictions, currency devaluation, removal of price controls (particularly on food), limitation of wage increases, and reduction of public sector budget deficits (sometimes obtained by revenue increases
especially revenue increases which make disproportionate demands on the poor — and sometimes obtained by spending reductions, particularly spending for "social services, salaries and wages, housing, health, education and land reform" [1971:159]). The stability sought by these practices includes the reduction of inflation, restoration of price equilibria (disrupted by past government interference in the economy), and increased private investment (resulting from increased private sector confidence in the economy, easier importation of spare parts and raw materials, and easier remittance of profits by multinationals).

However, the stability programs pushed by these organizations have seldom succeeded even in terms of their own criteria. Under these programs, inflation has raged on, anticipated private investment has failed to materialize, and economic stagnation has occurred instead of economic growth. Frequently, the outcome of a stabilization program is recession, followed by political crisis which brings the program to an end. Furthermore, stabilization tends to lower demand and credit availability, while lowered import restrictions insufficiently matched by devaluation render foreign manufactures more attractive in price compared to domestically-made goods, devaluation and elimination of price controls drive up prices, and devaluation may result in a redistribution of income to the wealthy. Other effects, which seem to be of little concern to the aid institutions, include urban-focused growth (to the extent that there is any growth), neglect of improvements in living conditions, avoidance of land reform (presumed to have short-term detrimental effects on agricultural production), agricultural
production policies with little or no benefit to peasants, higher food prices for the urban poor, and increased unemployment.

These outcomes seem not to have deterred the aid agencies from continued pursuit of their policies. Neither have these organizations been convinced that they should seriously consider alternative perspectives and policies — such as those embodied in the "structuralist," less radical version of dependency theory. Instead, the aid agencies continue to support governments which seem likely to pursue stabilization policies; these governments tend to be right-wing, even military, dictatorships which have little if any concern for improving living conditions throughout the populations of their countries.

The second most important concern of these aid agencies after stability is economic growth (often considered as if it were the whole of development). As stability is held to be a prerequisite for growth, growth is believed to be a necessary condition for their third, last, and least concern: "social," as opposed to "economic," issues — "the distribution of income, employment, health, education, even agriculture, and in general the material and social conditions of the rural and urban poor" (1971:162).

Although Hayter's study concentrates on detrimental results of leverage, she claims that aid has negative effects on the conditions of Third World residents in several additional ways. First, aid may serve as a "concession" by dominant countries so that they may persist in exploiting the subordinate countries, much as reforms within the dominant countries may serve to obviate more radical changes potentially
wrought by the lower strata. There are several variants of this mechanism, including (1) buying the indulgence of Third World governments with regard to large outflows in the form of repatriated profits by foreign firms and interest payments on foreign debt, (2) providing near-term support to Third World governments facing economic woes, and (3) developing and perpetuating a Third World class supportive of imperialism due to its dependence on foreign aid (as well as private investment) for its survival. Second, foreign aid may be employed in projects which worsen the economic conditions of the majority of the recipient country's population. Third, aid generally increases a country's total foreign debt (presumably in the direct sense that foreign aid is usually in the form of a loan). Fourth, foreign aid may act as a subsidy to large corporations, with the citizens of the corporations' home country footing the bill, in three ways: (1) aid may be "tied" to the purchase of products from the donor nation -- products typically higher in cost than similar goods available from other sources, (2) aid helps finance the (growing) transfer of profits and payment of interest from the underdeveloped countries to the imperialist countries, and (3) aid may be used to develop infrastructure (e.g., roads, ports), and to bring Third World funds into these projects, which increases the profitability of these firms' activities abroad (Hayter, 1971:9-10). (One might point out that, to the extent that aid draws Third World resources into benefits for such corporations, residents of the underdeveloped recipient countries as well as those of the developed donor countries are subsidizing these businesses.)
Robert E. Wood (1980) examines the influence of foreign aid on development-related actions and policies of Third World governments. He argues that aid has helped to turn these governments away from all forms of "statist development" and toward reliance on private investment in profitable activities. Whereas previous radical treatments of foreign aid's influence in the Third World focused either on "aid bargaining" and conditions required in return for aid by particular institutions, or on the role of aid in fostering foreign investment, Wood emphasizes the role of the total world system of aid donors and recipients and the ways in which foreign aid molds the very nature of the state.

Since the 1950s, most official aid for development purposes has been bilateral assistance from the Development Assistance Committee (DAC) countries of the Organization for Economic Co-operation and Development (OECD), 17 developed capitalist countries. Including their contributions to multilateral aid donors, "DAC countries accounted for almost all official aid until the mid-1960s and continue to account for about three-fourths of it" (Wood, 1980:8). Official development aid from "communist" countries has never constituted more than a minute fraction of all official aid; the OPEC countries became significant aid donors during the 1970s, but their total contributions were only about half those of the DAC countries even in 1975, the strongest OPEC performance for which Wood provides data. Furthermore, while an increasing share of DAC aid has been channeled through multilateral organizations such as the World Bank, bilateral aid still accounted for over three-fourths of DAC contributions in 1978. Even these data do not
fully reveal the degree of concentration of aid donors. The U.S. provided more than half of DAC bilateral aid before the late 1960s, and in 1978 over 70 percent of DAC aid came from five countries: the U.S., Japan, France, Germany, and the United Kingdom.

There is a similar concentration of donors within individual recipient countries. Three-fourths of Third World countries obtained at least 70 percent of their bilateral aid from one donor. While this pattern seems to be less common now, many recipient countries still get aid through consortia or "consultative groups" of donors. Although this practice supposedly reduces the dependence of a country on single donors, one country or multilateral organization often coordinates a consultative group and may thereby have more power than in purely bilateral aid agreements. On the other hand, OPEC's increased aid levels have given more options to recipients. Bilateral and multilateral OPEC aid is generally not administered very closely and is frequently provided for uses initially proposed by recipients and for uses other donors will not generally fund (e.g., general balance-of-payments assistance). However, OPEC donors seem to be growing more restrictive in these areas, adopting guidelines similar to those used by DAC countries. Also, to the extent that OPEC funds are routed through non-OPEC multilateral donors (e.g., the World Bank), it may merely increase the power of the Western nations dominant in these organizations. In brief, foreign aid continues to be a resource largely provided by the developed capitalist countries.

The foreign aid system is structured such that aid recipients have few alternatives. First, as suggested above, there are relatively few
donors representing very few points of view, and this situation is
aggravated by the fact that individual recipient countries often obtain
much of their aid from single donors or groups of donors dominated by
one organization. Thus, aspiring recipients have a limited choice of
alternate donors should they dislike the terms demanded by one donor,
and breaking with a donor on one project or program could well affect
most of the other aid already being received. Second, DAC countries and
multilateral agencies follow a policy of "strategic nonlending," i.e.,
official assistance for a certain purpose is not provided when private
capital can be obtained for that purpose. Foreign aid is thus more a
last resort than a true alternative. The terms of willing private
lenders or investors cannot easily be refused, and when agreements for
official assistance are sought the potential donor is in an even better
bargaining position to insist on its own terms -- terms which typically
foster a better environment for private investment. Either way,
strategic nonlending boosts the private sector and the involvement of
foreign private interests. Third, a principle of "institutionalized
noncompetitiveness" reigns among aid agencies, meaning that "each agency
offers the hardest terms deemed justifiable by a particular proposal and
is prepared to acquiesce to any agency offering harder terms" (1980:14).
The terms of aid range from grants, which require no repayment, through
no-interest loans (made by the International Development Association, a
World Bank affiliate), low-interest loans (made, for example, by
bilateral agencies), medium-interest loans (made by the World Bank and
regional development banks), and finally to export credits, which
require near-market interest rates (given by bilateral export-import
banks). Among United States agencies, for example, AID will not make a
loan which the Eximbank might extend. This policy is intended to "wean"
recipients to capital with harder terms and, ultimately, to private
sources of capital.

Since the 1950s, a trend toward higher-interest official loans and
private lending has contributed to the problem of Third World debt. The
need for foreign currency to repay this debt has pushed Third World
governments to support export-oriented development strategies which
encourage trade and foreign investment. Simultaneously, the need for
foreign aid continues if only to permit repayment of these previous
loans. In 1977, underdeveloped countries spent on foreign debt service
the equivalent of 71 percent of the new official and private foreign
funds they obtained that year. The "cures" for this debt as well as the
means by which it was incurred influence Third World government policies
and the development of their countries.

Since the late 1950s, the "strategic withholding" described above has
been implemented largely at the sectoral level rather than at the
overall country level. The result is another restriction on the
availability of official foreign assistance: aid is generally withheld
from use in sectors which private investment finds attractive. This is
particularly true in the industrial sector. However, aid has been used
extensively to develop infrastructure supportive of private investment
in industry. Evidence for such strategic withholding may be found in
sectorally categorized data for bilateral aid from AID and from the DAC
countries as a whole. The World Bank (International Bank for
Reconstruction and Development, or IBRD) and its associated soft-loan
organization, the International Development Association (IDA), have followed a similar pattern. Little IBRD/IDA assistance has gone to projects classified as industrial, but a great deal of their lending has been for infrastructure -- especially physical infrastructure (primarily transportation and electric power). The proportion of OPEC aid going to industry is similar to that of the DAC donors, though OPEC balance-of-payments assistance may give recipient governments more economic options. Closer examination shows that even the small amounts of aid these bilateral and multilateral donors have provided for "industry" are in fact heavily devoted to development of industrial infrastructure. In sum, foreign aid is generally unavailable for state-owned industrialization, which would compete with private industrialization, but is available for development of infrastructure needed by private industry.

Finally, while some types of foreign aid are intended for the development of industry, these also promote private rather than public enterprise. These forms of aid use institutions including development finance companies, commodity financing, and direct assistance to private firms. Development finance companies (DFCs), local institutions which are usually privately owned and usually only lend to or invest in private firms, have received large sums of foreign aid. Indeed, AID and the World Bank have played important roles in the creation of DFCs. The AID did much lending to DFCs in the 1960s; in the 1970s AID reduced its emphasis on this form of aid and the World Bank provided relatively more support for DFCs. In 1978 about 14 percent ($927 million) of all lending by the World Bank group (the IBRD, the IDA, and the
International Finance Corporation or IFC) was to DFCs. Although the World Bank has relaxed earlier requirements regarding private ownership and lending to private enterprise among DFCs receiving Bank funds, the Bank estimated in the mid-1970s that 85 to 90 percent of loans made by these DFCs were to private firms.

General commodity financing is a source of foreign currency to compensate for trade balance deficits. It is virtually always from bilateral sources; most bilateral commodity financing from DAC countries is from the United States. The major varieties of U.S. commodity financing are P.L. 480 food aid, and "program loans" and CIP (Commodity Import Program) aid which are administered by AID. Each of these U.S. programs uses the government of the recipient country as an intermediary, which transfers the U.S. commodities or currency to the private sector in exchange for local currency. Thus, the funds obtained by the recipient government cannot be used for any investment involving foreign exchange. Such programs also lend themselves particularly well to leverage (as discussed by Hayter), in the judgement of some AID officials. Furthermore, this lending of foreign exchange reduces pressures created by outflows of capital from MNC subsidiaries and thus helps protect these foreign interests. The potential for corruption associated with commodity financing programs is considerable, and leads the recipient government to serve as "a conduit for the formation of a powerful class that uses its state power to develop an independent economic base in society" (Wood, 1980:31).

The third and last form of foreign aid for industrialization discussed by Wood is actual direct aid to private firms. In the 1960s,
AID lent hundreds of millions of dollars to foreign private enterprises (including subsidiaries of U.S. multinationals). The debtor firms usually repaid the loans to the domestic government in local funds, and this government in turn paid the U.S. government in U.S. dollars. More recently, other forms of industrial lending directed toward particular firms have been used by AID, the World Bank, and other aid institutions. Most aid donors will consider non-private industrial projects, but the great majority of such funds still go to private enterprise. Also, even public-sector projects may be used to foster growth in the private sector. The World Bank, for example, promotes joint ventures with private business when it considers public projects. The U.S. even goes so far as to provide "government-subsidized insurance against both political and business risks for U.S. companies investing in underdeveloped societies" (1980:32). This function was carried out by AID until 1970, when the Overseas Private Investment Corporation (OPIC), a federal agency, was created. As of 1970, 85 percent of the investment guaranteed by AID was in the industrial and mining sectors.

Wood's general conclusion is that the world system of foreign aid is "structured to block statist forms of development and to promote the structural dependence of the state on processes of private accumulation" (1980:33). Given a definition of the capitalist state as one with such a dependence on private accumulation, "reliance on foreign aid contributes to the creation and consolidation of capitalist states in underdeveloped societies" (1980:33).
SUMMARY

The literature in the dependency, world-system, and related perspectives provides an important, if debatable, explanation of underdevelopment in the Third World. In general, these perspectives make the case that some, many, or all of the major economic, social, and political relationships between the "core" and "peripheral" parts of the world result in the underdevelopment of the latter. In particular, the literature stresses the roles of trade, involvement of multinational corporations, foreign aid, and private lending in creating and perpetuating underdevelopment. Many of the Latin American dependentistas, including Frank, Dos Santos, and Cardoso, particularly emphasize the importance of MNC involvement for postwar underdevelopment (cf. Appendix A).

It is true that not all the theorists discussed in this chapter and in Appendix A define development and underdevelopment in the same way. Cardoso, for example, even argues that dependence often leads to a rather limited, unequally distributed — and undesirable -- form of development. Many authors are unclear as to what they mean by "underdevelopment," and consequently they may well make implicit, veiled shifts from one aspect of underdevelopment to another as their arguments proceed. To a degree, the thinkers reviewed in this chapter view development in terms of aggregate economic growth, much like more conventional, "bourgeois" development theorists. But most of the theorists discussed above are particularly concerned with the inequality dimension of underdevelopment. Income inequality is frequently the focus of attention, with a number of scholars arguing that various sorts
The moral tenor of many of these writings suggests that dependence causes an absolute worsening of inequality, though the arguments presented may make a case for the occurrence of increasing relative income inequality without demonstrating that an absolute worsening of income inequality is occurring due to dependence. But despite the vagueness of the concept of underdevelopment in much of this literature, it seems that almost all of the theorists presented are ultimately concerned with how much of the population of the world has an adequate quality of life; they do not see luxurious living for some as desirable as long as others lack necessities for a minimally acceptable standard of living. (In saying this, I recognize that I risk incorrectly injecting my own values and ethical principles into the somewhat vague statements of the writers discussed.) This position seems to be particularly obvious in Wallerstein's discussion of the semiproletarian household: for this significant and growing segment of the population of the world-system, capitalism threatens life expectancy itself. Thus, basic needs satisfaction appears to be a major, or perhaps even the most important, aspect of development and underdevelopment in the theoretical literature reviewed in this chapter. Oddly enough, as the next chapter shows, the quantitative empirical literature has focused largely on economic growth and income inequality as dependent variables, while the satisfaction of basic needs has been virtually ignored by cross-national researchers.

The theoretical literature suggests a complex array of mechanisms that link dependent, core-periphery relationships to underdevelopment in the periphery. The involvement of multinational corporations in the
Third World is thought to contribute to underdevelopment in several ways: (1) MNCs impose an administrative hierarchy under which MNC-employed Third World inhabitants cannot receive incomes as high as those of employees in the developed countries (rendering impotent attempts to foster development via increased stocks of human capital). A pattern of income inequality thus develops in the world economy as a whole (Hymer, 1972). (2) MNCs displace domestic firms from the most dynamic sectors of the economy, impeding development of the domestic economy (Moran, 1978). (3) The presence of an MNC in an underdeveloped country, while it requires and benefits from investments in infrastructure by the domestic government, reduces potential domestic tax revenues (which could be used to invest for future economic growth and to improve living conditions of the population) since it can disguise profits with transfer pricing (overvaluing imported technology and undervaluing exports) and can threaten to leave the country if taxed too much (Hymer, 1972; Mueller, 1979). (4) The use of transfer pricing to disguise profits increases the MNC's ability to repatriate those profits (Mueller, 1979). (5) Far from adding to total domestic investment, the MNC obtains the great majority of the capital it uses within the host country, not in the developed countries. Most of the profit is repatriated, and thus most of the returns to domestic capital go to the developed countries. This is made possible in part by various advantages of MNCs over domestic firms in local capital markets (Mueller, 1979; Moran, 1978). (6) The presence of MNCs impedes implementation of domestic government policies by channeling alien legal, political, and cultural forces into the host country (Hymer,
1972). (7) MNCs distort host-country political processes themselves (implicitly, in ways which harm economic development and/or the incomes and living conditions of many host-country inhabitants) by coopting local elites, by exerting pressure on host-country governments through home-country (and sometimes other developed-country) governments, and by manipulating the international system to fight economic nationalists (e.g., by redistributing risk to domestic interests in the Third World, making them more dependent on the MNC and the MNC less dependent on them) (Moran, 1978). (8) MNCs use capital-intensive production techniques in the Third World, despite the overabundance of labor there. As a result, MNC sales benefit fewer employees than more labor-intensive firms (which domestic firms tend to be), thus contributing to unemployment while improving the lot of a wealthy and small minority, thereby increasing income inequality (Mueller, 1979; Moran, 1978). This is true even in agribusiness operations, which one might expect to be rather labor-intensive (George, 1977, 1979). (9) MNCs tend to restrict exports from host countries, though such exports would improve the balance of payments and could contribute to economic development, through technology licensing agreements (Mueller, 1979). (10) MNCs corrupt domestic consumer tastes in particular and local culture in general, through sales of products developed for home-country markets and through drastic change in the domestic economy (Moran, 1978; George, 1977, 1979). Often, scarce wages are spent on relative luxuries produced by the multinationals rather than on necessities (George, 1977). (11) In the case of agribusiness operations of MNCs, multinationals divert land — often some of the best land — from use
for domestic food production and from farming by poor inhabitants for whom farming is potentially a major source of income, using it instead for export (often luxury) crops (George, 1977). Agribusiness MNCs also introduce a food system, which evolved in the developed countries and especially in the U. S., which requires expensive inputs, produces highly processed foods, and as a consequence drives up the cost of food (George, 1979).

In world-system terminology, MNCs are a force in the world-economy distinct from the state system, whereas foreign aid linkages between developed and underdeveloped nations represent intervention in the world-economy by core-based governments, largely for the purpose of enhancing the position of core economic interests. Foreign aid is thought to be detrimental to development — or at least fails to be helpful, despite contrary claims in justifications of aid — in a variety of ways: (1) Much foreign aid, including that of the U. S., goes to and supports repressive governments unconcerned with the needs of the poor (Lappe et al., 1981). Presumably, without such assistance these governments would tend to give way to governments more responsive to the needs of the majority. (2) Aid provides major benefits for elite classes in the Third World and thus coopts them to support various forms of imperialism (Hayter, 1971). (3) In general, by far the greatest portion of the benefits of aid go, not to the poor, but to a wealthy elite (Lappe et al., 1981). (4) Much aid is used for projects which are economically harmful to a majority of the population of the recipient country (Hayter, 1971). For example, aid is often used to develop infrastructure (e.g., electrification) which is conducive to capital-
intensive production and thus contributes to unemployment (Lappe et al., 1981). (5) Food aid, except perhaps for short-term emergencies, has a harmful net effect in that it reduces the prices consumers will pay for domestically produced food, leading to reduced domestic production and increased dependence on food imports (simultaneously freeing land for use in export agriculture) (Lappe et al., 1981). (6) Foreign aid is used for leverage to influence general economic policy in Third World countries in such a way that it benefits capitalist and especially core-based capitalist interests. Aid leverage may be used, for example, to ensure reliance on market forces in the economy, to ensure observance of rights to private property (particularly foreign private property), to ensure free trade, to ensure repayment of foreign debts, and to ensure tolerance for massive repatriation of profits by MNCs (Hayter, 1971). (7) More generally, aid shapes the very nature of the Third World state toward capitalism, its conditions creating much pressure for an economy based on private investment and not on statist approaches to development (Wood, 1980). (8) Since it is usually in the form of loans, aid increases the recipient's foreign debt and presses it to seek an improved balance of payments through export-oriented development strategies and reliance on foreign private investments (Hayter, 1971; Wood, 1980). (9) Aid often subsidizes corporations based in the donor country, via tying the aid to the purchase of goods from the donor nation, via financing repatriation of profits by MNCs and payment of interest on loans from private institutions based in the developed countries, and via the use of aid -- often on the condition that local funds are also used -- to build infrastructure needed to improve MNC
profitability (Hayter, 1971). (Of course, to the extent that aid is 
*purely* a subsidy to the MNCs and other corporations and is not linked to 
contributions by the recipient country, the losers are the taxpayers in 
the donor country, not the inhabitants of the recipient country.)
NOTES FOR CHAPTER II

1. Much of Wallerstein's work and that of his associates is concerned not so much with the structure of the world-system as with its processes (Hopkins and Wallerstein, 1980; Hopkins et al., 1979; Wallerstein, 1978, 1979, 1983, 1984). Indeed, Wallerstein probably views the study of the processes of the world-system as more important, since they suggest the world-system's future. However, it is the world-system's structure, not its processes, that are of more central importance for this study, and so these processes will not be discussed here.

2. This conclusion seems somewhat questionable. If an MNC producing for a local market in a low-income country is producing, as many apparently do, expensive consumer goods -- for which potential profits might be highest for the MNC, in part because entry of domestic competition into the market would be difficult -- then it would appear to be in the interest of the MNC to support maintenance of a pattern of income distribution in which at least a small number of wealthy people can afford their products. The leveling of incomes might well mean that almost no one could pay for their products.
CHAPTER III

REVIEW OF CROSS-NATIONAL RESEARCH ON
DEPENDENCE AND DEVELOPMENT

This chapter reviews previous quantitative cross-national research relevant to the effects of MNC investment and foreign aid, as well as other factors, on economic growth, income inequality, and basic needs performance. These earlier studies are grouped by their dependent variables. The review begins with studies of economic growth and income inequality, undoubtedly the most common dependent variables in cross-national research. While they are not examined empirically in this dissertation, growth and income inequality are viewed as important intervening variables between dependence and basic needs satisfaction. That is, basic needs are presumed to be better met as economic growth rises and income inequality falls — an assumption with some empirical support, as this review will show. Consequently, the nature of the effects of dependence and other independent variables on growth and income inequality has implications for the explanation of basic needs performance. The distribution of basic needs is, of course, itself an important aspect of inequality, though it is not necessarily tapped by measures of inequality in income. However, the bulk of this review focuses on studies having dependent variables closely related to basic
needs, including research on health and mortality, nutrition, education, and various composite indexes comprising basic needs indicators.

Studies of these issues vary widely in their design and choice of measures of given variables. First, they vary in the size and composition of samples. Typically, colonies and countries with populations under one million are excluded from studies of the effects of dependence, as are oil producing countries and socialist nations in some cases, due to theoretical reasons and problems of data comparability (socialist countries are also often excluded because of missing data). Some studies include both developed and underdeveloped countries, while others limit themselves to underdeveloped countries or analyze the two groups separately. Samples are sometimes divided according to population size or level of economic development. Quite a few studies are limited to a particular world region or present separate analyses for different regions. Second, some research designs are cross-sectional while others are panel designs, and some panel studies control for a lagged dependent variable or use change scores for the dependent variable (which can amount to the same thing -- cf. Kessler and Greenberg, 1981) while others do not. Third, the time period examined varies somewhat, though this literature is essentially confined to the post-war period because of the unavailability of data prior to this time. Fourth, dependency/world-system concepts are operationalized in a variety of ways. In some instances, the source of data seems to influence the outcome. Finally, the control variables used -- if any are used at all -- vary considerably (Bornschier et al., 1978). All these matters are considered in the review which follows.
In addition to economic growth, income inequality, and basic needs satisfaction, several other related phenomena are the subjects of cross-national analyses but are not reviewed here. Some of these factors may act as intervening variables between dependence and basic needs performance (like growth and income inequality), while others may be important effects of basic needs satisfaction. These variables include government spending on welfare, social security, and education and the longevity of government programs in these areas; tax progressiveness; government revenues and state strength (the latter often being taken as a measure of the former); external public borrowing and debt; foreign aid receipts; political compliance with major advanced countries; expropriation or forced divestment of MNCs; political democracy; collective violence and political conflict; investment and growth in investment; urbanization and overurbanization; fertility and population growth; the size of the workforce in the service sector; social mobility; land distribution inequality; and sexual equality and women's roles in the labor force.¹

In the following discussion, statistical results described as significant are significant at the 0.05 level or better, unless specified otherwise. Authors' usages are followed in deciding between one- and two-tailed tests. When possible, obtained significance levels are determined from the information presented by the author if they are not stated explicitly.²
ECONOMIC GROWTH

Since economic growth was long considered the measure of development and is still considered an important development indicator, cross-national studies of growth abound. Fortunately, there are several reviews of this research literature, and much of the following survey relies on these (Bornschier and Chase-Dunn, 1985; Bornschier et al., 1978; Rubinson and Holtzman, 1981). A thorough yet reasonably brief survey of this literature is impractical here due to the extent of the research on this issue. Readers interested in greater detail should refer to the reviews cited above and the references included therein.

Many studies of economic growth based on a dependency/world-system perspective examine the effects of trade dependence. Rubinson and Holtzman (1981) review the earlier literature on this issue. Not surprisingly, they find that the results of these studies depend in large part on the manner in which "trade dependence" is measured. A number of studies use measures of "trade intensity," or the volume of trade; this research fails to show any effects of trade dependence on growth. This result is not particularly surprising, for intensity is not emphasized in the theoretical literature (though Frank's assertion that all contact between metropolis and satellite is harmful to the latter suggests the possibility that trade intensity is harmful for historically peripheral countries). Indeed, one might expect that trade intensity would contribute to growth; no one would argue, for example, that Great Britain was harmed by its massive volume of exports during the nineteenth century. Other studies use measures of "trade composition," measures which reflect relative levels of exports and
imports of raw and manufactured goods. These studies tend to support
the proposition that the export of raw materials is detrimental to
growth, though this finding is not unanimous. Still other research
examines the effects of export "commodity concentration" (the degree to
which one or a few commodities constitute total exports) and export
"partner concentration" (the degree to which a one or a few importing
countries account for total exports). While there are no consistent
findings for the latter explanatory variable, the data tend to bear out
a negative effect of export commodity concentration on economic growth.
Rubinson and Holtzman do note that there is a pattern of exceptions for
some of these conclusions for underdeveloped countries with very low per
capita incomes. In analyses for these nations alone, trade composition
and commodity concentration fail to show any systematic influence on
growth, whereas export intensity seems to contribute to growth.

Several other studies of the effects of trade dependence on growth
have appeared since Rubinson and Holtzman's review, including research
by Bornschier and Chase-Dunn (1985), Bradshaw (1985), Stokes and Jaffee
(1982), Weede and Tiefenbach (1981d), and Jaffee (1985). Jaffee's
recent study is particularly interesting in that it examines
interactions between export intensity and other measures of trade
dependence. He finds that export intensity has a positive effect on
growth in samples of underdeveloped countries and of developed and
underdeveloped countries combined. However, the effect of intensity is
reversed for countries with exports for which world prices fluctuate
greatly and for countries which are characterized by imports of
manufactures and exports of raw materials, though such interactions are
not found for commodity concentration or for low levels of processing of major export commodities. Interestingly, Jaffee finds that the generally positive effects of trade intensity on growth are significantly reduced for countries with high levels of investment by MNCs. This result is congruent with theoretical arguments that export revenues tend to exit a country as remitted MNC profits in those countries where MNCs play a major role in the economy.

The focus of the present study, however, is the influence of MNC investment and foreign aid. Much, but not all, of the literature on economic growth finds the effects predicted by the dependency/world-system perspective for certain forms of foreign investment and aid. A major article by Bornschier et al. (1978) reconciles the differing results of the earlier studies of growth to a large degree. A key issue in their review is the distinction between "stocks" and "flows" of foreign capital, stocks being the accumulated amount of investment or aid in a country, and flows being increases in these stocks over a certain period. They find that longitudinal designs which control for prior economic development and use a diversity of Third World countries in their samples support the hypothesis of a negative effect of stocks of capital on economic growth. Flows of capital, on the other hand, have positive short-term effects on growth. Bornschier et al. argue that current inflows of investment capital and aid cause short-term increases in growth due to the contribution to capital formation and demand as foreign corporations purchase land, labor, and materials and start production, while the long-run structural distortions of the national economy produced by foreign investment and the exporting of profits tend to produce negative effects over
time. We conclude, then, that the effect of short-term flows of investment and aid has positive effects on growth, but that their cumulative effect over time is negative. Many of the seemingly contradictory findings of these studies can be reconciled under this proposition. [1978:667-668]

New analysis for a sample of underdeveloped countries by Bornschier et al. indicates that differences in the effects of MNC investment across regional samples can be largely accounted for by an interaction between the stock of MNC investment and GNP per capita. (The stock of investment still has a less detrimental effect in Latin America than in other regions, however.) Specifically, the effect of the stock of MNC investment is significantly more negative for higher-income underdeveloped countries than for the poorest countries.

There has been a running battle over these conclusions between Bornschier and his associates, on one hand, and Erich Weede and Horst Tiefenbach, on the other. Weede and Tiefenbach (Weede, 1981a, 1981c; Weede and Tiefenbach, 1981d, 1982b) generally claim that there is no such negative relationship between MNC penetration and economic growth. Bornschier (1982a; Bornschier and Chase-Dunn, 1985) argues that Weede and Tiefenbach's findings are due to a failure to control for recent flows of MNC investment and to an incorrect specification of the time dimension involved (economic growth over a given period is regressed on the level of MNC penetration measured during the middle of this period). Bornschier makes a similar criticism of Jackman (1982), who also fails to find a significant negative effect of MNC penetration on growth.

More recent studies by Bornschier and his colleagues generally support the conclusions of Bornschier et al. (1978) regarding MNC penetration and/or flows of MNC investment (Berweger and Hoby, 1978;
Bornschier, 1980, 1981b; Bornschier and Chase-Dunn, 1985). Other researchers, including Dolan and Tomlin (1980) and Timberlake and Kentor (1983), also find some support for Bornschier's position. The interaction between income per capita and MNC penetration is supported by Bornschier (1981a), Bornschier and Chase-Dunn (1985), and Dolan and Tomlin (1980).

In addition to trade dependence, aid dependence, and MNC investment (including some studies of sector-specific MNC investment, e.g., Bornschier and Chase-Dunn [1985] and Dolan and Tomlin [1980]), other independent variables are found to have effects on economic growth in various cross-national studies. Some studies control for prior levels of economic development, a factor which could be expected to be positively correlated with MNC investment (Bornschier and Chase-Dunn, 1985). In some cases, a quadratic function of prior economic development is used to take into account a tendency for growth levels to be constrained by a ceiling effect among the most developed countries, resulting in the highest rates of growth occurring at middle levels of development. Several studies confirm that this is the correct functional form (e.g., Bornschier, 1980; Jackman, 1982; Weede and Tiefenbach, 1981d; Wright, 1979). Most dependency/world-system research controls for the level of domestic investment, which, as suggested by conventional economic theory, contributes positively to growth (Bornschier and Chase-Dunn, 1985). Other explanatory variables used in models of economic growth include primary and/or secondary school enrollments, a measure of human capital formation (Delacroix, 1977b; Snyder and Kick, 1979; Stokes and Jaffee, 1982; Weede, 1983; positive
effect); population growth (Jackman, 1982; negative effect); specialization in raw mineral production (Chase-Dunn, 1975; positive effect); the military participation ratio (Weede, 1983; positive effect); size of the service sector (Fiala and Ramirez, 1984; Timberlake and Kentor, 1983; negative effect); military aid (Hartman and Walters, 1985; positive effect); "overurbanization" (Timberlake and Kentor, 1983; negative effect); population size (Firebaugh, 1983; positive effect); and "industrializing agrarian" vs. "industrializing horticultural" status (Lenski and Nolan, 1984, discussed further in the section below on health and mortality research). There is also some research on the role of national economic policy and national regulation of MNCs in economic growth (Berweger and Hoby, 1978; Bornschier and Hoby, 1981).

INCOME INEQUALITY

The popularity of cross-national studies of economic growth is rivaled only by those of personal and household income inequality, and many of the researchers prominent in one of these literatures are also prominent in the other. The following review depends heavily on earlier surveys by Bornschier and Chase-Dunn (1985), Bornschier et al. (1978), and Isaac (1981) to reduce these numerous studies to a manageable level. As with economic growth, only the most cursory survey is possible in a short space; the interested reader should refer to these studies and their references for greater detail.

Cross-national research on income inequality has met limitations of data availability not encountered by studies of economic growth. Data
on income inequality for a given country are typically available for only one year, and years of data availability vary across countries. Consequently, panel studies controlling for a lagged dependent variable are generally impractical, and even the cross-sectional designs tend to be somewhat crude. It is impossible, for example, to control for earlier levels of income inequality to verify that any apparent effects of MNC investment on inequality are not due to an attraction of MNCs to countries with more unequal income distributions, or to verify that apparent effects of foreign aid do not merely reflect a tendency of aid to go where the greatest inequality exists. The existing data on income inequality are published in several sources, which usually incorporate data from earlier sources along with additional data: Adelman and Morris (1973), Paukert (1973), Jain and Tiemann (1973), Jain (1975), Ahluwalia (1976b), Ballmer-Cao and Scheiddegger (1979), and the World Bank's World Tables (1980). Income inequality data are much less complete than data on basic needs satisfaction, which in effect is another and more fundamental form of inequality that results partly from income inequality. Panel studies of basic needs performance, then, should be able to provide important insights into the effects of dependence that are currently unobtainable for another major form of inequality.

Bornschier et al. (1978) cite five studies which investigate the effects of MNC investment and foreign aid on income inequality. All of these support the proposition that dependence contributes to inequality. In a somewhat more recent review, Isaac (1981) makes much the same conclusion for eight studies of income inequality and various types of
dependence, as do Bornschier and Chase-Dunn (1985) in their review of seventeen studies using MNC investment as an independent variable. As in the case of economic growth, there is an intense disagreement between the Bornschier and Weede camps about the effects of MNC investment on income inequality (cf. Weede and Tiefenbach, 1981b, 1981c; Bornschier, 1981a), in which Bornschier appears to have the edge, though much of the argument hinges on which of several data sources for inequality is most accurate -- a messy issue to resolve.

Bornschier and Chase-Dunn (1985) make the interesting point that studies based on samples including only underdeveloped countries find stronger positive effects of MNC penetration on inequality, and that studies of developed countries alone actually find negative effects for MNC penetration. A noteworthy finding of Bornschier and Chase-Dunn's (1985) recent research is that MNC penetration in the manufacturing and petroleum sectors contributes to inequality, whereas penetration in mining and smelting has a positive but not significant effect, and penetration in agribusiness has no discernable effect whatever.

A number of other explanatory variables have been used in the cross-national study of income inequality. Indeed, perhaps the most common explanation of income inequality has been the economic development approach (Kuznets, 1963), which argues that inequality is a quadratic function of economic development (e.g., GNP per capita). That is, inequality increases with the level of economic development up to a point, then decreases. This proposition receives repeated empirical support in studies which also use dependence variables in their analyses (e.g., Bornschier and Chase-Dunn 1985; Stack and Zimmerman, 1982; Weede
and Tiefenbach, 1981c), though there is much disagreement over the theoretical implications of these findings. Another prominent explanation of inequality is the political democracy perspective, which argues that possession of political power by the masses reduces inequality (Lenski, 1984). This thesis does not receive such consistent support. Stack and Zimmerman (1982), for example, note that political democracy and economic development are strongly correlated, and when a quadratic function of the level of development is controlled they did not find any significant influence of political democracy on inequality. Furthermore, Rubinson and Quinlan (1977) present evidence supportive of the opposite causal order (i.e., income inequality obstructs political democracy). Using related arguments, Hewitt (1977) and Jackman (1980b) report that socialist party strength reduced inequality in developed countries, though Weede (1982) found no such relationship. Other research supports the idea that inequality is lower in socialist countries (Ahluwalia, 1976b; Bornschier and Chase-Dunn, 1985; Cereseto, 1982; Weede and Tiefenbach, 1981a). Keynesian (fiscal) intervention by states is also a common explanation of variation in inequality; the bulk of the evidence supports the expected negative effect of government spending on inequality (Issac, 1981). Other independent variables used in research on income inequality include school enrollments (Ahluwalia, 1976a, 1976b; Weede and Tiefenbach, 1981a, 1981c; negative effect), literacy rates (Ahluwalia, 1976a, 1976b; negative effect), population growth rates (Ahluwalia, 1976a, 1976b; positive effect), military participation ratios (Stack, 1980b; Weede and Tiefenbach, 1981a, 1981c; negative effect), "uneven development," i.e., sectoral inequality.
(Sullivan, 1983; positive effect), and arms imports (Mahler, 1980; positive effect). Other studies (e.g., Bornschier and Ballmer-Cao, 1979) examine various intervening variables between dependence and inequality.

HEALTH AND MORTALITY

Several cross-national studies focus on indicators of what must be a strong competitor for a position as the most basic of basic needs: health and longevity. These indicators include such outcomes as infant mortality rates, child mortality rates (i.e., for ages one through four years), and life expectancy, along with such "inputs" as the numbers of nurses and doctors in a country. The measures of outputs are of inherent interest, since they attempt to gauge the actual extent of physical well-being for certain age groups and the length of life itself. Input measures are of less importance and will not be included in this study's analysis; they do not determine mortality and longevity, and they are apt to reflect the distribution of health inputs across the population rather poorly. An illustration of the latter point is a (not unlikely) scenario in which virtually all a country's doctors serve only a small wealthy elite.

INFANT MORTALITY

The influence of dependence on infant mortality has scarcely been touched upon in the literature I was able to uncover. Young's (1980) study of all 23 Caribbean countries (including colonies) is the
exception. Her data are for the late 1960s, though the dates of the measures vary across countries within this period. Young finds a significant positive bivariate correlation ($r = 0.56$) between the logged infant mortality rate and the proportion of exports made of "plantation products," essentially a measure of trade dependence. She also finds significant positive correlations with the proportions of the labor force and of GDP in the agricultural sector and, interestingly enough, with complete political independence. Infant mortality has a significant negative correlation with (logged) GDP per capita ($r = -0.72$), and it also increases with such inputs as the numbers of inhabitants per physician, nurse, and hospital bed. Correlations with urbanization, population, political repression, and the proportion of GDP in the industrial sector are not significant.

Hicks and Streeten (1979) present bivariate correlations between GNP per capita and a series of basic needs indicators, including infant mortality. (Recall from Chapter I that Streeten is a primary spokesperson for the basic needs approach in the academic literature.) All their data are for 1970 and include developed and underdeveloped capitalist countries with populations of one million or more. For a sample of 64 countries for which data are available, there is a significant correlation ($r$) of 0.65 between GNP per capita and infant mortality. However, when the sample is divided into developed and underdeveloped countries and the correlation recalculated, the relationships are somewhat weaker. The correlation is 0.50 in the developed subsample and 0.58 in the underdeveloped subsample. Although some reduction in these correlations would be expected due to the
restrictions in the ranges (and therefore in the variances) of these variables, an important curvilinear relationship is in fact involved. Scatterplots for certain other basic needs indicators (discussed below) reveal very pronounced J-curve relationships with GNP per capita, such that per capita income and the basic need variable covary strongly only among middle-income countries. The authors note that a similar pattern occurs for infant mortality, and that many basic needs indicators "have asymptotic limits which reflect biological and physical maxima" (1979:572), and that these limits result in curvilinear relationships at higher levels of GNP per capita.

