KAIKAI, ALPHA-YAYAH
AN AXIOMATIC THEORY OF REGIONAL INTEGRATION:
APPLICATIONS TO WEST AFRICA.

THE OHIO STATE UNIVERSITY, PH.D., 1978

© Copyright by Alpha-Yayah Kaikai
1978
Dedicated to the Memory of
my mother Mariama Kaikai
ACKNOWLEDGMENTS

The expression "you have finally made it" implies the achievement of an important objective but not without encountering many serious difficulties. It is fully borne out by this writer's experiences in graduate school.

Originally brought up in the "traditional" mode of political science research, this writer knew absolutely nothing about empirical research until he entered graduate school. Indeed, his interest in empirical research was first provoked by reference to the Polimetrics Laboratory in the brochure of the Department of Political Science, Ohio State. Since his traditional mind had always associated laboratories with the hard sciences, he decided to find out what on earth took place inside a social science lab.

What followed later (in graduate school) was a painful and protracted experience that required extra hard work on his part to make up for lost time. On the other hand, the expression (referred to above) ignores valuable assistance that is accorded one along the way. This writer wishes to acknowledge the help of specific persons, and others too numerous to mention by name, without which this work would not have been possible. Of course, he takes full responsibility for all errors (of commission and omission) that appear in this dissertation.
First and foremost many thanks go to this writer's parents. Their decision to invest in all of their children's education was certainly a noble example to many others in their local community. That investment, part of a growing trend in Sierra Leone, is bound to fructify sooner or later.

This writer's brother Septimus M. Kaikai (professor of economics and chairman of the Business Studies Division, Catonsville Community College, Maryland) and his wife Regina (professor of education, Morgan State University, Baltimore, Maryland) picked up where this writer's mom and dad left off. They not only made college education in the United States possible for him, but also provided him with room and board while he did his undergraduate work. This writer has also always felt free to draw upon his brother's expertise. To both him and his wife many thanks are due.

Sincere thanks are due also to the Graduate School and Department of Political Science, Ohio State for providing this writer with valuable financial assistance throughout his graduate program. Besides making the program possible, this assistance went a long way in reducing the impact of adjusting to empirical political research.

This writer's advisor deserves immense thanks for providing him with the necessary guidance in the course of his graduate program. Professor Chadwick F. Alger has been helpful to him in more ways than one: His methodical way of doing things, detailed advice on academic and personal matters, and his care in alerting this writer to and making available to him materials pertinent to his research interests.
(which he helped shape) will ever remain to ring in his ears.

Professor Alger first drew this writer's attention to the interdependence of the contemporary international system and the role that international organizations play in it.

Thanks are due also to this writer's reading committee for their careful and prompt reading of various drafts of this dissertation. Professor Harf's methodological insight and Professor Taaffe's transportation expertise were indispensable to the completion of this dissertation.

This writer is also grateful to his friend Dr. Okey Onyejekwe for cheering him on. At critical times when he felt frustrated, Okey was fond of reminding him that victory was within his grasp. With the ball on the one-yard line, this writer had to muster up strength to score the winning touchdown, otherwise mother Africa should take him to task.

One may know what one wants to do, but how to do it is another matter entirely. The assistance of the staff of the Polimetrics laboratory with the computer runs reduced drastically the number of error messages that are characteristic of quantitative research. This enabled the present writer to spend as much time as possible in university libraries whose staff helped him tremendously to locate valuable research materials.

Mrs. Sandy Wood's professional typing is clearly evident in these pages. She also typed various drafts of this dissertation fast enough to meet Graduate School deadlines. The assistance of Miss Joan Taylor
in this endeavor is gratefully acknowledged. But for them this
dissertation might have taken longer to complete.

Last but by no means least, this writer wishes to thank his
wife Hawa immensely for standing by him throughout this long effort.
Her presence was a constant reminder that there was an unfinished
job on his hands. Hawa's dedication to the family shone through
this period. Indeed, as always she was an invaluable source of in-
spiration to this writer. Their daughter Mariama played no small
role either. Once in a while when this writer dozed off, she woke
him up and handed him a page from the dissertation with the word
"here."
VITA

March 22, 1945. . . . . . . . . . Born - Kailahun, Sierra Leone

1966-1967 . . . . . . . . . . Assistant Teacher, Muslim Congress
Secondary School, Freetown, Sierra Leone

1972. . . . . . . . . . . . . . . . B.A., Magna cum laude, Morgan State
University, Baltimore, Maryland

1973-1975, 1977-1978. . . . . Teaching Assistant, Department of
Political Science, The Ohio State
University, Columbus, Ohio

FIELDS OF STUDY

Major Field: International Relations

   Studies in Transnational Relations. Professor Chadwick F. Alger

   Studies in Regional Integration. Professor Louis McCall

   Studies in Foreign Policy. Professor Charles Hermann

Minor Field: Comparative Politics

   Studies in Political Development. Professor R. William Liddle
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>iii</td>
</tr>
<tr>
<td>VITA</td>
<td>vii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>x</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xiii</td>
</tr>
<tr>
<td>GLOSSARY OF INTERNATIONAL ORGANIZATION INITIALS AND FULL NAME</td>
<td>xiv</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
</tbody>
</table>

Chapter

I. WEST AFRICA: AN OVERVIEW OF REGIONAL INTEGRATION, ECONOMIC DEVELOPMENT, AIR TRANSPORT AND DEPENDENCY SINCE 1945. ........................................... 11
   The West African Integration Movement. ........................ 12
   Relations Between Member-States. ............................... 27
   Attitudes and Perceptions. ..................................... 29
   Independent Integrative Institutions. ........................ 31
   Mutual Responsiveness and the Role of IOs. .................... 33
   Summary and Conclusion. ........................................ 58

II. REVIEW OF THE LITERATURE. ..................................... 67
   Socio-Economic Development. .................................... 67
   Dependency. ..................................................... 87
   Regional Economic and Political Integration. ................ 111
   Air Transport. .................................................. 146

III. AN AXIOMATIC THEORY OF REGIONAL INTEGRATION ............... 170
   The Form of Axiomatic Theory. ................................. 171
   The Axiomatic Theory of Regional Integration ............... 176

viii
<table>
<thead>
<tr>
<th>IV. RESEARCH DESIGN</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit of Analysis</td>
<td>185</td>
</tr>
<tr>
<td>Operational Definitions and Data Sources</td>
<td>186</td>
</tr>
<tr>
<td>Methods of Data Reduction</td>
<td>191</td>
</tr>
<tr>
<td>Techniques of Analysis</td>
<td>219</td>
</tr>
<tr>
<td>Trends in the Variables</td>
<td>228</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>V. RESEARCH FINDINGS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The West African Case</td>
<td>264</td>
</tr>
<tr>
<td>Member-States</td>
<td>265</td>
</tr>
<tr>
<td></td>
<td>285</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VI. SUMMARY AND CONCLUSIONS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>APPENDICES</td>
<td>309</td>
</tr>
<tr>
<td>A. Glossary of West African Regional Organizations</td>
<td>327</td>
</tr>
<tr>
<td>B. Glossary of Air Transport Organizations with West African Members</td>
<td>328</td>
</tr>
</tbody>
</table>