Leipziger and Lewis' (1980) bivariate correlation analysis divides 38 underdeveloped countries into two equal sized subsamples at a GNP per capita of US$550 in 1975. In the richer countries, the Gini coefficient of income inequality has a significant correlation of 0.457 with infant mortality, while GNP per capita is not significantly correlated with infant mortality. For the poorer countries, just the opposite pattern emerges: the Gini coefficient is not significant, but GNP per capita has a significant $r$ of -0.676. Thus, infant mortality increases with income inequality in the richer Third World countries and decreases with per capita income in the poorer countries. Leipziger and Lewis find similar patterns for other basic needs indicators, which are discussed below. In brief, the same pattern of significant correlations (all of the expected sign) occurs for most basic needs indicators. Per capita GNP is never significantly correlated with a basic needs variable in the richer countries, and income inequality is never significantly correlated with basic needs performance in the poorer countries. The
authors interpret these results as an indication that redistributive policies are particularly important for improving basic needs satisfaction in the richer underdeveloped countries, and that economic growth is especially important for attaining this goal in the world's poorest countries.

Cereseto (1982) uses infant mortality as a dependent variable in a study of 120 developed and underdeveloped countries for the mid-1970s. She finds that infant mortality is significantly lower in socialist countries than in capitalist countries, once the level of GNP per capita is controlled, in a comparison of means. Not surprisingly, she also reports a negative relationship between infant mortality and GNP per capita. Mean infant mortality is 41 per thousand in the socialist countries (all of which are classified as middle-income), 78 per thousand in other middle-income countries, and 31 per thousand in high-income capitalist countries. Cereseto also shows that, for the 57 countries for which she could obtain data, there is no difference in infant mortality in 1938 between present-day socialist and capitalist middle-income countries. At that time, only two of the thirteen contemporary socialist countries in her analysis, the USSR and Mongolia, were already socialist. This result lends some quasi-experimental support to the idea that socialism is the cause of this lower level of infant mortality.

CHILD MORTALITY

I was able to locate four studies which address the child mortality rate as a dependent variable. Most of these use multiple regression
analysis, and most are authored either in whole or in part by Patrick Nolan. The world-system measures used as independent variables in all these studies are derived from blockmodels of multiple transnational networks. In the Nolan studies, these independent variables are based on the core-semiperiphery-periphery classifications developed by Snyder and Kick (1979). Although Snyder and Kick's research is probably the best-known network analysis of world-system phenomena, much of the data on which it is based refer to phenomena not really central to the dependency/world-system perspective: networks of military interventions, diplomatic relations, and joint treaty memberships during the early- to mid-1960s. A trade network is also used, and, while trade flows are measured in the aggregate without any distinction among different kinds of commodities, this network is more theoretically relevant. Another study, Nemeth and Smith (1985), is primarily devoted to a blockmodel analysis, the results of which are used to create world-system measures on which child mortality and other variables are regressed. This blockmodel, a major improvement over the Snyder and Kick analysis in theoretical terms, is based on five networks of different categories of trade commodities: heavy manufactures/high technology, intermediate manufactures, light manufactures, raw materials, and food products. But even the most appropriate data used in the two network analyses, i.e., trade, do not reflect a form of dependence which is particularly emphasized in much of the current literature: "investment" dependence. As Nemeth and Smith themselves note:
Several commentators [including Cardoso and Faletto, Evans, and Frank] have argued that with the rise of supranational economic units (e.g., multinational corporations) dependency relations are becoming increasingly tied to control of flows of technology and finance capital.... Consequently, the type of unequal exchange captured by examining the movement of raw materials versus finished products gradually may become less significant. [1985:544]

Nemeth and Smith observe that network data on MNCs is more difficult to obtain. Another, less frequently raised problem with the use of these blockmodel analyses in constructing world-system status measures is that they lead to very crude operationalization of dependence. The use of three or four categories to measure what is fundamentally a continuous variable inevitably introduces measurement error.

The analytically simplest of these studies of child mortality, that of Nolan (1983a), performs an analysis of variance comparing mean child mortality across the core, semiperiphery, and periphery for 112 developed and underdeveloped (including socialist) countries. Both 1960 and 1970 child mortality rates increase from core to semiperiphery and from semiperiphery to periphery status ($R^2 = 0.397$ for 1960 and $R^2 = 0.366$ for 1970). In 1970, for example, the mean child mortality rate is 1.78 in the core, 9.81 in the semiperiphery, and 21.50 in the periphery. For both years, the differences in means are significant. The research reported by Nolan and White (1983) is somewhat more sophisticated. They regress 1970 and 1977 child mortality on a measure of the level of economic development (logged energy consumption per capita in kilograms of coal equivalent) and dummy variables for semiperiphery and periphery status (the core being the suppressed category). For 1970 child mortality, both semiperiphery and periphery status have positive effects, but only the latter status has a significant effect. In the
same equation, the control for energy consumption is significant when raised to the first, second, and third powers (with positive, negative, and positive effects, respectively). Multiplicative interactions with energy consumption (at the first power) for both semiperiphery and periphery are included in a second equation. The periphery-energy consumption interaction is significant and negative, indicating that the level of economic development has a less strongly positive effect on child mortality among peripheral countries than among core or semiperipheral countries. For 1977 child mortality, neither world-system variable is significant in the equation without interactions, and energy consumption is significant at the first power (negative effect) but not when squared or cubed. With the interactions included, energy consumption fails to attain significance, periphery status has a significant positive effect, and the periphery-energy consumption interaction is again significant and negative. The proportions of variance explained in these equations for 1970 and 1977 child mortality range from 0.70 to 0.78.

Lenski and Nolan (1984) add an alternative, ecological evolutionary explanation of "societal development" -- whether an underdeveloped country was "agrarian" or "horticultural" in its preindustrial era. "Industrializing agrarian" societies traditionally used plow agriculture and were relatively advanced in terms of urbanization and occupational specialization prior to the onset of industrialization. "Industrializing horticultural" societies, on the other hand, had previously used hoe or digging-stick horticulture, which was less productive and did not permit a large economic surplus or permanently
cultivated fields (and thus permanent settlements). Lenski and Nolan argue that industrializing agrarian societies should be more developed than industrializing horticultural societies, even when the effects of world-system phenomena are taken into account. Using dummy variables for industrializing agrarian (opposed to industrializing horticultural) societies and for semiperipheral (opposed to peripheral) societies as independent variables, they use multiple regression to examine child mortality rates for 65 countries in 1960 and 1977. Both independent variables have negative effects on child mortality, with those of the ecological evolutionary perspective being stronger (standardized regression coefficients of -0.641 and -0.698, compared to -0.261 and -0.214 for the world-system measure). That is, child mortality is lower in previously agrarian countries than in previously horticultural countries, and is lower in semiperipheral countries than in peripheral countries. Similar results occur in a comparable analysis of 40 countries which attained independence after 1940.

Nemeth and Smith (1985) divide countries into four categories based on their blockmodel for five 1970 trade commodity networks: core, semiperiphery I (the more advanced, less dependent semiperiphery), semiperiphery II (the more underdeveloped, more dependent semiperiphery), and periphery. Regressing 1970 child mortality rates on logged 1970 GNP per capita and on dummy variables for the periphery and the two semiperipheries (with the core as the excluded category), they find significant negative effects for GNP per capita and positive effects for the world-system variables ($R^2 = 0.75$). The effects of the
periphery and semiperiphery II dummies are significant at the 0.05 level, but semiperiphery I is significant only at the 0.10 level.

**LIFE EXPECTANCY**

I located six cross-national studies, all of which are noted in the above surveys of infant and child mortality research, which use life expectancy as a dependent variable. Three of these, all authored or coauthored by Nolan, include measures of world-system status as independent variables.

Lenski and Nolan (1984) find significant positive effects of both industrializing agrarian status and semiperiphery status (standardized regression coefficients of 0.652 and 0.184, respectively) on 1977 life expectancy at birth for 66 countries. When they limit their analysis to 41 countries which became independent after 1940, a similar pattern emerges, but the world-system variable no longer has a significant effect (the standardized regression coefficients are 0.626 and 0.223 for industrializing agrarian status and semiperiphery status, respectively).

Nolan and White (1983) use 1970 and 1977 life expectancy at birth as dependent variables in their multiple regression analysis for 92 developed and underdeveloped capitalist and socialist countries. When interactions between logged energy consumption per capita and semiperiphery and periphery status, respectively, are included in the equation for 1970 life expectancy, both the semiperiphery and periphery dummies are negative and significant (unstandardized coefficients of -38.819 and -48.874, respectively). Energy consumption (negative effect) and squared energy consumption (positive effect) are also
significant, as are the periphery-energy consumption interaction (positive effect), yielding an $R^2$ of 0.830. (A cubed energy consumption term is negative but not significant.) The semiperiphery and periphery dummy variables have negative effects on 1977 life expectancy also, but none of the variables in the equation with interactions is significant for this year. With the interactions excluded, both world-system dummies have negative effects (unstandardized coefficients of -3.073 and -4.994 for semiperiphery and periphery respectively), and that of periphery status is significant; the pattern of effects of energy consumption is similar, though only the cubed term is significant ($R^2 = 0.770$). Nolan (1983) reports similar significant bivariate results for ANOVAs comparing 1960 and 1970 life expectancy across core, semiperiphery, and periphery categories for 113 countries. In 1970, for example, the mean life expectancy is 70.80 years in the core, 61.30 years in the semiperiphery, and 51.39 years in the periphery.

Hicks and Streeten (1979) also use life expectancy at birth in their bivariate correlation analyses of developed and underdeveloped capitalist nations. While the correlation between life expectancy and GNP per capita (both for 1970) is significant at 0.73 in the full sample of 102, it falls dramatically when the sample is divided. The same correlation for underdeveloped countries is 0.53, while for developed countries it is only 0.36. A scatterplot for this relationship reveals a strong J-curve in which life expectancy and per capita income has a comparatively weak positive association up to about 500 1970 U. S. dollars per capita. Life expectancy varies a great deal over this low narrow range of GNP per capita. Both variables vary within themselves
and covary between themselves rather well from about US$500 to US$2000, after which life expectancy nearly levels off (at about 70 years) and per capita income ranges up to more than US$5000. Anyone who correlates GNP per capita with life expectancy -- and with other basic needs variables, as Hicks and Streeten show -- would thus be well advised to watch for a curvilinear relationship. The authors' interpretation is that the level of economic development as measured by GNP per head is of little value as an indication of basic needs satisfaction, despite a close correspondence between ranks of income per capita and basic needs indicators.

Leipziger and Lewis (1980) report bivariate correlations between life expectancy at birth and the Gini coefficient of income inequality and GNP per capita. For 19 underdeveloped countries with per capita GNPs above US$550 in 1975, neither income inequality nor the level of economic development is significantly correlated with life expectancy. On the other hand, for 19 countries below US$550 per capita income, the level of economic development has a significant positive correlation with life expectancy, while the correlation with income inequality is not significant. This finding fits into the overall pattern noted by Leipziger and Lewis that per capita income is more important for improving basic needs satisfaction in the poorest countries, whereas reducing income inequality is more important in the richer underdeveloped countries.

Cereseto's (1982) research shows that, much as in the case of infant mortality, life expectancy at birth is significantly greater in socialist countries than in capitalist countries when GNP per capita is
controlled. Again using data for the mid-1970s, she finds that the mean life expectancy in the socialist countries is 68 years, compared to 60 years for capitalist middle-income countries and 69 years for the high-income countries. In 1938, however, now-socialist countries did not significantly differ from other middle-income countries on this variable (data are available for 7 currently socialist countries and 28 countries altogether).

NUMBERS OF NURSES AND DOCTORS

I identified six cross-national studies which use the number of nurses and/or doctors adjusted for population size as a dependent variable. One should keep in mind, however, that the numbers of nurses and doctors are of less relevance than the mortality and longevity measures just discussed, for they are neither "outputs" nor measures of distribution. Young's (1980) research on late 1960s data for 23 Caribbean countries includes results for both nurses and doctors. The number of nurses per capita is significantly correlated only with the proportion of the labor force in agriculture and the existence of political repression, both relationships being negative. The association between nurses per capita and the proportion of exports in plantation products (Young's only measure of dependence) is negative, but not significant. Also, the number of nurses per capita is positively but not significantly related to the logged GDP per capita. Other nonsignificant correlations are obtained for the proportion of the population in urban centers (2000 or more inhabitants), the proportions
of GDP from industry and from agriculture, logged GDP, and logged population. Young's measure of the number of physicians is inverted from that she uses for nurses: she divides population size by the quantity of physicians, whereas she divides the quantity of nurses by population size. Thus, while a positive correlation with basic needs satisfaction is indicated by a positive correlation with nurses per capita, a positive correlation with basic needs performance would correspond to a negative correlation with inhabitants per physician. However, Young finds a significant positive correlation ($r = 0.50$) between inhabitants per physician and the proportion of exports in plantation products, as well as significant positive correlations between inhabitants per physician and the proportions of the labor force and of GDP in agriculture. Of course, it is possible that this unexpected result reflects the existence of a larger or wealthier elite, made possible by an economic system based on plantation exports, that could afford a relatively large number of doctors. Population per physician has significant negative correlations with logged GDP per capita and logged GDP, the former correlation being the strongest Young reports for this dependent variable ($r = -0.79$).

Like Young, four other studies — McGowan (1976), McGowan and Smith (1978), Vengroff (1977), and Cereseto (1982) — use inhabitants per physician as a dependent variable. Dependence indicators are used as independent variables by McGowan (1976), McGowan and Smith (1978), and Vengroff (1977), who report bivariate correlation analyses limited to black African nations. McGowan (1976) uses 30 such countries in his research, which correlates a variety of development indicators with
three measures of dependence: (1) aid concentration, the percentage of all official bilateral aid contributed by the largest donor country, (2) trading partner concentration, the percentage of exports going to the major trading partner, and (3) commodity concentration, the percentage of exports in the three most important commodity exports. Each dependence measure is for 1967, and inhabitants per physician is measured for 1967-68. All three dependence measures are positively correlated with population per physician, but only trading partner concentration has a correlation ($r = 0.32$) that is significant at the 0.05 level (one-tailed test) and can be described as anything but negligible. This correlation is somewhat stronger in former French colonies ($r = 0.44$, $p < 0.05$) and is particularly strong for Eastern Africa ($r = 0.87$, $p < 0.01$).

In a later article, McGowan and Smith (1978) use much the same data with several additional measures of dependence: (1) trade structure, a measure of the degree to which exports consist of processed and manufactured goods and the inverse of the degree to which a few commodities dominate exports (1961-63), (2) investment concentration, the percentage of foreign direct investment accounted for by the major investing country (1967), and, most importantly, (3) foreign direct private investment per capita (1967). They find that foreign direct private (i.e., MNC) investment per capita is significantly and positively correlated ($r = 0.38$) with the number of inhabitants per physician. Investment concentration and trade structure are actually negatively correlated with inhabitants per physician, but not significantly so. Unfortunately, the correlations between inhabitants
per physician and the three measures of dependence used in McGowan's 1976 article are shown in this article with negative signs, not positive signs as before. No explanation or even recognition of this contradiction appear in the 1978 article. A likely cause is the use of the ratio of physicians to population instead of the ratio of population to physicians in one of the articles (there is no indication which article it might be). Thus, McGowan's (1976) and McGowan and Smith's (1978) analyses for inhabitants per physician are valueless, and the presence of such sloppiness calls into question their other results (reported below) on literacy rates. (Cf. note 4.)

Vengroff (1977) includes up to 32 black African nations in his analysis, which presents correlations between a number of dependence indicators and a number of measures of development, of which only population per physician (measured as of 1967-68) is of interest in the present study. Eight of Vengroff's ten dependence variables measures various aspects of trade dependence, while the other two measures foreign aid dependence: aid from the respective former colonial power (1963) divided by GDP (1963), and aid from the former colonial power (1967) divided by GNP (1968). If one assumes a sample of 32 for all ten of the correlations between the dependence variables and inhabitants per physician, only one correlation is significant at the 0.05 level: the percentage of imports originating from the former colonial power in 1960 ($r = 0.32$). While this relationship is in the expected direction, the same measure for 1971 has a correlation of approximately zero. The correlation for exports to the former colonial power is also positive ($r = 0.28$) and approaches significance (in fact, it is the only other
correlation greater than ±0.12), but the corresponding indicator for 1960 is not correlated at all.

In an analysis of 112 countries, Cereseto (1982) finds that the population per physician declines with GNP per capita and that socialist countries have significantly fewer inhabitants per physician (a mean of 1,385) than other middle-income countries (a mean of 3,426). The difference between socialist nations and high-income capitalist nations (which have a mean of 1,053 inhabitants per physician) is not significant.

The remaining five studies report findings only for the number of physicians. Leipziger and Lewis (1980) use doctors and dentists per capita as a dependent variable rather than the number of inhabitants per physician. Among the richer underdeveloped countries, this variable is negatively and significantly correlated with income inequality ($r = -0.489$), but is not significantly related to per capita income. There is not a significant relationship for either inequality or income per capita among the poorer underdeveloped countries.

**NUTRITION**

My own interest in underdevelopment was probably sparked by television coverage of mass starvation in Africa in the early 1970s. I rather suspect that, within that portion of the American public which is very concerned about the underdeveloped world, images of children with bellies swollen from hunger are closely linked to the motivation to "do something" about underdevelopment. Given this suspicion, I have found it somewhat surprising that quantitative research on the effects of
dependence has virtually ignored nutrition-related phenomena. I was able to find only two studies which examine relationships between dependence and nutrition indicators (Nolan, 1983a, and Schubert, 1981). In the following paragraphs these and related studies are surveyed. The discussion is divided into summaries of research on calorie supplies and protein supplies, respectively. These supplies, and changes therein, are frequently used by advocates of the basic needs approach to measure how well a population is nourished and how that level of nourishment has changed (the major assumption being that food supplies closely parallel food consumption).

Admittedly, these indicators do not reflect the distribution of basic needs so well as the health and mortality indicators discussed above. An infant or child has only one life to lose, and there are distinct biological limits to longevity; these facts make infant and child mortality and life expectancy good measures of basic need distributions, to the degree that they are accurately measured. But some strata of society can afford more food than other strata, making aggregate food supplies a somewhat poor indicator of the distribution of food. In addition, food supplies are perhaps better conceived as inputs than as outputs. Nonetheless, aggregate supply data are probably the best source of information we have on the adequacy of nutrition per se in entire populations for a large number of countries.
CALORIE SUPPLIES/CONSUMPTION

Nolan (1983a) uses calorie supplies per capita per day in 1960 and 1970 as dependent variables in his study of the relationship between world-system status and development. He finds that this ratio falls significantly from core countries (in 1970, a mean of 3280 calories per capita per day) through semiperipheral countries (2697 calories) to peripheral countries (2317 calories). His analysis of variance is for 110 underdeveloped and developed capitalist and socialist countries.

Schubert (1981) includes a measure of change in calorie deficiency (1963-73) in his study of the effects of U.S. food aid contributed over the period 1962-75 (measured in dollars). In a comparison of means for 89 underdeveloped countries, he finds that countries which receive relatively high levels of U.S. food aid per capita reduce calorie supply deficiencies significantly more than countries which received lower levels of food aid (one-tailed test). Thus, those countries which are more dependent on food aid appear to benefit from their dependence.

Hicks and Streeten (1979) correlate calorie consumption (supply) as a percentage of national requirements with per capita GNP for 103 developed and underdeveloped capitalist countries. While this relationship is significant and fairly strong with an $r$ of 0.66, the correlation drops to 0.47 in the subset of Third World countries and is only 0.14 for the developed countries. A curvilinear relationship is involved in this finding, as in the authors' findings for some other basic needs indicators (cf. the above discussion of life expectancy).
Cereseto (1982) includes among her basic needs indicators a measure of national calorie supplies as a percentage of estimated adequate national calorie requirements in 1974. Not surprisingly, this percentage increases with GNP per capita in her sample of 116 countries. However, socialist countries have a significantly higher mean percentage than other middle-income countries (123 percent compared to 109 percent), a mean which does not differ significantly from that of the high-income capitalist countries (124 percent).

**PROTEIN SUPPLIES/CONSUMPTION**

Schubert (1981) performs more elaborate analyses for protein supply as a dependent variable than for calorie supply (i.e., calorie deficiency). Using multiple regression analysis for a sample of 89 underdeveloped countries, he finds that U. S. food aid per capita, GNP per capita, and the extent of protein deficiency in 1963 all have significant positive effects on improvement in the supply of protein per capita from 1963 to 1973 ($R^2 = 0.466$). The same results hold for the 81 countries which actually received some U. S. food aid between 1962 and 1975. Population growth, non-food economic aid receipts, and growth in domestic food production, on the other hand, do not have significant effects. When the increase in protein deficiency over the period is used as a dependent variable, the substantive implications of the results are essentially the same. Schubert also uses the increase in vegetable protein per capita as a dependent variable. He argues that this measure tend to reflect the distribution of protein better than measures which included animal protein, since vegetables are the major
source of protein in underdeveloped countries and "meat is generally too scarce and too costly to play an important role in the diets of many" (1981:335). Nonetheless, the same variables that have significant positive coefficients in the equation for change in protein supply per capita are significant and positive in the equation for change in the vegetable protein supply per capita. The $R^2$ for this equation is considerably lower (0.175 for all 89 cases), but this is due much more to the reduced explanatory power of GNP per capita and prior protein deficiency (which ideally should have been replaced by prior vegetable protein deficiency) than to the reduced explanatory power of food aid. In short, Schubert shows that nutritional needs are better met when there is more food aid, to the extent that his indicators measure satisfaction of nutrition needs. This result conforms to conventional and common-sense expectations, though not necessarily to more radical perspectives.

However, one might surmise that if any form of foreign aid were beneficial, it would be food aid. One should also keep in mind that Schubert's data are for food supplies, i.e., food available for consumption. To the extent that food aid is not associated with reduced domestic production (due to "dumping" effects, aid as a response to crop failures, and so on), one might well expect that food aid would increase the absolute supply of food. The manner in which the food aid is distributed, however, could well result in actual supply increases only for limited segments of the population (e.g., residents of urban areas where all the food is resold).
Finally, Leipziger and Lewis (1980) include protein consumption (supply) per capita in their research. Income inequality has a significant negative correlation ($r = -0.457$) with consumption per capita in their sample of richer underdeveloped countries. For the poorer countries, neither income inequality nor income per capita is significantly correlated, though the association of per capita income is more strongly positive. Again, these results fit the larger pattern of interactions identified by the authors.

**EDUCATIONAL ENROLLMENTS AND LITERACY**

There seems to be more cross-national research on educational phenomena than on nutritional phenomena; ten such studies are reviewed in this section. Research on school enrollment (adjusted by the appropriate school-aged population) is discussed first, followed by a survey of studies using the adult literacy rate as a dependent variable.

While education is not such a basic or immediate need as health or nutrition, it is important in that it tends to (1) improve the individual's access to information essential for gaining more control over his or her own life (especially via literacy), (2) provide the individual with knowledge about beneficial health and nutrition practices, and (3) increase the value of the individual's labor, potentially improving his or her ability to purchase other basic needs. Like mortality rates, and unlike ratios of food supplies to food requirements, school enrollment ratios and literacy rates are, if accurately measured, fairly good measures of the distribution of a basic
need. Each person contributes equally to these indicators—a person can only be enrolled once or literate once.

SCHOOL ENROLLMENTS

This discussion is largely limited to research on primary school enrollments. Secondary enrollments are also important, but the increment in education provided by secondary schools is of less importance from the perspective of basic needs than the basic skills and knowledge provided by primary education. Furthermore, higher secondary enrollments could reflect an allocation of resources away from primary education to more advanced education, resulting in basic education for fewer people. Several cross-national studies use secondary enrollments as a dependent variable, but these are not reviewed here (Cereseto, 1982; Delacroix, 1977a; Delacroix and Ragin, 1978, 1981; Lenski and Nolan, 1984; McGowan, 1976; and Young, 1980). Most of these include measures of dependence as independent variables.

Meyer et al. (1977) use change in the ratio of primary enrollment to the primary-aged population as a dependent variable in multiple regression analyses. Their samples consist of varying numbers of underdeveloped and developed capitalist and socialist countries, though they exclude from analysis all countries with adjusted primary enrollments higher than 0.90 (i.e., primary enrollments greater than 90 percent of the primary-aged population) in 1955. Measuring change as the 1970 ratio minus the 1955 ratio and controlling for several variables having to do with the system of primary education itself, they find a significant negative effect of "political modernization" (a
standardized regression coefficient of \(-0.35\), a measure of the extent and duration of control of a country by "elites committed to modernization" (1979:52). No other independent variables are significant; these include 1955 export partner concentration, independent vs. colonial status, 1955 GNP per capita, urbanization, political representation and participation indexes, and government revenues as a fraction of GDP.

Young (1980) uses primary enrollment per capita in her bivariate correlation analysis of late-1960s data for Caribbean countries. This variable has significant negative correlations with the proportion of GDP originating in industry, the population size, and the degree of independence from a colonial power (rs of \(-0.50\), \(-0.38\), and \(-0.38\), respectively). It is not correlated significantly with the proportion of exports in plantation products, GDP per capita, the proportions of the GDP and labor force in agriculture, political repression, or urbanization.

Hicks and Streeten (1979) correlate primary enrollment (apparently measured as a ratio of the primary school age population) with per capita GNP for 101 capitalist countries in 1970. The familiar pattern of their analysis recurs: the variables have a significant correlation of 0.53 in the total sample, which falls slightly to 0.49 in the sample of underdeveloped countries and to a mere 0.22 in the sample of developed countries. The authors note that this is due to the same kind of curvilinear pattern described previously for other variables.

Leipziger and Lewis (1980) use "first-level enrollment," presumably taken as a ratio of the primary school age population or total
population (though they do not say so) in their bivariate correlation analysis. As in their analyses of health, mortality, and nutrition variables, there is a particular kind of difference between richer and poorer underdeveloped countries. In the richer countries, primary enrollment is not correlated with per capita income, but there is a negative correlation ($r = -0.423$) between primary enrollments and income inequality which approaches the 0.05 level of significance (and would be significant with a one-tailed test). For the poorer countries, primary enrollment is uncorrelated with income inequality but has a significant positive correlation with per capita income ($r = 0.492$). Thus, we again see in Leipziger and Lewis' research that income equality is linked to improved basic needs satisfaction in the high-income Third World countries and income per head is associated with better basic needs performance in the world's poorest countries.

Other studies use as a dependent variable the adjusted enrollments for primary and secondary schools combined. Mahler's (1981) paper is of this type, and it is of particular interest because it includes stocks of investment by foreign MNCs among its independent variables. In a sample of 68 underdeveloped countries, Mahler finds that when the 1970 combined enrollment ratio is regressed on 1970 GNP per capita and 1967 MNC investment stocks as fractions of GNP (measured separately by mining, agricultural, and manufacturing sectors), GNP per capita has a significant positive effect but MNC investment has no significant effects ($R^2 = 0.57$). Chenery and Syrquin (1975) also use the combined enrollment ratio in their multiple regression analysis of 433 country-years (based on 1950-70 time-series data for developed and
underdeveloped capitalist countries). Controlling for population and squared population (neither was significant) and time period, they find significant effects for GNP per capita and net resource inflow ("imports minus exports of goods and nonfactor services" [1975:16]) as a proportion of GDP. GNP per capita has a positive effect, squared GNP per capita has a negative effect, and the net resource inflow ratio has a positive effect ($R^2 = 0.720$).

LITERACY RATES

As opposed to primary education enrollments, which is really an input into basic needs performance rather than the direct satisfaction of basic needs, literacy rates indicate the incidence of a specific and very important skill within a country's population. Six studies using adult literacy rates as a dependent variable are reviewed here.

I identified only three studies of literacy rates -- McGowan (1976), McGowan and Smith (1978), and Lenski and Nolan (1984) -- that use measures of dependence as independent variables. Again, McGowan's research is limited to 30 black African nations. In his 1976 study, he finds negative correlations between each of his three 1967 dependence variables and the 1965 literacy rate, but two of these associations are not significant: that for the percentage of bilateral aid originating with the primary aid donor, and that for the three largest commodity exports as a percentage of total exports. Only the measure of export partner concentration (the percentage of exports made to the primary importer from the African country) has a significant correlation ($r = -$
-0.44). When this correlation is recalculated for several subsamples divided along lines of region and former colonial power, the association is consistently negative (ranging from -0.34 to -0.76) but is strongest for East Africa. Further analysis of the data for these African countries by McGowan and Smith (1978) reveals that literacy rates are significantly and negatively correlated ($r = -0.62$) with "trade structure." That is, the more that exports are processed or manufactured and the less that exports are dominated by a few commodities, the lower are literacy rates. This is a rather strange finding, especially given the magnitude of the correlation. As suggested in the discussion of McGowan and Smith's analysis for inhabitants per physician, however, this may not be a very trustworthy finding -- other parts of their analysis are handled in a very sloppy manner. MNC investment concentration and MNC investment per capita had correlations with literacy of about zero in McGowan and Smith's study.

Lenski and Nolan (1984) use the adult literacy rate as a dependent variable in their study of the effects of dependence (as measured by Snyder and Kick's [1979] categories) and their ecological evolutionary perspective. For a sample of 57 underdeveloped countries, they find that both semiperipheral status and industrializing agrarian status are significantly and positively related to literacy, though the latter effect is again stronger (standardized regression coefficients of 0.243 and 0.571, respectively). When the analysis is restricted to the 41 countries which gained independence after 1940, the direction and approximate magnitude of the relationships persist, though the semiperiphery dummy is no longer significant.
Hicks and Streeten (1979) find a significant positive correlation ($r = 0.73$) between GNP per capita and the adult literacy rate for 70 developed and underdeveloped capitalist countries in 1970. However, closer examination reveals a phenomenon basically identical to that which they discovered for per capita GNP and life expectancy. Positive correlations still result when the sample is divided into developed and underdeveloped subsamples, but the relationship is weaker — substantially so for the industrialized nations: the correlation coefficient is 0.40 for the developed countries and 0.69 for the underdeveloped countries. This finding suggests a curvilinear relationship between per capita GNP and literacy. A scatterplot reveals that the relationship indeed takes the form of a distinct J-curve, with a relatively weak positive association up to a GNP per head of about US$500 (1970 prices). Literacy then covaries more strongly with the level of GNP per capita up to about US$2000, at which point literacy virtually stabilizes at the ceiling of 100 percent and no longer varies systematically with per capita income.

In Leipziger and Lewis (1980), their familiar distinction between richer and poorer underdeveloped countries appears once again: the adult literacy rate is negatively correlated with income inequality in the richer countries ($r = -0.564$) and is positively correlated with per capita GNP in the poorer countries ($r = 0.450$). Per capita income and the Gini coefficient of income inequality are not significantly related to literacy in higher- and lower-income countries, respectively.

Cereseto (1982) again finds a major difference between capitalist and socialist countries when she examines literacy. Using mid-1970s
literacy data for 120 countries, she finds that socialist nations have a much higher mean literacy rate (93 percent) than other middle-income nations (62 percent) and do not differ significantly from the high-income capitalist countries (87 percent).

COMPOSITE INDEXES RELATED TO BASIC NEEDS SATISFACTION

Other cross-national studies use as dependent variables multiple-item indexes which are wholly or partially composed of commonly-accepted basic needs indicators. Among these is apparently the only previous cross-national study rooted in the world-system perspective which explicitly addresses basic needs satisfaction, Dixon's (1984) study of 74 underdeveloped countries. The major dependent variable in Dixon's multiple regression analysis is the "Disparity Reduction Rate," or DRR, the average annual improvement in the Physical Quality of Life Index (PQLI), which in turn consists of life expectancy at age one, the infant mortality rate (scoring reversed), and the adult literacy rate. The DRR is measured over the period 1960 to 1980. Average annual change in GNP per capita (1960-80) has a significant and positive effect on the DRR, as does per capita government expenditures on health and education. However, several 1965 trade concentration indexes, including two indicators each of export partner concentration, export commodity concentration, and the product of these two concentration indexes, fail to show significant effects when entered into separate equations for DRR (though each of these dependence measures has a negative sign). Dixon acknowledges there may be a small negative indirect effect of trade concentration through economic growth; some of the trade measures are
significantly related to growth. He does not suggest it, but there is a possibility of a negative indirect effect through the control for welfare expenditures as well. Dixon does not examine the relationship between health and education expenditures and the DRR. The $R^2$s for all the regressions for the DRR are slightly over 0.50.

Cereseto (1982) uses the PQLI itself, measured for the mid-1970s, as a dependent variable. In a sample of 120 developed and underdeveloped nations, the mean PQLI is significantly higher for socialist countries (88) than for other, capitalist middle-income countries (66), and it is not significantly different from the mean PQLI for the capitalist high-income countries (89).

Cutright and Adams (1984) use an index similar to the PQLI as a dependent variable. Their "social development index" consists of 1970 life expectancy and adult literacy. Bivariate correlations for separate Asian and Latin American samples (with Ns ranging from 12 to 20) are computed between this measure and a number of dependence indicators, which are measured for various periods beginning as early as 1965 and ending as late as 1973. Of the correlations for eight different measures of trade dependence, none is significant or particularly large for both Asia and Latin America; two correlations between dependence indicators and export commodity concentration and "the degree of processing of traded goods" were significant and positive ($rs$ of 0.56 and 0.48, respectively) for Latin America. The positive correlation with export commodity concentration would seem to directly contradict the dependency perspective. Presumably, the "degree of processing" variable is Galtung's trade composition index and is scored, as in
Jackman (1975) (discussed below), so that high scores indicated less
dependence; if so, this positive correlation was consistent with the
dependency perspective. In addition, five measures of foreign aid
dependence -- a variable to be used in the present study -- are used:
(1) foreign aid as a percentage of imports, (2) foreign aid as a
percentage of GNP, (3) foreign aid per capita, (4) the percentage of
foreign aid contributed by the largest donor, and (5) the percentage of
foreign aid contributed by the two largest donors. All the aid
variables are measured for 1969-71 and, given the OECD source,
presumably are limited to bilateral aid from the DAC countries. It is
not clear whether all forms of aid (loans, grants, and so on) are
combined or whether only particular forms are used, and it is also
uncertain whether commitments or disbursements are used. Only two of
these aid measures have significant or particularly strong effects: aid
as a percentage of imports for both Asia (-0.79) and Latin America
(-0.40), and aid as a percentage of GNP for Latin America only (-0.40).
Government revenues as a percentage of GDP, sometimes seen as an
intervening variable ("state strength") between dependence and
development, has significant positive associations with the social
development index in both Asia and Latin America. Cutright and Adams
also perform a multiple regression analysis limited to 20 Latin American
countries, regressing the 1970 social development index on the
percentage of imports coming into a country from its largest import
partner, an economic development index (urbanization and telephones per
capita), and a lagged dependent variable, all for 1940. Only the lagged
dependent variable has a significant effect.
Other studies examine a "social welfare index" based on a measure used as an explanatory variable in Hibbs' (1973) cross-national study of mass political violence. Jackman (1974, 1975) seems to be the first researcher to have used the social welfare index as a dependent variable. His sample consists of 60 developed and underdeveloped capitalist countries, and he measures social welfare as a combination of infant mortality (reversed), physicians per capita, calorie consumption per capita, and protein consumption per capita, all for 1960. The only dependence measure Jackman uses as an independent variable in his multiple regression analyses is Galtung's trade composition index for 1960, which may be conceived as a ratio of manufactured exports and unprocessed imports to unprocessed exports and manufactured imports. The effect of this variable is not significant once the level of economic development (measured as energy consumption per capita), which had a significant positive effect, is controlled. "Social insurance program experience" (SIPE), an index of the number of five different kinds of social security programs implemented in a country and the longevity of each, also has a significant positive effect on social welfare. Other independent variables which fail to manifest significant effects once appropriate controls are introduced include a democratic performance index, an index of intersectoral income inequality, growth in energy consumption per capita, population growth, socialist party strength, non-military government expenditures per capita, and an index of "institutional longevity" (based on the ages of the constitutional form and of the largest political party and on the age of the largest party divided by the number of major parties).
Mahler (1981) uses another variant of Hibbs' social welfare index, composed of infant mortality (reversed), calorie consumption (presumably per capita), life expectancy, and literacy, as a dependent variable. The components are measured for 1970. Multiple regression analyses for 68 underdeveloped countries, controlling for GNP per capita (which again has a significant positive effect), reveal a negative effect by MNC investment. Mahler measures MNC investment as the 1967 stocks of private direct investment from the DAC countries in mining, agriculture, and manufacturing sectors, each divided by GNP. These three different variables are entered into separate equations along with GNP per capita, and in each case their effects are significant. Standardized regression coefficients are -0.31 for mining, -0.19 for agriculture, and -0.16 for manufacturing; $R^2$s range from 0.69 to 0.77.

Another study by Mahler (1980) uses a more complex composite indicator of social welfare, combining the social welfare index just described with adjusted primary and secondary education enrollments, a SIPE-type measure, and direct taxes as a fraction of total government revenue (intended as a measure of tax progressivity), all for circa 1970. Unfortunately, the wide array of indicators included in this and other indexes makes this study of less value for the present research. Mahler uses factor analysis somewhat indiscriminantly to combine indicators at almost every opportunity. The resulting composite variables are sometimes not particularly meaningful theoretically; the worst example, perhaps, is an index combining foreign aid as a proportion of GNP and a terms of trade index (which does not correlate with the dependent variable).
Mahler's (1980) multiple regression analysis for 70 underdeveloped countries finds GNP per capita and a "natural resources endowment index" have significant positive effects on social welfare. Independent variables with significant negative effects include: university students studying abroad divided by total university students (an indicator of "cultural dependence"), a composite trade dependence index (based on Galtung's trade composition [level of processing] index, exports as a ratio of GNP, and the Hirschman export commodity concentration index), the ratio of the value of arms imports to GNP, and a composite measure of partner concentration in aid, trade, and stock of private direct investment. All these variables are measured within two years of 1970, except for arms imports (1965-74) and direct investment partner concentration (1967). No significant effects are found for 1970 "finance dependence" (comprising debt service on public and publicly guaranteed loans as a ratio of exports, and international reserves as a ratio of imports), or -- and this is of particular interest -- for the 1971 stock of private direct investment from DAC countries divided by GNP.

SUMMARY

The bulk of cross-national research in the dependency/world-system tradition focuses on economic growth and income inequality as dependent variables. This literature tends to support the idea that MNC investment and foreign aid -- particularly the former, which has been the subject of much more research -- are detrimental for these aspects
of development, though admittedly the findings are so complex that this conclusion is arguable. The long-term nature of some of these effects on growth and inequality and differences in the effects of MNCs across levels of economic development are particularly noteworthy. Since growth and inequality presumably act as intervening variables between dependence and basic needs satisfaction (in a fashion to be elaborated in the next chapter), these results tend to support the notion that MNC investment and foreign aid are harmful to basic needs satisfaction. In addition, the studies of economic growth and income inequality suggest potentially fruitful paths of investigation using basic needs measures as dependent variables, including important control variables, nonlinear effects of the level of economic development, and possible interactions with economic development. The growth and inequality literature also serves as a model of relatively sophisticated cross-national research, as opposed to the comparatively unsophisticated research pursued on basic needs performance to date.

Of course, it is the research which uses basic needs performance measures as dependent variables which is of more direct relevance for the present study. Among those studies which include dependence indicators among their independent variables, there is a tendency to support the idea that dependence is detrimental to meeting basic needs. (In this chapter summary, two related studies -- McGowan [1976] and McGowan and Smith [1978] -- are disregarded because of unexplained contradictions in portions of their analyses which are reported in both articles.) Only three studies (Outright and Adams, 1984; Schubert, 1981; and Young, 1980) give any indication that dependence actually is
beneficial for basic needs satisfaction. Trade dependence variables, including the measures based on blockmodels, are most common in studies of the effects of dependence on basic needs performance, followed by aid dependence and then MNC dependence.

The studies reviewed above operationalize trade dependence in a number of ways, some more relevant to the dependency/world-system perspective than others. Studies which lend some support to the idea that trade dependence is detrimental to basic needs satisfaction are those of Cutright and Adams (1984), Vengroff (1977), and Young (1980). In addition, the studies based on blockmodels — Lenski and Nolan (1984), Nemeth and Smith (1985), Nolan (1983a), and Nolan and White (1983) — provide some evidence for the expected relationship between dependence and basic needs indicators.

However, two of the studies which find some support for the idea that dependence improves basic needs satisfaction do so with trade dependence variables. Young (1980) finds a bivariate correlation indicating that the more exports, proportionately, that were plantation products, the fewer the inhabitants per physician. Her data, however, are limited to one region (the Caribbean) and included a number of very small countries; it may be that some anomaly associated with these exceptional observations is responsible for this unexpected finding. There is also a possibility, however, that plantation export production simply creates a larger and wealthier elite that can afford the frequent use of physicians. Furthermore, it was anticipated that the number of inhabitants per physician is a poor measure of the distribution of access to physicians; this result is not strong evidence that this form
of dependence increased access to physicians among the poor. (A study of black African samples by Vengroff [1977], on the other hand, finds evidence for a positive correlation between dependence and the number of inhabitants per physician.) However, Cutright and Adams' (1984) bivariate correlation analysis also produces one finding which directly contradicts the dependency perspective. They report that the more exports are concentrated in a few commodities, the higher is the social development index (a combination of life expectancy and literacy) in Latin America. Thus, this second unexpected result also occurs in a sample limited to a single region, though the measures used seem to operationalize trade dependence and the distribution of basic needs fairly well.

In yet other instances, there is no relationship at all between trade dependence and basic needs satisfaction. One or more cases of no relationship are found in Young (1980), Vengroff (1977), Meyer et al. (1977), Dixon (1984), Cutright and Adams (1984), and Jackman (1975). In addition, blockmodel measures based wholly or in part on trade patterns are uncorrelated with basic needs indicators in at least one instance in Nemeth and Smith (1985), Nolan and White (1983), and Lenski and Nolan (1984).

A few studies examine relationships between aid dependence and basic needs performance. Research by Mahler (1980) and Cutright and Adams (1984) finds at least one relationship between aid dependence (in Mahler's case, a combination of partner concentration in aid, trade, and direct investment) and basic needs which has the expected sign. At least one measure of aid dependence is found to be uncorrelated with a
basic needs indicator in Vengroff (1977), Schubert (1981), Cutright and Adams (1984), and Mahler (1980) (in Mahler's case, a combination of debt from public and publicly-guaranteed loans and international reserves, the latter measuring something other than aid dependence).

Schubert's (1981) research is the only study to find that basic needs satisfaction actually improves with more aid dependence. While this study includes data from different regions of the Third World, the type of aid for which this result occurred — U. S. food aid — seems as likely to be positively associated with basic needs satisfaction as any form of aid. Also, the measures of basic needs performance in this case, the supply or deficiency of protein, are hardly ideal measures of the distribution of food across the population. It is conceivable that all the increase in food supply due to aid goes to an elite, or even that there is an absolute decline in food going to the poor as aid increases. Finally, it can be argued that food aid tends to increase food supplies anyway, to the extent that it is not diverted from human consumption and to the extent that it does not reduce domestic production.

Of the cross-national studies of basic needs measures which I identified, only those by Mahler (1980, 1981) use MNC investment (stocks of investment taken as a ratio of GNP), a phenomenon of particular theoretical relevance, as an independent variable. (McGowan and Smith's [1978] problematic study also uses MNC investment as an independent variable, but, as was noted previously, their report of their research appears unreliable.) MNC investment is not associated with combined primary and secondary school enrollments or with Mahler's (1980) social
welfare composite indicator (which is partly composed of items other than basic needs measures). Mahler does find MNC investment (separated into mining, agricultural, and industrial sectors) to have a negative relationship, as would be expected from the dependency perspective, with an index comprising infant mortality, calorie consumption, life expectancy, and literacy. He also finds an index of "partner concentration" in aid, trade, and MNC investment to be negatively related to his social welfare composite indicator. In no case does he find that MNC investment is linked to improved basic needs satisfaction.

However, there are important shortcomings even in the few existing studies of basic needs which use MNC investment or aid dependence as explanatory variables. With regard to MNC investment, Mahler measures his dependent variables circa 1970 and MNC investment in 1967. While this allows for an approximate three-year lag between MNC investment and basic needs performance, the studies of economic growth reviewed earlier suggest that this effect could be a relatively "long-term" phenomenon, increasing over time. It may be, for example, that one would find significant effects on school enrollments if a longer lag were used. On the other hand, a number of important control variables are not used by Mahler, including lagged dependent variables. In his 1980 study, Mahler controls only for some other forms of dependence, arms imports, GNP per capita, and natural resources endowment, while in his 1981 research he controls only for GNP per capita. Inclusion of other controls (thus introducing alternative explanations of the dependent variable) might wipe out some of his significant findings, change their sign, or perhaps reveal relationships previously suppressed. Finally, Mahler's measures
of basic needs performance leave something to be desired, though one should keep in mind that Mahler does not intend to study "basic needs" as such. The measure used in 1980 is particularly problematic; it not only combines several different kinds of basic needs indicators into a single index, but also uses variables other than basic needs measures to make up about half the variance in the index. Even in the 1981 study, Mahler combines indicators of mortality, longevity, nutrition, and education into a single index. From the perspective of the current study, there are certain disadvantages to using such composite indexes, as will be discussed shortly.

Similar shortcomings exist in the studies of the effects of aid dependence. Vengroff (1977) allows for a lag of about four or five years between an aid dependence measure and the ratio of inhabitants to physicians, but he does not control for the lagged dependent variable (or anything else, for that matter). All of the other studies of aid may be fairly accurately portrayed as cross-sectional designs, despite the theoretical importance of long lags. Also, only Mahler (1980) and Schubert (1981) control for other variables in multivariate analyses. However, the relevance of Mahler's work for the relationship between aid and basic needs is quite questionable, since his aid indicators are combined in indexes with other kinds of variables in addition to the presence of a variety of components in his dependent variable which tap concepts other than basic needs. On the other hand, Schubert uses only nutrition indicators as dependent variables.

Many of the studies reviewed above use multiple-item indexes which tap basic needs performance. Although the use of multi-item indexes for
basic needs and similar concepts has the advantage of potentially improving reliability, there are distinct drawbacks to composite measures in this substantive area, as was suggested in Chapter I. In general, such indexes tend to obscure more than they clarify. First, the components of a composite basic needs index are of great interest in themselves. The concept of basic needs was created as a convenient abstraction for related phenomena, but it was not conceived as a monolithic phenomenon. It is apparent that most scholars who study basic needs satisfaction would no more combine these indicators into a single measure than a scholar of social stratification would lump education, occupational prestige, and income into one measure of socioeconomic status. The fact that the more concrete indicators of basic needs performance are policy matters of life and death also makes retention of separate indicators desirable. Second, there are probably important differences in the intervening processes which connect performance in various basic needs variables to such variables as dependence and economic development, and there are presumably causal linkages among basic needs variables themselves (as noted earlier). The use of a composite index tends to cover up the very existence of such questions, and research with a composite index can be expected to contribute little to future research which does raise these issues. Third, for reasons just noted, there is little if any agreement among basic needs researchers as to the proper components of a basic needs index and their weights. Lacking such a consensus, each researcher would tend to create his or her own multiple-item index, and the comparability of their studies would be much more problematic than is
now the case. Thus, if one were to use a multi-item basic needs index at all, it should be only in conjunction with an analysis using separate basic needs indicators.

All these points apply to the measurement of "development" in general, as well. In some cross-national studies, so many different kinds of indicators are lumped into an index that the study is virtually worthless for the present undertaking. An index used by Olsen (1982) and called "political performance," for example, includes the level of civil violence and non-military governmental expenditures along with the mean number of persons per room (sometimes used with misgivings as a basic needs variable) and calorie supply as a percentage of requirements. While it is true that Olsen never intends to create a "basic needs" index, his findings might be more useful to others if he used less abstract measures. A particularly extreme example of the use of a multi-item index in this area is Ward's (1978) "composite inequality index," which he regresses on dependence indicators among other independent variables. This measure is Ward's major dependent variable and includes several basic needs indicators; therefore, the study at first appears to be very relevant to the study at hand. Unfortunately, the composite inequality index is an index built of still more indexes, all of which are, like basic needs (never mind concrete indicators of basic needs), of interest by themselves, but are nonetheless buried inextricably in this complex measure. The actual components of the index would require several more lines to list. (Ward himself apparently becomes so confused by this monstrosity that he
includes some of its components again in measures used as independent variables in his regression equations.)

In short, the existing literature on the effects of dependence on basic needs satisfaction is lacking in a number of ways. Many of the studies reviewed above use bivariate analyses or cross-sectional designs, limit their samples to certain regions, and/or use measures of dependent or independent variables which obscure the relationships of interest here. Few studies investigate the influence of aid dependence or MNC involvement, and those which do are fraught with the problems just listed. There are no long-term panel studies which cover a variety of aspects of basic needs satisfaction (unmixed with other indicators of development) and which control for lagged dependent variables and other important alternative explanations of basic needs performance. Nor are there any studies which even approach this level of rigor. In all fairness, it should be noted that virtually all the authors of these works never intend to study "basic needs," and the indicators of basic needs performance emphasized above typically are only a few of the many development-related dependent variables they use. But this, too, reflects a shortcoming of the literature: the amount of attention given basic needs seems to be in inverse proportion to the importance of this issue.

On the other hand, these previous studies, and those of economic growth and income inequality, suggest a number of factors that might be incorporated as control variables in tests of the presumed relationship between dependence and basic needs. The most common control variable in this literature is the level of economic development, typically measured
as GNP per capita. In general, economic development is shown to be positively related to the satisfaction of basic needs. However, this relationship does not appear to be a simple linear one. A number of the studies covered above find it useful to transform measures of economic development (e.g., GNP per capita), the distributions of which tend to be positively skewed, to log functions. The evidence that income inequality is a quadratic function of the level of economic development suggests the utility of controlling for a squared term of GNP per capita as well as GNP per capita itself in this study. After all, basic needs satisfaction is, in effect, another measure of inequality. Nolan and White's (1983) findings for energy consumption per capita in polynomial equations for child mortality and life expectancy tend to bear out this possibility. Furthermore, Hicks and Streeten (1979) find that several measures of basic needs performance increase most sharply with GNP per capita at middle-income levels. Paradoxically, Leipziger and Lewis (1980) find stronger correlations between GNP per capita and basic needs indicators at lower levels of per capita income. They also find that income inequality has a negative correlation with basic needs satisfaction only at middle-income levels. Bornschier et al. (1978) also find an interaction between economic development (GNP per capita) and the effect of MNC penetration on economic growth, such that MNC penetration has a significant negative effect on economic growth in the richer underdeveloped countries but not in the poorer ones. This evidence suggests that one should be aware of the possibility of nonlinear and nonadditive effects of economic development on basic needs.
Other variables also prove relevant. There appear to be substantial
differences between capitalist and socialist countries in the meeting of
basic needs, as suggested in Cereseto's (1982) research. It is
possible, of course, that this difference arises because of incomparable
data for the two groups, but there seems to be a difference nonetheless.
A country's natural resource endowment also seems to contribute to basic
needs satisfaction over and above the effects of economic development,
as shown by Mahler (1980). Additional control variables suggested by
the economic growth and income inequality literatures include domestic
investment levels, human capital formation (i.e., school enrollments),
population growth, population size, the military participation ratio,
military aid, arms imports, size of the service sector, urbanization,
the level of development (i.e., horticultural or agrarian) prior to
incorporation into the world-system, political democracy, socialist
party strength, Keynesian intervention in the economy, and sectoral
inequality.

In general, little research has been done on the relationship between
dependence and basic needs satisfaction, as opposed to the vast quantity
of research that has been done on the effects of dependence on economic
growth and income inequality. What research has been performed in this
area generally lacks the rigor of much of the research on growth and
inequality. As suggested earlier, it would seem that basic needs are of
more fundamental importance than even growth or income inequality.
Thus, there is a call for a great deal more research on basic needs
within the dependency/world-system perspective paralleling that already
performed for these other aspects of development.
In conclusion, it appears that the studies reviewed in this chapter generally support the dependency/world-system perspective, especially for the effects of MNC investment and foreign aid dependence on economic growth and income inequality -- variables which in turn are expected to influence basic needs satisfaction. Though relatively unsophisticated, the few previous studies of dependence and basic needs also tend to support this perspective. In addition to suggesting that major dependency/world-system propositions are correct, this research literature also suggests important control variables and the existence of nonlinear and nonadditive effects that should be taken into account in cross-national studies of dependence and basic needs performance. The implications of the theoretical literature reviewed in Chapter II and the empirical literature reviewed in this chapter are developed into formal hypotheses and specific regression models in the next chapter.
NOTES FOR CHAPTER III


2. When only standard errors or $t$ or $F$ statistics are reported, significance is determined from this information. For a $t$-ratio, the result is considered significant when the $t$ statistic is 2.00 or higher (an approximation to a two-tailed test at the 0.05 level). Some authors provide neither obtained significance levels nor test statistics from which significance can be determined.

3. Cf. also Colclough (1982). Nolan (1983b), however, fails to find a significant effect of school enrollments on growth.

4. McGowan and Smith also perform a multiple regression analysis for inhabitants per physician, literacy, and a number of other development
indicators. Unfortunately, they do not discuss the results of this analysis in detail, and the regression table is uninterpretable due to printing errors. The level of methodological sophistication of the authors does not appear to be high; at one point, for example, they refer to having regressed the independent variables on the dependent variables.

5. Two other measures used in the 1976 and 1978 studies are not reported here due to their questionable theoretical relevance: the ratio of trade to GNP (both articles) and the total, unadjusted stock of foreign direct private investment (1978 article only).

6. As indicated by a one-tailed test I performed; Vengroff does not provide obtained significance levels or details on missing data.

7. These control variables are: (1) the product of the 1955 primary enrollment ratio (adjusted enrollment) and that ratio subtracted from one, (2) 1955 adjusted enrollment subtracted from one, (3) growth in the primary-aged population from 1955 to 1970, and (4) the reciprocal of the 1970 primary-aged population.
CHAPTER IV

HYPOTHESES AND RESEARCH DESIGN

Based on the dependency/world-system perspective, this research examines hypotheses that certain forms of "capital stocks" in underdeveloped countries and originating in developed countries have negative effects — particularly long-term negative effects — on basic needs satisfaction, which is measured with seven different indicators. Multiple regression analysis will be used to perform statistical tests of these hypotheses and to assess the apparent directions and strengths of the relationships between these sets of variables. All the regression models will be based on panel designs, beginning typically in 1967 and terminating as late as 1980. The sample to be analyzed includes as many as 77 Third World countries, depending on the specific dependent variable.

This chapter has two major sections. The first draws on the reviews of theoretical and empirical literature in Chapters II and III to develop a model of the process through which dependence influences basic needs performance. Four hypotheses, two additive and two specifying interaction effects, are derived from this model. Several competing explanations of basic needs satisfaction are also introduced in this model and suggest important control variables. In the second major section, a research design with which the hypotheses can be empirically
tested is detailed. The timing of the panel models to be examined is determined, the measurement and sources of the dependent, independent, and control variables are discussed in detail, the composition of the sample is outlined and the criteria for inclusion presented, and alternative model estimation procedures are considered.

**THEORETICAL MODEL AND DERIVATION OF HYPOTHESES**

This section develops a general model of the effects of dependence on basic needs satisfaction. On the basis of this model, four hypotheses are derived to predict the relationships between MNC involvement and foreign aid dependence, on one hand, and basic needs satisfaction, on the other. Several alternative explanations of basic needs satisfaction are considered and incorporated into the general model.

**A GENERAL MODEL**

How can the relations between core and periphery negatively influence basic needs satisfaction? To begin, one should recall that "basic needs" include such goods and services as adequate and safe food, water, sanitation, clothing, housing, medical services, and basic education. Satisfaction of these needs in turn influences health, another basic need (perhaps the most basic of basic needs). The satisfaction of food, water, sanitation, clothing, housing, medical services, and education needs depends on the ability of households to either produce, barter for, or purchase them and/or on the ability and willingness of other parties (e.g., the government) to provide them. Production requires
access to resources, such as land for food production. In a pure market economy, purchase requires that the supply and demand curves meet at a point such that the individual can afford them; with the intervention of government or other parties (e.g., private charity), these goods and services may be sold at subsidized prices, or they may be provided free. In either case, there must be a sufficient supply for the entire nation for the basic needs of all individuals to be met. Health, on the other hand, cannot be directly obtained through production or purchase; it depends in part on biological and social factors (e.g., the body's resistance to disease, incidence of war and other violent events) which are not completely determined by these economic processes. Nonetheless, access to the basic goods and services listed above has a major impact on health, and the vast majority of variation in morbidity, mortality, and life expectancy between developed and underdeveloped countries probably can be attributed to differences in access to food, water, sanitation, clothing, housing, medical services, and education.

Therefore, for core-periphery relations to influence satisfaction of basic needs, they must influence the production, distribution, and/or consumption of food, water, sanitation, clothing, housing, medical services, and education. That is, core-periphery relations must affect (1) supplies of (a) these goods and services and/or (b) the resources required for their (subsistence) production, (2) incomes of individuals (to the extent that a pure market operates), including income in kind with which one could barter for basic goods and services, (3) national incomes (to the extent that this goes to personal incomes and is evenly distributed across individuals, and to the extent that national income
goes to the government and other organizations which subsidize or provide outright these goods and services), and (4) the willingness and ability of governments and other organizations to subsidize or give away these goods and services. Some of these effects -- specifically, economic growth and income distribution -- have been studied at length in previous cross-national research, as Chapter III demonstrated. Income distribution (including that derived through subsistence production) also has close theoretical links with the incidence of semiproletarian households and the related phenomena of unemployment and underemployment discussed by Wallerstein.

Figure 1 presents a model of the process through which dependence affects basic needs satisfaction in underdeveloped countries. (The model should not be interpreted as a path model, though in many ways it resembles one.) While this model raises some issues not directly addressed in the present research, the hypotheses to be tested in this study can be derived from it. In brief, various forms of dependence lead to a variety of social, economic, and political distortions, which tend to diminish aggregate income and other, nonmonetary resources and worsen distributions of these benefits, while the core appropriates benefits from the underdeveloped country. The aggregate quantity of these resources (in both the monetized and subsistence segments of the economy) and their distribution interact in their contribution to the satisfaction of basic needs in the form of goods and services. The consumption of these basic needs, in turn, affects health in the way discussed above. Four variables representing other explanations of basic needs satisfaction are also included in the model: the level of
FIGURE 1. Effects of dependence and other factors on basic needs satisfaction in Third World Countries.

NOTE: Relationships between exogenous variables are excluded for simplicity.
economic development, the ratio of investment to production, school enrollments per capita, and the rate of population growth. Other variables could have been added, but, as will be discussed later, these four factors are to be used as control variables in the present study.

Several dimensions of dependence are included in Figure 1: MNC involvement, foreign aid dependence, other private investment and lending, trade dependence, and political and military subordination. The theoretical literature reviewed in Chapter II indicated that dependence leads to underdevelopment through a wide array of distortions in the social, economic, and political structures of Third World countries. (For example, MNCs decapitalize host countries, and foreign aid props up repressive governments which are unconcerned with the needs of the majority.) Simultaneously, these distortions serve as the means by which the core appropriates surplus from peripheral and semiperipheral countries. The reader should note that a very complex reality is summed up by this label, "distortions"; different forms of dependence lead to different kinds of distortions, which no doubt influence each other and give rise to yet more distortions. Whatever the nature of specific distortions, however, the theoretical literature clearly argues that they produce "underdevelopment."

Of the various forms of dependence, only MNC involvement and foreign aid dependence are examined in the present study. The inclusion of MNC involvement is particularly noteworthy, as its effects on basic needs satisfaction have scarcely been considered in previous empirical research. This is not meant to suggest that other forms of dependence, such as trade dependence, are not important. However, this study
devotes its effort toward the effects of the accumulation of capital flows, since these have received relatively little attention in the past. Suffice it to say that various structural distortions, some of which were touched upon in Chapter II, result from these other forms of dependence and presumably lead to lessened basic needs satisfaction. The combined effects of MNC involvement, aid dependence, and other forms of dependence on basic needs performance should be pursued in future research.

The conclusion of Chapter II listed a number of detrimental phenomena presumably introduced by MNC involvement and foreign aid dependence. Distortions claimed to result from MNC involvement in underdeveloped countries include lower incomes, higher unemployment, displacement of domestic firms from key sectors, reduction of potential tax revenues, impediments to implementation of domestic government policies, distortion of domestic political processes, wasteful consumption, reduction of land available for production of food to be consumed domestically, more expensive food, and, through a variety of means, decapitalization of the host economy. Similarly, dependence on foreign aid is said to introduce distortions including strengthening of repressive governments unconcerned with the poor, cooptation of domestic elites to assist in the exploitation of the poor, development of infrastructure conducive to capital-intensive production and thus more unemployment, reduction of domestic food production, loss of effective domestic control over economic policy, increased foreign debt and therefore increased reliance on export-oriented strategies and other forms of dependence, purchase of overpriced foreign goods, more
powerful, flexible, and profitable MNCs, and, in general, a capitalist development strategy.

How do semiproletarian households fit into this process? Recall from Chapter II that Wallerstein and his associates view the existence of semiproletarian labor as an essential feature of the capitalist world-economy, and that they emphasize the lower quality of life in semiproletarian households as compared to both subsistence and fully proletarian households. Indeed, they attribute declining overall welfare of the world-system's population to the secular trend of a proportional increase in semiproletarian households in the world-system (Hopkins et al., 1977). A secular increase in semiproletarian households can be viewed as a distortion of the type discussed just above, but how are MNC involvement and foreign aid linked to this distortion?

In part, the process of semiproletarianization seems likely to be a consequence of some of the other distortions just described. For example, cooptation of local elites to assist in exploitation of the poor suggests that these elites use members of semiproletarian households as wage-laborers, since proportionately more surplus can be expropriated from semiproletarians. But dependence could have more direct impacts on semiproletarianization as well. Consider the activities of MNCs. Recently, there has been a great deal of interest in the employment practices of MNCs operating in Third World countries. In particular, many MNCs tend to hire younger women for a short period at very low wages, laying them off permanently when it is more profitable to do so (Ward, 1984b; cf. also Truelove, 1985). Kelly and
Beers (1985), for example, describe such working conditions in a U. S.-owned St. Lucia plant which manufactures parts for microcomputers (attracted to St. Lucia with great efforts by the domestic government). The plant employs only women, who work under very hazardous conditions, are frequently laid off, and are often never recalled (the use of "temporary" layoffs to effect permanent layoffs apparently being a tactic to avoid payment of accrued benefits and severance pay). Their wages are quite low; Kelly and Beers report that, "In St. Lucia, if an assembler is to eat, she must plant her own garden or rely on relatives who farm. The island's electronics workers pool their hard cash earnings with family and friends" (1985:26). This, of course, is an almost perfect example of Wallerstein's semiproletarian household: the wage worker can be paid so poorly only because she is supported by subsistence activities, and thus her wages need not compensate for the reproduction of her labor. Furthermore, she may work for wages for only a brief period in her life. Thus, it may be that one of the distortions introduced by MNCs is an increase in the level of semiproletarianization (though domestic firms may of course use the same practices).

To some extent, the various structural distortions thought to be caused by dependency may directly influence basic needs satisfaction — or at least may influence basic needs performance through intervening variables not elaborated in Figure 1. In extreme cases, for example, dependence might lead to such high levels of domestic repression and violence that the overall health of the entire population is seriously affected. But for the most part, the influence of these distortions on basic needs satisfaction seems likely to operate through interactions
between the total economic product and other resources of a country relevant to basic needs and the distribution of those resources. In Figure 1, these interactions are signified by two boxes, one for the subsistence sector and a second for the monetized sector.

Specifically, it is postulated that the consumption of basic needs in the form of goods and services is positively influenced by a combination of a high aggregate level of resources and a highly equal distribution of these resources. (The consumption of these goods and services, in turn, has a large positive effect on the health dimension of basic needs.) A crucial point which should be understood is that neither aggregate resources nor the distribution thereof provides a good explanation of the degree to which there is adequate consumption of basic goods and services by all fractions of the population. In the monetized sector, for example, a country's basic needs performance could be very poor under conditions of either (1) perfect income equality and a very low level of product per capita used for consumption or (2) a very high level of product per capita available for consumption and extreme income inequality. Similarly, in the subsistence sector, either a dearth of resources (e.g., farmland) or a high degree of inequality in the distribution of access to these resources will limit basic needs satisfaction; massive quantities of resources are of little help if they are available to only a small minority, and great equality is of relatively little consequence if there are insufficient quantities of resources per capita. Basic needs is essentially a positive function of multiplicative interactions between aggregate resources for consumption and the equality of their distribution.
Consequently, structural distortions which reduce either aggregate resources per capita or the equality of their distribution, or both, will have indirect negative effects on basic needs satisfaction. In general, the distortions said to result from dependence are also said to have these effects on the supply and distribution of such resources. For instance, decapitalization reduces future resources for consumption by reducing resources for investment and in turn reducing economic growth. The forms of class structure thought to be associated with high levels of dependence, on the other hand, result in extreme inequalities in both the monetized and the subsistence sectors.

Note that there is a conflict between channeling national product per capita to consumption or to investment. This fact introduces a constraint into the model: the more national income that goes to one of these uses, the less that remains for the other, i.e., national product per capita used for consumption equals total national product minus national product used for investment. Investment should lead to greater aggregate production in the future (at t3 in Figure 1), and thus has the potential to raise future consumption levels, but at the expense of current consumption. Note also that this general model is not sufficiently specific to make a distinction between government spending and private consumption, as does the Keynesian model. It is assumed here that the share of the national product going to government may be used either for consumption (e.g., subsidies on various goods, supplements to personal incomes which are then used for consumption) or for investment alongside or in place of business investment.
One should consider this general model as a somewhat rough and rather preliminary image of the relationships between dependence and basic needs satisfaction. Figure 1 greatly simplifies — and indeed, may oversimplify — the very complex processes through which dependence is translated into a low level of basic needs satisfaction. The factor labeled "social, economic, and political distortions" is a particularly vague "black box" which deserves elaboration. For the present purposes, however, this relative lack of detail on the means by which the effects of dependence are mediated is not especially problematic. The concern of this study is the total effects of certain forms of dependence on basic needs satisfaction, and the model just described provides adequate detail from which to derive testable hypotheses about this relationship.

**ADDITIVE HYPOTHESES**

Given the general model in Figure 1, some reasonable hypotheses can be stated about the influence of direct foreign investment and foreign aid on basic needs performance. The first two hypotheses, presented in this section, concern additive effects of MNC investment and foreign aid. In the following section, two more hypotheses are stated which specify a way in which the strength of these effects should vary across nations.

The two general additive hypotheses to be tested in this study concern the effects of stocks of foreign-owned capital created through past capital "flows" from developed nations to underdeveloped nations. The specific capital stocks to be considered are investments controlled by MNCs and debt accumulated from official lending (foreign aid loans).
These variables represent the linkage of underdeveloped countries with two major core-based actors in the world-system: multinational corporations and states. By application of the chain rule as used in path analysis (Heise, 1975) to the model in Figure 1, one can see that these factors have a negative influence (via structural distortions) on the aggregate size and equality of distribution of resources, thus having a negative influence on basic needs performance as well. Therefore, it is hypothesized that:

$H_1$: The greater the relative level of the stock of investment by MNCs in an underdeveloped country, the less basic needs will be satisfied in that country, ceteris paribus.

$H_2$: The greater the relative level of debt accumulated by an underdeveloped country from official foreign lending, the less basic needs will be satisfied in that country, ceteris paribus.

"Relative level" here refers to the fact that measures of absolute levels of capital stocks must be adjusted for other factors reflecting the scale of the society and the scale of the "national economy." Such factors include population, the total stock of capital in a country, and the level of national production. Measures of basic needs satisfaction discussed later in this chapter must be similarly adjusted for similar reasons. The extent to which the magnitudes of these variables are merely the results of such scale factors is of no theoretical interest. The particular fashion in which these variables are adjusted is addressed in a later section of this chapter.

It is anticipated that these hypotheses will receive stronger support -- that is, the effects they describe will be stronger -- as the lag
increases between the independent variables (stocks of MNC investment and of debt to official foreign sources) and the dependent variables (basic needs satisfaction indicators). Indeed, the anticipated effects might well fail to appear at all, or opposite effects might appear, for short lags (i.e., zero to three years). The assumption that relatively long lags are involved is based in part on the generally accepted proposition that economic growth tends to lead to satisfaction of basic needs, in conjunction with the finding of previous cross-national research that stocks of foreign capital have increasing negative effects on economic growth with the passage of time.

Cross-national research shows that an increase in the stock [i.e., a flow] of foreign capital (owing to an inflow of capital with consequent purchase of land, labor, etc.) has a short-run positive effect on GNP growth. On the other hand, dependence on an accumulated stock of foreign capital has a negative (retardant) effect on GNP growth after a time lag of about five years, and this negative effect gets larger up to at least 20 years. [Chase-Dunn, 1982:130]

More generally, dependency theory addresses long-term rather than short-term explanations of underdevelopment (Kohli et al., 1984). The model depicted in Figure 1 also suggests the long-term nature of these processes; the development of the relevant structural distortions might be expected to take some time.

NONADDITIONAL HYPOTHESES

Two additional hypotheses are proposed which relate to interactions between these capital stock variables and the level of countries' economic development as indicated by their GNP's. In general, it is
expected that these capital stocks are more detrimental for relatively high-income Third World countries than for the poorest countries. The basis of this supposition is not in dependency/world-system theorizing, but rather in two sets of previous empirical findings. First, Bornschier et al. (1978) find that stocks of MNC investment have a stronger negative effect on economic growth in Third World countries with higher GNPs. By analogy, it is suspected that there may be such an interaction for stocks of debt accumulated from foreign official lending, though this specification of the relationship apparently has not been empirically examined. Second, economic growth in turn appears to have a generally positive influence on satisfaction of basic needs, implying that there may also be an interaction between levels of GNP and stocks of MNC investment when basic needs satisfaction is the dependent variable. However, the apparent effect of GNP per capita on basic needs satisfaction is not linear. Hicks and Streeten (1979) find that the relationship between GNP per capita and various basic needs indicators resembles a J-curve, with the effects of income per capita being most dramatic for middle-income countries, a group which would include many high-income Third World countries. This finding indicates that an interaction of the form just suggested is particularly likely: foreign capital stocks are more harmful for richer underdeveloped countries, and it is for these countries that income per capita appears to have the strongest influence on basic needs satisfaction. Thus, it is hypothesized that:
H₃: The negative effect of the relative level of the stock of investment by MNCs in underdeveloped countries on these countries' satisfaction of basic needs is stronger in countries with high income per capita than in countries with low income per capita, ceteris paribus.

H₄: The negative effect of the relative level of debt accumulated by underdeveloped countries from official foreign lending on these countries' satisfaction of basic needs is stronger in countries with high income per capita than in countries with low income per capita, ceteris paribus.

Tests of these hypotheses will be performed with regression models in which MNC investment and stocks of foreign aid are multiplied by a dummy variable for GNP per capita (dichotomized at the median, with low-income countries coded zero and high-income countries coded one). It is expected that, as in the case of economic growth, this specification of the differential effects of MNC investment and foreign aid stocks across nations should help to explain any differential effects by region.

SOME ALTERNATIVE EXPLANATIONS

As the first pages of this dissertation pointed out, the dependency/world-system perspective does not hold a monopoly over explanations of underdevelopment. This is true whether "development" is conceptualized as economic growth, reduced income inequality, or improved satisfaction of basic needs. The danger these competing explanations (and indeed, other explanations never even conceived) present for an empirical test of the world-system perspective is the possibility that factors suggested by these other perspectives and temporally prior to basic needs performance are correlated both with this dependent variable and with the world-system variables included in
the preceding hypotheses. In this case, failure to control for these other factors in statistical tests could result in apparent support for the hypotheses when in fact the "effects" of the world-system variables are partially or entirely spurious. Acceptable tests of these hypotheses thus require that alternative explanations be included in the model tested so that they may be ruled out as sources of spurious effects of the world-system variables on basic needs satisfaction. Four selected competing explanations, borrowed in large part from the existing cross-national quantitative literature on growth and inequality, are taken into account for this purpose. These four explanations, the presumed effects of which are shown in Figure 1, are (1) the level of economic development (national product, or income, per capita), (2) the rate of physical capital formation (investment as a ratio of production), (3) the rate and distribution of human capital formation (school enrollment per capita), and (4) the rate of population growth. These are discussed in turn below.

The well-known Kuznets "U-shaped curve" hypothesis contends that income inequality initially increases with economic growth, then decreases with economic growth later on (Kuznets, 1955, 1963). (The assumption that today's underdeveloped countries will follow the development path of contemporary "advanced" countries implies that the relationship between growth and income inequality across nations at one point in time or over a relatively short span of time should follow the growth-inequality relationship one would find in time-series data for any country once it has reached a high level of economic development.) Reduction in income inequality in latter phases of growth is attributed
to increased demand for skilled blue- and white-collar labor resulting from increased technological complexity; skilled workers, in short supply, have greater bargaining power than they would otherwise (Kerr et al., 1960). A variety of explanations have been proposed for the increase in inequality in earlier stages of growth: the existence of a "skilled labor aristocracy," growth in sectors in which higher income groups initially reap the benefits, "the erosion of traditional economic structures as a consequence of the expansion of the modern sector" (Ahluwalia, 1976b:330), and the fact that prior to the onset of economic growth incomes could have been too low to permit great inequalities (Ahluwalia, 1976b; Stack and Zimmerman, 1982; Wright, 1978). A number of studies have supported the Kuznets hypothesis (e.g., Ahluwalia, 1976b; Paukert, 1973; Weede and Tiefenbach, 1981c), though rather different interpretations of the data have recently been proposed by Bornschier and Chase-Dunn (1985).

Lenski (1984) also views inequality (in consumption generally as well as in money income) as a quadratic function (i.e., an inverted U-curve) of the size of a society's surplus, which corresponds to the level of a society's "development" (ranging from the hunting and gathering society to the industrial society). In Lenski's view, inequality is made possible by and increases with the existence of a surplus above that required for mere survival, but it may be reduced "when conditions permit persons who individually lack power to combine and organize, and thus to develop a collective counterbalance to those with greater individual power," an event most likely "in democratic nations with an egalitarian or socialist ideology" (Lenski, 1984:85).
Since some of the historical situations included in the Kuznets andLenski arguments are characterized by low or nonexistent levels of exchange via money, these positions at least imply that the relationship between "development" and inequality goes beyond monetary income inequality. This is perhaps more evident in Lenski. Since individuals do not obtain goods and services required for basic needs purely through exchange of money they have gotten through wages or other means -- for many Third World inhabitants, for example, an important source of food is the right to grow it themselves on certain parcels of land -- the levels of surplus, the vitality of different economic sectors, variations in political power, and other phenomena discussed by Kuznets, Lenski, and their followers would be expected to have an influence on basic needs satisfaction beyond that mediated through inequality in money income as an intervening variable.

Of course, economic development would be expected to influence basic needs satisfaction more directly as well. The total size of a country's production is the size of the pie that must be divided among its populace. If relative inequalities in its division remained constant or varied within a limited range, its absolute increase would entail improvements in basic needs performance.

It is clear, then, that the level of economic development should be controlled in a test of the effects of dependence on basic needs satisfaction. The presumed effects of economic development on basic needs via inequality (income and otherwise) suggest that basic needs may be a quadratic function of economic development (i.e., basic needs
satisfaction first falls, then rises, with economic development. Thus, a quadratic control for economic development should be considered.

There is another, empirical reason to control for the level of economic development. It is known that economic development is positively correlated with investment by MNCs (Reuber, 1973), a condition which, combined with a positive effect of economic development on basic needs satisfaction, would tend to suppress any negative relationship between MNC investment and basic needs performance.

Other explanations closely related to national production and income inequality are that levels of physical and human capital contribute to the satisfaction of basic needs. Investment, or change in capital stock, has long been considered a necessary condition -- even a sufficient condition by some -- for economic growth, as postulated in the Harrod-Domar growth model (Todaro, 1981). A large proportion of cross-national world-system studies have thus controlled for physical capital formation (cf. the review in Bornschier and Chase-Dunn, 1985). Similarly, the level of skill in the labor force, i.e., the level of human capital, appears to contribute to growth. This notion is supported by several empirical studies which have used school enrollments as a measure of human capital formation (Delacroix, 1977b; Snyder and Kick, 1979; Stokes and Jaffee, 1982; Weede, 1983). Additionally, human capital formation seems to be negatively related to income inequality (Ahluwalia, 1976a, 1976b; Weede and Tiefenbach, 1981a). Fry (1981) cites an economist who argues that educational equality leads to other forms of social equality (Catherwood, 1939). Fry also notes the human capital perspective in economics (Becker and
Chiswick, 1966), which argues that, to the extent education provides students with skills valuable in the economy, educational inequality gives rise to economic inequality. In sociology, the status attainment approach (Blau and Duncan, 1967) implies a similar relationship between educational and other forms of equality.

A somewhat different explanation, directed more squarely at basic needs satisfaction itself, is the neo-Malthusian proposition that rapid population growth is the chief obstruction to the meeting of basic needs and the primary threat to other aspects of development. Almost two centuries ago, Thomas Malthus argued that population growth tends to outstrip increases in supplies of food and other resources, and that if population growth is not checked by individual responsibility it will be checked by war, epidemic, and starvation. Some contemporary thinkers take their inspiration from Malthus, claiming that the road to development lies in population control, including family planning as well as more coercive techniques (Borgstrom, 1973; Hardin, 1974, 1977; Paddock and Paddock, 1967; cf. Murdoch, 1980). This explanation of underdevelopment is undoubtedly one of the most commonly accepted among the general public, and the findings of cross-national studies have indeed suggested that the rate of population growth has a negative effect on economic growth (Jackman, 1982), and a positive effect on income inequality (Ahluwalia, 1976a, 1976b). Population growth also seems likely to adversely affect the subsistence sector; it clearly would reduce the per capita stock of resources for production so long as the total remains constant. Also, since birth rates are higher among the lower strata (Murdoch, 1980), there should be a tendency for
relative inequality in access to these resources to increase as population grows, dividing the smaller portion of the pie held by the poor into smaller and smaller individual shares (unless the size of that portion changes). But while it seems indisputable that at some high level of population density human needs could not be sustained, the neo-Malthusian view has been rejected as oversimplistic by Murdoch (1980) and others. Murdoch argues that it is poverty which leads to rapid population growth and inadequate food supplies, rather than rapid population growth leading to poverty and food shortages.

There are a number of additional competing explanations for economic growth, income inequality, and basic needs performance itself which will not be incorporated into this study. A number of such explanations are suggested in the discussions of control variables used in the cross-national studies reviewed in Chapter III. At least some of these contending explanations deserve inclusion in cross-national research on basic needs satisfaction, but they are set aside here in the interest of keeping this investigation manageable. Future studies of this kind should return to these issues.

RESEARCH DESIGN

With the derivation of hypotheses accomplished and with several control variables of theoretical and empirically-demonstrated relevance chosen for examination, the precise research design to be used may be elaborated. In this section, the time periods and duration of lags to be covered by panel models is discussed, followed by discussions of
measurement and data sources for the dependent, independent, and control variables. (Selected descriptive statistics for all these variables are presented in Appendix B.) Next, the criteria for inclusion in the sample are presented, and, finally, techniques for estimation of the models are considered.