| BIBLIOGRAPHY                              | 330  |
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Per Cent Distribution of INGOs by Goal Type.</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Per Cent of INGOs Working in West Africa, by Goal Type</td>
<td>39</td>
</tr>
<tr>
<td>2</td>
<td>Intra-Regional (Export) Trade as a Proportion of World Trade</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>Diplomatic Exchange Data</td>
<td>195</td>
</tr>
<tr>
<td>4</td>
<td>Energy Consumption/c, Coal Equivalent, and in Kilos/c</td>
<td>198</td>
</tr>
<tr>
<td>5</td>
<td>Electricity Consumption/c, in Kilowatt Hours/c (Thousand Million KW Hours)</td>
<td>200</td>
</tr>
<tr>
<td>6</td>
<td>Female as Per cent of Total Primary Enrollment</td>
<td>201</td>
</tr>
<tr>
<td>7</td>
<td>Pupil/Teacher Ratio in Primary Education</td>
<td>202</td>
</tr>
<tr>
<td>8</td>
<td>Combined Primary and Secondary Enrollment as Percent of Age Group 5-19</td>
<td>203</td>
</tr>
<tr>
<td>9</td>
<td>Daily Newspaper Circulation per 1,000 Population</td>
<td>204</td>
</tr>
<tr>
<td>10</td>
<td>Radios per 1,000 Population</td>
<td>205</td>
</tr>
<tr>
<td>11</td>
<td>Agricultural Production per Male Agricultural Worker</td>
<td>206</td>
</tr>
<tr>
<td>12</td>
<td>Telephones per 100,000 Population</td>
<td>207</td>
</tr>
<tr>
<td>13</td>
<td>Motor Vehicles per 1,000 Population</td>
<td>208</td>
</tr>
<tr>
<td>14</td>
<td>Manufacturing: Industrial Origin of Gross Domestic Product</td>
<td>209</td>
</tr>
<tr>
<td>15</td>
<td>Per Cent Distribution of INGOs by Goal Type</td>
<td>210</td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>16</td>
<td>Inhabitants per Hospital Bed</td>
<td>211</td>
</tr>
<tr>
<td>17</td>
<td>Inhabitants per Physician (in Thousands)</td>
<td>212</td>
</tr>
<tr>
<td>18</td>
<td>Air Transport: Connectivity</td>
<td>214</td>
</tr>
<tr>
<td>19</td>
<td>Air Transport: Intensity</td>
<td>215</td>
</tr>
<tr>
<td>20</td>
<td>Dependency Data</td>
<td>220</td>
</tr>
<tr>
<td>21</td>
<td>Unrotated Matrix of Developmental Data on West Africa.</td>
<td>224</td>
</tr>
<tr>
<td>22</td>
<td>Rotated Factor Matrix of Developmental Data on West Africa.</td>
<td>226</td>
</tr>
<tr>
<td>23</td>
<td>Economic Development Index</td>
<td>229</td>
</tr>
<tr>
<td>24</td>
<td>Social Development Index</td>
<td>230</td>
</tr>
<tr>
<td>25</td>
<td>Data for the West African Case</td>
<td>246</td>
</tr>
<tr>
<td>26</td>
<td>Summary of Research Findings, Pearson r's.</td>
<td>270</td>
</tr>
<tr>
<td>27</td>
<td>Summary of Research Findings: r^2</td>
<td>272</td>
</tr>
<tr>
<td>28</td>
<td>Pearson r's from Synchronic, Diachronic Analysis</td>
<td>276</td>
</tr>
<tr>
<td>29</td>
<td>Durbin-Watson Test for Autocorrelation</td>
<td>277</td>
</tr>
<tr>
<td>30</td>
<td>Pearson r's From Synchronic, Diachronic Analysis,</td>
<td>279</td>
</tr>
<tr>
<td></td>
<td>Hypothesis 1-6: Transformed Data</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Selected Statistics from Multiple Regression, Hypothesis 7</td>
<td>280</td>
</tr>
<tr>
<td>32</td>
<td>Selected Statistics from Multiple Regression, Hypothesis 8</td>
<td>282</td>
</tr>
<tr>
<td>33</td>
<td>Indirect Effects, The West African Case</td>
<td>284</td>
</tr>
<tr>
<td>34</td>
<td>Research Findings About Member-States: Economic Development and Integration</td>
<td>286</td>
</tr>
<tr>
<td>35</td>
<td>Research Findings About Member-States: Air Transport and Economic Development</td>
<td>288</td>
</tr>
<tr>
<td>Table</td>
<td>Research Findings About Member-States: Economic Integration and Dependency.</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>36</td>
<td></td>
<td>290</td>
</tr>
<tr>
<td>37</td>
<td>Research Findings About Member-States: Air Transport and Economic Integration.</td>
<td>291</td>
</tr>
<tr>
<td>38</td>
<td>Research Findings About Member-States: Economic Development and Dependency.</td>
<td>293</td>
</tr>
<tr>
<td>39</td>
<td>Research Findings About Member-States: Air Transport and Dependency.</td>
<td>295</td>
</tr>
<tr>
<td>40</td>
<td>Member-States: Test for Serial Correlation</td>
<td>296</td>
</tr>
<tr>
<td>41</td>
<td>The Effect of Economic Integration and Dependency on Economic Development.</td>
<td>298</td>
</tr>
<tr>
<td>42</td>
<td>The Effect on Air Transport of Economic Development, Integration and Dependency.</td>
<td>300</td>
</tr>
<tr>
<td>43</td>
<td>Indirect Effect of Dependency on Economic Development.</td>
<td>302</td>
</tr>
<tr>
<td>44</td>
<td>Indirect Effect of Economic Integration on Air Transport.</td>
<td>304</td>
</tr>
<tr>
<td>45</td>
<td>Indirect Effect of Dependency on Air Transport.</td>
<td>306</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intra-West African Travel, Ghana</td>
<td>34</td>
</tr>
<tr>
<td>2</td>
<td>Air and Road Travel to Ghana, % West African</td>
<td>36</td>
</tr>
<tr>
<td>3</td>
<td>An Axiomatic Theory of Regional Integration, Where E is Development; I Integration; D Dependency; and T Transportation</td>
<td>176</td>
</tr>
<tr>
<td>4</td>
<td>A Table of Units for Micro-Analytic Designs</td>
<td>190</td>
</tr>
<tr>
<td>5</td>
<td>Changes in Economic Development in West Africa</td>
<td>248</td>
</tr>
<tr>
<td>6</td>
<td>Changes in Social Development in West Africa</td>
<td>249</td>
</tr>
<tr>
<td>7</td>
<td>Changes in Economic Integration in West Africa</td>
<td>250</td>
</tr>
<tr>
<td>8</td>
<td>Changes in Political Integration in West Africa</td>
<td>252</td>
</tr>
<tr>
<td>9</td>
<td>Changes in Air Transport (Connectivity) in West Africa</td>
<td>253</td>
</tr>
<tr>
<td>10</td>
<td>Changes in Air Transport (Intensity) in West Africa</td>
<td>255</td>
</tr>
<tr>
<td>11</td>
<td>Changes in Dependency in West Africa</td>
<td>256</td>
</tr>
<tr>
<td>Initials</td>
<td>Full Name</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td>AAA</td>
<td>Association of African Airlines</td>
<td></td>
</tr>
<tr>
<td>AFCAC</td>
<td>African Civil Aviation Commission</td>
<td></td>
</tr>
<tr>
<td>AOCI</td>
<td>Airport Operators Council International</td>
<td></td>
</tr>
<tr>
<td>BITS</td>
<td>International Bureau of Social Tourism</td>
<td></td>
</tr>
<tr>
<td>CE</td>
<td>Conseil de l'Entente</td>
<td></td>
</tr>
<tr>
<td>CEAO</td>
<td>Communauté Economique de l'Afrique de l'Ouest</td>
<td></td>
</tr>
<tr>
<td>ECA</td>
<td>Economic Commission for Africa</td>
<td></td>
</tr>
<tr>
<td>ECOSOC</td>
<td>Economic and Social Council</td>
<td></td>
</tr>
<tr>
<td>ECOWAS</td>
<td>Economic Community of West African States</td>
<td></td>
</tr>
<tr>
<td>FSF</td>
<td>Flight Safety Foundation</td>
<td></td>
</tr>
<tr>
<td>IACA</td>
<td>International Air Carrier Association</td>
<td></td>
</tr>
<tr>
<td>LAT</td>
<td>Institute of Air Transport</td>
<td></td>
</tr>
<tr>
<td>IATA</td>
<td>International Air Transport Association</td>
<td></td>
</tr>
<tr>
<td>ICAO</td>
<td>International Civil Aviation Organization</td>
<td></td>
</tr>
<tr>
<td>ILO</td>
<td>International Labor Organization</td>
<td></td>
</tr>
<tr>
<td>ICAOPA</td>
<td>International Council of Aircraft Owner and Pilot Associations</td>
<td></td>
</tr>
<tr>
<td>IFALPA</td>
<td>International Federation of Air Line Pilots Associations</td>
<td></td>
</tr>
<tr>
<td>IRF</td>
<td>International Road Federation</td>
<td></td>
</tr>
<tr>
<td>ISTC</td>
<td>International Student Travel Conference</td>
<td></td>
</tr>
<tr>
<td>IUOTO</td>
<td>International Union of Official Travel Organizations</td>
<td></td>
</tr>
<tr>
<td>OAMCE</td>
<td>Organisation Africaine et Malgache de Cooperation Economique</td>
<td></td>
</tr>
<tr>
<td>OAU</td>
<td>Organization of African Unity</td>
<td></td>
</tr>
<tr>
<td>OCAM</td>
<td>Organisation Commune Africaine et Mauricienne</td>
<td></td>
</tr>
<tr>
<td>OMVS</td>
<td>Organisation pour la Mise en Valeur du Fleuve Senegal</td>
<td></td>
</tr>
<tr>
<td>UAM</td>
<td>Union Africaine et Malgache</td>
<td></td>
</tr>
<tr>
<td>UAMCE</td>
<td>Union Africaine et Malgache de Cooperation Economique</td>
<td></td>
</tr>
<tr>
<td>UAS</td>
<td>Union of African States</td>
<td></td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
<td></td>
</tr>
<tr>
<td>WAY</td>
<td>World Assembly of Youth</td>
<td></td>
</tr>
<tr>
<td>WTO</td>
<td>World Travel Organization</td>
<td></td>
</tr>
</tbody>
</table>
INTRODUCTION