**TIME PERIODS AND LAGS TO BE EXAMINED**

Given the dependent, independent, and control variables to be examined in this study, the major considerations in deciding the timing of the waves of the panel designs are (1) the lags anticipated between causes and appreciable effects and (2) the years for which the required data are available. As was suggested previously, the time lags involved seem likely to be fairly long, e.g., on the order of at least five to ten years rather than one to two years. Unfortunately, the feasibility of examining effects over periods longer than ten to fifteen years is greatly constrained by the availability of data for the variables studied in this research. Data on the major variables of interest -- basic needs satisfaction indicators, stock of foreign direct investment, and accumulated debt from official foreign lending -- are generally more limited in availability than such data as population totals and national accounts components.

Availability of data on stocks of foreign direct investment imposes the key constraint on the timing of the waves in the panel designs. The earliest date for which these data are available is 1967 (OECD, 1972). Given the importance of examining long-term effects of MNC investment, then, 1967 is the optimum practical time for the first wave of the panel
design. Data for lagged dependent variables and foreign aid are generally available for about this point in time as well.

Currently, data for the dependent variables are readily available at least to 1980. The terminal point for one set of panel models is thus 1980, maximizing the time span over which the effects of MNC investment and official foreign lending may be observed. In the portion of the analysis which tests only the additive hypotheses ($H_1$ and $H_2$), panel models terminating in 1975 and 1970 are also analyzed for each dependent variable in order to examine effects over shorter periods. This procedure permits consideration of whether the effects of MNC involvement and foreign aid dependence indeed increase over periods of time up to 13 years. For the more complex models incorporating the interaction hypotheses ($H_3$ and $H_4$), however, only the 1967-80 panel model is examined.

Table 1 summarizes the panel models examined in this study. As is implied just above, four types of models are included. The first three comprise the major portion of the analysis: models for 1967-70, 1967-75, and 1967-80 which provide for tests of the additive hypotheses only. The last model covers only the period 1967-80 but allows for testing of the interaction hypotheses as well as the additive hypotheses. There are 7 dependent variables for each type of model, yielding a total of 28 regression models to be estimated.
TABLE 1

SUMMARY OF PANEL MODELS

<table>
<thead>
<tr>
<th>Model</th>
<th>Period</th>
<th>MNC Investment Stock</th>
<th>Foreign Aid Debt</th>
<th>MNC Investment Stock X GNP</th>
<th>Foreign Aid Debt X GNP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1967-70</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1967-75</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1967-80</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1967-80</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**Hypotheses**

*Independent Variables and Interactions*

(1) (2) (3) (4)

**Dependent and Control Variables**

(1) All seven dependent variables are examined for each model type (4 model types X 7 dependent variables = 28 regression models).

(2) A lagged dependent variable and the other four controls are used in each regression model.
DEPENDENT VARIABLES

This research uses as dependent variables several of the basic needs performance measures commonly used in the past (Hicks and Streeten, 1979; Sheehan and Hopkins, 1978, 1979), as discussed in Chapter I. The variables were selected for their relevance to the concept of basic needs and, as a practical matter, for data availability. Measures of mortality and life expectancy, calorie and protein supplies, and educational enrollments and literacy are included. These measures address the basic needs of health, food, and education, respectively, and at least one mortality measure indirectly indicates adequacy of water and sanitation. Direct indicators for satisfaction of needs for water, sanitation, clothing, and housing are not so readily available, and while counts of doctors and nurses exist, they are not used since they do not seem to be very valid measures of the distribution of health care.

Three measures of mortality and life expectancy are used: the infant mortality rate, the child mortality rate, and total life expectancy at age five. The infant mortality rate is the number of infant deaths per 1000 live births in a given year. In addition to indicating the health of this age group, infant mortality reflects the adequacy of water supply and sanitation facilities, due to infants' vulnerability to water-borne diseases (Hicks and Streeten, 1979). Similarly, infant mortality reflects satisfaction of nutrition needs (e.g., nutrition received by the mother during pregnancy and nursing). The child mortality rate is the number of deaths of children aged one through four per 1000 population of children of those ages in a given year. As with
infant mortality, these rates measure health and indirectly indicate satisfaction of nutrition needs. Life expectancy at age five, as measured here, approximates the average total lifespan projected for an infant born in this year and who survives to age five "if subject to the mortality risks prevailing for a cross-section of the population at the time of birth" (World Bank, 1983b:ix-x). That is, this measure of health permits examination of life expectancy separate from the incidence of infant and child mortality. Since data for life expectancy at age five are not generally available in published form for large numbers of countries at a particular point in time, they are derived from published data for infant mortality rates, child mortality rates, and life expectancy at birth, all from the same point in time, and from assumptions about the mean survival periods of the infants and children who died before age one or at ages one through four, respectively. The formula for approximating the total life expectancy at age five is

$$e_5 = \frac{e_0 - [1 - q_0(1 - k_0)] - (1 - q_0)[4 - q_1(4 - k_1)]}{(1 - q_0)(1 - q_1)} + 5$$

(1)

Where:

- $e_5$ = Total lifespan expected for persons surviving to age five (expressed in years), as opposed to the remaining lifespan expected at age five
- $e_0$ = Life expectancy at birth (expressed in years)
- $q_0$ = Infant mortality rate expressed as a fraction ($0 \leq q_0 \leq 1$)
- $q_1$ = Child mortality rate multiplied by 4 and expressed as a fraction ($0 \leq q_1 \leq 1$)
- $k_0$ = Average period of survival since birth for infants dying before age one (expressed in years)
- $k_1$ = Average period of survival since age one for children dying before age five (expressed in years)
Note that, if one makes the (slightly unrealistic) assumption that the annual birth cohorts are of equal size, the child mortality rate overestimates the probability of death in this age group, since it is based not on the sizes of the four birth cohorts at age one but rather on the smaller base of the number of surviving children in this age group in a given year. Child mortality is multiplied by four since the data for child mortality are the numbers of children per 1000 who die in a single year; to the extent that the child mortality rate measures the average annual risk of death for children surviving to age one, the risk of death over the four-year period is four times the child mortality rate. It is assumed that $k_0$ is 0.2 years and that $k_1$ is 1.5 years. Data for the variables in the formula are obtained for 1965 (the lagged dependent variable), 1970, 1975, and 1980 from the machine-readable version of the World Bank's World Tables (1983b).

Two nutrition indicators are examined: calorie supply per capita per day and protein supply (in grams) per capita per day. The FAO (Food and Agriculture Organization of the United Nations) has estimated calorie and protein supplies from the composition and volume of food supplies reaching consumers. These food supplies are in turn calculated from prior and subsequent stocks (where available), domestic production, imports, and exports, and are adjusted for losses during production (including processing), storage, and distribution and for quantities used for seeds or animal feed. Losses at the household level are not adjusted (FAO, 1980). Unfortunately, as was indicated in the review of previous research in Chapter III, these indicators do not tap the distribution of basic needs fulfillment as do infant and child mortality.
rates, which measure the proportions of populations of given ages which die. The FAO's statistics tell nothing about the distribution of food supplies, though if the supplies are inadequate even under the assumption of a perfectly equal distribution, in reality some proportion of the population — probably quite sizable — is clearly suffering. However, these are among the best existing direct measures of nutrition needs performance. Both calorie and protein supplies are measured as three-year averages for 1966-68 (the lagged variable), 1969-71, 1974-76, and 1979-81. The use of averages, in this case centered on the years 1967, 1970, 1975, and 1980, is believed by the FAO to reduce inaccuracy introduced by lack of data on food stocks for some countries (FAO, 1980). Averaging should reduce variation introduced by short-term supply fluctuations (which are of no theoretical interest here) as well. Furthermore, data for 1980 only are not even available yet at the time of this writing; use of the three-year averages seems to be called for if only to make levels of measurement error and levels of the related phenomenon of short-term supply fluctuations comparable across panel designs. All these data are taken from the FAO's Production Yearbook; data for 1969-71 and later are from the 1983 edition of the Yearbook (FAO, 1984), while data for 1966-68 are from the 1981 edition (FAO, 1982).

Two education-related variables are considered as well. The first, the adjusted primary school enrollment ratio, is more an "input" than an "output" measure, since mere enrollment does not guarantee educational results. This indicator is the number of pupils enrolled in primary schools as a percentage of the population of children of primary-school
age, this age varying with the country's school system (UNESCO, various years). The second measure, the adult literacy rate, is more clearly an "output." It is the number of persons able to read and write aged 15 years and older as a percentage of the population of persons 15 and older. Both indicators are obtained for 1965 (the lagged dependent variable), 1970, 1975, and 1980 from the machine-readable version of the World Tables (World Bank, 1983b). Unfortunately, although the latter measure is perhaps more important theoretically, the data for it are limited to a relatively small number of countries.

In some instances, missing data for dependent variables were replaced by data for a different year and/or from a different source. Data for a year within two years of 1980 were thus used to estimate 1980 infant mortality and child mortality rates for three countries. Calorie and protein supplies for 1966-68 were not available for eleven countries for which data were available for the later periods necessary; however, the annual data for 1967 and 1968 were published for these countries (FAO, 1980), permitting the use of 1967-68 averages as estimates of the missing data. A number of missing data were replaced for the primary school enrollment ratio: data for 1965 were located for two additional countries in the 1978-79 UNESCO Statistical Yearbook, 1976 data were located in the 1984 Statistical Yearbook to estimate missing 1975 data for one country, and 1980 data or at least data for a year within two years of 1980 were located in the 1984 Yearbook and used in place of missing data for twenty-five countries. (In the last case, three-fifths of the data were for 1980, the estimate for one country was an average of 1979 and 1981 data, and all but two of the remaining estimates were
from 1979 or 1981.) Finally, quite a few missing data were replaced for adult literacy rates, using data published in various editions (through 1984) of the UNESCO Statistical Yearbook. There was an especially large amount of missing data in this variable for 1965, and forty-four substitutions of data for a year from 1961 through 1966 were used; about four-fifths of these replacement values were from 1961 or 1962. For 1970 adult literacy, a 1970 datum was located to replace a missing datum in one country. 1976 data were used to replace missing 1975 data for seven countries. Missing 1980 data for twelve countries were replaced by data for 1980 (five instances) or for a year within two years of 1980. Given the many estimates required for adult literacy, results from these data should be interpreted more cautiously than results for other dependent variables.

INDEPENDENT VARIABLES

MNC involvement is conceived here as "MNC penetration," described by Bornschier and Chase-Dunn (1985) as the stock of foreign direct investment in a developed country, adjusted for the country's total capital stock and for the size of its labor force. This type of measure was developed by Bornschier and his colleagues and has been used extensively by them and other researchers in studies of economic growth and income inequality. The source of data for this variable is Bornschier and Chase-Dunn (1985). They measure the stock of foreign direct investment in millions of U. S. dollars of stock, or book value, of private direct investment by DAC (Development Assistance Committee) countries, 16 developed capitalist countries which are members of the
OECD (the Organization for Economic Cooperation and Development), as reported by the OECD (1972). This value is divided by the square root of the product of estimated domestic capital stock in billions of U. S. dollars and population size in millions (a proxy for size of the labor force).

The other independent variable of substantive importance for this research is a measure of debt accumulated from official foreign lending, i.e., the stock of borrowing from official foreign sources. More specifically, this measure "includes loans extended by governments ... in currencies other than that of the recipient country, with maturities of over one year, for which repayment is required in convertible currencies or in kind" (OECD, 1969:viii); military aid is excluded. Accumulated debt from official foreign lending is measured by a proxy, the sum of net official bilateral loan disbursements (i.e., loan disbursements minus repayments of principal) to underdeveloped countries by the DAC countries for each year from 1960 (the first year for which these data are available) through 1967. These data are from the OECD's Geographical Distribution of Financial Flows to Less Developed Countries (1966, 1967, 1969). Data points marked as unavailable in this source were considered equal to zero. Multilateral lending, such as that provided by the World Bank, and bilateral lending by other countries are not examined in this research. Accumulated bilateral DAC aid (in millions of U. S. dollars) is adjusted for the scale of the recipient country's economy by dividing it by 1967 GNP in millions of 1967 U. S. dollars (for the source of these data, see the discussion of control variables below).
Tables 2 and 3 reveal the extent to which these two independent variables made up capital flows from the developed to the developing countries during the period in question. The data for these tables are from the OECD, which, as the above discussion suggests, is a major source of data on MNC investment and foreign aid. Table 2 shows the magnitudes of different types of net bilateral official and private financial flows from developed OECD countries from 1950 to 1967. During 1960-67, the period for which accumulated debt to official foreign sources is aggregated as a measure of aid dependence for this study, official lending made up 30 percent of all official flows and 19 percent of all flows from developed OECD countries. Grants and "grant-like flows" (loans repayable in the recipient's currency -- a substantial portion of this category of official flows), on the other hand, made up 70 percent of official flows and about 44 percent of combined official and private flows over this period. A comparison of average annual official flows indicates that the magnitude of these flows was substantially higher in 1960-67 than it was in the 1950s (a period for which flows cannot be identified with their recipients), and that the importance of loans relative to grants and grant-like flows was much greater in 1960-67 than in the late 1950s. Grants and grant-like flows remained about constant from the early- to mid-1960s, though there was a slight increase in the early 1960s and a slight decline beginning in the mid-1960s. Lending, conversely, increased substantially over this period. These lending trends tend to indicate that the period for which net borrowing can be accumulated to measure the stock of debt to official sources (i.e., 1960-67) was in fact the period during which
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Official Flows</td>
<td>4,272</td>
<td>5,200</td>
<td>5,352</td>
<td>5,632</td>
<td>5,392</td>
<td>5,769</td>
<td>5,966</td>
<td>6,227</td>
<td>43,811</td>
<td>63.3</td>
<td>100.0</td>
<td>1,800</td>
</tr>
<tr>
<td>Grants and Grant-Like Flows</td>
<td>3,661</td>
<td>3,973</td>
<td>4,030</td>
<td>3,958</td>
<td>3,792</td>
<td>3,784</td>
<td>3,802</td>
<td>3,683</td>
<td>30,684</td>
<td>44.3</td>
<td>60.0</td>
<td>2,875</td>
</tr>
<tr>
<td>Lending (Net)</td>
<td>2,652</td>
<td>1,277</td>
<td>1,322</td>
<td>1,674</td>
<td>1,600</td>
<td>1,985</td>
<td>2,164</td>
<td>2,564</td>
<td>13,127</td>
<td>19.0</td>
<td>30.0</td>
<td>1,641</td>
</tr>
<tr>
<td>Gross Lending</td>
<td></td>
<td>1,705</td>
<td>1,748</td>
<td>2,159</td>
<td>2,307</td>
<td>2,750</td>
<td>2,994</td>
<td>3,429</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Amortization</td>
<td></td>
<td>478</td>
<td>426</td>
<td>484</td>
<td>707</td>
<td>766</td>
<td>830</td>
<td>885</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Private Flows</td>
<td>2,946</td>
<td>3,017</td>
<td>2,214</td>
<td>2,590</td>
<td>3,060</td>
<td>3,926</td>
<td>3,794</td>
<td>3,891</td>
<td>25,438</td>
<td>36.7</td>
<td>100.0</td>
<td>1,580</td>
</tr>
<tr>
<td>Direct Investment</td>
<td>1,767</td>
<td>1,830</td>
<td>1,695</td>
<td>1,603</td>
<td>1,784</td>
<td>2,489</td>
<td>2,185</td>
<td>2,103</td>
<td>15,256</td>
<td>22.7</td>
<td>60.0</td>
<td>1,920</td>
</tr>
<tr>
<td>Portfolio Investment</td>
<td>633</td>
<td>614</td>
<td>147</td>
<td>327</td>
<td>416</td>
<td>687</td>
<td>502</td>
<td>809</td>
<td>4,135</td>
<td>6.0</td>
<td>16.3</td>
<td>519</td>
</tr>
<tr>
<td>Export Credits</td>
<td>546</td>
<td>573</td>
<td>572</td>
<td>660</td>
<td>860</td>
<td>750</td>
<td>1,107</td>
<td>979</td>
<td>6,017</td>
<td>8.7</td>
<td>23.8</td>
<td>732</td>
</tr>
<tr>
<td>TOTAL OFFICIAL AND PRIVATE FLOWS</td>
<td>7,218</td>
<td>8,217</td>
<td>7,756</td>
<td>8,522</td>
<td>8,452</td>
<td>9,695</td>
<td>9,760</td>
<td>10,118</td>
<td>69,249</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>


Note: Figures may not sum due to rounding.

NA = Not available

a. The "developed OECD countries" are Australia, Austria, Belgium, Canada, Denmark, France, the Federal Republic of Germany, Italy, Japan, the Netherlands, Norway, Portugal, Sweden, Switzerland, the United Kingdom, and the United States. Australia is omitted from official flows data prior to 1965, but appears to be included in private flows for all years.

b. Slightly higher figures for total official flows, 1960-67, are given by Martin (1969, Table II-1), but are not broken down into components comparable to the foreign aid data used in this study. (This difference reflects the 1969 change in the classification system used by the OECD for official flows.)

c. Grants consist of "gifts, in money or in kind, for which no repayment is required" (OECD, 1969:viii). Grant-like flows consist of "the sum of loans repayable in recipients' currencies and transfer of resources through sales for recipients' currencies" (OECD, 1969:vii); loans of recipient countries' currencies are excluded.

d. Export credits covered include "guaranteed credits, including unguaranteed portions. Excludes credits which are not guaranteed in the donor country" (Martin, 1969:38).
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Developed OECD Countries</td>
<td>7,218</td>
<td>8,217</td>
<td>7,566</td>
<td>8,222</td>
<td>8,452</td>
<td>9,695</td>
<td>9,760</td>
<td>10,118</td>
<td>69,249</td>
<td>89.7</td>
</tr>
<tr>
<td>Of Which:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bilateral Official</td>
<td>611</td>
<td>1,227</td>
<td>1,322</td>
<td>1,674</td>
<td>1,600</td>
<td>1,905</td>
<td>2,164</td>
<td>2,544</td>
<td>13,127</td>
<td>17.0</td>
</tr>
<tr>
<td>Leading</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Private Investment</td>
<td>1,767</td>
<td>1,830</td>
<td>1,495</td>
<td>1,603</td>
<td>1,784</td>
<td>2,489</td>
<td>2,185</td>
<td>2,103</td>
<td>15,256</td>
<td>19.8</td>
</tr>
<tr>
<td>Other Capitalist</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>11</td>
<td>9</td>
<td>10</td>
<td>15</td>
<td>69</td>
<td>0.1</td>
</tr>
<tr>
<td>Industrial Countries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socialist Countries</td>
<td>200</td>
<td>300</td>
<td>400</td>
<td>375</td>
<td>375</td>
<td>325</td>
<td>350</td>
<td>350</td>
<td>2,675</td>
<td>3.5</td>
</tr>
<tr>
<td>Multilateral Agencies</td>
<td>284</td>
<td>252</td>
<td>410</td>
<td>653</td>
<td>790</td>
<td>892</td>
<td>895</td>
<td>1,041</td>
<td>5,217</td>
<td>6.8</td>
</tr>
<tr>
<td>TOTAL FROM ALL SOURCES</td>
<td>7,708</td>
<td>8,774</td>
<td>8,382</td>
<td>9,257</td>
<td>9,628</td>
<td>10,921</td>
<td>11,015</td>
<td>11,524</td>
<td>77,210</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Sources: Data for Developed OECD countries are from Table 2. Other data are from Martin (1969, Table II-2).

Note: Figures may not sum due to rounding.

a. See Table 1 for a list of the countries included in the developed OECD countries.

b. Finland, New Zealand, and South Africa.

most -- perhaps the vast majority -- of such debt was incurred up to
1967. Gross official lending from 1960 to 1967 remained in relatively
constant proportion to repayments of principal, there being about four
times as much lending each year as repayments.

Among financial flows from private sources, direct investment
accounted for 60 percent of all private investment and lending and for a
slightly greater proportion of all bilateral flows than official lending
(22 percent). Of course, one should recall from Chapter II that MNC
investment tends to consist heavily of local funds and is not in fact
the flow of capital from the developed world that it appears to be.

Table 3 demonstrates that the financial flows detailed in Table 2
made up about 90 percent of such flows from all donors during 1960-67.
There were virtually no such official or private flows from any other
capitalist countries, and socialist countries provided a rather
insignificant level of capital. Although multilateral institutions
(e.g., the World Bank) greatly increased their disbursements over this
period, they still accounted for less than 7 percent of net financial
flows to underdeveloped countries for the entire period. Not included
in the table are data for contributions from underdeveloped countries to
other underdeveloped countries, which made up only about 200 million
dollars in 1967. The level of such aid increased considerably the
following year, primarily because of a rapid growth in foreign aid flows
between Arab countries (Martin, 1969). Thus, the use of bilateral data
limited to developed capitalist OECD "donors" excludes relatively little
official or private flows from alternative sources.
CONTROL VARIABLES

As many as five variables are controlled in the analyses presented in the next chapter: (1) the level of economic development, (2) the rate of physical capital formation, (3) the rate and distribution of human capital formation, (4) the rate of population growth, and (5) a lagged dependent variable. Each lagged dependent variable is measured the same way and is taken from the same source as the dependent variable, as was discussed above in the section on dependent variables. The lagged dependent variables are all measured for 1965 (the year closest to 1967 for which the World Tables reports these data), except for calorie supply per capita and protein supply per capita, which are measured as of 1967 (i.e., 1966-68).

The level of economic development is measured as gross national product per capita at current (1967) market prices. GNP data are from the machine-readable version of the World Tables (World Bank, 1983a), which reports these data in national currencies. These figures are converted to U. S. dollars using the exchange rate reported in the same source, which is normally "the average annual value of national currency units per U. S. dollar" (1983a:xi). To reduce distortion of the resulting measure by short-term exchange rate fluctuations, the exchange rate used is the (arithmetic) mean rate over each year 1966-68, with the exchange rate for each year weighted by the implicit U. S. GNP deflator (as reported by U. S. Department of Commerce, 1981) to maintain 1967 prices. (The same procedure is used by the World Bank in reporting GNP per capita for selected years.) The population data used to
construct this ratio are also taken from the World Bank (1983a), and are midyear estimates.

The model in Figure 1 depicts rates of physical capital formation, human capital formation, and population growth as being important control variables when measured over the interval between the point at which the other exogenous variables are measured (ca. 1967 in this case) and the point at which the dependent variables are measured. However, since it is desirable that results be comparable for panel models ending at different times, these data are averaged only for the period 1967-70. Otherwise, reduction of measurement error (due to a larger number of indicators) would tend to occur as the interval included in the panel design increased; this event would in turn tend to increase the apparent, but not actual, explanatory power of these controls (Nunnally, 1978).

The rate of physical capital formation is measured as gross domestic investment as a percentage of gross domestic product (in market prices). This annual percentage is averaged (arithmetic mean) over the period 1967-70. Both gross domestic investment and GDP data are from the machine-readable version of the World Tables (World Bank, 1983a).

Similarly, the rate and distribution of human capital formation is measured as the mean of the number of students enrolled in all types of secondary schools as a percentage of total population for 1967-70. These enrollment data are from the UNESCO Statistical Yearbook (UNESCO, various years), and the population data are the same as those used to calculate GNP per capita. This indicator measures both the rate and the distribution of human capital formation because it measures the share of
the population obtaining education at the secondary level, unlike such conceivable measures as the mean years of education for the population.

Finally, the rate of population growth is the geometric mean annual percentage increase in population over the period 1967-70. Specifically, this measure is the cube root of the product of the populations for 1968, 1969, and 1970 (each as a proportion of the previous year's population), minus one, multiplied by 100 (Shryock and Siegel, 1980:378). Again, the data are from the machine-readable version of the World Tables (World Bank, 1983a).

Other than for certain lagged dependent variables, which were discussed above in the section on measurement of the dependent variables, no missing data for the control variables were obtained from alternative sources. The data were simply used in their published form. However, data for these variables are generally quite complete in the sources used.

SAMPLE COMPOSITION

The analysis includes most Third World countries for which adequate data are available. Thus, the developed capitalist countries -- countries referred to either as the "developed OECD countries" by the OECD (1969), or as the "industrial market economies" by the World Bank (1983a), or both -- as well as the largely developed "East European nonmarket economies" (World Bank, 1983a), are excluded from the outset. A few restrictions are imposed on the remaining potential members of the sample. First, given the findings of related research for socialist countries reviewed in Chapter III, socialist countries (in general,
countries with virtually no private sector) are excluded from the analysis. Specifically, four of the countries defined as socialist by Cereseto (1982) are not included: the People's Republic of China, North Korea, Mongolia, and Cuba. In addition, Vietnam, Kampuchea (formerly Cambodia), and Laos are excluded. Second, countries with populations under one million in 1967 are not used, a practice followed in a number of other cross-national studies (e.g., Bornschier, 1980, 1983; Hicks and Streeten, 1979). A third criterion for exclusion was considered but not used. Namely, it is possible that great mineral wealth influences basic needs performance independent of the other explanatory variables used in this study, or that the effects of the other variables are contingent on this factor. However, only two of the eight countries classified by the World Bank (1983a) as "high-income oil exporters," Libya and Saudi Arabia, had populations above one million in 1967 and are included in the most recent edition of the World Tables, the major data source for this study. On the other hand, Pakistan and Bangladesh (formerly West and East Pakistan) are excluded due to incomparable data before and after their division in 1971.

Table 4 lists the total sample of countries used by this study. Of the 160 countries for which 1967 population data are included in the machine-readable World Tables (World Bank, 1983a), 76 are excluded for the reasons just discussed. This leaves 84 Third World countries of potential relevance. Of these, sufficient data are available for 77 such that they can be included in at least some of the analyses that follow. That is, all data for all the independent variables (which are common to all parts of the analysis) and for at least one dependent


**TABLE 4**

**LIST OF COUNTRIES IN THE SAMPLE**

**COUNTRIES USED IN PART OF THE ANALYSIS (N = 77):**

<table>
<thead>
<tr>
<th>Country</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>Malaysia</td>
</tr>
<tr>
<td>Algeria</td>
<td>Mali</td>
</tr>
<tr>
<td>Angola</td>
<td>Mauritania</td>
</tr>
<tr>
<td>Argentina</td>
<td>Mexico</td>
</tr>
<tr>
<td>Benin</td>
<td>Morocco</td>
</tr>
<tr>
<td>Bolivia</td>
<td>Mozambique</td>
</tr>
<tr>
<td>Brazil</td>
<td>Nepal</td>
</tr>
<tr>
<td>Burma</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>Burundi</td>
<td>Niger</td>
</tr>
<tr>
<td>Cameroon</td>
<td>Nigeria</td>
</tr>
<tr>
<td>Central African Republic</td>
<td>Panama</td>
</tr>
<tr>
<td>Chad</td>
<td>Papua New Guinea</td>
</tr>
<tr>
<td>Chile</td>
<td>Paraguay</td>
</tr>
<tr>
<td>Colombia</td>
<td>Peru</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>Philippines</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>Rwanda</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Saudi Arabia</td>
</tr>
<tr>
<td>Egypt, Arab Republic of</td>
<td>Senegal</td>
</tr>
<tr>
<td>El Salvador</td>
<td>Sierra Leone</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Singapore</td>
</tr>
<tr>
<td>Ghana</td>
<td>Somalia</td>
</tr>
<tr>
<td>Greece</td>
<td>Sri Lanka</td>
</tr>
<tr>
<td>Guatemala</td>
<td>Sudan</td>
</tr>
<tr>
<td>Haiti</td>
<td>Syria</td>
</tr>
<tr>
<td>Honduras</td>
<td>Tanzania</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>Thailand</td>
</tr>
<tr>
<td>India</td>
<td>Togo</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Trinidad and Tobago</td>
</tr>
<tr>
<td>Iran</td>
<td>Tunisia</td>
</tr>
<tr>
<td>Iraq</td>
<td>Turkey</td>
</tr>
<tr>
<td>Israel</td>
<td>Uganda</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>Upper Volta</td>
</tr>
<tr>
<td>Jamaica</td>
<td>Uruguay</td>
</tr>
<tr>
<td>Kenya</td>
<td>Venezuela</td>
</tr>
<tr>
<td>Korea, Republic of (South Korea)</td>
<td>Yugoslavia</td>
</tr>
<tr>
<td>Liberia</td>
<td>Zaire</td>
</tr>
<tr>
<td>Libya</td>
<td>Zambia</td>
</tr>
<tr>
<td>Madagascar</td>
<td>Zimbabwe</td>
</tr>
<tr>
<td>Malawi</td>
<td></td>
</tr>
</tbody>
</table>

**COUNTRIES EXCLUDED FROM ALL ANALYSES DUE TO MISSING DATA (N = 7):**

<table>
<thead>
<tr>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congo, People's Republic of</td>
</tr>
<tr>
<td>Guinea</td>
</tr>
<tr>
<td>Jordan</td>
</tr>
<tr>
<td>Lebanon</td>
</tr>
</tbody>
</table>
variable are available for these 77 nations. In some cases, all 77 are analyzed, but in most instances the actual sample is smaller due to missing data in the dependent variable. Whenever feasible, the same sample is used in all panels for a given dependent variable in order to maintain comparability between panels. Seven other countries cannot be used in any part of the analysis due to missing data and are listed separately in Table 4.

ESTIMATION OF PANEL REGRESSION MODELS

The final issue to be considered in the design for this research is the estimation technique that will be used to solve for the parameter estimates associated with the independent and control variables and to perform significance tests. Ordinary least squares (OLS) regression is the most commonly employed technique, but it has certain shortcomings for this research.

Specifically, the difficulty with the use of OLS in this study is the inclusion of lagged dependent variables in the panel models. It is virtually certain that the error terms for the dependent and lagged dependent variables are correlated, thus violating a major assumption of OLS: that the error terms in an equation are uncorrelated with the dependent variable. The result is that estimates of the parameters (regression coefficients) are biased, with the degree of bias depending on the strength of the correlation between the errors (Hanushek and Jackson, 1977). There are techniques, such as two-stage least squares, which can correct this bias. The obstacle to using such techniques is
that the model must first be identified. Underidentification may be
resolved either through constraints on parameters in the model or
through the use of instrumental variables. Both solutions depend,
however, on theory or past research which indicates appropriate
constraints or instrumental variables. Such prior knowledge is
generally lacking in this area of inquiry, a shortcoming aggravated by
the fact that, "as the literature argues that almost everything affects
everything else, it is hard to argue authoritatively a priori that some
variables behave as instruments (that is, they affect only some of the
variables in the model)" (Hannan, 1979:20).

For the present purposes, however, this is not as serious a problem
as it first appears. The coefficient of the lagged dependent variable
will indeed be biased upward (i.e., away from zero), but this variable
is of no substantive concern, serving only as a control variable.
Hannan (1979), in a discussion of this problem in similar cross-national
panel designs, notes small-sample simulations with OLS which find that,
as the coefficient of the lagged dependent variable is biased upward,
the coefficient of a second regressor is biased downward (toward zero).
This would produce a conservative bias with regard to hypothesized
effects of the second independent variable. Hannan argues that when one
adds the condition that the variable represented by the second regressor
is also influenced by the lagged dependent variable, the coefficient of
the second regressor may not be biased downward but is quite unlikely to
be biased upward.

A similar problem is the assumption of OLS that all observations are
independent. A major thesis of the dependency/world-system perspective
itself is that processes of development and underdevelopment in a given country do not occur independently of processes in other countries. Thus, it is possible that the cases analyzed are dependent on each other. The consequence of violating the assumption of independent observations is to increase the sampling variance of parameter estimates, though the estimates themselves are not biased. Generalized Least Squares (GLS) estimation can be used to correct for such inefficiency, but it cannot be used without first determining the value of the autocorrelation — not a straightforward problem for data which are not a time series (Hanushek and Jackson, 1977). In any case, the use of GLS in such cross-national studies is extremely rare. Given the other contributions of the present study, it seems reasonable to set aside this issue for the present.

Therefore, while OLS regression is not ideal for the analyses to be performed in this research, it appears to be the most viable option. The effect of violating the assumption of no correlation between the error terms and the lagged dependent variable is likely, to the extent that an effect exists, to increase the probability of failure to reject the null hypotheses corresponding to the four research hypotheses. And, as Hanushek and Jackson suggest, a set of observations such as this, which is not a time series, ordinarily does not suffer from serious dependence among observations.

Several diagnostic procedures are used to help assess the adequacy of the regression models estimated. The distributions of residuals are examined for normality. Plots of residuals against predicted values and partial regression plots (bivariate plots of the dependent variable
against each regressor with both variables adjusted to be uncorrelated with the remaining regressors) are used in assessments of linearity and homoscedasticity. Variance inflation factors (VIFs, the factors by which the sampling variances of parameter estimates are increased due to correlations with other regressors, and calculated as the reciprocal of \(1 - R^2\) for each regressor regressed on all other regressors) are used to detect multicollinearity (Bollen and Jackman, 1985; Montgomery and Peck, 1982; SAS Institute, 1982).

**SUMMARY**

This dissertation examines the influence of stocks of investment by multinational corporations and debt accumulated from foreign aid on basic needs satisfaction in Third World countries. It is hypothesized that these links with the developed nations have detrimental effects on basic needs performance — specifically, infant mortality, child mortality, life expectancy at age five, calorie and protein supplies per capita, primary school enrollments, and adult literacy — especially over the long term. This idea is derived from the dependency/world-system perspective which, unlike the prevailing views in conventional development economics and the foreign aid "establishment," claims that the influence of core capital in peripheral areas is generally detrimental to the welfare of the bulk of the peripheral population. It is also hypothesized, based on previous empirical findings, that these effects of MNC investment and foreign aid increase with national income per capita. Of course, factors emphasized by other perspectives, including income per capita, formation of physical and human capital,
and the rate of population growth, are also expected to influence basic needs satisfaction. These variables must be controlled in tests of the hypotheses just stated.

Panel regression models, all of which begin about 1967, are used to test the hypotheses. The additive hypotheses \( H_1 \) and \( H_2 \) will be tested for panels ending in 1970, 1975, and 1980. The hypotheses on interactions between core capital stocks and GNP (\( H_3 \) and \( H_4 \)) will be combined with the additive hypotheses in a single panel ending in 1980. Ordinary least squares regression is to be used to estimate parameters throughout the analysis. Up to 77 Third World countries are used in the sample.
1. One should recall that flows of MNC capital are actually not for the most part flows from the developed countries; most of this capital is borrowed or otherwise obtained within the host country.

2. Findings by Leipziger and Lewis (1980), however, seem to contradict those of Hicks and Streeten. Their results indicate that the relationship between income per capita and basic needs performance is most evident among poorer countries. There are several differences between these two studies that may account for this conflict, the most important of which may be the samples used. Hicks and Streeten use only non-socialist countries with populations of one million or more. Leipziger and Lewis provide little detail on their sample of underdeveloped countries, but their sample size is only 38 (divided into equal subsamples of higher and lower income countries), much smaller than most of the samples used by Hicks and Streeten; the same 38 nations are used in Leipziger and Lewis' entire analysis. While the pattern of different relationships between richer and poorer countries in the Leipziger and Lewis study is usually supported by significance tests, it may well be that their sample was selected in such a way (probably based entirely on availability of data) that it is particularly unrepresentative, whereas a much greater proportion of the population is included in the Hicks and Streeten study. Thus, the Hicks and Streeten study seems more trustworthy.

3. This formula is based on a similar formula used by Morris (1979) for approximating life expectancy at age one from data on life expectancy at birth and the infant mortality rate. It was developed with crucial assistance by Nathan Keyfitz and Krishnan Namboodiri, for which I am very grateful. The formula is algebraically derived from a formula for life expectancy at birth, which may be conceptualized as the sum of expected periods of survival for the first year of life, for years one through four, and for years five and up, respectively:

\[ e_0 = (1 - q_0(1 - k_0)) + (1 - q_0)(4 - q_1(4 - k_1)) + (1 - q_0)(1 - q_1)e_5' \]

where the notation is identical to that used in the formula for \( e_5 \) in the text, and \( e_5' \) equals \( e_5 \) minus five (i.e., \( e_5' \) is the expected years of life remaining at age five, the value used in life tables).

The formula used in the text, without the constant 5 added, was used to calculate test values for life expectancy at age 5 (\( e_5' \)) from values given for \( e_0 \), \( q_0 \), and \( q_1 \) in selected "West" model life tables presented by Shryock and Siegel (1980:881-883). The resulting values for \( e_5' \) differed from those shown in the life tables by no more than 0.02 years.

4. The value used for \( k_0 \) is that used by Morris (1979), while the value used for \( k_1 \) was suggested by Nathan Keyfitz (personal communication).
5. These countries are Australia, Austria, Belgium, Canada, Denmark, France, the Federal Republic of Germany, Italy, Japan, the Netherlands, Norway, Portugal, Sweden, Switzerland, the United Kingdom, and the United States.

6. The donor countries included in these data are identical to those for which stocks of foreign direct investment are used, except that data for Australia are not available for the period 1960-64.

7. However, exchange rates varied relatively little in 1967, since the gold standard was still in effect.

8. The World Bank's industrial market economies are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany (Federal Republic), Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, the United Kingdom, and the United States. The OECD also includes Portugal among the developed OECD countries (though it excludes Finland, Iceland, Ireland, Luxembourg, New Zealand, and Spain, since they are not OECD members). The World Bank's East European nonmarket economies are Albania, Bulgaria, Czechoslovakia, Germany (Democratic Republic), Hungary, Poland, Romania, and the U.S.S.R.
This chapter presents results from tests of the additive hypotheses \( H_1 \) and \( H_2 \) and nonadditive hypotheses \( H_3 \) and \( H_4 \) stated in the previous chapter. Multiple regression analysis is used to examine panel models for seven dependent variables, each measured for 1970, 1975, and 1980, which indicate levels of basic needs satisfaction: the infant mortality rate, the child mortality rate, total life expectancy at age five, calorie supply per capita, protein supply per capita, adjusted primary school enrollment, and adult literacy. \( H_1 \) and \( H_2 \) specify that MNC penetration and debt accumulated from official foreign lending, respectively, have detrimental effects on these basic needs performance indicators. \( H_3 \) and \( H_4 \) specify that these effects of MNC penetration and debt from foreign aid are stronger for countries with higher per capita incomes. Controls included in the models are GNP per capita, gross domestic investment as a percentage of GDP (gross domestic product), secondary school enrollment as a percentage of population, and the average annual percentage rate of population growth. As many as 77 countries have sufficient data available for analysis, depending on the dependent variable; the specific countries used in each part of the analysis are listed in Appendix C.
While each dependent variable is important in its own right and deserves individual attention in the analysis which follows, these indicators are generally quite closely related. Table 5 shows the bivariate correlations between each pair of these measures for 1980. (Correlations among these same measures for 1965/67 are shown in Table 6, discussed below.) In the cases of calorie and protein supply indicators, logged as well as untransformed variables are included in the correlation matrix, since the logged versions were ultimately used in the regression analysis. Infant and child mortality rates are especially strongly related ($r = 0.96$). The only really low correlations are between nutrition indicators and education indicators, whereas the mortality and life expectancy indicators are much more consistently correlated with the other variables.

Careful attention was given to the proper functional form for each regressor in developing the regression models presented in this chapter. First of all, the relationship between the lagged dependent variable and the dependent variable was examined for each panel before any other variables were added to the models. Previous experience (Wimberley, 1985) indicates that the form of such lagged relationships can be far from linear. In several instances, U-shaped plots of residuals against predicted values from linear models of the lagged relationship suggested a quadratic function. The functional form determined from these analyses was as a firm rule retained for analyses in which the other regressors were added.

Next, close consideration was given the form of the effect of GNP per capita. Great caution was needed in the case of this control variable
TABLE 5
BIVARIATE CORRELATIONS BETWEEN DEPENDENT VARIABLES, 1980

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Mortality Rate</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child Mortality Rate</td>
<td>0.96</td>
<td>0.56</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Expectancy, Age 5</td>
<td>-0.58</td>
<td>-0.55</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calories per Capita</td>
<td>-0.54</td>
<td>-0.52</td>
<td>0.54</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logged Calories per Capita</td>
<td>-0.55</td>
<td>-0.53</td>
<td>0.54</td>
<td>0.99</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Protein per Capita</td>
<td>-0.42</td>
<td>-0.39</td>
<td>0.46</td>
<td>0.85</td>
<td>0.83</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Logged Protein per Capita</td>
<td>-0.40</td>
<td>-0.38</td>
<td>0.42</td>
<td>0.81</td>
<td>0.80</td>
<td>0.99</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Adjusted Primary Enrollment</td>
<td>-0.72</td>
<td>-0.76</td>
<td>0.50</td>
<td>0.45</td>
<td>0.46</td>
<td>0.20</td>
<td>0.17</td>
<td>-</td>
</tr>
<tr>
<td>Adult Literacy Rate</td>
<td>-0.79</td>
<td>-0.81</td>
<td>0.60</td>
<td>0.24</td>
<td>0.24</td>
<td>-0.03</td>
<td>-0.01</td>
<td>0.78</td>
</tr>
</tbody>
</table>

Note: Sample sizes vary from 42 to 77, due to the use of "pairwise" deletion of missing cases. Most of the missing cases occur for the adult literacy rate; for other variables, the minimum sample size is 72.
because of the central role of the level of economic development in theoretical and empirical writings which have attempted to explain basic needs performance, and because of the discovery of nonlinear relationships between GNP per capita and economic growth, income inequality, and measures of basic needs satisfaction in previous research. The specifications considered for income per capita were quadratic and logged (i.e., common, or base ten, logarithm). The logged form is preferable to the linear form because its distribution is approximately normal. Without transformation, GNP per capita is somewhat positively skewed and leptokurtic, traits which are exaggerated in its square. Nonetheless, in some cases the quadratic specification performs much better than the logged specification. Unfortunately, it was not feasible to use the quadratic logged specification used in some studies of economic growth and income inequality (e.g., Weede and Tiefenbach, 1981d; Bornschier, 1983). This functional form would reduce the skewness problem just noted, but, for the distribution of countries at hand, logged GNP per capita is correlated 0.996 with its square (n = 77), making the multicollinearity normally present in quadratic models an insurmountable obstacle in this case.

Models including only the lagged dependent variable (in its proper functional form) and either logged or quadratic GNP per capita were studied to determine the most promising specification of per capita income. The more promising functional form was identified through comparisons of partial (Type II) sums of squares and significance levels; distributions of residuals and plots of residuals against predicted values were used as checks on how adequately these models met
assumptions of the general linear model. When there was little appreciable difference in performance between the functional forms, or when both forms were significant, the competing forms were used in separate and otherwise identical full regression models to determine which performed best in terms of partial sums of squares, significance levels, and the distributions of the residuals. Partial regression plots for GNP per capita were in all cases examined in the full models as a final check of the adequacy of the chosen functional form. The quadratic specification was chosen over the logged specification in the full model only if it did not have a lower adjusted $R^2$, except when otherwise noted. The better specification for income per capita in the full model was thus determined before the effects of any other variables were considered.

Finally, the partial regression plots for all independent and control variables in full models were checked for indications of nonlinearity. When it appeared that a nonlinear relationship might be present, the model was reestimated with the alternative specification. In a few cases, a quadratic specification both proved to be significant (or at least approached significance notably better than the logged specification) and yielded notably higher partial sums of squares than the previous specification, and thus was retained in the final models if doing so did not reduce the adjusted $R^2$. But, unless this procedure indicated otherwise, all regressors except the lagged dependent variable, GNP per capita, and accumulated debt from official foreign lending as a percentage of 1967 GNP were used in their linear forms. Debt as a percentage of GNP had a strong positive skew and an extremely
leptokurtic distribution. It was added to two and this sum was transformed to a common logarithm. This transformation dramatically improved the distribution of this variable, rendering it approximately normal. Other than GNP per capita and squares of some variables introduced in response to nonlinearities, then, all the regressor variables have relatively normal distributions. Detailed descriptive statistics for all the independent as well as dependent variables are presented in Appendix B.

As the previous chapter stated, additional diagnostic procedures are used to assess the adequacy of each full model. In addition to partial regression plots, the distributions of residuals and plots of residuals against predicted values are examined for deviations from the assumptions required for OLS. Except as noted, no serious deficiencies were identified through these techniques. Variance inflation factors (VIFs) for full regression models are shown in the accompanying tables and are used to assess the presence of multicollinearity. According to Montgomery and Peck, "Practical experience indicates that if any of the VIFs exceeds 5 or 10, it is an indication that the associated regression coefficients are poorly estimated because of multicollinearity" (1982:300).

Table 6 presents bivariate correlation coefficients for pairs of independent and control variables in the various functional forms in which they are used in this analysis. The top section of the table, which presents correlations between the first 13 variables and all 25 variables ever used as regressors, includes virtually all correlations between variables which appear in the same regression equation.
TABLE 6

BIVARIATE CORRELATIONS BETWEEN INDEPENDENT VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  HBC Penetration, 1967</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>2  HBC Penetration, 1967, Squared</td>
<td>0.30</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>3  Log Aid Debt, 1964-65, GDP</td>
<td>-0.07</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>4  Log Aid Debt, 1964-65, GDP, Squared</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>5  GDP per Capita, 1967</td>
<td>0.42</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>6  GDP per Capita, 1967, Squared</td>
<td>0.28</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>7  Log GDP per Capita, 1967</td>
<td>0.56</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>8  Investment as % of GDP, 1967-70</td>
<td>0.43</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>9  Secondary Enrollment, 1967-70</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>10 Secondary Enrollment, 1967-70, Squared</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>11 Population Growth Rate, 1967-70</td>
<td>0.16</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>12 HBC &amp; Dummy GDP/Capita, 1967</td>
<td>0.73</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>13 Log Aid Debt &amp; Dummy GDP/Capita, 1967</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>14 Infant Mortality Rate, 1965</td>
<td>-0.39</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>15 Infant Mortality Rate, 1965, Squared</td>
<td>-0.18</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>16 Child Mortality Rate, 1965</td>
<td>-0.13</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>17 Child Mortality Rate, 1965, Squared</td>
<td>-0.10</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>18 Life Expectancy at Age 5, 1965</td>
<td>0.19</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>19 Calorie per Capita, 1964-68</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>20 Log Calories per Capita, 1964-68</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>21 Protein per Capita, 1964-68</td>
<td>-0.16</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>22 Log Protein per Capita, 1964-68</td>
<td>-0.16</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>23 Adult Literacy Rate, 1965</td>
<td>0.22</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>24 Adult Literacy Rate, 1965, Squared</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>25 Adult Literacy Rate, 1965, Squared</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
</tbody>
</table>

Note: Sample sizes vary from 54 to 77, due to the use of "pairwise" deletion of missing cases.
Correlations between lagged dependent variables are shown in the bottom portion of the table; these variables do not, of course, appear in equations together except for instances of quadratic lags (i.e., a variable and its square). Other than for pairs of variables which are different functional forms of each other, the only correlations as high as ±0.80 are between secondary school enrollment as a percentage of the population and forms of the adult literacy rate. In addition, secondary enrollment has a correlation greater than 0.60 with log GNP per capita. There are also several correlations ranging from ±0.60 to ±0.80 between lagged dependent variables and various functional forms of GNP per capita and secondary enrollment. Thus, there are almost no bivariate indications of severe multicollinearity other than in cases of component terms of polynomials, a circumstance in which it is difficult to avoid multicollinearity. However, there are enough correlations between ±0.60 and ±0.80 to suggest that multicollinearity may become a problem when several of these variables are combined in regression models, a situation that would be indicated by the VIFs. Fortunately, there are no really strong correlations between the independent variables of major interest -- MNC penetration and debt due to borrowing through bilateral aid programs -- and any other independent variables, and these variables are themselves essentially uncorrelated. Multicollinearity among the control variables, the effect of which is to reduce the efficiency of their parameter estimates (i.e., make it more difficult to reject the null hypothesis for these variables) is not of great concern, however, since the effects of these variables are not of primary interest in this study. The importance of the controls is to introduce factors without
which the apparent effects of MNC penetration and aid debt might be spuriously large or even suppressed.

The remainder of this chapter presents the results of the regression analyses for additive and nonadditive (interaction) models of the seven basic needs indicators used as dependent variables. Analyses for the mortality and life expectancy variables -- i.e., health indicators -- are discussed first, followed by the findings for the nutrition variables and finally for the education and literacy variables.

MORTALITY AND LIFE EXPECTANCY

Hypotheses $H_1$ and $H_2$ imply that MNC penetration and the stock of debt from official foreign lending positively affect infant and child mortality rates and negatively affect life expectancy. Conceptually, the three dependent variables addressed in this section are the most important objects of this study, for they deal directly with issues of life and death. Furthermore, these indicators reflect distributions of basic needs outcomes — unlike the nutrition indicators, which do not measure the adequacy of the distribution of food but are merely averages of aggregate quantities of nutrients, and unlike the primary education enrollment ratio, which is an "input" rather than an "output." Of course, the conceptual significance of the mortality and life expectancy indicators does not guarantee that the measures at hand adequately tap this significance; it is difficult to assess whether these indicators are more or less reliable and valid than the indicators of the other dependent variables in this study.
INFANT MORTALITY

Seventy-three countries have sufficient data to include them in all three infant mortality panel models, that is, for the models ending in 1970, 1975, and 1980. The results for these three panels with lagged dependent variables are shown in Table 7. In each case, preliminary analysis suggested that infant mortality per 1000 live births was a quadratic function of the lagged dependent variable. Specifically, both terms of the quadratic function were positive, meaning that countries with the highest rates of infant mortality in 1965 had disproportionately high rates in later years. Since there was a general decline in infant mortality over these periods, this result shows that countries with lower infant mortality rates in 1965 experienced greater absolute declines in infant mortality than countries with higher rates. This lagged variable explains almost all the variance in the models: approximately 99 percent in the 1970 model, falling only to 97 percent in the 1980 model (as shown by the "lagged variable" adjusted R² in the table). Though infant mortality rates have fallen considerably in the Third World since 1965, the relative positions of nations on this basic needs satisfaction indicator changed little from 1965 to 1980.

Yet, several regressors other than the lagged variable have significant effects in the full model. Both average secondary school enrollment as a percentage of total population for 1967-70 and average annual percentage population growth for 1967-70 have significant negative effects on infant mortality in all three panels. This effect was anticipated for secondary school enrollments, but not for population growth; the neo-Malthusian position, of course, implies that faster
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$b (t)$</td>
<td>VIF</td>
<td>$b (t)$</td>
</tr>
<tr>
<td>Infant Mortality, 1965</td>
<td>0.746*</td>
<td>34.1</td>
<td>0.529*</td>
</tr>
<tr>
<td></td>
<td>(14.817)</td>
<td></td>
<td>(6.115)</td>
</tr>
<tr>
<td>Infant Mortality, 1965, Squared</td>
<td>0.000848*</td>
<td>27.0</td>
<td>0.00152*</td>
</tr>
<tr>
<td></td>
<td>(4.726)</td>
<td></td>
<td>(4.924)</td>
</tr>
<tr>
<td>MNC Penetration, 1967</td>
<td>0.104b</td>
<td>20.0</td>
<td>0.143c</td>
</tr>
<tr>
<td></td>
<td>(1.869)</td>
<td></td>
<td>(1.4488)</td>
</tr>
<tr>
<td>MNC Penetration, 1967, Squared</td>
<td>-0.000871b</td>
<td>19.3</td>
<td>-0.00120c</td>
</tr>
<tr>
<td></td>
<td>(1.811)</td>
<td></td>
<td>(1.4522)</td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP</td>
<td>1.193</td>
<td>1.1</td>
<td>1.009</td>
</tr>
<tr>
<td></td>
<td>(0.846)</td>
<td></td>
<td>(0.416)</td>
</tr>
<tr>
<td>GNP per Capita, 1967</td>
<td>-0.00776</td>
<td>22.6</td>
<td>-0.0242b</td>
</tr>
<tr>
<td></td>
<td>(0.991)</td>
<td></td>
<td>(1.799)</td>
</tr>
<tr>
<td>GNP per Capita, 1967, Squared</td>
<td>0.00000491</td>
<td>16.1</td>
<td>0.0000174b</td>
</tr>
<tr>
<td></td>
<td>(0.845)</td>
<td></td>
<td>(1.740)</td>
</tr>
<tr>
<td>Investment as % of GDP, 1967-70</td>
<td>0.0563</td>
<td>1.6</td>
<td>0.0327</td>
</tr>
<tr>
<td></td>
<td>(0.573)</td>
<td></td>
<td>(0.194)</td>
</tr>
<tr>
<td>Secondary Enrollment as % of Population, 1967-70</td>
<td>-0.739b</td>
<td>3.6</td>
<td>-1.320b</td>
</tr>
<tr>
<td></td>
<td>(1.866)</td>
<td></td>
<td>(1.939)</td>
</tr>
<tr>
<td>Average Annual Population Growth, 1967-70</td>
<td>-1.364b</td>
<td>1.4</td>
<td>-1.974c</td>
</tr>
<tr>
<td></td>
<td>(1.902)</td>
<td></td>
<td>(1.601)</td>
</tr>
<tr>
<td>Constant</td>
<td>7.930</td>
<td></td>
<td>17.480</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.995</td>
<td></td>
<td>0.986</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.994</td>
<td></td>
<td>0.983</td>
</tr>
<tr>
<td>$R^2$ Lagged Variable</td>
<td>0.994</td>
<td></td>
<td>0.980</td>
</tr>
</tbody>
</table>

Note: Unstandardized regression coefficients are shown with corresponding absolute $t$-ratios in parentheses. VIFs are variance inflation factors.

a. $p \leq .01$, one-tailed test.
b. $p \leq .05$, one-tailed test.
c. $p \leq .10$, one-tailed test.
population growth produces higher infant mortality. On the other hand, investment as a percentage of GDP never approaches significance.

GNP per capita has appreciable effects only in the two longer panels. The influence of this control is negligible in 1970. The quadratic specification, shown in the table, performs slightly better than a logged specification, but neither functional form yields coefficients that approach significance. (The results shown for MNC penetration and debt due to foreign aid are virtually identical for either specification of income per capita.) For the latter panels, though, GNP per capita does have significant effects via a quadratic specification in which the coefficient for the first-order term is negative and the coefficient for the second-order term is positive. With the use of calculus, it can be demonstrated that the minima for the infant mortality rates occur at GNP per capita values of about US$695 and US$790, respectively, for the 1967-75 and 1967-80 panels. Given this parabolic function, the expected rate of infant mortality is higher for either lower or higher levels of GNP per capita with the other variables in the equations held constant. To place this result in perspective, it must be noted that these minima occur above the ninetieth percentile of GNP per capita both in the sample of 73 countries used here and in the total sample of 77 countries. Thus, infant mortality decreases with GNP per capita for the bulk of the countries examined, then increases among the countries with the highest incomes.

As for the effects of the independent variables specified by the additive hypotheses, the results are mixed. Logged net official foreign lending has a positive "effect" in all three panels, but none of these
are at all significant. MNC penetration has no significant effect for 1980 (when the effect was expected to be strongest), but influences infant mortality in the form of a quadratic function for 1970 and 1975. These effects are significant at a more stringent criterion level in 1970 than in 1975, though the magnitude of the effects (as indicated by the unstandardized coefficients) is somewhat greater in 1975. The infant mortality rates reach their maxima at MNC penetration levels of about 57 and 60 in 1970 and 1975, respectively. These values are somewhat above the mean of MNC penetration and are at about the sixtieth percentile. Infant mortality increases up to these maxima, then decreases at higher levels of MNC penetration.

**CHILD MORTALITY**

The 73 countries with adequate data for all three infant mortality panels are the same countries used in the child mortality panels. Results for the 1970, 1975, and 1980 lagged child mortality panels are presented in Table 8. As in the case of infant mortality, with which child mortality is highly correlated, preliminary analysis indicated that the appropriate functional form of the lagged dependent variable was quadratic in all three panels. The coefficients for both terms in the polynomial function are positive. This lagged function accounts for 99 percent of the variance in 1970, a figure which declines only to 93 percent in 1980.

Gross domestic investment as a percentage of GDP is always positively related to child mortality, while secondary school enrollment as a
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b (t)</td>
<td>VIF</td>
<td>b (t)</td>
</tr>
<tr>
<td>Child Mortality, 1965</td>
<td>0.635a</td>
<td>20.4</td>
<td>0.328a</td>
</tr>
<tr>
<td></td>
<td>(14.301)</td>
<td></td>
<td>(4.298)</td>
</tr>
<tr>
<td>Child Mortality, 1965, Squared</td>
<td>0.00498a</td>
<td>15.0</td>
<td>0.00890a</td>
</tr>
<tr>
<td></td>
<td>(6.847)</td>
<td></td>
<td>(7.112)</td>
</tr>
<tr>
<td>MNC Penetration, 1967</td>
<td>0.00878c</td>
<td>1.9</td>
<td>0.0141c</td>
</tr>
<tr>
<td></td>
<td>(1.492)</td>
<td></td>
<td>(1.395)</td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP</td>
<td>0.524</td>
<td>1.1</td>
<td>0.719</td>
</tr>
<tr>
<td></td>
<td>(1.102)</td>
<td></td>
<td>(0.877)</td>
</tr>
<tr>
<td>GNP per Capita, 1967</td>
<td>-0.00934a</td>
<td>22.1</td>
<td>-0.0168a</td>
</tr>
<tr>
<td></td>
<td>(3.555)</td>
<td></td>
<td>(3.721)</td>
</tr>
<tr>
<td>GNP per Capita, 1967, Squared</td>
<td>0.00000585a</td>
<td>15.3</td>
<td>0.0000107a</td>
</tr>
<tr>
<td></td>
<td>(3.044)</td>
<td></td>
<td>(3.224)</td>
</tr>
<tr>
<td>Investment as % of GDP, 1967-70</td>
<td>0.0494c</td>
<td>1.5</td>
<td>0.0561</td>
</tr>
<tr>
<td></td>
<td>(1.501)</td>
<td></td>
<td>(0.990)</td>
</tr>
<tr>
<td>Secondary Enrollment as % of Population, 1967-70</td>
<td>-0.304a</td>
<td>3.5</td>
<td>-0.497b</td>
</tr>
<tr>
<td></td>
<td>(2.314)</td>
<td></td>
<td>(2.194)</td>
</tr>
<tr>
<td>Average Annual Population Growth, 1967-70</td>
<td>-0.573a</td>
<td>1.3</td>
<td>-0.828b</td>
</tr>
<tr>
<td></td>
<td>(2.438)</td>
<td></td>
<td>(2.048)</td>
</tr>
<tr>
<td>Constant</td>
<td>3.950</td>
<td>7.317</td>
<td>9.613</td>
</tr>
<tr>
<td>R²</td>
<td>0.993</td>
<td>0.978</td>
<td>0.958</td>
</tr>
<tr>
<td>R²</td>
<td>0.992</td>
<td>0.975</td>
<td>0.952</td>
</tr>
<tr>
<td>R², Lagged Variable</td>
<td>0.998</td>
<td>0.964</td>
<td>0.932</td>
</tr>
</tbody>
</table>

See notes in Table 7.
percentage of population and average annual population growth are negatively related to the dependent variable in each panel. The effect of the rate of investment attains significance only for 1970, however, and then only at the 0.10 level. The direction of this relationship presumably reflects short-term costs to basic needs satisfaction due to diversion of national income from consumption to investment, though this variable did not have a significant influence in the infant mortality models. The negative effects of secondary school enrollment and population growth, found also for infant mortality, are significant in all three panels.

The influence of GNP per capita takes a quadratic form in each of the panels, and each term of this function is always significant at a quite stringent level. Child mortality at first declines with per capita GNP, then increases. The minima for the dependent variables occur at average incomes of 798, 785, and 805 U. S. dollars, respectively, for 1970, 1975, and 1980. These levels of income per capita occur just short of the ninety-fifth percentile of income per capita, either for the 73 countries used here or for all 77 countries used in this study. Therefore, as in the case of infant mortality, child mortality decreases with increasing per capita GNP for the great majority of the countries examined, then increases for underdeveloped countries with very high incomes.

MNC penetration and accumulated debt due to official foreign lending have positive coefficients in all three panels, as hypothesized. However, these effects never attain significance for debt. MNC penetration, the effects of which appear to be linear, has an influence
significant at the 0.10 level in 1970 and 1975 but not in 1980. The unstandardized regression coefficients for both variables increase slightly over time, though the associated $t$-ratios, and thus significance levels, decline over time. 5

LIFE EXPECTANCY AT AGE FIVE

Data for 71 countries were available for analysis of models of life expectancy at age five. (Data for life expectancy at birth, required for calculation of this dependent variable, were missing for two countries for which infant and child mortality data were available.) The results of this analysis are given in Table 9. In this case, the effect of the lagged dependent variable proved to be linear. The lagged dependent variable explains a very large proportion of the variance in these models, though slightly less than in the mortality models. About 98 percent of the variance is explained by the lagged variable in 1970, falling to about 89 percent in 1980.

Few of the regressors make a showing in these models. GNP per capita, investment as a percentage of GDP, and population growth never have significant effects, and secondary school enrollment has a significant effect (positive, as expected) only in 1980. Similarly, MNC penetration is never significant, though it displays an interesting pattern contrary to hypothesis $H_1$: its positive regression coefficients and $t$-ratios increase steadily over time. The impact of aid debt, on the other hand, is significant and positive in all three panels. That is, the greater this indicator of aid receipts, the greater the expected
TABLE 9
LAGGED REGRESSION MODELS OF TOTAL LIFE EXPECTANCY AT AGE 5 (N = 71)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b (t)</td>
<td>VIF</td>
<td>b (t)</td>
<td>VIF</td>
<td>b (t)</td>
<td>VIF</td>
</tr>
<tr>
<td>Total Life Expectancy at Age 5, 1965</td>
<td>0.963*</td>
<td>2.6</td>
<td>0.921*</td>
<td>2.6</td>
<td>0.848*</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>(38.702)</td>
<td></td>
<td>(19.333)</td>
<td></td>
<td>(14.438)</td>
<td></td>
</tr>
<tr>
<td>MNC Penetration, 1967</td>
<td>0.00345</td>
<td>1.7</td>
<td>0.00752</td>
<td>1.7</td>
<td>0.0108</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>(0.907)</td>
<td></td>
<td>(1.033)</td>
<td></td>
<td>(1.200)</td>
<td></td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP</td>
<td>0.898*</td>
<td>1.1</td>
<td>1.112b</td>
<td>1.1</td>
<td>1.005c</td>
<td>1.1</td>
</tr>
<tr>
<td></td>
<td>(2.698)</td>
<td></td>
<td>(1.745)</td>
<td></td>
<td>(1.280)</td>
<td></td>
</tr>
<tr>
<td>Log GNP per Capita, 1967</td>
<td>-0.141</td>
<td>3.8</td>
<td>-0.727</td>
<td>3.8</td>
<td>-1.268</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>(0.263)</td>
<td></td>
<td>(0.711)</td>
<td></td>
<td>(1.006)</td>
<td></td>
</tr>
<tr>
<td>Investment as % of GDP, 1967-70</td>
<td>0.0278</td>
<td>1.5</td>
<td>0.0284</td>
<td>1.5</td>
<td>0.0177</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>(1.231)</td>
<td></td>
<td>(0.659)</td>
<td></td>
<td>(0.333)</td>
<td></td>
</tr>
<tr>
<td>Secondary Enrollment as % of Population, 1967-70</td>
<td>0.0388</td>
<td>2.7</td>
<td>0.156</td>
<td>2.7</td>
<td>0.409b</td>
<td>2.7</td>
</tr>
<tr>
<td></td>
<td>(0.489)</td>
<td></td>
<td>(1.023)</td>
<td></td>
<td>(2.180)</td>
<td></td>
</tr>
<tr>
<td>Average Annual Population Growth, 1967-70</td>
<td>0.116</td>
<td>1.3</td>
<td>0.311</td>
<td>1.3</td>
<td>0.174</td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td>(0.737)</td>
<td></td>
<td>(1.031)</td>
<td></td>
<td>(0.468)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>2.064</td>
<td>5.985</td>
<td>12.638</td>
<td></td>
<td>6.765</td>
<td></td>
</tr>
<tr>
<td>R^2</td>
<td>0.984</td>
<td></td>
<td>0.941</td>
<td></td>
<td>0.906</td>
<td></td>
</tr>
<tr>
<td>R^2, Lagged Variable</td>
<td>0.983</td>
<td></td>
<td>0.934</td>
<td></td>
<td>0.896</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.981</td>
<td></td>
<td>0.933</td>
<td></td>
<td>0.894</td>
<td></td>
</tr>
</tbody>
</table>

See notes in Table 7.
lifespan at age five, in opposition to hypothesis $H_2$. The statistical significance of these effects of aid declines over time.

**INTERACTION MODELS**

Hypotheses $H_3$ and $H_4$ imply that any detrimental effects of MNC penetration and aid debt on infant mortality, child mortality, and life expectancy at age five are stronger in countries with higher incomes per capita. That is, these independent variables should have stronger positive effects on infant and child mortality and stronger negative effects on life expectancy. Table 10 presents regression models in which interaction terms have been added for the MNC and aid variables multiplied by a dummy GNP per capita variable (coded 0 for countries with per capita incomes below the median of the 77 countries in the total sample and 1 for high-income countries). Given the rather poor showing of the additive forms of the dependence indicators in the 1967-80 panel models just presented, one might suspect that the relationships hypothesized in $H_1$ and $H_2$ are strong enough to be apparent only for certain countries, i.e., the higher income countries.

This does not prove to be the case, however. None of the interaction terms for MNC penetration in Table 10 are significant, indicating that there is no difference between low- and high-income countries with regard to the effect of penetration on these dependent variables. The interaction terms for aid debt are significant for infant and child mortality, but in the opposite direction from that hypothesized: the effects are actually negative (that is, beneficial) for richer
<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Infant Mortality (N = 73)</th>
<th>Child Mortality (N = 73)</th>
<th>Life Expectancy at Age 5 (N = 71)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b (t)</td>
<td>VIF</td>
<td>b (t)</td>
</tr>
<tr>
<td>Lagged Dependent Variable</td>
<td>0.427*</td>
<td>(4.018)</td>
<td>0.125c</td>
</tr>
<tr>
<td></td>
<td>35.7</td>
<td></td>
<td>20.8</td>
</tr>
<tr>
<td>Lagged Dependent Variable, Squared</td>
<td>0.00168*</td>
<td>(4.465)</td>
<td>0.0108a</td>
</tr>
<tr>
<td></td>
<td>27.9</td>
<td></td>
<td>15.3</td>
</tr>
<tr>
<td>MNC Penetration, 1967</td>
<td>-0.00257</td>
<td>(0.055)</td>
<td>0.0132</td>
</tr>
<tr>
<td></td>
<td>3.3</td>
<td></td>
<td>3.3</td>
</tr>
<tr>
<td>MNC Penetration, 1967, X Dummy GNP</td>
<td>-0.00345</td>
<td>(0.064)</td>
<td>-0.00305</td>
</tr>
<tr>
<td></td>
<td>5.8</td>
<td></td>
<td>5.8</td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP</td>
<td>3.716</td>
<td>(1.096)</td>
<td>1.950b</td>
</tr>
<tr>
<td></td>
<td>1.5</td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP, X Dummy GNP</td>
<td>-7.722b</td>
<td>(1.916)</td>
<td>-3.204a</td>
</tr>
<tr>
<td></td>
<td>3.0</td>
<td></td>
<td>2.9</td>
</tr>
<tr>
<td>GNP per Capita, 1967</td>
<td>-0.00932</td>
<td>(0.492)</td>
<td>-0.0116b</td>
</tr>
<tr>
<td></td>
<td>31.0</td>
<td></td>
<td>30.6</td>
</tr>
<tr>
<td>GNP per Capita, 1967, Squared</td>
<td>0.000000623</td>
<td>(0.463)</td>
<td>0.000000702c</td>
</tr>
<tr>
<td></td>
<td>20.3</td>
<td></td>
<td>19.7</td>
</tr>
<tr>
<td>Log GNP per Capita, 1967</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investment as % of GDP, 1967-70</td>
<td>0.0465</td>
<td>(0.230)</td>
<td>0.0546</td>
</tr>
<tr>
<td></td>
<td>1.5</td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>Secondary Enrollment as % of Population, 1967-70</td>
<td>-1.760b</td>
<td>(2.178)</td>
<td>-0.617b</td>
</tr>
<tr>
<td></td>
<td>3.6</td>
<td></td>
<td>3.5</td>
</tr>
<tr>
<td>Average Annual Population Growth, 1967-70</td>
<td>-2.422c</td>
<td>(1.572)</td>
<td>-0.822c</td>
</tr>
<tr>
<td></td>
<td>1.5</td>
<td></td>
<td>1.4</td>
</tr>
<tr>
<td>Constant</td>
<td>20.021</td>
<td>7.841</td>
<td>11.984</td>
</tr>
<tr>
<td>R^2</td>
<td>0.978</td>
<td>0.963</td>
<td>0.907</td>
</tr>
<tr>
<td>R^2 -</td>
<td>0.974</td>
<td>0.957</td>
<td>0.893</td>
</tr>
</tbody>
</table>

See notes in Table 7.
countries, but positive (detrimental) for poorer countries. (The effect for the group coded one in the dummy variable is determined by summing the coefficients for the additive MNC or aid term and the respective interaction, while the effect for the group coded zero is stated by the coefficient of the additive term alone. For example, the effect of aid debt on child mortality is 1.950 for poorer countries, and -1.254 [i.e., 1.950 - 3.204] for richer countries. Cf. Rao and Miller [1971].) The effects of aid debt for the poorer countries, that is, for the additive terms, are stronger than in the purely additive models shown previously; this effect is significant for the child mortality model.6

Additional analyses (results not shown) using true analysis of covariance, or ANCOVA, designs -- using the dummy GNP variable in place of the continuous GNP variable (or variables) in the additive as well as multiplicative terms -- tended to support these findings of interactions between GNP per capita and aid debt. This interaction was significant in an ANCOVA model for infant mortality and not significant in a model for life expectancy, as occurs in the models shown in Table 10. However, the ANCOVA model for child mortality failed to produce a significant aid interaction.

NUTRITION

Nutrition is of course one of the most basic of human needs, and the inadequate nutrition faced by many of the inhabitants of the Third World has aroused the concern of many in the developed world. Unfortunately, sufficient data on the distribution of food are not available for a cross-national study such as this one. The best available substitutes
are data on total food supplies per capita. While it is expected that there are strong correlations between the total supply and distributional measures such as the percentage of the population receiving adequate nutrition, these correlations are obviously not perfect. The results from this portion of the analysis must be interpreted with this limitation in mind.

Adequacy of food supplies is measured here as logged calories per capita per day and logged protein (in grams) per capita per day. Preliminary regression analysis of the linear forms of these variables, the distributions of which are positively skewed and leptokurtic, resulted in notably abnormal distributions of residuals, a problem largely solved by use of common log transformations. The additive hypotheses $H_1$ and $H_2$ imply that the greater the level of penetration by MNCs and the greater the level of debt due to official foreign lending, the lesser will be calorie and protein supplies per capita. There are no missing data on food supplies for any of the 77 countries in the basic sample used in this study, and thus all these nations are included in the analyses of calorie and protein supplies per capita. While the dependent and lagged dependent variables used in this portion of the analysis are three-year averages, for the sake of convenience the panels will be referred to in terms of the middle year of each average (i.e., 1967 to 1970, 1975, or 1980).
The results of the analyses for the three panel models of calorie supply per capita per day are presented in Table 11. Preliminary findings indicated that the relationship between log calorie supply per capita in 1967 and the same indicator in later years was linear. This relationship was moderate compared to those found for mortality and life expectancy, explaining 89 percent of the variance in 1970 calorie supply per capita and declining drastically to only 40 percent of the variance in 1980 calorie supply.

Gross domestic investment as a percentage of GDP has positive effects in each of the three panels, though this influence is not significant in the 1967-70 panel. As anticipated, the rate of population growth has a negative relationship with calorie supply per capita, though this effect is significant only in the short term (1967-70). The effect of secondary school enrollment is quadratic and significant in all three panels, with calorie supply first increasing, then decreasing, as the level of secondary enrollment increases. Calorie supply reaches its maxima with approximately 6.6, 4.8, and 6.0 percent of the population being enrolled in 1970, 1975, and 1980, respectively. These are rather high rates of enrollment. Eighty-seven percent of the countries in the sample had enrollments of less than 4.8 percent, and 96 percent had enrollments below 6.6 percent. Thus, for the great bulk of the countries in the sample, calorie supply per capita increases with secondary enrollments per capita. Finally, as expected, the influence of GNP per capita is always positive, though it is significant only in 1975.
<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>1969-71</th>
<th></th>
<th>1974-76</th>
<th></th>
<th>1979-81</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Calorie Supply per Capita per Day, 1966-68</td>
<td>0.856&lt;sup&gt;a&lt;/sup&gt; (16.983)</td>
<td>2.2</td>
<td>0.614&lt;sup&gt;a&lt;/sup&gt; (5.794)</td>
<td>2.2</td>
<td>0.480&lt;sup&gt;a&lt;/sup&gt; (3.176)</td>
<td>2.2</td>
</tr>
<tr>
<td>MNC Penetration, 1967</td>
<td>-0.0000753 (0.952)</td>
<td>2.0</td>
<td>-0.000390&lt;sup&gt;a&lt;/sup&gt; (2.345)</td>
<td>2.0</td>
<td>-0.000297 (1.253)</td>
<td>2.0</td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP</td>
<td>0.00168 (0.260)</td>
<td>1.1</td>
<td>0.00355 (0.246)</td>
<td>1.1</td>
<td>-0.0319&lt;sup&gt;b&lt;/sup&gt; (1.644)</td>
<td>1.1</td>
</tr>
<tr>
<td>Log GNP per Capita, 1967</td>
<td>0.00262 (0.226)</td>
<td>4.8</td>
<td>0.0518&lt;sup&gt;b&lt;/sup&gt; (2.127)</td>
<td>4.8</td>
<td>0.0399 (1.149)</td>
<td>4.8</td>
</tr>
<tr>
<td>Investment as % of GDP, 1967-70</td>
<td>0.000213 (0.505)</td>
<td>1.6</td>
<td>0.00192&lt;sup&gt;b&lt;/sup&gt; (2.155)</td>
<td>1.6</td>
<td>0.00213&lt;sup&gt;b&lt;/sup&gt; (1.682)</td>
<td>1.6</td>
</tr>
<tr>
<td>Secondary Enrollment as % of Population, 1967-70</td>
<td>0.00978&lt;sup&gt;a&lt;/sup&gt; (2.771)</td>
<td>13.8</td>
<td>0.0173&lt;sup&gt;a&lt;/sup&gt; (2.331)</td>
<td>13.8</td>
<td>0.0220&lt;sup&gt;b&lt;/sup&gt; (2.081)</td>
<td>13.8</td>
</tr>
<tr>
<td>Secondary Enrollment as % of Population, 1967-70, Squared</td>
<td>-0.000742&lt;sup&gt;b&lt;/sup&gt; (1.766)</td>
<td>11.5</td>
<td>-0.00180&lt;sup&gt;b&lt;/sup&gt; (2.038)</td>
<td>11.5</td>
<td>-0.00182&lt;sup&gt;c&lt;/sup&gt; (1.441)</td>
<td>11.5</td>
</tr>
<tr>
<td>Average Annual Population Growth, 1967-70</td>
<td>-0.00651&lt;sup&gt;b&lt;/sup&gt; (2.029)</td>
<td>1.4</td>
<td>-0.00765 (1.133)</td>
<td>1.4</td>
<td>-0.000105 (0.011)</td>
<td>1.4</td>
</tr>
<tr>
<td>Constant</td>
<td>0.482</td>
<td>1.165</td>
<td>0.462</td>
<td>1.165</td>
<td>0.482</td>
<td>1.165</td>
</tr>
<tr>
<td>R²</td>
<td>0.925</td>
<td>0.760</td>
<td>0.916</td>
<td>0.732</td>
<td>0.892</td>
<td>0.612</td>
</tr>
<tr>
<td>R², Lagged Variable</td>
<td>0.892</td>
<td>0.612</td>
<td>0.892</td>
<td>0.612</td>
<td>0.401</td>
<td>0.401</td>
</tr>
</tbody>
</table>

See notes in Table 7.
MNC penetration has the expected negative relationship with log calorie supply per capita in all three panels, but this effect is significant only in 1975. The magnitude of the regression coefficient as well as that of the t-ratio declines from 1975 to 1980. Debt from official foreign lending, on the other hand, is not significant in the first two panels. Interestingly, this variable does have a significant negative effect in 1980.7

PROTEIN SUPPLY PER CAPITA

Findings for the panel models of protein supply per capita per day ending in 1970, 1975, and 1980 are shown in Table 12. These results are similar to those just discussed for calorie supply per capita. As in the case of calorie supply, the dependent variables proved to be linear functions of the lagged dependent variable. About 95 percent of the variance in 1970 protein supply was explained by the lagged variable, compared to 68 percent for 1980 protein supply.