This is a study of economic development, regional integration, air transport and dependency in West Africa during the period 1959-1973. From the point of view of both research and policy-making, this study examines economic development and the most practical way to achieve it in West Africa given the inadequate resources available to member-states. The answer to illiteracy, disease and malnutrition, development improves transport; it is in turn hampered by the region's dependency ties. All of these relationships are tested axiomatically utilizing longitudinal data. The thesis is transnational in perspective: The nation-state, IO, group and individual play an important, though not necessarily equal, role in the drive for development in West Africa.

Development, long neglected by international relations scholars, has with the emergence of the new nations assumed international importance. One of the main avenues to development in the Third World is regional integration. Until recently this approach could not be successfully pursued there because the pre-conditions were presumably lacking. But the new interest in Third World development and integration is the climax of a long trend in international relations research.

No doubt, international relations research has come a long way. In the early 1950s research emphasized the attitudes and perceptions
of nations and developed grand theories about nation-state behavior. This tradition argued that whereas peace was the rule in domestic politics, war was the distinguishing characteristic of international politics. War in international politics stemmed directly and inescapably from the absence of community, consensus, and monopoly of the means of violence in the entire world. Thus war, the expectation of war, and the resultant diplomatic and strategic behavior become the explicanda of international relations (Modelski, 1970).

This position is espoused clearly by Morgenthau in successive editions of his Politics Among Nations and by Aaron (1966), inter alia, and can be traced all the way back to Thomas Hobbes.

The middle and late 1950s brought a shift of interest to nations' actual behavior. Research dealt with what nations do to and with each other. The result has been the development of two types of data study.

First to emerge was the use of transaction data. Pioneered by Karl Deutsch, it focuses on routine, measurable occurrences such as mail flows and trade. Transaction analysis features prominently in integration studies.

Other scholars including Charles McClelland soon developed an interest in the nonroutine and unconventional activities of international actors -- event/interactions. Though applied mainly in foreign policy and international system studies, following Sondermann's (1961) and Singer's (1961) timely but independent distinction between foreign policy and international politics, events data research is by no means limited to these areas.
As a matter of fact, integration research can and does draw upon events data to measure such concepts as crisis frequency and crisis intensity, variables which perhaps best summarize "backwash-" and "spread-effects" (Myrdal, 1957). Furthermore, events data research is, so to speak, abreast of the times in that it focuses on non-state actors as well. One is reminded of Trice's study (1974) of the influence of non-governmental associations on United States Middle-east policy. All of this is despite Burgess and Lawton's (1972) assessment of events data projects as non-comparable in terms of conventions for scaling, categorization, source coverage, reliability, types of measurement scales, and other relevant criteria.

More recently transnational relations research has underscored the inadequacy of the traditional unit of analysis, the nation-state, to account for the complete universe of international relations phenomena (Keohane and Nye, 1971). This perspective recognizes the nation-state as still the chief actor in international relations. However, it argues that non-territorial actors also play a significant role.

In a quantitative study of the primacy of the nation-state in international relations, Handelman and his colleagues at Syracuse University (1973) found that most scholars still do research within a Morgenthau paradigm that views the nation-state as 1) pre-occupied with security matters; 2) the most significant actor in world affairs; and 3) unified. The realist (Morgenthau) conception of international politics holds that nation-states are the only independent, and most
significant actors in the international system; consequently, the interactions observed and measured are between national societies and/or governments. Furthermore, international organizations (IOs) are seen merely as instruments of governments. Generally speaking, the realist scholar views international events as the more or less purposive acts of unified national governments. But as Allison (1971) has argued, national governments are viewed as unified when information about their internal affairs is lacking.

International relations scholars' pre-occupation with the nation-state has aroused concern about IOs. Following Keohane and Nye (1971) and Angell (1969), the entire transnational world (McHale, 1969); international shipping as a transnational issue-area (Knudsen, 1973); labor (Cox, 1971); and the 1973 Midwestern conference of universities have been examined, the last for solutions to world problems. The aim of the transnational school of IR scholars is to focus attention on actors (and interactions) other than the nation-state as illustrated by Keohane and Nye's concept "world politics paradigm", a comprehensive model of world politics. In this regard, Keohane and Nye, and Angell are complementary since they focus on organizations and individuals respectively; both organizations and individuals are crucial components of the world politics paradigm.