Investment has the anticipated positive influence on protein supply in each panel, though this relationship is significant only in 1975. The effect of the population growth rate varies, but is never significant. Secondary school enrollment is significant only in quadratic form, in 1975 and 1980. As was true for calorie supply, the protein supply per capita first increases, then decreases, with enrollment, reaching maxima at relatively high enrollments of 4.5 and 5.3 percent in 1975 and 1980, respectively. The effect of GNP per capita is positive, but is significant only in the two longer panels.
**TABLE 12**

LAGGED REGRESSION MODELS OF LOG PROTEIN SUPPLY PER CAPITA PER DAY (N = 77)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>1969-71</th>
<th>1974-76</th>
<th>1979-81</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b (t)</td>
<td>VIF</td>
<td>b (t)</td>
</tr>
<tr>
<td>Log Protein Supply per Capita per Day, 1966-68</td>
<td>0.949*</td>
<td>1.9</td>
<td>0.843*</td>
</tr>
<tr>
<td></td>
<td>(27.227)</td>
<td></td>
<td>(13.144)</td>
</tr>
<tr>
<td>MNC Penetration, 1967</td>
<td>-0.000136</td>
<td>2.4</td>
<td>-0.00000320b</td>
</tr>
<tr>
<td></td>
<td>(1.238)</td>
<td></td>
<td>(1.871)</td>
</tr>
<tr>
<td>MNC Penetration, 1967, Squared</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP</td>
<td>-0.00120</td>
<td>1.1</td>
<td>-0.00175</td>
</tr>
<tr>
<td></td>
<td>(0.142)</td>
<td></td>
<td>(0.111)</td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP, Squared</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log GNP per Capita, 1967</td>
<td>0.0170</td>
<td>4.1</td>
<td>0.053u b</td>
</tr>
<tr>
<td></td>
<td>(1.236)</td>
<td></td>
<td>(1.985)</td>
</tr>
<tr>
<td>Investment as % of GDP, 1967-70</td>
<td>0.000287</td>
<td>1.6</td>
<td>0.00134c</td>
</tr>
<tr>
<td></td>
<td>(0.536)</td>
<td></td>
<td>(1.314)</td>
</tr>
<tr>
<td>Secondary Enrollment as % of Population, 1967-70</td>
<td>0.000963</td>
<td>2.4</td>
<td>0.0123c</td>
</tr>
<tr>
<td></td>
<td>(0.504)</td>
<td></td>
<td>(1.432)</td>
</tr>
<tr>
<td>Secondary Enrollment as % of Population, 1967-70, Squared</td>
<td>-0.00136c</td>
<td>11.2</td>
<td>-0.00213c</td>
</tr>
<tr>
<td></td>
<td>(1.360)</td>
<td></td>
<td>(1.543)</td>
</tr>
<tr>
<td>Average Annual Population Growth, 1967-70</td>
<td>-0.00477</td>
<td>1.3</td>
<td>-0.00585</td>
</tr>
<tr>
<td></td>
<td>(1.169)</td>
<td></td>
<td>(0.753)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.0663</td>
<td>0.151</td>
<td>0.151</td>
</tr>
<tr>
<td>R²</td>
<td>0.958</td>
<td>0.867</td>
<td>0.867</td>
</tr>
<tr>
<td>R²</td>
<td>0.953</td>
<td>0.852</td>
<td>0.852</td>
</tr>
<tr>
<td>R² Lagged Variable</td>
<td>0.952</td>
<td>0.815</td>
<td>0.815</td>
</tr>
</tbody>
</table>

See notes in Table 7.
As hypothesized, the effect of MNC penetration is negative in 1970 and 1975, though it is not significant in 1970 (i.e., in the short term). This effect appears to take a quadratic form in 1980, and protein supply per capita first decreases, then increases, as MNC penetration rises. The protein supply reaches its minimum at a penetration level of 74, a value higher than 71 percent of the countries in the sample. Thus, MNC penetration has a negative influence on protein supply per capita for most of the countries analyzed. Debt due to official foreign lending has no appreciable effect in 1970 and 1975, but the effect of this variable is, like MNC penetration, significant in quadratic form in the 1967-80 panel with protein per capita initially decreasing and then increasing with the protein supply reaching its minimum at an aid debt level of 1.2. This value is higher than 95 percent of the cases, indicating a negative effect for the vast majority of countries studied.8

INTERACTION MODELS

The nonadditive hypotheses \( H_3 \) and \( H_4 \) imply that the effects of MNC penetration and aid debt on calorie and protein supplies are more strongly negative for higher-income countries. Results from regressions testing these interaction hypotheses for the 1967-80 panels are presented in Table 13. None of the interactions is significant, however. These results were also supported by models which substituted the dummy GNP variable for log GNP per capita (results not shown).
### TABLE 13
LAGGED INTERACTION MODELS FOR NUTRITION ADEQUACY INDICATORS, 1979-81 (N = 77)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Log Calorie Supply per Capita per Day</th>
<th>Log Protein Supply per Capita per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( b(t) )</td>
<td>VIF</td>
</tr>
<tr>
<td>Lagged Dependent Variable</td>
<td>0.517* ( \text{(3.330)} )</td>
<td>2.3</td>
</tr>
<tr>
<td>MNC Penetration, 1967</td>
<td>-0.000431c ( \text{(1.371)} )</td>
<td>3.5</td>
</tr>
<tr>
<td>MNC Penetration, 1967, Squared</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MNC Penetration, 1967, X Dummy GNP</td>
<td>0.000268 ( \text{(0.789)} )</td>
<td>5.4</td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP</td>
<td>-0.0313c ( \text{(1.363)} )</td>
<td>1.5</td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP, Squared</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP, X Dummy GNP</td>
<td>0.00719 ( \text{(0.264)} )</td>
<td>3.1</td>
</tr>
<tr>
<td>Log GNP per Capita, 1967</td>
<td>0.0213 ( \text{(0.540)} )</td>
<td>6.2</td>
</tr>
<tr>
<td>Investment as % of GDP, 1967-70</td>
<td>0.00212b ( \text{(1.656)} )</td>
<td>1.6</td>
</tr>
<tr>
<td>Secondary Enrollment as % of Population, 1967-70</td>
<td>0.0198b ( \text{(1.895)} )</td>
<td>14.2</td>
</tr>
<tr>
<td>Secondary Enrollment as % of Population, 1967-70, Squared</td>
<td>-0.00159 ( \text{(1.244)} )</td>
<td>11.8</td>
</tr>
<tr>
<td>Average Annual Population Growth, 1967-70</td>
<td>-0.000413 ( \text{(0.042)} )</td>
<td>1.4</td>
</tr>
<tr>
<td>Constant</td>
<td>1.564</td>
<td>0.419</td>
</tr>
<tr>
<td>( g^2 )</td>
<td>0.612</td>
<td>0.805</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.553</td>
<td>0.768</td>
</tr>
</tbody>
</table>

See notes in Table 7.
EDUCATION AND LITERACY

Education-related needs, as represented here by primary enrollment as a percentage of the population of primary-school age and by the percentage of the adult population which is literate, are of less immediate importance than the health and nutrition phenomena examined above. Nonetheless, basic education is an important need over the longer term -- that is, for those who survive the short term. Hypotheses $H_1$ and $H_2$ imply that the higher the levels of MNC penetration and debt due to official foreign lending, the lower will be the adjusted primary enrollment ratio and the adult literacy rate.

ADJUSTED PRIMARY ENROLLMENT

Results of the analysis for the adjusted primary enrollment models are presented in Table 14. Data are available for 74 countries in all three panels. Preliminary analysis found that the appropriate functional specification for the lagged dependent variable is linear. The lagged variable explains about 88 percent of the variance in the 1970 panel, a proportion which diminishes to about 60 percent in the 1980 panel.

In general, the regressors other than the lagged variable perform rather poorly. This is most apparent in the 1967-70 panel, in which the only significant regressor is the lagged dependent variable. None of the independent variables have coefficients even as large as their standard errors. In the two later panels, the only variables ever significant are GNP per capita and population growth. Population growth
TABLE 14
LAGGED REGRESSION MODELS OF THE ADJUSTED PRIMARY ENROLLMENT RATIO (N = 74)

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>1970 b (t)</th>
<th>VIF</th>
<th>1975 b (t)</th>
<th>VIF</th>
<th>1980 b (t)</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted Primary</td>
<td>0.839a</td>
<td>2.7</td>
<td>0.650a</td>
<td>2.7</td>
<td>0.663a</td>
<td>2.7</td>
</tr>
<tr>
<td>Enrollment Ratio,</td>
<td>(12.804)</td>
<td></td>
<td>(7.265)</td>
<td></td>
<td>(6.138)</td>
<td></td>
</tr>
<tr>
<td>1965</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MNC Penetration,</td>
<td>0.0206</td>
<td>2.0</td>
<td>-0.0495</td>
<td>2.0</td>
<td>-0.0345</td>
<td>2.0</td>
</tr>
<tr>
<td>1967</td>
<td>(0.401)</td>
<td></td>
<td>(0.704)</td>
<td></td>
<td>(0.407)</td>
<td></td>
</tr>
<tr>
<td>Log Aid Debt,</td>
<td>0.142</td>
<td>1.1</td>
<td>7.072</td>
<td>1.1</td>
<td>3.184</td>
<td>1.1</td>
</tr>
<tr>
<td>1960-67, as % of</td>
<td>(0.033)</td>
<td></td>
<td>(1.211)</td>
<td></td>
<td>(0.452)</td>
<td></td>
</tr>
<tr>
<td>1967 GNP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GNP per Capita,</td>
<td>0.0143</td>
<td>20.0</td>
<td>0.0533b</td>
<td>20.0</td>
<td>0.0214</td>
<td>20.0</td>
</tr>
<tr>
<td>1967</td>
<td>(0.617)</td>
<td></td>
<td>(1.681)</td>
<td></td>
<td>(0.559)</td>
<td></td>
</tr>
<tr>
<td>GNP per Capita,</td>
<td>-0.0000116</td>
<td>13.3</td>
<td>-0.0000361c</td>
<td>13.3</td>
<td>-0.0000169</td>
<td>13.3</td>
</tr>
<tr>
<td>1967, Squared</td>
<td>(0.064)</td>
<td></td>
<td>(1.520)</td>
<td></td>
<td>(0.588)</td>
<td></td>
</tr>
<tr>
<td>Investment as %</td>
<td>0.195</td>
<td>1.6</td>
<td>0.187</td>
<td>1.6</td>
<td>0.117</td>
<td>1.6</td>
</tr>
<tr>
<td>of GDP, 1967-70</td>
<td>(0.730)</td>
<td></td>
<td>(0.513)</td>
<td></td>
<td>(0.266)</td>
<td></td>
</tr>
<tr>
<td>Secondary Enrollment</td>
<td>0.798</td>
<td>3.1</td>
<td>0.392</td>
<td>3.1</td>
<td>-0.0344</td>
<td>3.1</td>
</tr>
<tr>
<td>as % of Population,</td>
<td>(0.743)</td>
<td></td>
<td>(0.267)</td>
<td></td>
<td>(0.019)</td>
<td></td>
</tr>
<tr>
<td>1967-70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Annual</td>
<td>-1.065</td>
<td>1.2</td>
<td>3.979c</td>
<td>1.2</td>
<td>5.835a</td>
<td>1.2</td>
</tr>
<tr>
<td>Population Growth,</td>
<td>(0.536)</td>
<td></td>
<td>(1.464)</td>
<td></td>
<td>(1.779)</td>
<td></td>
</tr>
<tr>
<td>1967-70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>9.067</td>
<td></td>
<td>7.897</td>
<td></td>
<td>19.184</td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.892</td>
<td></td>
<td>0.760</td>
<td></td>
<td>0.627</td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.879</td>
<td></td>
<td>0.730</td>
<td></td>
<td>0.582</td>
<td></td>
</tr>
<tr>
<td>R², Lagged Variable</td>
<td>0.883</td>
<td></td>
<td>0.728</td>
<td></td>
<td>0.596</td>
<td></td>
</tr>
</tbody>
</table>

See notes in Table 7.
has a significant positive influence in each case. GNP per capita is used in its quadratic form in all the panels. In 1975, each term of the GNP per capita function is significant, indicating that primary enrollment first increases, then decreases with increasing per capita income. The maximum for this panel is attained at a value of US$738 per capita, a level of income not attained by 94 percent of the total sample of 77 countries (95 percent of the slightly smaller sample used in this analysis). A similar pattern is found for 1980, but the coefficients for income per capita are not significant in this panel.

As was just implied, the independent variables specified in hypotheses $H_1$ and $H_2$ do not have significant effects in any of the panels. MNC penetration has the predicted negative coefficients in the last two panels, though it has a positive coefficient in the 1970 panel. Debt due to official foreign lending, on the other hand, always has an unexpected positive coefficient, which is larger than its standard error in 1975.

A backward stepwise elimination procedure (results not shown) was used to assess the impact of removing insignificant variables from these equations. Beginning with the full models shown in Table 14, the least significant variables were successively removed until all remaining variables were significant at the 0.10 level (one-tailed). For the 1967-70 panel, only the lagged variable and the two GNP per capita terms survived. For the other two panels, the stepwise procedure retained only those variables which are marked as significant in the full models reported in the accompanying tables. No coefficients changed signs as a result of deleting the insignificant variables.
ADULT LITERACY

Table 15 shows the results of regression analysis for the lagged panel models of the adult literacy rate (literate adults as a percentage of the adult population). Unfortunately, data on literacy are available for relatively few countries at a given point in time, and virtually no countries had data on this variable for all four times (including the lagged dependent variable) used in the three panels. For any analysis at all to be possible, all countries with sufficient data for a panel had to be used in that panel, rendering incomparable the cases used across the panels. The sample sizes in these analyses are 36, 25, and 34 in 1970, 1975, and 1980, respectively. A linear lagged variable proved better for 1970, while the quadratic form was better in the other two panels. In these last two panels, adult literacy appears to increase, then decrease with increasing adult literacy in 1965. However, the maxima for these functions are 159 percent and 82 percent literacy, respectively, for 1975 and 1980. The maximum for 1975 is obviously higher than the upper limit of this variable, while the 1980 maximum is higher than the values for 95 percent of the countries in the total sample of 57 countries for which 1965 literacy data are available and higher than all but one of the 34 countries actually used in the regression analysis. From 86 percent (1980) to 97 percent (1975) of the variance is explained by the lagged dependent variable.

The influence of investment and, surprisingly, secondary school enrollment on literacy in these models is negligible; neither variable has any significant effects. The effect of the population growth rate
TABLE 15
LAGGED REGRESSION MODELS OF ADULT LITERACY RATES

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b (t)</td>
<td>VIF</td>
<td>b (t)</td>
</tr>
<tr>
<td>Adult Literacy Rate, 1965</td>
<td>0.978**</td>
<td>4.6</td>
<td>1.148**</td>
</tr>
<tr>
<td></td>
<td>(11.986)</td>
<td></td>
<td>(7.239)</td>
</tr>
<tr>
<td>Adult Literacy Rate, 1965, Squared</td>
<td>-0.00362b</td>
<td>21.9</td>
<td>-0.0112a</td>
</tr>
<tr>
<td></td>
<td>(2.127)</td>
<td></td>
<td>(3.375)</td>
</tr>
<tr>
<td>MNC Penetration, 1967</td>
<td>-0.397a</td>
<td>21.0</td>
<td>0.0119</td>
</tr>
<tr>
<td></td>
<td>(2.806)</td>
<td></td>
<td>(0.272)</td>
</tr>
<tr>
<td>MNC Penetration, 1967, Squared</td>
<td>0.00356a</td>
<td>21.2</td>
<td>-0.00391b</td>
</tr>
<tr>
<td></td>
<td>(2.766)</td>
<td></td>
<td>(2.207)</td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP</td>
<td>11.516b</td>
<td>1.9</td>
<td>-1.857</td>
</tr>
<tr>
<td></td>
<td>(2.108)</td>
<td></td>
<td>(0.734)</td>
</tr>
<tr>
<td>GNP per Capita, 1967</td>
<td>0.0436**</td>
<td>20.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.423)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GNP per Capita, 1967, Squared</td>
<td>-0.0000300a</td>
<td>15.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.389)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log GNP per Capita, 1967</td>
<td>11.956c</td>
<td>11.5</td>
<td>2.691</td>
</tr>
<tr>
<td></td>
<td>(1.539)</td>
<td></td>
<td>(0.334)</td>
</tr>
<tr>
<td>Investment as % of GDP, 1967-70</td>
<td>-0.0818</td>
<td>1.9</td>
<td>-0.0137</td>
</tr>
<tr>
<td></td>
<td>(0.326)</td>
<td></td>
<td>(0.055)</td>
</tr>
<tr>
<td>Secondary Enrollment as % of Population, 1967-70</td>
<td>0.137</td>
<td>3.8</td>
<td>0.536</td>
</tr>
<tr>
<td></td>
<td>(0.131)</td>
<td></td>
<td>(0.303)</td>
</tr>
<tr>
<td>Average Annual Population Growth, 1967-70</td>
<td>3.401b</td>
<td>1.4</td>
<td>-0.793</td>
</tr>
<tr>
<td></td>
<td>(1.898)</td>
<td></td>
<td>(0.384)</td>
</tr>
<tr>
<td>R²</td>
<td>0.965</td>
<td>0.985</td>
<td>0.910</td>
</tr>
<tr>
<td>R²</td>
<td>0.953</td>
<td>0.978</td>
<td>0.876</td>
</tr>
<tr>
<td>R² Lagged Variable</td>
<td>0.936</td>
<td>0.970</td>
<td>0.856</td>
</tr>
</tbody>
</table>

See notes in Table 7.
is positive where it is significant (1970 and 1980). GNP per capita has a quadratic effect in 1970 which gives way to a logged effect in 1975 and 1980. In 1970, literacy first increases, then declines with GNP per capita (the maximum of the function is US$727, the ninety-fourth percentile in the total sample of 77 and the ninety-second percentile in the sample of 36 countries used for this regression model, rendering this function positive for the vast majority of the countries considered). In the longer panels, literacy increases with income per capita, but not significantly so in 1980.

MNC penetration appears to have a quadratic effect on literacy in 1970 and 1980. Partial regression plots suggested a quadratic function in 1975 also, the panel with the fewest cases, but an attempt to use this specification reduced the adjusted $R^2$. MNC penetration has significant effects in its quadratic form in the 1970 and 1980 panels, but strangely enough the directions of these effects are opposite. Literacy first decreases, then increases with MNC penetration in 1970, the function reaching a minimum at a penetration level of 56 (below which lie 58 percent both of the 77 countries in the total sample and of the 36 countries in this analysis). In 1980, literacy increases, then decreases with MNC penetration (the maximum occurs at a penetration level of 54, which lies at a point on the MNC penetration distribution similar to that of the minimum for 1970). MNC penetration has no apparent effect in either direction in 1975. Debt due to official foreign lending, on the other hand, is always positive (thus contradicting $H_2$), though it has a significant effect only in 1970.11
Finally, Table 16 presents results from interaction models for primary enrollment and adult literacy. Interactions between GNP per capita and MNC penetration and aid debt, respectively, are added to the final models of these education indicators for the 1967-80 panels. Hypotheses H₃ and H₄ imply that the impacts of MNC penetration and aid debt on these indicators of satisfaction of basic educational needs should be more strongly negative for higher income countries. However, as in the models of the nutrition indicators, none of the interaction terms is significant. True ANCOVA models (results not shown) produced the same outcome.

SUMMARY

The results of this analysis are not consistently supportive of the hypotheses formulated in Chapter IV. In a word, the findings for additive hypotheses H₁ and H₂ are mixed. The interaction hypotheses H₃ and H₄ are not supported at all; the only significant interaction terms are those between aid debt and GNP per capita in the 1980 models of infant and child mortality, and the coefficients of these terms have signs opposite those predicted. Since the findings for the additive hypotheses are more complex, they are discussed in detail below.

Outright support (in terms of statistical tests) for the hypothesized additive detrimental effects of MNC penetration occurs for models of child mortality (panels ending in 1970 and 1975), calorie supply per capita (1975 panel), and protein supply per capita (1975 panel). There
TABLE 16
LAGGED INTERACTION MODELS FOR EDUCATION INDICATORS, 1980

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Adjusted Primary Enrollment Ratio (N = 74)</th>
<th>Adult Literacy Rate (N = 34)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b (t) VIF</td>
<td>b (t) VIF</td>
</tr>
<tr>
<td>Lagged Dependent Variable</td>
<td>0.665* (5.812) 2.9</td>
<td>1.774* (6.243) 19.5</td>
</tr>
<tr>
<td>Lagged Dependent Variable, Squared</td>
<td>-0.0103* (2.879)</td>
<td></td>
</tr>
<tr>
<td>MNC Penetration, 1967</td>
<td>-0.0334 (0.310) 3.1</td>
<td>0.423b (2.068) 20.1</td>
</tr>
<tr>
<td>MNC Penetration, 1967, Squared</td>
<td>-0.00451b (0.866) 5.5</td>
<td>0.146 (0.886) 17.9</td>
</tr>
<tr>
<td>MNC Penetration, 1967, X Dummy GNP</td>
<td>3.214 (0.399) 1.4</td>
<td>7.836 (0.897) 3.6</td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP</td>
<td>-0.354 (0.037) 2.9</td>
<td>-6.119 (0.623) 5.6</td>
</tr>
<tr>
<td>GNP per Capita, 1967</td>
<td>0.0231 (0.504) 27.9</td>
<td></td>
</tr>
<tr>
<td>GNP per Capita, 1967, Squared</td>
<td>-0.0000179 (0.547) 16.8</td>
<td></td>
</tr>
<tr>
<td>Log GNP per Capita, 1967</td>
<td></td>
<td>2.095 (0.208) 4.7</td>
</tr>
<tr>
<td>Investment as % of GDP, 1967-70</td>
<td>0.118 (0.262) 1.6</td>
<td>-0.244 (0.523) 2.9</td>
</tr>
<tr>
<td>Secondary Enrollment as % of Population, 1967-70</td>
<td>-0.0562 (0.031) 3.2</td>
<td>-1.789 (1.136) 3.0</td>
</tr>
<tr>
<td>Average Annual Population Growth, 1967-70</td>
<td>5.894b (1.704) 5.245 (1.166) 2.3</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>18.772</td>
<td>-12.523</td>
</tr>
<tr>
<td>R²</td>
<td>0.627</td>
<td>0.913</td>
</tr>
<tr>
<td>R²</td>
<td>0.568</td>
<td>0.869</td>
</tr>
</tbody>
</table>

See notes in Table 7.
are also several instances of significant quadratic penetration effects, i.e., cases in which the direction of the effect depends on the level of penetration. In all but one of these cases, the effects of MNC penetration are initially detrimental, turning to beneficial effects at inflection points ranging approximately from the sixtieth to the seventieth percentile of the penetration distribution. This result occurs for models of infant mortality (1970 and 1975 panels), protein supply per capita (1980 panel), and adult literacy (1970 panel). In another case, the 1980 adult literacy panel, the effects of MNC penetration are initially beneficial, then detrimental as penetration increases, with the inflection occurring at about the sixtieth percentile. Notably, there are no significant effects of MNC penetration in a direction opposite to that hypothesized, other than in cases of quadratic effects.

The detrimental effects of debt accumulated from official bilateral lending, specified in hypothesis H₂, are not supported even to this degree. Significant effects in the predicted direction occur only for the 1980 calorie supply model. In another case — that of the 1980 protein supply model — a significant quadratic effect appears in which aid debt is initially detrimental, then beneficial; however, the effect reverses direction at such a high level of debt that the impact of this variable is detrimental for almost all countries analyzed. On the other hand, significant effects of aid debt in the opposite direction from that hypothesized occur for models of life expectancy at age five (all three panels) and adult literacy (1970 panel).
It is worth noting that the control variables often fare no better than the independent variables just discussed. The poorest performer among the controls is gross domestic investment as a percentage of GDP. It has significant influence only for one child mortality model (1970 panel, detrimental effect), two calorie supply models (1975 and 1980 panels, beneficial effect), and one protein supply model (1975 panel, beneficial effect). The rate of population growth more frequently attains significance, but usually with an apparent effect opposite to that predicted by the neo-Malthusians (infant mortality, all three panels; child mortality, all three panels; primary enrollment ratio, 1975 and 1980 panels; adult literacy, 1970 and 1980 panels). This control has a significant impact in the predicted direction only for the 1970 calorie supply model. Secondary school enrollment as a percentage of total population behaves more nearly in an expected fashion, at least for mortality and life expectancy models, where it is linked with better performance in infant mortality (all three panels), child mortality (all three panels), and life expectancy at age five (1980 panel). This control displays quadratic effects in the nutrition models, but for most countries these effects are beneficial (calorie supply, all three panels; protein supply, 1975 and 1980 panels). Oddly enough, secondary enrollment has no significant relationships with the education-related dependent variables.

Given its theoretical importance, GNP per capita does not appear to perform very well, at least on first impression. When used in its logged form, it fails to attain significance for life expectancy models, and has significant beneficial effects in one of three calorie supply
models, in two of three protein supply models, and in one of two adult literacy models. In quadratic form, it has significant effects in two of three infant mortality models, all three child mortality models, one of three primary enrollment models, and one adult literacy model; in each of these instances, the effect of income per capita is at first beneficial and then detrimental at increasing income levels, though the effect is in each of these cases beneficial for almost all of countries in the analysis. The effect of income per capita would almost certainly be more apparent throughout the analysis were it not for problems of multicollinearity. An inspection of the variance inflation factors for the logged form of per capita GNP shows that this variable always has the greatest multicollinearity of any variable in the model other than polynomials.
NOTES FOR CHAPTER V

1. Polynomials of an order higher than quadratic are as a rule avoided for any variable in this analysis, and any indications that such higher-order polynomials are involved are ignored. Without a prior substantive reason for such a function, it seems inadvisable to introduce such complexity for purely technical reasons. Cf. Montgomery and Peck (1982:183).

2. This criterion is equivalent to insisting that the quadratic specification not have a larger residual mean square than the log specification. Cf. Montgomery and Peck (1982:251-252).

3. Some values of this variable were between negative one and zero -- values for which logarithms are not defined -- before transformation. A common practice in logging variables which have a lower limit of zero is to add one before the transformation. In this case, two was added to avoid negative logarithms, which occur for values less than one and which decrease disproportionately rapidly with respect to decreases in the original values.

4. A logged specification of GNP per capita approached the performance of the quadratic specification, but evidence regarding the hypotheses $H_1$ and $H_2$ was basically unaffected by the choice of this functional form.

5. The distributions of the residuals for the three child mortality models are somewhat leptokurtic.

6. In the interaction model of child mortality as in the additive models, the residuals display a somewhat peaked distribution.

7. Despite the use of a log transformation for calories per capita per day, the distribution of residuals for the 1975 panel was still leptokurtic.

8. As in the case of calorie supply, the 1975 protein supply panel produced residuals with a peaked distribution.

9. The choice of the quadratic specification of GNP per capita is somewhat a compromise and is based on results of models including only the lagged dependent variable and GNP per capita. This functional form was clearly superior in the 1970 panel, but in 1975 it had a very slightly lower adjusted $R^2$ than the log specification and performed rather similarly otherwise. In the 1980 panel the adjusted $R^2$ was again slightly lower for the quadratic form, but, while neither form of per capita income had a significant effect, the quadratic specification approached significance more closely than log GNP per capita.

10. The distribution of the residuals from the 1970 panel is slightly leptokurtic.
11. The distributions of residuals from the 1975 and 1980 panel models are slightly peaked.
CHAPTER VI

CONCLUSION

This study has been an attempt to examine the effects of certain relationships between developed and underdeveloped countries on the satisfaction of basic needs in the latter. The guiding theoretical perspective of the research is the dependency/world-system perspective, which generally claims that contact between developed (core) areas and underdeveloped (peripheral) areas serves to enrich the core by exploiting the periphery. Conventional Western development theories, which are quite dominant in the agencies of many Western governments and in major development-related organizations associated with these governments (e.g., the World Bank), make the opposite claim: the Third World must seek development through reliance on investment and aid from the advanced countries and through trade with these countries. Although this research is not intended as a direct comparison of the two perspectives, important arguments of the conventional perspective are incorporated into the research design.

Proponents of the world-system/dependency perspective argue that private foreign investment and lending, foreign aid, trade, and political and military subordination by the core (collectively referred to as "dependence") all contribute to the underdevelopment of the periphery. The present study examines the effects of two specific,
measurable forms of core-periphery relations — penetration by multinational corporations (MNCs) and debt accumulated from bilateral official foreign lending — on underdevelopment in the form of unmet basic human needs. Basic needs include food, safe water, proper sanitation, adequate shelter, basic education, and health, some of which are indicated in this study by infant mortality rates, child mortality rates, total life expectancy at age five, calorie and protein supplies per capita, the adjusted primary school enrollment ratio, and adult literacy rates. It was hypothesized that MNC penetration and debt due to official foreign lending would have detrimental effects on these dependent variables. Despite the ultimate, life-and-death importance of basic needs, little cross-national research has been conducted on the effects of dependence on basic needs. Most research on the impact of dependence has examined economic growth and income inequality as aspects of development.

This chapter begins with a discussion of the results from the statistical tests of the hypotheses. The implications of the findings for the world-system/dependency perspective and for policy are examined next. Finally, an extensive agenda for additional research needed on the relationship between dependence and basic needs satisfaction is presented.

**DISCUSSION OF FINDINGS**

In this section, the results of Chapter V are reviewed and general patterns in the findings are identified and discussed. Detailed comments are grouped by the type of dependent variable: mortality and
life expectancy, nutrition, and education and literacy. The focus here is almost exclusively on the additive hypotheses, $H_1$ and $H_2$, which state that MNC involvement and foreign aid receipts, respectively, have detrimental impacts on basic needs satisfaction. Two additional hypotheses ($H_3$ and $H_4$) which specified that these detrimental effects are stronger in countries with higher incomes per capita were never supported for any dependent variable, and are not discussed in detail. However, these interaction hypotheses are not nearly so relevant to the dependency and world-system perspectives as are the additive hypotheses $H_1$ and $H_2$.

MORTALITY AND LIFE EXPECTANCY

In the models for the infant mortality rate, hypothesis $H_1$ received conditional support and hypothesis $H_2$ was not supported. Infant mortality indeed increased with MNC penetration, as expected, for countries in about the bottom 60 percent of the distribution of MNC penetration in 1970 and, at a less stringent significance criterion, in 1975, but the effect was reversed for countries with higher levels of penetration. There was no effect, either linear or curvilinear, in 1980.

Hypothesis $H_2$ again lacked support in the models of child mortality rates, but $H_1$ received direct support for this dependent variable. MNC penetration appeared to lead to higher levels of child mortality from 1970 to 1980 (as indicated by unstandardized regression coefficients), though the obtained significance was weak and declined slightly over time, failing to attain significance in 1980. Thus, the pattern of
results for child mortality was somewhat similar to that for infant mortality.

The models for total life expectancy at age five exhibited a strikingly different pattern. $H_1$, which posits a negative relationship between MNC penetration and life expectancy, was not supported; indeed, though the effects of penetration never reach significance, they are positive and increase somewhat over time. Results for $H_2$, which predicts a negative relationship between aid debt and life expectancy, were even more unexpected. Not only was this relationship positive, but it was significant as well, indicating that aid improves life expectancy at age five.

Four points call for attention in these results for models of mortality and life expectancy. First, there is no consistent indication of whether harmful effects of dependence on basic needs satisfaction increase over time. Of course, this is a moot point for life expectancy, since dependence appears to actually boost this basic needs indicator. Such a trend does appear in the effects of penetration in the child mortality models, though it is mitigated by falling levels of obtained significance. (A similar trend occurs for aid debt, though these effects are never significant.) But the results for infant mortality are not really comparable due to the curvilinear effect for the first two panels.

Second, the curvilinear effect of MNC penetration in the infant mortality models is perplexing. Why should there be a curvilinear effect of penetration on infant mortality, and why is this effect not curvilinear for child mortality as well? Perhaps different types of MNC
investment are correlated with levels of investment, and infant
mortality responds to the different types of investment in opposite
ways. It may be that MNC investments in, for example, agriculture, are
relatively low in comparison to the effects of this foreign involvement
on the social structure, while MNC investments in a sector such as
manufacturing are high with respect to the impact of this involvement on
structure. Might the effect of involvement in the agricultural sector
be especially harmful to basic needs satisfaction (e.g., via diversion
of land from production of food for domestic consumption, as Susan
George [1977, 1979] claims), while MNC involvement in manufacturing is
actually beneficial? These suggestions are of course highly speculative
and should be subjected to empirical testing. On the other hand, the
absence of this curvilinear effect for child mortality suggests that,
under high levels of MNC penetration, some intervening factors which
contribute more to infant mortality than to child mortality are
inhibited. These factors should be identifiable from the demographic
and public health literatures on infant and child mortality.

Third, the effect hypothesized for aid debt is consistently
unsupported, and is actually significant and in the opposite direction
from that predicted for life expectancy at age five. These results
suggest that aid is in fact a more benign form of contact from the core
to the underdeveloped world than is MNC investment.

Finally, just as the effect of aid debt shifts from nonsignificant to
significant and beneficial as one moves from the mortality models to the
life expectancy models, MNC penetration shifts from significant and
mostly detrimental to nonsignificant. The forms of dependence examined
here seem to improve or at least not shorten the lifespan of those who survive early childhood, while, on balance, the same forms of dependence make it somewhat less likely that individuals in the peripheral countries will survive childhood. The causes of mortality are different for different age groups, and it appears that dependence affects these different causes in different ways. As was mentioned earlier in this dissertation, for example, infants are particularly susceptible to diseases which accompany inadequate nutrition, unclean water, and poor sanitation. It would be useful to specify the precise linkages between various forms of dependence and particular factors which influence mortality at different ages.

The findings for the effects of dependence on infant mortality, child mortality, and life expectancy at age five are particularly interesting because of the special relevance of these indicators for basic needs. First, these variables are measures of the health of a population, and health is perhaps the most basic of basic needs. Though they may be important for providing immediate comfort as well, much of the importance of needs such as food, water, sanitation, shelter, and even basic education lies in their contribution to health. Also, for reasons discussed in previous chapters, these measures tap the distribution of health rather well. Infant and child mortality rates are direct measures of distribution, since they measure the proportion of persons who fail to attain an acceptable outcome, namely survival. Life expectancy at age five does not directly indicate the distribution of longevity, but there is a major limitation on the degree to which the longevity distribution (of which life expectancy is an average) can be
skewed: there are distinct, biologically-imposed upper limits on longevity which are little affected by a person's wealth.

NUTRITION

Hypotheses $H_1$ and $H_2$ are each supported in one panel model for calorie supply per capita. MNC penetration always has a detrimental effect on this variable, as hypothesized, but it is significant only in 1975 (albeit at a very stringent significance level). In terms of both $t$-ratios and regression coefficients, the effect of penetration is negligible in 1970, increases considerably by 1975, and declines somewhat by 1980. Aid debt has positive but negligible effects in 1970 and 1975, but has the significant negative (harmful) effect predicted in 1980.

The results for the protein supply models are made more complex by the presence of polynomials. MNC penetration has a detrimental effect in 1970 and 1975, though it is not significant in 1970. In 1980 the effect of penetration appears to be curvilinear, with the protein supply per capita first diminishing, then increasing with rising MNC penetration. The inflection point of this curve indicates that the protein supply is decreased by penetration for about the 70 percent of countries with the lowest penetration levels, with the remaining 30 percent enjoying a beneficial effect of MNC penetration. Over most of the countries in the distribution, then, the same impact of penetration occurred as occurred for calorie supplies in the same year. The effects of aid debt are essentially nonexistent in 1970 and 1975, but take a
curvilinear form in 1980 when the protein supply is first a decreasing, then increasing, function of debt. However, aid debt actually has a beneficial effect on protein supply for only the five percent (assuming that the inflection point of the function corresponds with a minimum in the actual data points) of the countries with the highest aid debt scores, and thus the result for the great majority of countries resembles that for calorie supply in the same year.

One should note that this relationship between aid and food supplies differs from that found by Schubert (1981) for the period 1963-73. This inconsistency may reflect the difference in historical periods, but Schubert's aid variable is also quite different. He examines the effects of U.S. food aid, not the effects of debt due to official foreign lending.

The particularly strong effects of aid dependence on calorie and protein supplies in 1980 at first appear to confirm the idea that the effect of dependence grows stronger and more harmful with time. However, there is no apparent trend in this effect between the panels ending in 1970 and 1975. Since the Third World debt crisis was becoming particularly severe by 1980, this finding may merely reflect the reduced ability to import all goods, including food; recall that the FAO estimates calorie and protein supplies from food supplies, which in turn are constituted partly by imports and exports. This would not contradict the dependency/world-system perspective, which claims that one of the harmful aspects of aid is that it increases debt to foreign creditors. Nonetheless, if this result is due to the explosion of the Third World debt crisis, it does not necessarily indicate that the
effects of this form of dependence grow more detrimental with time, but that they were more detrimental at this particular point in time because of the convergence of other historical phenomena which aggravated the crisis.

In interpreting the effects of MNC penetration and aid on these food supply indicators, one should also keep in mind that these are measures not of the proportion of the population receiving adequate nutrition (i.e., distributional measures), but of the aggregate supply of food available for consumption. Thus, although these models show the effects of dependence on potential nutrition adequacy, and although nutrition is a particularly important basic need, the effects on the extent to which the entire population receives adequate nutrition are not altogether clear.

EDUCATION AND LITERACY

Neither of the additive hypotheses was supported for the models of the adjusted primary enrollment ratio. The effects of MNC penetration and aid debt were not significant for any panel. This result for MNC penetration corresponds with Mahler's (1981) findings for combined primary and secondary enrollment ratios, which are based on 1970 enrollments and sector-specific 1967 investment stocks as proportions of GNP. It should be pointed out that, other than the lagged dependent variable, none of the control variables performed very well in these models; only a quadratic function of GNP per capita was significant in the 1975 panel, and only population growth was significant in the 1980 panel.
Whatever the outcome for these hypotheses, one should be careful not to give too much weight to primary education enrollments as an indicator of the satisfaction of basic educational needs. Such enrollments are inputs rather than outputs, and thus do not directly reflect the proportion of the population with a sufficient education to gain some satisfactory level of understanding and control of their environment, including health as well as such overtly social spheres as finances, work, and politics. It is possible, of course, that the additive hypotheses would have been supported for an output measure of education.

Results for the models of adult literacy were more impressive, though not providing any clear support for the additive hypotheses. Hypothesis $H_2$ was contradicted for the 1970 panel; the level of debt due to aid had a positive (beneficial) effect on adult literacy in this model, though it had no significant impact in the other two panel models. The effect of MNC penetration was not significant in 1975, though it had a curvilinear effect in 1970 and 1980. Oddly enough, in 1970 literacy first decreased, then increased with the penetration function (reversing direction at a penetration level slightly higher than the median), but in 1980 literacy first increased, then decreased with the penetration function (again reversing direction a little above the median of MNC penetration). No substantive rationale for this difference readily comes to mind. In comparison, McGowan and Smith (1978) found no correlation between 1967 MNC investment per capita and 1965 literacy rates in their study of black African nations.

The literacy models are, unfortunately, the least valuable models analyzed because of lack of data. Panels for 1967-70, 1967-75, and
1967-80 are not really comparable for purposes of establishing a trend in the effects of dependence over time because they are based on very different sets of countries. (See Appendix C for a list of the countries used in each panel.) Identical samples over time were not feasible because virtually no countries had literacy data available for all four points in time that are involved in the three panels. Furthermore, the estimation procedure used to increase sample sizes somewhat blurs the timing of the waves in the panels. Compared to the other dependent variables, many missing data points were estimated with data from other years. The lagged literacy variable (i.e., for 1965) is especially problematic in this regard, with many estimates taken from 1961 and 1962.

**GENERAL REMARKS**

As was noted earlier, the hypotheses that the detrimental effects of MNC penetration and debt due to aid are stronger in Third World countries with higher per capita incomes were never supported. However, it was determined that the effect of aid in high-income countries differed significantly from its effect in low-income countries for infant and child mortality, with aid having a beneficial effect in the richer countries and a detrimental effect in the poorer countries. These hypotheses were tested only for the 1980 panels.

The additive hypotheses received far better support, but why were they not supported more strongly? Other than the possibility that the hypotheses are in some cases incorrect, there are several potential
reasons. First of all, the analysis presented in Chapter V was designed as a conservative test of the hypotheses. Several control variables were used, and close attention was given to the functional form of these variables in order to maximize their impacts on the dependent variables. Because of its important role in previous theory and research, particular care was taken with GNP per capita, to the extent of searching for its best functional specification before adding any variable other than the lagged dependent variable to the equations. With the relatively small samples used, a limitation inherent in the research problem itself (there is only a limited number of Third World countries), the use of so many regressors reduces the degrees of freedom for significance tests and thus reduces the power of the tests to reject false null hypotheses, though this phenomenon is partially compensated by the use of a significance criterion of 0.10 (a compromise which makes the test more liberal by increasing the risk of failing to reject a false alternative hypothesis). The analysis in Chapter V also consisted of conservative tests in that the use of lagged dependent variables without corrections for correlations between the lagged variables and the associated error terms should tend to bias the coefficients of other regressors, including the dependence measures, toward zero (see Chapter IV).

Second, some random measurement error is certainly present in the variables constituting the models studied, though the amount of such error is difficult to guess and more difficult to measure. A careful reading of the notes accompanying the published data used for this study reveals that those who collected the data are often quite cautious in
mankind claims about its reliability. Unfortunately, few researchers in this area of inquiry can influence the quality of the collection of required data, which is carried out by many individuals and organizations of varying capabilities, unlike social psychologists and others who design and administer their own surveys to individuals. To the extent that random measurement error exists in the independent variables, the strength of their effects is attenuated (Duncan, 1975).

There may also be a substantive reason why the effects of MNC penetration in particular are not stronger. Research on economic growth, reviewed in Chapter III, has suggested that the long-term detrimental influence of stocks of MNC investment is suppressed when recent flows of investment, which have short-term beneficial effects, are not controlled (see the discussion in the section on the agenda for future research, below). It could well be that a similar suppression effect occurs for debt accumulated from foreign aid.

A final issue that should be addressed here is the very large proportions of variance often explained by the lagged variables alone. A number of the adjusted $R^2$s for the lagged variable models exceed 0.900, including virtually all the models of mortality and life expectancy, plus the 1970 model of protein supply per capita and the 1970 and 1975 models of adult literacy. For the 1970 models of infant and child mortality, about 99 percent of the variance was explained by the lagged dependent variables. Such extreme results indicate that these basic needs indicators closely approach exact functions of the lagged dependent variables and that the relative positions of nations on these indicators have changed little, though dramatic improvements have
occurred for many of these indicators on an international scale since the mid-1960s (cf. Appendix B). One might be tempted to conclude that, given these very strong relationships, the only important independent variable in these instances is the lagged dependent variable. As a practical matter, however, this conclusion implies that countries desiring to improve their performance in one of these dimensions of basic needs should (1) have a good performance to begin with and (2) wait for a general trend to improve this performance even more. This would be analogous to explaining mortality by age; demographers have opted instead to standardize mortality rates by age. In the models presented in this study, massive apparent effects of lagged variables call for an adjustment such as controlling them in the regression equations, but they are not particularly interesting effects in the context of the research problem at hand.

**IMPLICATIONS FOR THEORY AND POLICY**

The hypothesis that MNC penetration is detrimental to basic needs satisfaction was supported outright in one model for 1970, three models for 1975, and no models for 1980. There were in addition significant curvilinear effects of penetration for two models in 1970, one model in 1975, and two models in 1980. These nonlinear effects were generally such that there was an initial detrimental effect of penetration on basic needs satisfaction which became beneficial only for a minority of countries with the highest levels of penetration; in the sole exception, adult literacy in 1980, MNC penetration was beneficial for a majority of countries with the lowest penetration levels, turning to a detrimental
effect for only a minority of countries with high penetration levels. Excepting this one case, then, over a range including most of the countries in the sample the hypothesized effect of MNC penetration held for three models in 1970, four models in 1975, and one model in 1980, out of seven possible models in each year. The hypotheses were successful primarily for the infant and child mortality models and the nutrition models—most of the basic needs indicators in this study with greatest relevance to the immediate survival of an inhabitant of the periphery. Again, this is mixed evidence for the dependency/world-system position, but on the other hand there is no evidence at all here for the conventional position that MNCs are helping to develop Third World countries. These results suggest that the world-system perspective has serious relevance for the explanation of basic needs satisfaction, especially when it is compared to other perspectives represented in the control variables used in the regression models (variables which frequently do not behave as anticipated). The world-system perspective's emphasis on the activities of MNCs does not seem to be misplaced.

The notion that the ill effects of MNCs increase over time is not altogether supported here. Given the numbers of supported hypotheses in different panels listed above, the overall effects seem to be strongest in 1970 and 1975 (especially the latter year), then vanishing to a great degree by 1980. This does not necessarily indicate that such effects are likely to appear in the very short term (i.e., one year or less), but it does seriously call into question any very long-term effects.
On the other hand, foreign aid, as measured in this study, does not seem to be so harmful as some authors suggest, at least so far as the basic needs indicators used here are concerned. The hypothesized effect really holds only for the 1980 calorie supply and protein supply models, while effects contradicting the hypothesis appear in four models, including all three panels for life expectancy at age five. It is true that foreign aid does not receive so much attention in the dependency/world-system literature as do MNCs, and even this emphasis seems questionable for basic needs issues. The conventional "diffusionist" perspective on development seems to gain some support with regard to foreign aid, then.

The overall implications of this study for the dependency and world-system perspectives are obviously mixed, but the level of support found for different hypotheses corresponds directly to their importance in these theories. Recall that the interaction hypotheses, H3 and H4, though totally lacking in empirical support, are not taken from these theoretical perspectives at all, but are derived instead from results of other cross-national studies. The impact of debt due to foreign aid debt, as specified in H2, was rarely supported and sometimes directly contradicted. But although some writers (e.g., Frank) argue that foreign aid contributes to underdevelopment, others, such as Dos Santos, seem to say that on balance aid has a neutral effect. This additive hypothesis does not, then, get unanimous approval from the thinkers reviewed in this volume. However, MNCs appear to attract universal and frequently extended condemnation among all writers within this perspective who discuss them. As has been noted already, it is the
hypothesis that reflects this view (\(H_1\)) which is best supported by the data examined here.

What are the policy implications of these results for those who wish to see improvements in basic needs satisfaction in the underdeveloped world? It seems that MNCs can retard progress toward the meeting of some of these needs, and Third World governments are probably wise to try to regulate the activities of MNCs carefully, if not prohibit them altogether, given the results of this study and previous studies of economic growth and income inequality by researchers such as Bornschier and Chase-Dunn (1985). Similarly, those who live in the advanced countries and are concerned about basic needs satisfaction in the Third World have an interest in constraining the activities of MNCs based in their home countries. This is not to say that MNCs must necessarily have detrimental effects on any dimension of basic needs, but at the very least it is possible that they will. It may be that, with a greater understanding of the mechanisms through which MNCs affect basic needs performance, selective regulation could minimize or eliminate these effects and possibly even generate benefits from other effects of MNCs. Of course, for Third World governments to restrict the activities of MNCs, they must be not only able but willing to do so, and this is altogether a different matter.

But the results of this study do not imply the same policy response to foreign aid as to MNCs. It may not be contradictory for a Third World government to both accept aid and to want to improve basic needs performance. Although aid programs could probably be more beneficial, the fact that they are not is not necessarily cause for advanced country
inhabitants to oppose aid altogether. On the other hand, there is not overwhelming evidence here to show that aid helps, though the results for life expectancy are quite interesting.

Obviously, these policies are easier described than implemented, and it is easier to carry out the research than to put it to full use in the "real world." At the very least, however, such research can better inform those in opposition to the status quo of the world-system where they should focus their efforts.

AGENDA FOR FUTURE RESEARCH

The research presented in this dissertation may be viewed as an important step toward understanding the relationship between dependence and the satisfaction of basic needs. However, much of this importance lies in the fact that little cross-national research has been conducted previously on this issue, especially in comparison to the number of studies of economic growth and income inequality which have been inspired by the dependency/world-system perspective. Much work remains to be done to clarify and specify the relationship between dependence and basic needs.

A potentially important next step to take in research on this relationship is to more carefully examine the models already presented in this study for "influential observations," cases which have unusually great effects on estimates of parameters in a model. Some recently developed techniques make it feasible, if time-consuming, to identify such cases (Belsley et al., 1980; Bollen and Jackman, 1985). It is
possible that some of the results presented in Chapter V are inordinately influenced by a few observations.

A major issue is whether the results presented in this study would hold for a replication in a different historical period. Unfortunately, it is unlikely that data will ever be available with which to test models as elaborate as those examined here for the period from the end of World War II to the mid-1960s, much less for pre-war periods. But data do exist which could be used to replicate portions of this study for more recent years. The late 1960s seem to have marked the end of an economic era in the world economy as well as in the U.S. in particular, and effects of dependence measures as of 1975 might well differ from those for 1967. Does MNC investment in the 1970s and 1980s have a different character than in previous years, and are these differences consequential for basic needs? Also, foreign aid policies have changed greatly, at least on the surface, since the late 1960s, as Clausen's (1985) comments about the World Bank suggest. There has been an ostensible shift toward the use of aid to meet basic needs. Has this development had a real impact on basic needs performance in the Third World, or is this policy change mere rhetoric serving to hide the same old exploitive system that the dependentistas attacked so violently?

Another way in which this research may be extended is to include other measures of ties underdeveloped countries have with the core. Several such variables were suggested in Chapter IV (see Figure 1). Measures of trade dependence, which have been used more frequently in past cross-national research on indicators relevant to basic needs, could be combined with the measures of capital stocks used in this
dissertation. The effects of political and military subordination should be taken into account as well. Furthermore, an important form of capital flow not touched upon in this study — lending by private institutions based in the West — might have important effects on basic needs satisfaction.

Other aspects of MNC penetration itself might also be considered. First of all, the present study does not take into account changes (investment "flows") in MNC penetration between 1967 and the end of the panel. The study by Bornschier et al. (1978) indicates that stocks of MNC investment have negative effects on economic growth, while recent flows of MNC investment have positive effects. This finding suggests that the effects of stocks (used in the study at hand) are suppressed without a control for recent flows. Perhaps a similar phenomenon occurs for basic needs satisfaction, and the addition of controls for investment flows would reveal a stronger, long-term detrimental effect of MNC penetration. In addition, it is possible that MNC investment in different types of activities have different effects. Susan George (1977, 1979) certainly claims that MNC involvement in the agricultural sector is harmful to the welfare of most local inhabitants, but it is at least conceivable that foreign involvement in manufacturing is less harmful or even beneficial with respect to basic needs performance. The OECD (1972) has in fact published data on the stock of foreign investment broken down by sector for 1967. These data could be used to compare the effects of different kinds of investment.

Similarly, alternative measures of variables already used in this study might be substituted to determine the robustness of the results.
presented here. In particular, a data set collected by the Multinational Enterprise Project at the Harvard Business School (Curhan et al., 1977; Vaupel and Curhan, 1969, 1973) provides data on the numbers of subsidiaries of large MNCs in each country, including information on the principal activity, total sales, and ownership structure (i.e., proportions of foreign and domestic ownership) for each subsidiary circa the late 1960s. These data could be used not only to generate a substitute measure of MNC penetration, but could also make it possible to examine effects of more specific characteristics of this penetration (e.g., ownership structure). Some such data have been released for more recent years by the U. N. Centre on Transnational Corporations (1983).

Other measures of foreign aid dependence might be considered as well. This study uses only the stock of accumulated debt arising from official foreign lending in the period 1960-67. The total flows of such aid over this period (i.e., before repayment of principal) could have a different effect, as might the level of aid received in the form of grants. Furthermore, the effects of aid from multilateral sources such as the World Bank and from OPEC sources — sources which have accounted for a much larger share of all foreign aid since the late 1960s — should be examined. As in the case of MNC penetration, stocks as well as recent flows of aid could be used as independent variables.

A particularly important way in which this line of research should be expanded is the testing of more complex models incorporating intervening variables. Figure 1 can provide a starting point for such an effort. For example, are the interactions between equality of the distribution
of resources and the quantity of these resources per capita in the subsistence and monetized sectors as important mediating factors as the model in Figure 1 suggests? In the subsistence sector, one could examine the effects of an interaction between the equality of land distribution and the per capita supply of agricultural land on measures of basic needs satisfaction. In the monetized sector, one could study the impact of an interaction between income inequality and national production in this formal sector. Additionally, the "black box" of social, economic, and political distortions in the figure should be elaborated into specific distortions with causes in specific forms of dependence and with effects on specific aspects of the subsistence and monetized sectors. For instance, does foreign aid indeed perpetuate repressive governments which in turn perpetuate inequality?

Additional control variables might also be brought to bear on models of dependence and basic needs satisfaction. Although the sample size available might be stretched unduly by the addition of more controls, those control variables which performed poorly in the present study (in particular, the level of investment) could be excluded. Government policy could be an important control variable. In models showing an apparent detrimental effect of MNC penetration on basic needs satisfaction, it might be that countries with strong policies favoring basic needs performance also tend to have strong policies limiting the actions of MNCs and thus discouraging MNC investment; this phenomenon could cause a spurious relationship between MNC penetration and basic needs satisfaction. Other variables noted in Chapter III, including capitalist-socialist economic forms, the size of the service sector,
Another direction in which this research should go is toward certain methodological enhancements. First, there are certain violations of the assumptions of OLS regression which may have been committed in this study as well as in a number of other cross-national studies. Due to the use of lagged dependent variables, the error terms may be correlated with the lagged variable. An attempt should be made to incorporate this unknown and possibly nonzero parameter into models of basic needs performance. Also, the error terms may not be independent of each other since the observations are all parts of a single world-system. Some way should be identified to apply a technique such as Generalized Least Squares which could correct for this potential autocorrelation.

Second, it may be possible to enhance the treatment of measurement errors in such models. The data may contain biases in measurement from such sources as manipulations by governments to enhance their images. An "instrumental theory" of measurement could be developed and indicators of sources of bias incorporated into testable models that would adjust for these measurement errors (Seidler, 1974; Seidler and Wimberley, 1984). A somewhat different measurement problem is the choice of techniques for estimation of demographic variables including mortality and life expectancy. There are more ways than one to produce such estimates. The present study has simply used the estimates prepared by the World Bank, but it would be useful to determine whether the same results would be obtained from data estimated with alternative procedures.

urbanization, population size, political democracy, and natural resource endowment, could be considered as well.
In addition to continued development of cross-national models as described above, this research would be better rounded by the use of case studies. This approach could be pursued both quantitatively and qualitatively. Quantitative case studies could take the form of time series analyses. It is likely that annual data of the type examined in this study -- e.g., MNC investment, infant mortality rates -- exist for some countries over a sufficient number of years to permit inquiry on the issue of whether variations in levels of dependence are followed by variations in levels of basic needs satisfaction within a single country.

On the qualitative side, historical case studies could be carried out to locate unique processes in specific countries through which the more generalized processes examined by the cross-national models operate. Such qualitative research could well complement time-series analysis for the same country. Countries to be studied in this fashion might be chosen because of extremely good or extremely poor fits to quantitative models of dependence and basic needs performance, such as those presented in this dissertation. This strategy would help to clarify how the processes described in Chapter IV work or, alternatively, do not work.

All these paths for future research should enhance our understanding of the relationship between the world-system and the life-chances of individuals and, in so doing, provide direction for appropriate policies on multinational corporations, foreign aid, and other mechanisms of dependence.
This study asserts that basic needs satisfaction is the most fundamental and important aspect of development in the Third World, for it is at the level of basic human needs — adequate food, safe water, sanitation, decent shelter, basic education, and health — that development is a matter of life and death for a large portion of the earth's population. The dependency/world-system perspective claims that various forms of "dependence," including involvement by multinational corporations and dependence on foreign aid, leads to underdevelopment in general and massive failure to satisfy basic needs in particular. However, of all the cross-national research carried out to test the world-system perspective's explanations of underdevelopment, scarcely any studies have satisfactorily addressed basic needs issues. This research has sought to begin to remedy this gap in the literature, drawing its hypotheses from the world-system perspective and using basic needs indicators as dependent variables in a series of cross-national panel models.

Although this study did not yield unqualified support for a world-system explanation of basic needs performance, it did provide considerable support for the idea that multinational corporations have detrimental effects on infant and child mortality levels and on food supplies. There is little or no evidence here that MNCs affect either life expectancy for individuals who have reached age five or the satisfaction of basic educational needs. Additionally, foreign aid does not appear to have generally harmful effects on basic needs.
satisfaction, and it does appear to be beneficial for the longevity of those who survive early childhood. These results imply that those who wish to see the improvement of basic needs performance in the underdeveloped world should be concerned with the activities of MNCs, though they may at least do no harm by supporting foreign aid programs.

However, the present study, in combination with the few other such studies relevant to basic needs, represents only a beginning in the cross-national investigation of the effects of dependence on basic needs satisfaction. A great deal of research remains to be done to verify the results presented here, and to more precisely specify the linkages between dependence and basic needs performance and the conditions under which such linkages exist.
NOTES FOR CHAPTER VI

1. This is not to say that this "general trend" comes about by magic and without effort, much less that it is unimportant.

2. I am grateful to Donald Voth for pointing out this possibility.
APPENDIX A

MARXIST DEPENDENCY THEORISTS

FRANK

Andre Gunder Frank received his graduate training in economics at the University of Chicago and began his professional career with a rather conventional Anglo-American view of the nature of underdevelopment -- a view of underdevelopment as a problem of insufficient capital, persistent feudal and traditional institutions, and political power held by rural oligarchies. However, his teaching and research experience in Latin America during the early 1960s convinced him of the falsehood of this perspective and led him to take a radical alternative. There, the conventional academic view on underdevelopment was often that promulgated by ECLA, and Frank was clearly influenced by ECLA's notion of a developed center and an underdeveloped periphery and the role of the unequal relationship between the two in the problems of Latin American development. By the early 1960s, though, there were indications that ECLA's optimistic predictions for economic growth in Latin America were incorrect. Frank took issue with the ECLA perspective, particularly with its view that foreign investment was a major solution for the problem of balance of payments deficits. Indeed, Frank saw Latin America's subordinate position to the center as a
constant factor in the former's underdevelopment beginning with the Conquest; the center was the last source to which one should look for help in the development of Latin America (Booth, 1975).

Frank argues that, to understand the existence of underdevelopment in the Third World, one must consider the history of the underdeveloped world and the relations between the developed and underdeveloped parts of the world. The "modernization" school of development studies, which was dominant in U. S. social science in the 1960s, fails on both counts: it emphasizes the historical experience only of developed nations such as Great Britain and the United States as a model of the future of the underdeveloped countries, and it focuses on internal phenomena as the source of underdevelopment, viewing relations with developed countries as the cure. Instead, Frank says, an adequate theory of underdevelopment must emphasize the world social system which generated and maintains both development and underdevelopment. The underdeveloped countries became underdeveloped -- and indeed are becoming more underdeveloped -- because of exploitation by the developed countries (Frank, 1969:46, 78).

Frank does not present his arguments very systematically. Indeed, his arguments are often vague and consist disproportionately of anecdotes and rhetoric relative to their content of precise historical or quantitative analysis. However, his relevant ideas for this study can probably be accurately summarized as follows: (1) Centuries ago, the metropolitan economies gained control of what is now Latin America, Africa, and India through military force and alliances. The consequence of metropolitan activity in these regions was the reduction of "the
large bulk of the world's peoples to levels of abject poverty that they had never suffered at the hands of their previous own or foreign masters" (1969:172). (2) These societies are now referred to as underdeveloped, and it is generally believed that they have always been underdeveloped. However, the truth is that these societies became underdeveloped through the theft of capital from them by developing metropolitan powers (with the willing assistance of local interests who benefited along with the metropolitan interests) which used this capital for their own development. Metropolitan interests tied these subordinate economies to their own by linking them into the "world market." (3) While their form has changed over time, the tentacles of capitalism have had persistent effects: "the level of living of the majority of the people is still falling" in terms of such criteria as local food production and per capita income, and income inequality is increasing (Frank, 1969:172-173).

In his first book, Capitalism and Underdevelopment in Latin America (1967), Frank outlines three "contradictions of capitalism" in which development and underdevelopment are rooted. The first of these is that of the "expropriation/appropriation of economic surplus," the expropriation being of economic surplus from its producers and the appropriation of this surplus being by capitalists.

It is this exploitative relation which in chain-like fashion extends the capitalist link between the capitalist world and national metropolises to the regional centers (part of whose surplus they appropriate), and from these to local centers, and so on to large landowners or merchants who expropriate surplus from small peasants or tenants, and sometimes even from these latter to landless laborers exploited by them in turn. At each step along the way, the relatively few capitalists above exercise monopoly
power over the many below, expropriating some or all of their economic surplus and, to the extent that they are not expropriated by the still fewer above them, appropriating it for their own use. Thus at each point, the international, national, and local capitalist system generates economic development for the few and underdevelopment for the many. [Frank, 1967:7-8]

The second contradiction, closely related to the first, is the polarization of the world capitalist system into center and periphery, surplus being lost by the latter to the former. Development and underdevelopment thus constitute a single process, one being dependent on the other. They do not arise from different economic systems or from different stages of development in a single system (1967:9). Frank's third and last contradiction is that of "continuity in change." That is, the essential structure and contradictions of the capitalist system persist despite important historical changes in, for example, the underdeveloped countries linked into that system.

The ways in which the exploitation of the periphery by the center has been imposed in the post-war era are complex, but the process is basically this: the developed countries, and in particular firms based in the developed countries with control over firms located in the underdeveloped countries (i.e., MNCs), profit at the expense of the underdeveloped countries, which become even more underdeveloped as a result. As part of the process of exploitation, the underdeveloped country undergoes distortion of its social and economic structure (Frank, 1969). And, as in the past, a local minority -- a "bourgeoisie" of sorts -- benefits as well as the metropolitan interests, though not as much as its senior partner in exploitation (this is particularly emphasized in Frank, 1972). Development in the underdeveloped countries
seems to gain the most ground when ties to the metropolitan countries are weakest (1972:130). The mechanisms of imperialism identified by Frank, i.e., the means by which capital flows from underdeveloped to developed countries are created and sustained, distorting domestic social and economic structure in the process, may be classified in several categories (though Frank would probably see the distinctions as somewhat artificial divisions, which are in any case closely interrelated): trade, foreign "aid," and foreign control of local firms. In Frank's words, "the general standard of living ... in almost all ... poor countries was higher before they became entangled in the relationship of 'trade,' 'aid,' and especially of 'foreign investment' than it is today" (1969:155, latter emphasis added).

Trade receives relatively little attention from Frank, though he seems to go along with the bourgeois ECLA version of dependencia that the underdeveloped countries are paying for the development of the developed countries in part through "worsening terms of trade." ECLA's position was that the major cause of the long-term increase of Latin America's balance of payments deficit is a greater increase in the value of units of products it imports than in the value of the units of products it exports. However, Frank contends that payments for "invisible foreign services," such as the profits which are repatriated by MNCs, are very important as well. This claim is based on his examination of balance of payments data for Latin America (excluding Cuba) published by ECLA for 1961-63. Merchandise imports (f.o.b., i.e., excluding freight and insurance) accounted for the expenditure of 73.2 percent of Latin America's foreign exchange earnings during this period.
As Frank conceptualizes them (he includes "capital account" as well as "current account" items), services -- including profits repatriated by foreign investors, debt service, freight and insurance (for imports), foreign travel, donations, funds transferred abroad, donations, "errors and omissions," and other services -- totaled 61.5 percent of foreign exchange earnings, or only approximately 12 percent less than imports of goods. (Expenditures for services and imports combined were 134.7 percent of foreign exchange earnings, i.e., Latin America had a balance of payments deficit of 34.7 percent over this period.) Repatriated profits and debt service were the services making the largest single contributions to expenditures of foreign exchange earnings, at 14.3 and 14.9 percent, respectively. Even so, the figure for repatriated profits is an underestimate, since it excludes "disguised profits" such as those hidden by overcharging imports to and undercharging exports from subsidiaries of foreign firms (1969:181-187).

Of the three mechanisms of imperialism listed above, Frank perhaps most emphasizes the role of multinational corporations controlling firms in underdeveloped countries. In general, MNCs operate so as to maximize their own profits, and the consequences of this principle are negative for the majority of the population in an underdeveloped host country. There are several aspects of this phenomenon. First, MNCs obtain the great bulk of their capital locally -- they do not, in general, bring most of their capital with them from the metropolis. Thus, claims by the U. S. that it is only reasonable for capital inflows from Latin America to exceed outflows to the same region, since capital must make a profit, are invalid because it is not U. S. capital that is producing
the profit. Capital brought in by an MNC may be augmented by domestic capital borrowed from some combination of several sources: from foreign banks with local offices and deposits from the host country, from foreign insurance companies having local funds, from domestic banks, or from the host-country government or its banks. Furthermore, as a consequence of domestic government attempts to attract "foreign investment," foreign investors may receive special concessions (i.e., a government grant), such as the right to operate a utility monopoly, or they may be given foreign exchange privileges not extended equally to domestic firms. An example of the latter privilege is that an MNC may obtain loans of foreign currency guaranteed by the host country government. An interesting Brazilian case Frank cites is that the government permitted foreign firms to import capital equipment at free market prices and to import used equipment, while domestic firms were required to obtain exchange licenses for equipment imports and had to import only new (i.e., more expensive) equipment; local interests which were thus placed in an uncompetitive position or which could not obtain assignments of foreign exchange were therefore forced to enter into agreements with foreign interests, providing capital to the foreigners in return for access to the foreigners' privileges. Additional capital may be obtained locally through excessive prices for local sales and thus a greater profit margin. Whatever the source of these local funds, they are used so that they tend to maximize returns to the MNC, not to benefit domestic development needs. And, the resulting earnings, when not repatriated outright, are frequently used to buy into pre-existing locally-controlled plants rather than for building additional capacity
Thus, foreign investment "deforms the economy into one ever less able to develop by increasingly absorbing [domestic] capital and misdirecting it" (1969:151).

Second, MNC subsidiaries tend to produce luxury consumer goods (e.g., automobiles, refrigerators, beverages), since these are most profitable, instead of products needed for "self-sustained industrialization and growth," such as steel, equipment, and trucks which are required for increased production (1969:168). Third, MNCs tend to locate only a portion of a given production process outside their home country, keeping a crucial (if perhaps small) portion of it under their direct control at home. For example, a subsidiary may have to import from its parent company its equipment, replacement parts, and crucial raw materials, as well as paying for technicians, transportation, and insurance from the parent company (1969:169). Fourth, even the portions of production processes which may be "farmed out" to local firms in underdeveloped countries benefit the MNC by allowing it to shift some of the riskier and less profitable aspects of production (e.g., demand fluctuation) to other firms, and simultaneously linking the economy of a given underdeveloped country ever more strongly to itself and to the economy of the metropolis (1969:169-170).

Foreign firms exploit Latin America through trade as well. For example, fuel imports constituted an important fraction of Latin American expenditures of foreign exchange in 1961-63. Frank argues that most of this amount went to the "international petroleum cartel" (a small set of primarily U. S.-based firms), which charged "notoriously high prices" for Venezuelan oil (Frank, 1969:187).
While many might be easily persuaded of the negative impact of MNCs on underdeveloped host countries, perhaps fewer would readily believe that foreign aid, in the forms of loans and grants, is a force for ill in the Third World. However, Frank argues that, like MNCs — and indeed, sometimes in direct conjunction with MNCs — foreign aid furthers underdevelopment and inhibits economic growth. He gives several examples of ways in which this occurs. First, foreign aid may provide a source of foreign exchange for foreign-controlled firms which is used for such purposes as importing equipment, materials, and services necessitated by the (dependent) organization of production used in the subsidiary. Similarly, aid may be used to buy out foreign control of what was originally locally-obtained capital (see above). Second, the economic and political restrictions attached to these loans result in loss of domestic control over important parts of the economy and reinforce dependence on interests in the lending country. For example, aid is often tied to the purchase of imports from the "donor" nation — goods produced with excess capacity. Furthermore, committed U. S. aid (and, one would presume, potential future commitments of aid) is disbursed on conditions such as meeting U. S. demands concerning appropriation and International Monetary Fund policies. Debt on foreign loans made to the domestic government thus has an effect similar to that of private foreign investment. Third, such aid tends not to go to the poorest areas (presumably, where some sort of aid might conceivably be most beneficial). Much higher amounts of aid per capita may go to urban areas (where the "donor" country's interests are apt to be) than to poor rural areas. Frank finds examples of all of these harmful effects of
foreign aid in the U. S. Alliance for Progress program. Fourth, even food aid programs are harmful in that they damage domestic food production. The Food for Peace program (U. S. Public Law 480), for example, provides domestic exchange for purchase of cheap surplus American wheat. This amounts to dumping and greatly harms production of more realistically priced food within the recipient country. Fifth, debt service, which already took up a large portion of Latin American foreign exchange earnings in the early 1960s, will be forced much higher by repayments coming due to such aid programs as the Alliance for Progress (1969:152-154, 156, 171-172, 188-189).

These effects of linkages with the developed countries have important implications for development policy in Third World countries. Generally, the weaker these linkages are, the better it is for the peripheral area concerned. Frank contends that Japan and the Soviet Union are important examples of how underdeveloped countries can develop economically when imperialist industrialized nations already exist. Both countries isolated themselves "substantially from foreign trade and totally from foreign investment and control" (1969:159). Such ties were not developed until they had built up economic structures under their own control (1969:159).

In short, Latin America's dependent position results in distortions in domestic social and economic structures and in "decapitalization." But why do underdeveloped countries allow and, indeed, encourage these exploitative relations with foreign firms (i.e., foreign investment and control) and foreign governments (i.e., foreign "aid")? Frank's answer for Brazil -- which seems likely to be his response for underdeveloped
countries in general — is, in part, that some Brazilians do in fact benefit from these relationships and use their power to preserve them. Additionally, severing ties of dependence would result in very high short-term costs (lack of refinancing for past borrowing, inability to continue imports needed because of dependence-induced deficiencies in productive capabilities, or even an end to trade altogether if foreign investment is threatened) despite any long-term benefits (Frank, 1969).

Frank's earliest works (1967, 1969) were criticized for glossing over the role of internal class relations in the exploitation of the Third World. In Lumpenbourgeoisie: Lumpendevolvement (1972), he restates many of his earlier ideas while emphasizing the historical relationship between classes that has produced underdevelopment. His basic argument is that, in a satellite, underdevelopment is the result of a "bourgeois policy" based on a set of class interests and on class structure, themselves the results of dependence. The dominant segment of the bourgeoisie uses state institutions to carry out this policy of underdevelopment. This class structure, in turn, has been formed by colonial and neocolonial relations with the capitalist metropolis and has varied over time in response to changes in the forms of these relations. Latin America was originally linked to the metropolis — i.e., was made part of a single capitalist world system — by the Conquest; the result has been increasing subordination and economic dependence (1972:13).

The period beginning with the 1929 crash, extending through the 1930s depression, World War II, and postwar reconstruction into the early 1950s, saw a major independent, nationalist push for industrialization,
largely for the manufacture of consumer goods previously imported from the metropolis (the process of import substitution industrialization, or ISI). A brief movement toward industrialization for domestic consumer-goods markets had occurred during World War I, when metropolis-satellite linkages including trade and capital flows were greatly diminished. However, at the war's end, American and British corporations moved into the profitable industrial regions and sectors thus established, and they quickly displaced Latin American industry. The metropolitan depression which began in 1929 again restricted foreign trade and foreign capital flows, though, reducing these new industrial investments as well. The drastic decline in foreign investment and loans and in Latin America's ability to import metropolitan manufactures led to great disruptions in the magnitude and distribution of national income, leading in turn to political crisis. Revolutions took place in many Latin American countries; Frank largely accepts a thesis posited by Cardoso and Faletto that successful revolutions and subsequent shifts toward development-oriented policies occurred only in countries whose major exports were not controlled by foreign interests and enclave economies. The differences between these countries and those where "successful" political and economic change did not take place are consequences of variation in colonial relationships and resulting internal class structure differences: control of the major export by local bourgeoisies had provided them with political power, and furthermore the industrial growth in these countries during World War I had contributed to the expansion of the middle class. However, the result even for these "revolutionary" countries was not independence but increased
dependence and "neocolonialism." Their class structures gave rise to two major limitations. First, the nature of demand created by the existing distribution of income required an emphasis on consumer goods production for high income buyers, preventing expansion in the internal market sufficiently rapid to sustain ISI. Second, the existing demand structure resulted (at least, this appears to be Frank's argument -- the text is not clear on this point) in the failure of these countries to produce sufficient capital goods needed for production of the finished goods; capital goods had to be imported from the metropolis. Thus, a new kind of imports (strategic imports, which are essential for production of consumer goods) merely replaces the former imports (consumer goods), and Latin American dependence increases in the process (1972:75-86).

This change in the relations between metropolis and satellite has eliminated the feasibility of such capitalist "semautonomous internal industrial development" in Latin America in the post-war era. The strong world demand for agricultural and other raw products which began in the nineteenth century but faltered during the Great Depression was recovered only from about 1940 to 1955, as a consequence of World War II. Frank wrote that such demand seemed to have ended forever, though the subsequent success of OPEC in raising the price of petroleum in the early 1970s makes this conclusion questionable. While the constraint on imports resulting from the lack of foreign exchange led to ISI in the 1930s, this form of industrialization has been impossible in recent years because of the necessity of foreign exchange for the purchase of capital goods. At the same time, there was great political pressure to
continue industrial growth: industry was the source of the bourgeoisie's profits, and the middle classes had grown to expect to be able to obtain consumer goods thus produced. The industrial bourgeoisie and the government's solution was to provide producers and exporters of agricultural and mining goods with means to maximize exchange earnings including devaluation, lowering of real wages via inflation, an end to reforms, and suppression of opposition to these policies. In short, the solution involved "a high level of foreign exchange earnings and a low level of wages" (1972:88). Another major part of the attempted solution was based on foreign investment and foreign aid: allowing foreign businesses to produce import substitutes domestically, and borrowing from the same foreign governments to cover deficits. As in previous centuries and as under previous bourgeois policies, this "development" policy has resulted in increasing dependence and underdevelopment (1972:86-91).

Thus, Frank comes to argue that

contemporary underdevelopment is simply a continuation of the same fundamental processes of dependence, transformation of economic and class structure, and lumpenbourgeois policies of underdevelopment which have been in operation throughout our history. [1972:92]

He uses as evidence statements and data of such representatives of the bourgeoisie as the U. S. Department of Commerce and the U. N. Economic Commission for Latin America (ECLA) and statements by Latin American government officials and U. S. businessmen (1972:92).

Frank begins by showing that the rate of economic growth is falling in Latin America and that Latin America is undergoing external "decapitalization." First of all, per capita economic growth declined
steadily between World War II and 1966. Agricultural production per capita increased from 1950 to 1966 at a rate of only one-half percent per year; per capita agricultural production actually declined by 7 percent from the mid-1930s to the early 1960s. The growth rate of industrial production declined steadily from the 1930s to the 1960s (from 7.2 percent annually in 1936-49 to 5.4 percent in 1960 and still falling). As for decapitalization, even representatives of bourgeois Latin American governments recently claimed that foreign private investment results in much greater losses than gains of potential capital in Latin America, and that foreign aid, while providing the "benefactor" with additional markets and other benefits, do not make up for payment of foreign loans and repatriation of profits on direct investment. ECLA estimates of financial capital outflow show that it had been increasing as a percentage of total Latin American foreign exchange income from exports since at least the early 1950s, and that it exceeded foreign capital inflows in 1967, 1968, and 1969. U. S. Commerce Department figures show that the flow of private investment capital from Latin America to the U. S. was about three times as great as the flow from the U. S. to Latin America in the period 1950-65 (1972:93-96). The Chairman of the Board at General Motors in the mid-1960s stated that over the same time GM's net working capital and fixed assets overseas had grown from $180 million to $1.1 billion, with almost all this expansion "generated by General Motors operations abroad and through local borrowings which could be repaid from local earnings" (Donner, 1966:109). U. S. Department of Commerce statistics bear out this phenomenon for overall U. S. investment in Latin America: from
1960 to 1964, investment truly originating in the United States averaged only 4 percent of all "U. S." investment. Indeed, a major goal and actual consequence of U. S. direct investment in Latin America is to generate U. S. exports, specifically supplies and capital goods destined for subsidiaries. Furthermore, although Latin America exported more goods than it imported (measured in value) from 1955 to 1966, falling prices for raw materials and rising prices for manufactured goods resulted in poor increases in the purchasing power of Latin American exports, while payments to foreign capital increased at much higher rates. Latin American manufactured exports were only 5 percent of total exports in 1964-66, and a great portion of this amount was in trade between foreign firms in different Latin American nations. Projection of these and other trends indicated, at the time Frank wrote, astronomical balance of payments deficits for Latin American countries in the 1970s (1972:92-100).

The sources of these recent trends are linked to "the new forms of foreign investment in Latin American industry and financial institutions and their effect on the economic structure and policy of the bourgeoisie" (1972:100). Post-war direct foreign investment in Latin America tended to displace domestic investors from the most profitable industries. Furthermore, foreign investment moved into existing industrial firms at an increasing rate, facilitating a greater exodus of capital without creating additional production capacity. Under this new form of dependence, multinational corporations sustained high profit levels by sending capital equipment outmoded in their home countries to locations where it could be used profitably but without competing.
against home-country production. The ill effects of these practices include technological dependence on parties in developed countries, some loss of control over the domestic economy, and increased production of goods and services which hinder "economic and social growth." Production technology is chosen for its profit potential for foreign interests, not for its appropriateness for the domestic economy, and local development of production technology is not pursued due to technological dependence on the metropolis. Foreign interests also press industrialization toward the production of luxury consumer goods (e.g., automobiles, televisions) rather than toward the production of capital goods needed for self-sustaining development. The sale of these goods entails the diversion of potential capital to consumer credit, making matters worse. "Foreign aid" also encourages encroachment by MNCs: domestic private banks, which may themselves be owned to a great degree by foreign parties, may obtain the funds they lend to local firms from funds originally lent by foreign governments (routed through the national government, for example). An ECLA document Frank cites noted that these private lenders play a major role in the intrusion of foreign corporations into domestic enterprises. Foreign aid and investment are not remedies for the scarcity of capital in Latin America, but rather cause this scarcity (Frank, 1972:100-106).

The inappropriate production technology and the production of inappropriate goods which dependence promotes result in Latin American industrial capacity far in excess of domestic demand. Domestic industry, which, paradoxically, is both owned to a great extent by foreign investors and is heavily protected by tariffs and trade quotas,
charges excessive prices for its products (relative to prices in developed countries) to compensate for these excessive fixed costs. The promotion of foreign control in domestic finance and production decisions have domestic benefits only for the bourgeoisie. Unlike the "metropolitan" countries, Latin America experiences falling agricultural and mining employment without an increase in industrial employment. In the metropolis, the agricultural sector developed in tandem with other sectors of the national economy. In the dependent colonies, however, agriculture was largely tied to the metropolis instead of the other sectors of the domestic economy. With the development of agriculture in the metropolis and the development of synthetic substitutes for agricultural products, demand declined for the products of dependent agricultural sectors and a labor surplus was created. From 1925 to 1969, the Latin American labor force in agriculture fell from 60 percent to 43 percent. Over approximately the same period, industrial production's share of the Latin American Gross Domestic Product more than doubled, but industrial employment remained constant at 14 percent of the labor force. The excess agricultural labor was absorbed into the service and construction sectors, which grew from 26 to 43 percent of the labor force during this time. Frank interprets ECLA statistics as implying that the "genuinely unproductive service sectors" (i.e., "other services" and "other unspecified activities") included 23 percent of the 1969 labor force and had absorbed an increasing proportion of growth in the labor force since at least 1925. Almost 50 percent of growth in the labor force went to these categories in the 1960s, with the majority of this fraction absorbed by "other unspecified activities" — described by
ECLA as "nothing more than unemployment or marginal services of lowest productivity." A recent ECLA (at the time Frank wrote) estimate of equivalent unemployment (taking into account underemployment as well as total unemployment) found the equivalent of one-fourth of Latin America's "economically active population" unemployed; over two-thirds of this amount was from underemployment. Frank predicted that this measure of unemployment would rise in the 1970s (1972:107-115).

Since the beginning of the colonial era, the colonial structure has given rise to the class structure of Latin America and this class structure has reinforced the colonial structure. Similarly, the class structure has caused a skewed distribution of income, and the income distribution has reinforced the class structure. The unequal distribution of income has meant that demand from internal markets has always been weak, resulting in the perpetuation of underdevelopment by bourgeois investments of surplus (extracted from the subordinate segments of society) in stronger links with the metropolis. Income inequality in Latin America is much greater than in the developed countries. For example, in 1965 the richest 20 percent of the population received 63 percent of national income, and the poorest 50 percent received only 13 percent of the national income. In the United States, by contrast, the richest 20 percent and the poorest 50 percent received 45 and 24 percent, respectively, of national income. Due to growing structural unemployment, Latin America's income distribution is becoming less equal over time. Even the growth of the middle class is no cause for optimism: Frank claims that increases in income accruing to the middle strata come, not from the upper class, but from greater
exploitation of the poorest strata. This distribution of income has an interesting relationship with the production of durable consumer goods that is so dominant in Latin American industry. The poorest half of the population cannot buy any appreciable amount of consumer durables, and even the next higher 45 percent of the population accounts for a miniscule amount of spending on these goods; almost all autos, refrigerators, and other consumer durable goods produced in Latin America are bought by the richest 5 percent. Frank claims that this distribution of income discourages savings, that the savings of the rich are too great to be absorbed. The income of the rich is spent instead on "luxury consumer goods, housing, and foreign travel." The consumption of luxury goods, in turn, encourages the channeling of Latin American savings into production of these goods and production of capital goods used in luxury goods production. Such investment is further promoted by metropolitan control over which products are made and over the production technology used by Latin American industry, and by the fact that such production is the source of wealth for the domestic bourgeoisie. This phenomenon has tended to replace bourgeois activity in production of raw materials and sale of finished imports; the local bourgeoisie can now earn similar profits by domestic production, and the metropolitan bourgeoisie can obtain greater profits by exporting capital goods and technology and by financial involvement in Latin America. The result is polarization between the metropolis and Latin America (as seen in the balance of payments crisis) and between classes in Latin America (as seen in increasing income inequality and absolute poverty) (1972:115-120). "The closer the economic and
political relations between the metropolis and its colonial satellite, the Latin American bourgeoisie, the more the economic and political policies of the latter intensify the development of underdevelopment" (1972:120).