International governmental (IGOs) and international nongovernmental organizations (INGOs) have for a long time stood in the shadow of the nation-state primarily because traditional peace-war research precluded any significant role for these entities in
preventing or helping end conflicts once they broke out. Transnational relations, like the study of integrative processes, is an attempt to give IOs their due attention. Research now indicates that transnational terrorism poses a serious challenge to the nation-state (Hutchinson, 1974) and that NGO impacts are felt before, during and after conflicts (Davis, 1974).

Transnational actors affect our daily lives in more ways than helping peace and ending conflicts. Two points of view prevail. One view, typified by Cobb and Elder (1970) and McHale (1969), is that IOs -- including multinational corporations -- are useful bridges of cooperation among nations. The second view holds that IOs reflect and perpetuate inequalities in the international system (Galtung, 1971).

Chapter one is a partial test of the positive view. This test is based on the fact that though their relative impact cannot be assessed, yet IOs have an important role to play in integration and development in West Africa. Furthermore, the test is only one aspect of the focus of chapter one. This is an overview of development, integration, transport and dependency in West Africa since 1945.

Throughout the development of international relations research concern for theory has never been in doubt. Over a quarter of a century ago Kenneth Thompson noted that the "questions that are asked... must be general and not particular and must inquire after what is common to the behavior of all states instead of merely what is unique in the conduct of a single state" (1952: 461). Much as one may
disagree with the substance of Morgenthau's theory, his contributions
to research include explication of the value of generalization, de­
finition of the core of the subject as the sources of state behavior
(the search for power), and emphasis upon inter-state relations as
displaying patterns of behavior and recurrence. Morgenthau observes
that the purpose of international relations theory is "to reduce the
facts of experience to mere specific instances of general propositions"
(1959: 20). Morgenthau and other grand theorists sought a general
theory of international politics. They assumed that the diverse data
of the field, the sources of state behavior, and the international
patterns and recurrences could be integrated, explained, or described
in a single theory, model, approach or framework.

Unfortunately, grand theorists have failed to give their theories
empirical validity. Indeed the theories have not met such requirements
of a general theory as comprehensiveness, coherence, and self­
correction (Holsti, 1971: 170-171). The decline in the appeal of
grand theory has been accompanied by the growing importance of more
empirically oriented studies, as indicated by the Rosenau reader (1969).
The shift, of course, stresses the emergence of various sub-fields
particularly following the distinction between foreign policy and
international politics made independently by Sondermann and Singer
in 1961. One of these is international integration and community
formation.

During the heyday of the grand theorists, international relations
research emphasized search for power, defined by Morgenthau as "the
ability to influence the minds and actions of men," as the driving force behind state behavior. As Thompson indicated then,

Today the threefold concern of international politics is with the conduct of foreign policy everywhere, the techniques and machinery by which foreign policy is executed, and both the novel institutions and traditional practices whereby the conflicts among nations are adjusted and accommodated...The basic drives which determine the policies of states, their desire for security and power, are the elemental facts with which international politics is fundamentally concerned (1952: 443).

It is not that emphasis has shifted from security issues. As a matter of fact, according to Handelman and his colleagues (1973), international relations continues to be done mostly in the Morgenthau paradigm which views the world as consisting primarily of unified nation-states pre-occupied with security matters.

The point is that the list of questions central to the field has since been expanded to include a redefinition of peace as more than the absence of violence. Led by Galtung, one group of scholars view peace positively in terms of social justice or the equitable redistribution of the world's resources. That is, socio-economic development has become a matter of national and international policy. There are two views on this question. One has it that development is both undesirable and impossible because it generates serious side-effects, such as pollution and overcrowding, and because the natural resources on which it is based are in short supply. According to the second view, and the one which underlies this study, estimates about supplies of natural resources have been misinterpreted. Moreover, West Africa needs development as the answer to "pollution of poverty;" that is, poor housing, illiteracy, bad sanitation and malnutrition.
Why is the Third World underdeveloped? One school of thought holds that it is because of lack of capital, natural resources and negative cultural attitudes. The other point of view attributes Third World underdevelopment to dependency (structural imperialism).

Galtung and other students of structural imperialism attribute international inequality to the international division of labor or unequal exchange relations between rich and poor countries which the former control to their own benefit. In this state of affairs the fact that the world is too small for the rich and powerful countries to confine their activities to within their own borders, renders external dependency inevitable. They manipulate their periphery ties to consolidate their position at the top of the international totem pole. On the other hand, Galtung (1973) agrees in part with Lagos (1963) that a vigorous policy of integration is a *sine qua non* for breaking these external shackles on socio-economic development.

On the role of transportation the basic question is two-pronged. Does transport precede or follow economic development? Is this relationship positive or negative? This study focuses on air transport.

In Chapter three, "An Axiomatic Theory of Regional Integration," the four variables (integration, economic development, transportation, and dependency) are integrated in an axiomatic format first proposed by Hans Zetterberg. There are five hypotheses plus the six bivariate ones of the axiomatic theory. The five include indirect effects, so that the axiomatic theory spells out empirically and logically all the relationships between the four variables.
The important question is related to the best means for achieving this goal. For purposes of the present study, the issue is whether "economic integration of a group of nations automatically triggers political unity" (Haas and Schmitter, 1964: 705)? What is the relation, if any, between economic integration and political unification? Does one lead automatically to the other? In the words of Stanley Hoffmann, will the achievement of welfare (development) "serve as the basis for a joint political action...or as the instrument which the separate nations will use for their separate political ends" (1965: 93)?

Hoffmann argues that nationalism impedes spillover from economic to political unification. But as suggested by neo-functionalists, the qualitative data will show that transnational pressure is being brought to bear on ECOWAS to speed up the march to political unification. This is taking place against the background of black Africa's preference for regional functionalism as the practical approach to political unity.

It would appear, however, that integration research is overly concerned with the process or movement from economic union to political unity. This is being done at the expense of knowledge of how welfare is achieved. How, in fact, does regional integration promote socio-economic development? Chapter two, "Review of the Literature," examines this question, the debate about development, the causes of Third World underdevelopment, and the role of transportation in development.
The theory is tested within a time-lag model. Such a model helps ascertained causality. The data utilized in the study come from public sources; particularly the United Nations and its specialized agencies. They cover the fifteen-year period from 1959 to 1973 for eleven West African countries. The research findings support the theory and emphasize the central role of regional integration.
CHAPTER ONE

WEST AFRICA: AN OVERVIEW OF REGIONAL INTEGRATION, ECONOMIC DEVELOPMENT, AIR TRANSPORT AND DEPENDENCY SINCE 1945

For almost twenty years West African states have been striving to dismantle "artificial barriers" set up by colonial powers to achieve integration and development. One of the principal obstacles to this lofty goal has been the region's division into French- and English-speaking states, together with the attendant dependency ties of each group to its metropole. But with the creation of the Economic Community of West African States (ECOWAS) in 1975, the region seems to have finally turned the corner. Of course, other major obstacles still remain. However, the bridging of the language and cultural gap symbolizes the readiness of the regional partners to sacrifice petty issues to their common cause.

The question can now be asked: Will the formation of ECOWAS lead to political unification? If this goal is to be realized, then what conditions have to be met? This question will be addressed in terms of i) peaceful (non-violent) relations and a mechanism for peacefully handling disputes in the region; ii) positive attitudes and perceptions about integration; iii) the presence of institutions that function independently of member governments; and iv) the extent of collaboration in the region. These are four of the criteria considered conducive to
successful integration. In trying to answer the question, close
attention will be paid to the role of international air transport
organizations in West Africa's drive for development. To kick off
this overview the integration movement in West Africa will be recalled.

The West African Integration Movement

The integration movement in West Africa may, strictly speaking,
be traced back to the United States where concerned Blacks such as
William DuBois and Marcus Garvey launched efforts to liberate Africa
from colonial rule. They even sent delegations to Paris to lobby their
case before the Versailles Conference to finalize a treaty to the end
of World War I. Taking their case within earshot of France and the
United Kingdom, the two main colonial powers, DuBois and his colleagues
later held more conferences in England. One of these, the Manchester
Conference of 1945, was unique in the sense that it was the first Pan-
African conference ever attended by African delegates, notably
Nkrumah, Azikiwe, and Kenyatta. From that point on Africans assumed
the leadership of the Pan-African movement from American Blacks.

There was a lapse of thirteen years before the next conference.
In April 1958 the first Conference of Independent African States
was held in Accra, Ghana. The Accra Conference proclaimed the unity
of purpose among the participants, recognized the rights of Africans
not yet independent to freedom, acknowledged the necessity for
economic, social, and cultural cooperation and coordination, and set
up the basis for the "African Group" at the United Nations. How-
ever, something was still missing. The conference host, Prime
Minister Nkrumah, realized that it was only a conference of
governments and that in order to achieve African unity, the people had to be involved in the struggle.

The All-African People's Conference held in December, 1958 had this goal in mind. It went a step further than the earlier conference in passing resolutions that set up the establishment of a continental African government as the primary objective; it saw the creation of regional federations as a first step in this direction (Hoskyns, 1967: 362). The call for the formation of regional federations would haunt Nkrumah and his cohorts later during the clash between the OAU and OCAM (The African, Malagasy and Mauritian Common Organization).

By 1958 when these conferences were held, only a handful of African countries were independent. Apart from the Arab countries in North Africa, only Liberia, Ghana, Guinea (and Ethiopia) were independent; the rest of West Africa was still under French and British colonial rule. This was somewhat of a drawback to the Pan-African movement since only a few governments were represented. On the other hand, the potential for involvement was tremendous because the All-African People's Conference was attended by delegates of independence movements. Indeed most of French-speaking Africa became independent in 1960. But 1960 was important for two other reasons. First, many sub-regional groupings were formed so as to promote political and/or economic integration among the member-states. Second, it became obvious that the road to unity, a common goal, was going to be long and rugged.
The Union of African States (UAS) was the first attempt at amalgamating sovereign, independent states without geographic proximity or previous association under the same colonial rule (Welch, 1966: 293-4). The Mali Federation involved two contiguous, French-speaking states (Senegal and the Soudan). It collapsed as a result of irreconcilable differences over the location of power. The Soudan argued that power should be centralized with its leader Keita as head. The Senegalese position, that the political framework should be confederal, eventually led to the Federation's demise.

From all indications, the UAS existed only on paper. Ghana, Guinea and Mali never established a joint currency; trade relations were restricted in size and scope; each member-state drew up its own development plan with apparently little regard for joint industries. However, the union had to its credit the warning that unless the newly independent states joined forces to protect themselves, European economic domination would continue to the region's detriment.

The inescapable conclusion to be drawn from all this is that integration would not be realized easily. Besides, there is every reason to believe that Guinea and Mali were not really interested in the union. They agreed to go along with Nkrumah, however, probably because of the economic help which he rendered them in very difficult times: Guinea received $30 million in economic assistance following the French withdrawal occasioned by Guinea's "No" vote in the
September 1958 referendum. Mali joined the union to seek solace for the collapse of the Mali Federation in 1960.

The UAS was only one of many integrative efforts in West Africa. Also to be recalled are the abortive federations of French West and Central Africa. The Conseil de l'Entente, formed in 1959, still exists. The West African Customs Union, also formed in 1959, was replaced in 1970 by the West African Economic Community (CEAO). The Organization for the Development of the Senegal River (OMVS) was established originally in 1963. OCAM embraces practically all of French-speaking Africa. (See Appendix A.)

All of these attempts at integration in West Africa have several things in common. First, all but the UAS concern just French-speaking countries. Second, all but the UAS (and perhaps the unsuccessful French federations of West and Central Africa) have had economic integration as their main objective. Indeed, the UAS was the only pre-ECOWAS grouping whose membership cut across linguistic lines. The notable exceptions were the Monrovia and Casablanca blocs which are best remembered as the embodiment of the disagreement about the approach to political unification.

Dissension over the road to unity reared its head soon after the integration movement was launched. On the one hand, there were leaders who wanted the federal approach to unity. The UAS seemed to manifest this line of thinking. But it was handicapped by its small size (only three members), and by Guinea and Mali's lukewarm support;
only Ghana appeared to pursue political unity vigorously. On the other hand, there was the "Brazzaville group" (UAM—Union Africaine et Malgache), formed in December 1960 by twelve former French-speaking colonies. This group preferred the functional approach to unity.

In November 1958 Ghana and Guinea had formed the "nucleus" of a union of African states. (Mali joined in 1960). The two countries exchanged resident ministers of cabinet rank in the other's government. The move made President Tubman of Liberia very uneasy. He feared that political union with Ghana and Guinea would give Ghana access, via Guinea, to Liberia's borders and that Nkrumah might use such access to foment subversion in Liberia (Addona, 1969: 68).

For this reason Tubman invited both Nkrumah and Guinea's President Sekou Toure to a conference at Sanniquellie in April 1959 to discuss his concept of unity. In a speech made at Sanniquellie the previous February, he had proposed the formation of regional groups to achieve common economic goals. The Sanniquellie conference was a head-on collision between the forces of functional and federal unity, with the former emerging victorious. The conference proposed a community of independent African states in which economic, cultural, social, scientific, and research councils were to be created (Addona, 1969: 70).

The Casablanca bloc was constituted in 1961. As the demise of federalism loomed ahead, members of the radical UAS in early January
1961 used the Algerian War and the Congo Crisis to rally their "cause." They did so by convening a conference in Casablanca in order to create a radical counter-force to the UAM. They were joined by the United Arab Republic, Libya, Algeria (FLN), and Morocco.

The conference failed if for no other reason than the fact that the participants merely used it as a propaganda forum: The UAR used it to denounce Zionism; Libya attended as one of the firmest supporters of Algeria's fight for freedom; FLN delegates used the conference to promote their goal of independence from France; Morocco objected vehemently to the creation of Mauritania out of land supposedly belonging to Morocco; Guinea was still smarting over French withdrawal as punishment for Guinea's "No" vote in the 1958 referendum; and Mali over the collapse of the Mali Federation. Ghana was prepared to accommodate these diverse interests in order to realize its goal of political union (Addona, 1969: 86).

Nevertheless, the "Charter of Casablanca" called for the creation of an African Consultative Assembly composed of representatives from every African state as soon as possible to meet periodically. It also laid down principles for the formation of economic organizations within the framework of the Charter. The fact still remains, though, that emphasis was still on political union.