Frank readily admits that ECLA's analysis of the role of dependence in Latin America's underdevelopment provides valuable information. However, he condemns their proposals for reform as bourgeois and totally inadequate to address Latin America's underdevelopment. ECLA proposals for the 1970s included the expansion of exports (particularly of manufactured goods), foreign financial assistance (foreign investment and aid), and greater economic integration of Latin America. Frank responds to these proposals first of all by stating that attempts by underdeveloped countries to gain improved terms for exports have failed miserably. Frank is also pessimistic about the prospects for Latin American benefits from exports even if they increased -- the greatest move toward development in Latin America occurred in the 1930s when exports virtually ceased, and in general it appears that closer ties to the metropolis lead to more underdevelopment. Similarly, previous foreign investment and foreign aid merely produced the present economic, class, and colonial structure and the present balance of payments problem. "The more 'external assistance' from the imperialist metropolis, the more underdevelopment for Latin America" (1972:130).

Finally, regional economic integration, as attempted in the Central American Common Market and the Latin American Free Trade Association (LAFTA), has had little positive impact since its benefits accrue to a great degree to multinational corporations. For example, LAFTA
agreements have tended to focus on industries dominated by foreign-owned firms, e.g., utilities, electronic equipment, and chemicals (1972:123-133).

The ECLA strategies are inadequate because its bourgeois interests stop it from addressing the real source of underdevelopment: the capitalist system. The solution for the causes of underdevelopment, as well as its symptoms, is "revolutionary destruction of bourgeois capitalism and its replacement by socialist development" (1972:136).

**DOS SANTOS**

In a paper presented at an annual meeting of the American Economic Association, Theotonio Dos Santos (1970) sets out his own version of dependencia. Dos Santos defines "dependence" as a condition under which "some countries (the dominant ones) can expand and can be self-sustaining, while other countries (the dependent ones) can do this only as a reflection of that expansion, which can have either a positive or a negative effect on their immediate development" (1970:231). This concept facilitates viewing the internal condition of dependent countries as linked to the world economy, a perspective in which underdevelopment is a result of capitalism's expansion. As the classical Marxist theory of imperialism concerned itself with the rise and success of the centers of imperialism, the dependency perspective seeks to "develop the theory of laws of internal development" for countries that are the objects of imperialist expansion. Underdevelopment is emphatically not the result of failure to adopt
"modern" practices, as was claimed by many American scholars of underdevelopment in 1970.

Dependence operates in a world market of commodities, capital, and labor that links together ostensibly national economies. However, these market relations are unequal. Some countries do develop in this system, but only via underdevelopment in other countries. In dependent, underdeveloped economies, such market relations drain the domestic surplus through repatriation of profit and interest abroad as well as reduce the level of domestic control over domestic economic resources. Dependent nations must produce large surpluses because of these unequal relations, and they do so through the superexploitation of labor, in turn limiting "the development of their internal market and their technical and cultural capacity, as well as the moral and physical health of their people" (1970:231).

The historic forms of this dependence have varied with the nature of the world economy, with the major forms of economic relations in capitalist center countries and their expansion, and with the forms of economic relations in peripheral countries which are integrated into "the network of international economic relations generated by capitalist expansion" (1970:232). There have been three historic forms of dependence (at least in Latin America, on which Dos Santos bases his paper). First was colonial dependence, in which European-colonial economic relations were dominated by a monopoly of trade and a colonial monopoly of natural resources and labor, imposed by the joined forces of commercial and financial capital and the colonial state. After "independence" came financial-industrial dependence, a phase marked by
the predominance of "big capital" in the centers and the expansion of this capital into peripheral countries by means of investment in production of primary products for export to the centers; this led to the creation of "export economies" and desarrollo hacia afuera (foreign-oriented development) in the dependent countries. Since World War II, what may be generally described as technological-industrial dependence has become predominant. Under this new form of dependence, multinational corporations have invested in industry in peripheral countries which is oriented to production for domestic sale and consumption.

In the first two periods of dependence, production was organized around export products, such as gold and tropical goods under colonial dependence and agricultural products in the financial-industrial period. Consequently, production in the periphery was a function of demand in the center. Production in these export economies was extremely specialized. Another sector, which included such activity as cattle-raising, developed along with the export economy and depended on it as an outlet for its products. A subsistence economy also existed which supplied labor to the export sector when needed and provided a source of subsistence to excess labor in periods when trade declined. This economic structure inhibited development of the internal market in several ways. First, most national income came from exports and was spent on inputs for export production and on luxury goods consumed by the wealthy. Second, labor was so heavily exploited that its consumption was greatly restricted. In addition, laborers' consumption was provided in part, and to degrees varying with economic cycles, by
the subsistence economy. Finally, in "enclave economies" (economies in which the land and mines used in export production were owned by foreigners), much of the profit accumulated was remitted abroad rather than reinvested or spent for consumption internally.

Under the current, technological-industrial form of dependence, development is obstructed by the need to obtain foreign currency to purchase capital goods and resources not available internally. The availability of foreign exchange is limited by returns from the export sector and by patent monopolies held by foreign firms which can -- and prefer to -- make higher profits by transferring machinery as capital rather than as goods for sale. These conditions limit domestic development in three major ways.

First, the export sector which developed in eras of colonial and financial-industrial dependence must be maintained as a generator of foreign currency. Preservation of this sector in turn blocks the development of a domestic market due to its "backward relations of production," and, furthermore, it perpetuates the power of "traditional decadent oligarchies." As in the earlier periods of dependence, the more that foreign capital is involved in the export sector (controlling marketing of exports in mild cases, owning land and mines in more extreme cases), the more negative is the impact of maintaining this traditional economy.

Second, the resulting link between domestic industrialization and the (fluctuating) balance of payments, combined with the unequal nature of these dependent relations, drives the balance of payments toward a deficit. One reason for this is the monopolistic character of the
international market which leads to lower prices for primary products and higher prices for industrial products, especially capital and intermediate goods. Aggravating this deterioration in the terms of trade is the trend toward replacement of natural raw materials with synthetics. Additionally, more capital exits than enters dependent countries, since the "most dynamic sectors of the economy" are controlled by foreign capital which takes out much of the profit made in the dependent country. Further, foreign loans (or grants) are required to cover the resulting deficit and to finance development handicapped by the earlier extraction of surplus. Though it would seem at first glance that foreign aid is thus compensating for past sins of the center, the restrictions placed on the use of this assistance, the fact that much aid is provided in domestic currency, and the fact that underdeveloped countries as well as center nations contribute to international financial institutions substantially reduce the value of foreign financing. To make matters worse, much foreign aid is used to finance foreign investment in the "recipient" country, to subsidize imports which compete with domestic goods, to import inappropriate technology, and to invest in relatively unimportant sectors of the local economy. In the end, underdeveloped countries must "pay for all the 'aid' they receive" (1970:233).

Third, the monopoly on technology held by large foreign corporations permits them to typically provide capital goods and processed raw materials to industry in dependent countries as their own capital, i.e., as direct investment. This practice is aided by the lack of foreign currency with which such goods might be purchased outright; "bourgeois
governments" are pressed to promote the entry of foreign capital into the heavily protected domestic market for industrial products. Foreign capital therefore occupies a favored position, often obtaining an exception from foreign exchange regulations for machinery imports and easily obtaining financing from domestic and foreign banks and from domestic governments, such financing often being facilitated by foreign aid (which is also frequently used to develop infrastructure needed by foreign investment). In the period 1946-67, U. S. direct investment in Latin America substantially increased. The ratio of remitted capital to new investment was 2.7 over this period, with a ratio about twice this amount in the 1960s.

Thus, a very detrimental economic structure is produced by dependent international relations. Within the underdeveloped country, the newer industrial sector extracts surplus from the older export sector, much as the foreign centers extract surplus from the peripheral country itself. Industry and technology are more determined by the profit needs of multinational corporations than by the development needs of the country. Capital accumulation proceeds through superexploitation of labor in an environment where a cheap labor market coexists with capital-intensive production; the resulting distribution of domestic wage-levels is highly skewed. The development of an internal consumer-goods market -- and therefore of basic domestic industry -- is choked by the low level of purchasing power of the work force and by the small number of jobs (especially relative to population increase) created by production based on capital-intensive techniques. In short, underdevelopment occurs not
in spite of these economies' linkages with capitalism but because of these linkages.

Finally, Dos Santos feels that the structure of dependence will not yield to relatively minor political actions.

Everything now indicates that what can be expected is a long process of sharp political and military confrontations and of profound social radicalization which will lead these [dependent] countries to a dilemma: governments of force which open the way to fascism, or popular revolutionary governments, which open the way to socialism. [1970:236]

CARDOSO

Fernando Henrique Cardoso (1972; Cardoso and Faletto, 1979) is another of the major Latin American dependentistas. He is best known for his concept of "dependent development," the idea that dependency and development are not altogether contradictory processes. Rather, a new kind of dependency has arisen in much of the Third World since World War II which produces a limited kind of development -- development for the relative few whose income is derived from the modern sector.

Cardoso sees Lenin's ideas on imperialism as correct for many areas of the world during the first half of the twentieth century, but he feels that some major changes in capitalism and imperialism have taken place in recent decades which render Lenin's views inadequate. The increasing roles of "monopoly capital and corporate enterprise" in the developed capitalist economies were rightly identified by such thinkers as Baran, Sweezy, and Magdoff. These neo-Marxists argued that banking (finance capital) control over industrial capital, emphasized by Lenin,
has been superseded by large corporations operating as "quasi-self-sufficient units of decision and action vis-a-vis capital accumulation" (1972:87); the vast product and geographic range of the operations of these corporations is distinctive as well (1972:84-88).

However, the political and economic impact of these "new patterns of capital accumulation" on Third World economies has not been sufficiently examined, and Cardoso seeks to at least partially remedy this situation. "New forms of economic dependency" have arisen as "foreign investment in the new nations and in Latin America is moving rapidly away from oil, raw materials and agriculture and in the direction of the industrial sectors" (1972:88). Further, multinational corporations are introducing advanced forms of technology and organization even in the primary sectors. Where industrialization is occurring in connection with these corporations, the nature of imperialism cannot be sufficiently understood through notions of "the exchange of raw material for industrialized goods as the main feature of trade" and "virtually complete external ownership of the dependent economies' means of production" (1972:89). The joint venture, based on domestic capital from government and private sources as well as "monopoly international investment," is a distinct characteristic of this trend. These new patterns of imperialism result in a dramatic change in the nature of dependence for some underdeveloped countries, where "foreign investment no longer remains a simple zero-sum game of exploitation as was the pattern in classical imperialism" (1972:89). Data show that development (of a purely economic variety, at least) can occur in dependent economies which have experienced monopoly penetration in their
industrial sectors, a phenomenon which Cardoso calls "dependent
capitalist development." This concept is a key contribution to the

In certain Third World countries, including many of the Latin
American countries, a particular form of "duality" (though very
different from the duality underlying, for instance, the Lewis-Ranis-Fei
model of economic development) is evolving in which the "advanced"
sectors of dependent economies are strongly articulated with the
international capitalist system and the "backward" sectors of the
dependent economies become the internal colonies of the advanced sectors
of the same economies. The gap between the sectors, which seems likely
to grow, is a product of capitalist expansion; it also serves capitalist
expansion since it holds wage-levels down and reduces political
instability in the advanced sector (i.e., by its promotion of a
relatively high socioeconomic standing among participants in that
sector) (1972:90).

How then does dependency coexist with development? On one hand,
contemporary imperialist investment in some economies relies heavily on
domestic sales of the goods produced (typically consumer goods) as a
source of profit, whereas under earlier forms of dependence the
important market for goods produced with foreign investment in dependent
economies (typically primary products) was in the developed countries.
General Motors produces automobiles in Latin America, for example, in
order to sell them in the producing country or another Latin American
market. This is a critical distinction between earlier and present
forms of imperialism. Today, the profits of imperialist capital may
require some level of prosperity within a dependent economy to create demand for its products there, while in an earlier era internal income levels were largely irrelevant for foreign capital. An important consequence is the forging of common interests in the advanced capitalist economies and the advanced sectors of dependent economies (1972:90).

But on the other hand, a Third World economy thus linked to the international capitalist system is still dependent on the developed capitalist economies for "the production of the means of production," that is, for the production of technology. The monopoly MNCs hold over technology gives them the power they need to guard their strategic positions in the capitalist system. Simultaneous with the rise in the importance of external markets for the dominant economies, the flow of new capital from dominant to dependent economies has declined, and local savings (including contributions of local capital to joint ventures with foreign capital) and reinvestment of locally-generated profits have become important sources of capital for "foreign investment." At the same time, dependent economies are also sending capital to the advanced capitalist economies. Though some Third World countries have sought to restrict repatriation of profits by multinational corporations, the MNCs have still managed to export their profits, especially "through the payment of licenses, patents, royalties and related items" (1972:91). In short, the extraction of capital from underdeveloped countries by the developed imperialist countries is being achieved by a very different process than it was a few decades ago (1972:90-92).
Cardoso foresees certain major social and political transformations occurring in the dependent countries as a result of these changes in the form of dependence. Internal fragmentation develops in those dependent countries which have become integrated into the international division of labor promoted by corporations (though not all or even most of the Third World is thus integrated) -- a fragmentation between those employed by the internationalized sector and those who are not. The former group includes the dominant part of the national bourgeoisie, which benefits directly from its collaboration with foreign corporations, plus intellectuals, government bureaucrats, the military, and even portions of the working class. For this group, development occurs as a consequence of dependence. While the dependence of this segment of society does not result in instant political co-option, it does mean that the lines of political conflict are not clearly drawn between the "Nation" and the "anti-Nation" (or "Foreign Power of Imperialism") (1972:93-95). Rather, "the anti-Nation will be inside the 'Nation'" (1972:93), notwithstanding socialist views to the contrary.

In the same way that trade unionism may become a danger for workers in advanced capitalist societies, development is a real ideological pole of attraction for middle class and workers' sectors in Latin American countries. [Cardoso, 1972:95; emphasis in the original]
NOTES FOR APPENDIX A

1. This argument is supported by more careful analyses; cf. Hertford (1978) on the apparent effects of P. L. 480 on wheat production in Colombia.

2. However, this point raises an interesting question of how Latin American countries managed to obtain the capital goods required to start ISI during the 1930s and 1940s, given that they no longer had the resources to import consumer goods and that investment linkages from the metropolis had been cut. Perhaps historical differences in levels of capital-intensity in industrial production account for this apparent contradiction.

3. Frank did not clearly explain why this should be so. A common claim of conventional economics is that the richer one is, the more one saves, and therefore unequal distribution is needed to produce investment which in turn leads to economic growth. Presumably, Frank meant that this unequal distribution leads to poor demand and excess capacity, discouraging further investment in similar industrial activity. But he then proceeded (see below) to argue that the consumption of luxury goods by this same wealthy group encourages more investment in the same area! Perhaps this is only contradictory on its surface, but Frank's argument is not very clear.

4. The inclusion of Cardoso among the Marxist _dependentistas_ is somewhat arbitrary; some writers have categorized him with the structuralists or have placed him between the structuralists and the Marxists. As will become apparent, Cardoso shares Sunkel's ideas on the major lines along which conflict occurs in Latin American nations.
APPENDIX B

DESCRIPTIVE STATISTICS FOR RELEVANT VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Mortality per 1000 Live Births, 1965</td>
<td>75</td>
<td>127.83</td>
<td>137.95</td>
<td>51.19</td>
<td>243.45</td>
<td>26.900</td>
</tr>
<tr>
<td>Infant Mortality per 1000 Live Births, 1965, Squared</td>
<td>75</td>
<td>18925.70</td>
<td>19030.20</td>
<td>12892.80</td>
<td>59267.90</td>
<td>723.610</td>
</tr>
<tr>
<td>Infant Mortality per 1000 Live Births, 1970</td>
<td>76</td>
<td>116.60</td>
<td>125.22</td>
<td>50.02</td>
<td>235.00</td>
<td>21.000</td>
</tr>
<tr>
<td>Infant Mortality per 1000 Live Births, 1975</td>
<td>74</td>
<td>104.01</td>
<td>112.48</td>
<td>48.87</td>
<td>224.85</td>
<td>14.900</td>
</tr>
<tr>
<td>Infant Mortality per 1000 Live Births, 1980</td>
<td>75</td>
<td>96.66</td>
<td>102.80</td>
<td>48.06</td>
<td>211.15</td>
<td>9.800</td>
</tr>
<tr>
<td>Child Mortality per 1000 Aged 1-4 years, 1965</td>
<td>75</td>
<td>24.44</td>
<td>25.25</td>
<td>14.88</td>
<td>60.30</td>
<td>1.500</td>
</tr>
<tr>
<td>Child Mortality per 1000 Aged 1-4 years, 1965, Squared</td>
<td>75</td>
<td>815.91</td>
<td>637.56</td>
<td>772.80</td>
<td>3636.09</td>
<td>2.250</td>
</tr>
<tr>
<td>Child Mortality per 1000 Aged 1-4 years, 1970</td>
<td>76</td>
<td>21.31</td>
<td>21.28</td>
<td>14.10</td>
<td>57.75</td>
<td>1.000</td>
</tr>
</tbody>
</table>

326
<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Mortality per 1000 Aged 1-4 years, 1975</td>
<td>74</td>
<td>18.12</td>
<td>16.88</td>
<td>13.49</td>
<td>54.70</td>
<td>0.600</td>
</tr>
<tr>
<td>Child Mortality per 1000 Aged 1-4 years, 1980</td>
<td>75</td>
<td>16.16</td>
<td>14.20</td>
<td>12.66</td>
<td>50.60</td>
<td>0.300</td>
</tr>
<tr>
<td>Total Life Expectancy at Age 5, 1965</td>
<td>73</td>
<td>62.24</td>
<td>62.63</td>
<td>6.58</td>
<td>74.83</td>
<td>47.338</td>
</tr>
<tr>
<td>Total Life Expectancy at Age 5, 1970</td>
<td>75</td>
<td>63.23</td>
<td>64.11</td>
<td>6.50</td>
<td>75.48</td>
<td>49.287</td>
</tr>
<tr>
<td>Total Life Expectancy at Age 5, 1975</td>
<td>73</td>
<td>64.52</td>
<td>65.19</td>
<td>6.27</td>
<td>76.76</td>
<td>50.829</td>
</tr>
<tr>
<td>Total Life Expectancy at Age 5, 1980</td>
<td>74</td>
<td>65.22</td>
<td>65.47</td>
<td>6.24</td>
<td>76.71</td>
<td>51.584</td>
</tr>
<tr>
<td>Calorie Supply per Capita per Day, 1967</td>
<td>77</td>
<td>2258.79</td>
<td>2203.00</td>
<td>313.33</td>
<td>3334.00</td>
<td>1829.00</td>
</tr>
<tr>
<td>Calorie Supply per Capita per Day, 1970</td>
<td>77</td>
<td>2291.08</td>
<td>2215.00</td>
<td>330.10</td>
<td>3354.00</td>
<td>1852.00</td>
</tr>
<tr>
<td>Calorie Supply per Capita per Day, 1975</td>
<td>77</td>
<td>2339.26</td>
<td>2216.00</td>
<td>398.02</td>
<td>3528.00</td>
<td>1750.00</td>
</tr>
<tr>
<td>Calorie Supply per Capita per Day, 1980</td>
<td>77</td>
<td>2443.04</td>
<td>2346.00</td>
<td>449.91</td>
<td>3812.00</td>
<td>1769.00</td>
</tr>
<tr>
<td>Log Calorie Supply per Capita per Day, 1967</td>
<td>77</td>
<td>3.35</td>
<td>3.34</td>
<td>0.06</td>
<td>3.52</td>
<td>3.262</td>
</tr>
<tr>
<td>Log Calorie Supply per Capita per Day, 1970</td>
<td>77</td>
<td>3.36</td>
<td>3.35</td>
<td>0.06</td>
<td>3.53</td>
<td>3.268</td>
</tr>
<tr>
<td>Variable</td>
<td>N</td>
<td>Mean</td>
<td>Median</td>
<td>Standard Deviation</td>
<td>Maximum</td>
<td>Minimum</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>----</td>
<td>-------</td>
<td>--------</td>
<td>-------------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Log Calorie Supply per Capita per Day, 1975</td>
<td>77</td>
<td>3.36</td>
<td>3.35</td>
<td>0.07</td>
<td>3.55</td>
<td>3.243</td>
</tr>
<tr>
<td>Log Calorie Supply per Capita per Day, 1980</td>
<td>77</td>
<td>3.38</td>
<td>3.37</td>
<td>0.08</td>
<td>3.58</td>
<td>3.248</td>
</tr>
<tr>
<td>Protein Supply (Grams) per Capita per Day, 1967</td>
<td>77</td>
<td>59.09</td>
<td>58.50</td>
<td>14.01</td>
<td>104.90</td>
<td>35.800</td>
</tr>
<tr>
<td>Protein Supply (Grams) per Capita per Day, 1970</td>
<td>77</td>
<td>59.76</td>
<td>59.00</td>
<td>14.51</td>
<td>106.10</td>
<td>36.700</td>
</tr>
<tr>
<td>Protein Supply (Grams) per Capita per Day, 1975</td>
<td>77</td>
<td>60.62</td>
<td>58.00</td>
<td>15.63</td>
<td>108.00</td>
<td>36.200</td>
</tr>
<tr>
<td>Protein Supply (Grams) per Capita per Day, 1980</td>
<td>77</td>
<td>62.96</td>
<td>58.20</td>
<td>17.27</td>
<td>112.70</td>
<td>32.400</td>
</tr>
<tr>
<td>Log Protein Supply (Grams) per Capita per Day, 1967</td>
<td>77</td>
<td>1.76</td>
<td>1.77</td>
<td>0.10</td>
<td>2.02</td>
<td>1.554</td>
</tr>
<tr>
<td>Log Protein Supply (Grams) per Capita per Day, 1970</td>
<td>77</td>
<td>1.76</td>
<td>1.77</td>
<td>0.10</td>
<td>2.03</td>
<td>1.565</td>
</tr>
<tr>
<td>Log Protein Supply (Grams) per Capita per Day, 1975</td>
<td>77</td>
<td>1.77</td>
<td>1.76</td>
<td>0.11</td>
<td>2.03</td>
<td>1.559</td>
</tr>
<tr>
<td>Variable</td>
<td>N</td>
<td>Mean</td>
<td>Median</td>
<td>Standard Deviation</td>
<td>Maximum</td>
<td>Minimum</td>
</tr>
<tr>
<td>----------</td>
<td>---</td>
<td>------</td>
<td>--------</td>
<td>-------------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Log Protein Supply (Grams) per Capita per Day, 1980</td>
<td>77</td>
<td>1.78</td>
<td>1.76</td>
<td>0.12</td>
<td>2.05</td>
<td>1.511</td>
</tr>
<tr>
<td>Adjusted Primary Enrollment Ratio, 1965</td>
<td>77</td>
<td>67.61</td>
<td>71.00</td>
<td>31.04</td>
<td>124.00</td>
<td>10.000</td>
</tr>
<tr>
<td>Adjusted Primary Enrollment Ratio, 1970</td>
<td>77</td>
<td>72.48</td>
<td>76.00</td>
<td>30.81</td>
<td>119.00</td>
<td>11.000</td>
</tr>
<tr>
<td>Adjusted Primary Enrollment Ratio, 1975</td>
<td>75</td>
<td>78.23</td>
<td>87.00</td>
<td>28.39</td>
<td>123.00</td>
<td>15.000</td>
</tr>
<tr>
<td>Adjusted Primary Enrollment Ratio, 1980</td>
<td>75</td>
<td>85.53</td>
<td>95.00</td>
<td>27.43</td>
<td>128.00</td>
<td>19.000</td>
</tr>
<tr>
<td>Adult Literacy Rate (% of Adults), 1965</td>
<td>57</td>
<td>32.05</td>
<td>22.80</td>
<td>26.57</td>
<td>90.40</td>
<td>1.400</td>
</tr>
<tr>
<td>Adult Literacy Rate (% of Adults), 1965, Squared</td>
<td>57</td>
<td>1720.99</td>
<td>519.84</td>
<td>2268.14</td>
<td>8172.16</td>
<td>1.96U</td>
</tr>
<tr>
<td>Adult Literacy Rate (% of Adults), 1970</td>
<td>54</td>
<td>49.62</td>
<td>53.95</td>
<td>29.88</td>
<td>96.10</td>
<td>4.200</td>
</tr>
<tr>
<td>Adult Literacy Rate (% of Adults), 1975</td>
<td>30</td>
<td>44.81</td>
<td>39.35</td>
<td>27.92</td>
<td>93.90</td>
<td>8.800</td>
</tr>
<tr>
<td>Variable</td>
<td>N</td>
<td>Mean</td>
<td>Median</td>
<td>Standard Deviation</td>
<td>Maximum</td>
<td>Minimum</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>----</td>
<td>------</td>
<td>--------</td>
<td>-------------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Adult Literacy Rate (% of Adults), 1980</td>
<td>44</td>
<td>52.64</td>
<td>51.00</td>
<td>25.64</td>
<td>90.00</td>
<td>6.100</td>
</tr>
<tr>
<td><strong>Independent Variables:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MNC Penetration, 1967</td>
<td>77</td>
<td>49.91</td>
<td>44.52</td>
<td>34.96</td>
<td>105.00</td>
<td>0.000</td>
</tr>
<tr>
<td>MNC Penetration, 1967, Squared</td>
<td>77</td>
<td>3697.47</td>
<td>1982.03</td>
<td>3954.83</td>
<td>11025.00</td>
<td>0.000</td>
</tr>
<tr>
<td>Aid Debt, 1960-67, as % of 1967 GNP</td>
<td>77</td>
<td>4.96</td>
<td>2.87</td>
<td>9.85</td>
<td>83.05</td>
<td>-0.878</td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP (Common Log of Value + 2)</td>
<td>77</td>
<td>0.70</td>
<td>0.69</td>
<td>0.31</td>
<td>1.93</td>
<td>0.050</td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP, Squared (Common Log of Value + 2), Squared</td>
<td>77</td>
<td>0.59</td>
<td>0.47</td>
<td>0.54</td>
<td>3.72</td>
<td>0.002</td>
</tr>
<tr>
<td><strong>Interaction Terms:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MNC Penetration, 1967, X Dummy GNP per Capita, 1967</td>
<td>77</td>
<td>32.53</td>
<td>0.00</td>
<td>40.00</td>
<td>105.00</td>
<td>0.000</td>
</tr>
<tr>
<td>Log Aid Debt, 1960-67, as % of 1967 GNP, X Dummy GNP per Capita, 1967</td>
<td>77</td>
<td>0.32</td>
<td>0.05</td>
<td>0.38</td>
<td>1.27</td>
<td>0.000</td>
</tr>
<tr>
<td>Variable</td>
<td>N</td>
<td>Mean</td>
<td>Median</td>
<td>Standard Deviation</td>
<td>Maximum</td>
<td>Minimum</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>---</td>
<td>--------</td>
<td>--------</td>
<td>--------------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>Control Variables:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GNP per Capita, 1967</td>
<td>77</td>
<td>283.96</td>
<td>214.39</td>
<td>257.43</td>
<td>1352.14</td>
<td>33.130</td>
</tr>
<tr>
<td>GNP per Capita, 1967, Squared</td>
<td>77</td>
<td>146044.00</td>
<td>45964.00</td>
<td>289501.00</td>
<td>1828294.00</td>
<td>1097.600</td>
</tr>
<tr>
<td>Log GNP per Capita, 1967 (Common Log)</td>
<td>77</td>
<td>2.30</td>
<td>2.33</td>
<td>0.37</td>
<td>3.13</td>
<td>1.520</td>
</tr>
<tr>
<td>Dummy GNP per Capita, 1967</td>
<td>77</td>
<td>0.51</td>
<td>1.00</td>
<td>0.50</td>
<td>1.00</td>
<td>0.000</td>
</tr>
<tr>
<td>Mean Gross Domestic Investment as % of GDP, 1967-70</td>
<td>77</td>
<td>17.66</td>
<td>16.72</td>
<td>5.86</td>
<td>32.71</td>
<td>5.372</td>
</tr>
<tr>
<td>Mean Secondary School Enrollment as % of Total Population, 1967-70</td>
<td>77</td>
<td>2.42</td>
<td>1.54</td>
<td>2.04</td>
<td>9.73</td>
<td>0.146</td>
</tr>
<tr>
<td>Mean Secondary School Enrollment as % of Total Population, 1967-70, Squared</td>
<td>77</td>
<td>9.96</td>
<td>2.36</td>
<td>15.66</td>
<td>94.67</td>
<td>0.021</td>
</tr>
<tr>
<td>Geometric Mean Annual Population Growth Rate, 1967-70</td>
<td>77</td>
<td>2.47</td>
<td>2.55</td>
<td>0.70</td>
<td>4.10</td>
<td>0.294</td>
</tr>
</tbody>
</table>
APPENDIX C

COUNTRIES INCLUDED IN EACH PART OF THE ANALYSIS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Algeria</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Angola</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Argentina</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benin</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bolivia</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burma</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burundi</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cameroon</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central African Republic</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Chad</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Chile</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Costa Rica</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecuador</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egypt</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>----------------</td>
<td>-----------------</td>
<td>-------------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td>El Salvador</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guatemala</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Haiti</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Honduras</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iran</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iraq</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Israel</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jamaica</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kenya</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Korea, Republic of</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liberia</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Libya</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Madagascar</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malawi</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mali</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mauritania</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>------------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>----------------</td>
<td>-----------------</td>
<td>-------------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Mexico</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morocco</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mozambique</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Nepal</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Niger</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Panama</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Paraguay</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Peru</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Philippines</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rwanda</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Senegal</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Singapore</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somalia</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sudan</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syria</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tanzania</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Thailand</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Togo</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>----------------</td>
<td>----------------</td>
<td>--------------------------</td>
<td>---------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tunisia</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Volta</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uruguay</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Venezuela</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yugoslavia</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zaire</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zambia</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Adelman, Irma
1975 "Development economics -- A reassessment of goals."

Adelman, Irma and Cynthia Taft Morris
1973 Economic Growth and Social Equality in Developing
Countries. Stanford, California: Stanford University
Press.

Ahluwalia, Montek S.
1976a "Income distribution and development: Some stylized
1976b "Inequality, poverty and development." Journal of

Amin, Samir
1976 Unequal Development: An Essay on the Social Formations of

Armer, Michael and Larry Isaac
1978 "Determinants and behavioral consequences of psychological
modernity: Empirical evidence from Costa Rica." American

Armstrong, Adrienne
1981 "The political consequences of economic dependence."
Journal of Conflict Resolution 25 (September):401-428.

Ballmer-Cao, Thanh-Huyen and Juerg Scheidegger
1979 "Compendium of data for world-system analysis." Bulletin
of the Sociological Institute of the University of Zurich
(special issue, March).

Baran, Paul A.
1957 The Political Economy of Growth. New York: Modern
Reader.

Baran, Paul A. and Paul Sweezy
1966 Monopoly Capital: An Essay on the American Economic and
Barnet, Richard J. and Ronald E. Mueller

Becker, Gary S. and Barry R. Chiswick

Belsley, David A., Edwin Kuh, and Roy E. Welsch

Bendix, Reinhard

Berweger, Gottfried and Jean-Pierre Hoby

Blau, Peter M. and Otis Dudley Duncan

Bodenheimer, Susanne

Bollen, Kenneth A.

Bollen, Kenneth A. and Barbara Entwisle

Bollen, Kenneth A. and Robert W. Jackman
Booth, David

Borgstrom, George

Bornschier, Volker


Bornschier, Volker and Thanh-Huyen Ballmer-Cao

Bornschier, Volker and Christopher Chase-Dunn

Bornschier, Volker, Christopher Chase-Dunn, and Richard Rubinson
Bornschier, Volker and Jean-Pierre Hoby

Bradshaw, York W.

Bury, J. B.

Cardoso, Fernando Henrique

Cardoso, Fernando Henrique and Enzo Faletto

Catherwood, B. F.
1939 Basic Theories of Distribution. London: P. S. King and Son.

Cereseto, Shirley

Chandler, Alfred D. and Fritz Redlich

Chase-Dunn, Christopher

Chenery, Hollis

Chenery, Hollis, Montek S. Ahluwalia, C. L. G. Bell, John H. Duloy, and Richard Jolly

Chenery, Hollis and Moises Syrquin

Chilcote, Ronald H.

Chirot, Daniel and Thomas D. Hall

Clausen, A. W.
1985  "Poverty in the developing countries 1985." Address given at the Martin Luther King, Jr., Center, Atlanta, Georgia. Washington: The World Bank.

Cohen, Benjamin J.

Colclough, Christopher

Curhan, Joan P., William H. Davidson, and Rajan Suri
Outright, Phillips
1967 "Income redistribution: A cross-national analysis."
Social Forces 46 (December):180-190.

Outright, Phillips with Richard Adams

Delacroix, Jacques


Delacroix, Jacques and Charles C. Ragin


Dixon, William J.
1984 "Trade concentration, economic growth, and the provision of basic human needs." Social Science Quarterly 65 (September):761-774.

Dolan, Michael B. and Brian W. Tomlin

Donner, Frederic G.

Dos Santos, Theotonio

Duncan, Otis Dudley
Durkheim, Emile

Eisenstadt, S. N.

Emmanuel, Arghiri

Evans, Peter B. and Michael Timberlake

FAO (Food and Agriculture Organization of the United Nations)


Fiala, Robert
1983 "Inequality and the service sector in less developed countries: A reanalysis and a respecification." American Sociological Review 48 (June):421-428.

Fiala, Robert and Francisco Ramirez

Firebaugh, Glenn

Frank, Andre Gunder

Fry, Gerald W.

Furtado, Celso

Galtung, Johan

Gauhar, Altaf

Geller, Daniel S.

George, Susan

Goulet, Denis

Hagen, Everett E.
Hannan, Michael T.

Hanushek, Eric A. and John E. Jackson

Hardin, Garrett

Hartman, John and Pamela Barnhouse Walters

Hayter, Teresa

Heise, David R.

Hertford, Reed

Hewitt, Christopher

Hibbs, Douglas A.

Hicks, Norman and Paul Streeten
1979 "Indicators of development: The search for a basic needs yardstick." World Development 7 (June):567-580.
Hopkins, Terence K.

Hopkins, Terence K. and Immanuel Wallerstein

Hopkins, Terence K. and Immanuel Wallerstein (eds.)

Hopkins, Terence K., Immanuel Wallerstein, and Associates
1977 "Patterns of development of the modern world-system." Review 1 (Fall):111-145.

Hoselitz, Berthold F.

Hout, Michael

Hymer, Steven

ILO (International Labour Office)
Inkeles, Alex and David H. Smith

Isaac, Larry

Jackman, Robert W.

Jackson, Steven, Bruce Russett, Duncan Snidal, and David Sylvan

Jaffee, David

Jain, Shail

Jain, Shail and Arthur E. Tiemann

Jodice, David A.

Kaufman, Robert R., Harry I. Chernotsky, and Daniel S. Geller
Kelly, Deirdre and David Beers

Kentor, Jeffrey

Kerr, Clark, John T. Dunlop, Frederick H. Harbison, and Charles A. Myers

Kessler, Ronald C. and David F. Greenberg

Keyfitz, Nathan

Kobrin, Stephen J.

Kohli, Atul, Michael F. Altfeld, Saideh Lotfian, and Russell Mardon

Kuznets, Simon

Laclau, Ernesto
Lappe, Frances Moore, Joseph Collins, and David Kinley

Leipziger, D. M. and M. A. Lewis

Lenski, Gerhard E.

Lenski, Gerhard and Patrick D. Nolan

Lerner, Daniel

Lewis, Arthur

Magdoff, Harry

Mahler, Vincent A.


Martin, Edwin M.

Marx, Karl
McClelland, David C.  

McGowan, Patrick J.  

McGowan, Patrick J. and Dale L. Smith  

Meyer, John W., Francisco O. Ramirez, Richard Rubinson, and John Boli-Bennett  

Monchar, Philip Harris  

Montgomery, Douglas C. and Elizabeth A. Peck  

Moon, Bruce  

Moran, Theodore  

Morris, Cynthia Taft  

Morris, Morris David  
Mueller, Ronald  

Muller, Edward N.  

Murdoch, William W.  

Murray, Robin (ed.)  

Nemeth, Roger J. and David A. Smith  

Nisbet, Robert  

Nolan, Patrick D.  


Nolan, Patrick D. and Ralph B. White  


Nunnally, Jum C.  
O'Brien, Philip J.  
1975  "A critique of Latin American theories of dependency."  

OECD (Organisation for Economic Cooperation and Development)  


Olsen, Marvin E.  

Paddock, William C. and Paul Paddock  

Papanek, Gustav  

Parsons, Talcott  

Paukert, Felix  
Payer, Cheryl

Perelman, Michael

Portes, Alejandro

Portes, Alejandro and Jose A. Cobas

Ramirez, Francisco O.

Ramirez, Francisco and Jane Weiss

Ranis, Gustav and John C. H. Fei

Rao, Potluri and Roger LeRoy Miller

Resnick, Stephen A.

Reuber, Grant L.
Rogers, Everett M.

Rostow, W. W.

Rubinson, Richard

Rubinson, Richard and Deborah Holtzman

Rubinson, Richard and Dan Quinlan

Samater, Ibrahim M.

SAS Institute

Schubert, James N.

Seers, Dudley

Seidler, John

Seidler, John and Dale W. Wimberley
Sheehan, Glen and Mike Hopkins  

Shryock, Henry S., Jacob S. Siegel, and Associates  

Sica, Alan and Harland Prechel  

Smye, Neil J.  

Snyder, David and Edward L. Kick  

Stack, Steven  

Stack, Steven and Delore Zimmerman  

Stevenson, Paul  
Stokes, Randall and David Jaffee

Streeten, Paul

Streeten, Paul and Shahid Javed Burki

Streeten, Paul, with Shahid Javed Burki, Mahbub ul Haq, Norman Hicks, and Frances Stewart

Sullivan, Gerard

Sunkel, Osvaldo

Thomas, George M. and John W. Meyer

Timberlake, Michael and Jeffrey Kentor

Timberlake, Michael and Kirk R. Williams
Todaro, Michael P.  

Toennies, Ferdinand  

Truelove, Cynthia  

Tyree, Andrea, Moshe Semyonov, and Robert W. Hodge  

U. N. Centre on Transnational Corporations  

UNESCO (United Nations Educational, Scientific and Cultural Organization)  
various Statistical Yearbook. Paris: UNESCO.

U. S. Department of Commerce, Bureau of Economic Analysis  

Vaupel, James W. and Joan P. Curhan  
1969 The Making of Multinational Enterprise. Boston: Division of Research, Graduate School of Business Administration, Harvard University.


Vengroff, Richard  
Vengroff, Richard and Yung Mei Tsai

Wallerstein, Immanuel

Ward, Kathryn B.

Ward, Michael Don

Warren, Bill
Weed, Frank J.

Weede, Erich

Weede, Erich and Horst Tiefenbach
Williams, Kirk R. and Michael Timberlake  

Wimberley, Dale W.  

Wood, Robert E.  

World Bank  


Wright, Charles L.  


Young, Ruth C.  