When it dawned on the Casablanca states that other African states were unlikely to move as far or as rapidly to political union as they (Casablanca) had hoped, they tried to meet them half-way by
substituting their political ideals with the concept of cooperation set down at Sanniquellie. This concession was prompted in part by the fact that President Toure's interest in federalism had flagged as a result of renewed friendship with President Houphouet-Boigny of the Ivory Coast. Toure was also prepared to sacrifice the UAS and the Casablanca group in the interest of a much wider African cooperation (Welch, 1966: 329-333).

The Monrovia Conference, held in May 1961, was co-sponsored by Ghana and Guinea for the Casablanca bloc, by the Ivory Coast and Cameroon for the UAM, and by Liberia and Nigeria for the uncommitted states. It was to have bridged the gap between the forces of functionalism and federalism. But it was boycotted by the Casablanca bloc on the grounds that they had not been allowed enough time to make arrangements. However, the fear of being outvoted was probably the reason for boycotting the conference. The conference itself gave its unstinted support to the Brazzaville group and functionalism.

The outcome of the Monrovia conference was, therefore, a victory for functionalism over federalism. As a matter of fact, this trend persisted right into the founding of the OAU in May 1963. National sovereignty refused to take a back seat. Most black African states agreed that their common developmental problems could best be approached in piece-meal fashion, and not by the creation of a leviathan that Nkrumah and his colleagues wanted.
Given this preference for functionalism, was the goal of political unification to be approached regionally or on a continental basis? What should be the role of regional organizations in the search for political unity? Positions taken on this question were quite predictable.

While the newly-formed Monrovia camp viewed regional organizations as both practical and desirable, the Casablanca bloc raised the specter of new centers of loyalty or "regional nationalism" that might impede the search for African unity (Cervanka, 1969: 141). This might seem to contradict Nkrumah's UAS-designed path to unity. It must be remembered, however, that it was quite consistent with his goal of total African unity. His opposition to regionalism stemmed from the proliferation of such organizations rather than the pooling of effort by all Africans to achieve unity the foundation of which he had laid together with Toure. Nkrumah lost on both counts—unity now, and on a continental basis.

The creation of the OAU seemed to settle this question once and for all. The Casablanca bloc finally yielded to pressure exerted from all sides to attend: Decolonization, the destruction of apartheid, and the desire to increase Africa's role in world affairs and the UN were causes that tended to bring the feuding factions together. But there was still the question as to whether regional organizations should handle political as well as economic matters on the march to unity.
The birth of the OAU carried in its wake the disbandment of all cross-linguistic organizations. These organizations (the UAS, Monrovia and Casablanca blocs) had been pre-occupied with the goal of political unity. But the entirely-French-speaking-membership-organizations (UAM, OAMCE or the functionally diffuse *Organisation Africaine et Malgache de Cooperation Économique* to which the UAM was linked, Entente, and the West African Customs Union) survived in violation of the contention made by the radical wing of the OAU that they were also political and an obstacle to the OAU's work. Furthermore, their memberships were primarily West African.

As a result of OAU pressure to disband, the UAM was transformed briefly into the *Union Africaine et Malgache de Cooperation Économique* (UAMCE) in February 1965, only to regroup again as OCAM almost immediately to accelerate the political, economic, social, technical and cultural development of member-states within the framework of the OAU. As might be expected, the OAU and OCAM were diametrically opposed to each other on the role of regional organizations in the search for African unity. While the OAU called for the dissolution of all regional groupings in the interest of African unity, the OCAM maintained that they were ancillary to the OAU and its work. Like its predecessors, OCAM refused to disband. It only agreed to concentrate on economic matters, such as renewing its relations with the EEC on terms "better adapted to the imperatives of development",
and pursuing a hands-across-the-sands policy by improving air service with the North African countries (Oudes, 1968: 50-55).

OCAM and its predecessors had been formed for virtually the same reasons: i) the belief held by the French-speaking African states that they had to join forces so as to make any impact either in Africa or on the international scene; ii) the need to band together to renegotiate the terms of the treaty of their associate relationship to the EEC; and iii) the plain desire to renew some of the old links that had united them under the old colonial regime (Hoskyns, 1967: 364; Allen, 1966: 13-18). It was argued that this would assist African integration. In an interview with Jos Alima of Jeune Afrique, OCAM's Secretary-General Falilou Kane denied charges that the organization was duplicating the OAU's work, and that it was an echo-chamber of French policy in Africa (Alima, 1971: 22-24).

Hoskyns supports OCAM's position but observes, all the same, that the organization has never been committed to African unity nor provided support for liberation movements. Another study confirms the view that OCAM had actually been set up as a political organization (Jalloh, 1973: 140). All of this served to fuel the OAU's suspicions and its call for OCAM's dissolution. According to a former secretary-general of OCAM,

The men who formed the UAM and who participate in the OCAM today were all either French deputies or their direct heirs. Their political horizon was colored by the Palais Bourbon, the Cross of Lorraine, the Grand Councils of the AOF and the AEF, etc. Political life for them is inseparable from France (Tevoedjre, 1965: 54-55).
President de Gaulle himself had warned the French-speaking African states that French aid to them was contingent upon close cooperation among them. As a matter of fact, France did not hesitate to cut off aid to the UAMCE for being economically-oriented. This was the reason why the UAMCE regrouped as OCAM so soon after it was formed. Indeed, OCAM's secretariat is financed by France (Corbett, 1972: 77).

But this does not mean that the French-speaking African states saw eye to eye on the role of regional organizations in Africa. The member-states of OCAM were bitterly divided on this question, which strained intra-organizational relations to the breaking point when some members threatened to withdraw. The opposing points of view, for dissolution and for retention of the organization, were spearheaded by Senegal's Senghor and Ivory Coast's Boigny respectively. To resolve the issue a summit conference was called to take place at Dakar in March 1964. The major point of controversy at the Dakar conference was whether the UAM or any new regional organization would be concerned with political matters or be limited strictly to economic and technical matters.

It was decided to dissolve the UAM as a political organization. At the previous summit at Cotonou, President Yameogo of Upper Volta had argued for dissolution and, therefore, supported the Dakar decision to break up the UAM. Reconsidering his position later, Yameogo called for restoration of the body and suggested that political relations among the French-speaking states were more important.
than economic ones. Thus, the issue was still alive. At the ensuing conference at Noakchott in February 1965 the OCAM was formed as a compromise between those states anxious to rebuild the political ties which characterized the defunct UAM, and those preferring to activate the looser UAMCE, in limbo since its establishment in March 1964.

The back to UAM movement, led by Boigny, was sparked off by three events: i) the OAU's continuing impotence on the Congo crisis and its inability to deal constructively with the explosive problems of East and Central Africa; ii) concern over the character and extent of Chinese (Peking) activity in Africa; and iii) the new vitality of the Council of the Entente (this resulted from Dahomey's agreement to settle its differences with Niger within the Entente itself, and from the emergence of the Ivory Coast from its isolation of the last few years as a result of economic successes both at home and abroad). The Senghor-led faction, on the other hand, wanted OCAM to refrain from any actions which might hinder the OAU's political initiatives, but to confine itself to cooperation in functional matters (Le Vine, 1965: 7-10).

Needless to say, Houphouet-Boigny's faction carried the day. Their victory accounted for the uncompromising position that the OCAM initially adopted towards the OAU. Relations between the two organizations became severely strained in 1965 over OCAM allegations that Nkrumah was inciting subversion against neighboring governments. Since Ghana was to host that year's OAU summit conference, the OCAM
states threatened to boycott the conference unless President Nkrumah publicly denounced all subversive activities and also promised to in future honor the principle of non-interference in the internal affairs of other states. Though the dispute was mediated, yet eight out of the thirteen OCAM states still boycotted the Accra Summit. But the OAU emerged from it all stronger than ever before (Cervanka, 1969: 149).

The UAM had tended to isolate its members at least as much as it unified them as a group. Much to its credit, it successfully established Air Afrique which is perhaps the best-known African airline. The OAMCE, also its creation, was designed to coordinate the development plans of its members, establish common investment codes, eliminate competition and enlarge markets, and develop transport facilities. These were ambitious goals, but the belief that no supranational body was needed to carry them out seriously hampered economic reconstruction. Adequate overall planning and coordinated economic development were also hindered by the UAM's unavoidable dependence on the EEC and especially French official and private capital to finance plans often drawn up by official French experts. (Green and Seidman, 1968: 156).

OCAM has established institutes and organizations, and signed international agreements with specific functions. Among these is the June 1966 agreement to create a common sugar market (Accord africaine et malgache du sucre). The agreement provided for the fixing
each year of a guaranteed price for sugar in OCAM countries; that is, it should benefit both the sugar-producing countries (Congo and the Malagasy Republic) and the consumer countries. The levy imposed on sugar imported from non-member countries—preference was given to sugar imported from Europe, mainly France and Belgium—was placed in a common fund. OCAM's Solidarity Fund compensates the landlocked member-states for the loss of customs revenue on imports cleared in coastal member-states but then re-exported inland. As of 1973, the organization has had plans to set up two multi-national companies, a joint shipping company, and to provide for mutual consultation on planning (Europa, 1974: 115).

Despite OCAM's decision in 1968 to concentrate on purely economic matters, the organization's troubles were by no means over. To start with, more and more members were inclined to the view that OCAM, in particular, was a tool of French policy in black Africa. Cameroon, Chad, Congo, the Malagasy Republic, and Zaire have since left the organization, blasting it as a French colonial relic. The charge was quickly denied by the remaining members and by France. The mass withdrawal, in effect, severely curtailed integration including the sugar common market.

More importantly, until 1972 integration in West Africa was just confined to the French-speaking states. The UAS, Monrovia and Casablanca blocs had disbanded in 1963 following the formation of the OAU. Membership in OCAM and other regional organizations
including the reconstituted CEAO, was open to any West African state. But because of the wanton French influence which these organizations evoked in many minds, the invitation was a dead letter. And English-speaking West Africa, at least because of their dispersion, could not possibly pose an effective counterforce nor bring pressure to bear on their French-speaking brothers to abandon the lone road. This situation prevailed until 1972 when Nigeria and Togo took the first step towards forming an economic community transcending linguistic barriers.

While preparations for the formation of the purely francophone CEAO were still in progress, Nigeria and Togo announced that they had agreed to form the nucleus of a wider regional community bridging linguistic and cultural barriers. The two countries left no stone unturned to win support for the creation of such a grouping from neighboring states, including the six CEAO countries. The immediate result of the Nigerian-Togolese initiative was a meeting of Economic Ministers from 15 West African countries, held in Lome in December 1973.

The meeting authorized Nigeria and Togo to collaborate with the ECA to draft detailed proposals for the establishment of the new community. A further meeting in Monrovia at the end of January 1975 adopted a draft treaty designed to form "a homogeneous economic community" embracing all of West Africa. On May 28, 1975 a heads of state meeting in Lagos concluded the Treaty of Lagos providing for
the establishment of ECOWAS, a new regional economic community covering an area of 6,100,000 square kilometers, with an estimated population of 124,000,000. ECOWAS took effect following the signature of a number of functional protocols by a summit meeting of the member-states at Lome in November 1976, thereby effectively completing the process of ratification.

But ECOWAS does not preclude "the existence of inter-governmental organizations and other economic groupings within the region" as long as membership in them does not "derogate from the provisions of the treaty (of Lagos)". Under this provision the CEAO will continue to exist and "play the same role within ECOWAS grouping as the Benelux sub-group plays within the EEC" (Keesing's, 1975: 27218). With this we return to some of the conditions believed necessary for successful integration.

**Relations Between Member-States**

In the great scramble for Africa during the latter half of the nineteenth century European powers carved the continent with little or no regard for ethnic diversity. Many tribes sat and still sit astride national boundaries. On attaining political independence in the late 1950s and early 1960s the new states of West Africa inherited this intractable problem. However, under the auspices of the Organization of African Unity (OAU) they have agreed to deal with it by recognizing their present borders as inviolable. But the recent war between Ethiopia and Somalia seemed to make a mockery of this agreement. In West Africa Nkrumah toyed briefly with the idea of violating the borders of Ghana's neighbors in order to unite
under Ghanaian sovereignty all tribes fragmented by those national boundaries. Togo and the Ivory Coast would have been affected the most by the implementation of such an irredentist policy.

But the question of non-recourse to violence to settle interstate disputes is mostly of a different brand in West Africa. Nkrumah was charged with fomenting subversion in neighboring states in order to install there leaders more sympathetic to his dreams of a continental government probably to be led by him. His denials of the charges and assurances that his neighbors had nothing to fear from him failed to stop the OCAM boycott of the OAU summit conference held in Ghana in 1965.

After Nkrumah's overthrow and domicile in Guinea in 1966 his host, President Toure, himself faced with severely strained relations with Senegal and the Ivory Coast, threatened to restore him to power by military means. But since Toure's invading forces would have had to pass through Ivorian territory, his threat was dismissed as an empty one when the Ivory Coast, backed by a defence agreement with France, denied him access. More recently, Mali and Upper Volta almost went to war over a disputed claim to mineral finds along their border.

These instances of violence or inclination to violence may be seen as isolated ripples on an otherwise pacific sea of intra-West African relations. However, they are worrisome to a community that is determined to forge integration and development in the region.
Against this background ECOWAS' preparation of a non-aggression pact among the member-states is understandable. Towards this end it has set up a Tribunal with broad powers to adjudicate in disputes between members and between members and the community. To the extent that it succeeds, this instrument will have meant the satisfaction of the first condition of an integrated community; that is, non-recourse to violence to settle inter-state disputes. On the other hand, it does not necessarily guarantee the success of integration. As Mitrany would have said, the purpose of integration is not to keep the partners apart but to bring them together.

Attitudes and Perceptions

Very little is known about attitudes and perceptions concerning integration in West Africa. Since its inception in the late 1950s the movement has been dominated by governments. No doubt, opinion leaders and the general public have at various times taken positions on the question of political unity. But for the most part those opinions were verbalized at different political gatherings. The pertinent records of the local newspapers which covered those events are not always available to the interested investigator. The truth of the matter is that the ebb and flow of the West African integration movement has in the past been dictated principally by governmental leaders.

The All-African Peoples' Conference sponsored by Nkrumah in December 1958 focused on liberation movements, not trans-national
groups and individuals. The movements became governments when their countries attained political independence. Once in office they played the game of their older colleagues.

What African leaders think of one another has very seldom been conducive to (political) integration. Kenyatta is reported to have consented to a policy of integration in East Africa only as a means of achieving independence early (Franck, 1968). That subversive activities in certain French-speaking West African states were linked to Nkrumah hindered the cause of political unity. According to Kurtz (1970), there were no insurmountable cultural, historical, or linguistic differences between Soudan (now Mali) and Senegal in the Mali Federation. Nevertheless, the Federation disintegrated because neither member's leader was willing to see his own political position eroded while promoting the Federation. Only the political elite was actively involved in the integration movement. Indeed, sovereignty is a die-hard obstacle to political unification. This is what Inis Claude, Jr. had in mind when he wrote (1971: 111):

Supranationality has contrived no genuine escape from sovereign states. It may be a step toward federal unity, but it is a step taken by governments, which retain the capacity to decide whether to take further steps forward, to stand still, or to retreat.

The view that ECOWAS will not achieve political unification is based on the different socio-political philosophies and aspirations of the member-states; and the fear of economic and, therefore, political domination of the weaker by the stronger states. All of
this is besides the apparently inexorable opposition of national sovereignty discussed above. Proponents of this view refer to Guinea and Liberia as clear-cut cases of different socio-political ideologies. However, this position fails to account for the challenge which the EEC in similar circumstances is able to pose to the United States and the Soviet Union.

The presence of a core state inside an integrating community poses a controversial issue in integration theory. Some scholars including Deutsch subscribe to the view that the presence of a core state promotes integration. The Ivory Coast plays this role in the Conseil de l'Entente. But it has seldom been on the best of terms with Senegal, its chief rival for leader of French-speaking West Africa. Fear of domination delayed the signing of the protocols and treaty of ECOWAS. That fear was shelved with the selection of the head of the Nigerian delegation as Chairman of the community's Ministerial Council, seemingly in appreciation of Nigeria's efforts to sustain the community since its inception through the help and advice of Nigerian officials to the Secretariat.

Independent Integrative Institutions

Political unity may be hard to achieve as envisaged by ECOWAS, but there is a silver lining to the West African integration movement's cloud. To start with, the community's Fund for Cooperation, Compensation and Development (financed from member-states' contributions, income from community enterprises, subsidies and
contributions from other sources) seeks to promote cooperation among member-states. By also compensating those states that suffer temporary losses through the community's liberalized trade policies and assisting states to implement their development programs, the Fund will obviate "backwash effects", an impediment to the integration process which some writers refer to mistakenly as "overpolitization". In pursuit of this noble goal the Ministerial Council has approved the allocation of $50 million to the Fund (TTPI, August 15, 1977, p. 33).

Second, unlike previous integrative efforts a role for transnationalism is not foreclosed. ECOWAS has prepared a convention defining the privileges and immunities to be enjoyed by the citizens of the member-states, who will one day become "community citizens with the right to live and work in any member-state." To realize this goal transnational pressure is being brought to bear on ECOWAS to accelerate the rate of progress, notably the immediate abolition of visa requirements. The Secretary-General of the West African Law Students Union, K. Effah-Dartey, has commented that the "lofty and brilliant ideals of ECOWAS will continue to remain a sham and an unrealizable goal unless African leaders are prepared to make legal and political concessions" (TTPI, August 15, 1977, p. 33).

Effah-Dartey also called for common financial institutions like banking, insurance and investment as a step toward political unification, the community's ultimate goal. But the demand for the
abolition of visas may take a long time to be met, if at all. This
is because of governmental apprehensions that without adequate safe­
guards this would play into the hands of criminals on the run. Fi­
nally, the founding of an "ECOWAS commission" in every member­state
will, it is widely believed, further positive attitudes and favorable
support for political unity.

**Mutual Responsiveness and the Role of IOs**

A fourth requirement for successful integration is mutual re­
sponsiveness. This refers to constant contact among the regional
partners. Mutual responsiveness in West Africa will be assessed in
terms of cooperation among governments and the contribution of in­
ternational organizations (IOs) and airlines to economic development.

A glimpse of the West African mutual responsiveness picture is
provided by means of travel data made available to this writer by
the Central Bureau of Statistics, Republic of Ghana for the period
1959-1970. The *International Travel Statistics* carries data for
1971 and 1972. This amounts to fourteen annual observations, one
short of the period covered by this study. A more serious limita­
tion pointed out by the Bureau, is that the data do not cover over­
land travel for many years, which in West Africa is considerable.

Figure 1 shows that the West African proportion of tourists\(^3\)
to Ghana rose steadily from slightly over 20% in 1959 and 1960 to
41% in 1964. The following year witnessed no change, but this was
followed by a decline until 1967. The remaining five years saw a
Figure 1: Intra-West African Travel, Ghana
sea-saw pattern in tourist flows. However, since this information pertains only to one regional partner, its development cannot possibly be extrapolated to the entire region. It simply gives the reader a very limited insight into how West African countries respond to one another.

A number of airlines, African and non-African, serve West Africa. Of the African airlines, the notable ones are Air Afrique, Nigeria Airways, and Ghana Airways. There are a number of lesser airlines. For the most part air services are uncoordinated. The result is duplication and avoidable operational losses. But to be able to contribute significantly to tourism, and therefore, development the West African airlines must exceed break-even load factors.\(^4\)

Air Afrique is one of a few successful airlines in this regard. Furthermore, 89% of its 3726 personnel in 1974 were African. Air Afrique is also the largest employer in these countries (Dunkel, 1974). An idea of the contribution which Air Afrique and other West African airlines are making toward the region's development is presented in Figure 2.

This shows trends in air and land travel to Ghana during 1959-1972; it is based on data provided by Ghana's Central Bureau of Statistics. As expected, the predominant mode of tourist travel to Ghana was air travel, at least until 1966. About this time air travel started to decline proportionately just as road travel was accelerating. This situation lasted for three years until 1969 when the
Figure 2: Air and Road Travel to Ghana, percent West African
two patterns became roughly equal at 48% apiece of Ghana's incoming tourist market. It then seasawed until 1972 when land travel took a slight lead. As a matter of fact, air travel leveled off after 1969.

Unfortunately, the data do not indicate the purpose of the travel—business, pleasure, school, etc.—nor the nationality of travelers by each mode. Thus, it is impossible to say whether West African tourists to Ghana traveled mostly by air or land. On the other hand, the Bureau cautions that figures for 1961-1965 exclude overland travel. This might account for the large gap between air and road travel during these five years. The increase in road travel, therefore, reflects the inclusion of information on this mode. It suggests also that West African tourists travel mainly by road. As envisaged by the ECA, the establishment of an ECOWAS airline may go a long way towards solving the problems of unnecessary duplication and losses incurred by many West African airlines. Such an airline would have the further advantage of contributing more to development in the region. Next, air transport IOs figure prominently here.

Of course, one important question is: How do IOs contribute to development in West Africa? This question is one concern of this paper and in trying to answer it, it should be borne in mind that INGOs engage in basically six types of goals: research, information dissemination, promotion of individual member's identity, alternative future goal specifications, promotion of general cooperation.
and friendship between members, and development programs (Feld and Coate, 1976). These goals may in turn be classified as pursuit of the personal interests of the members, and international organizations themselves, and goals beneficial to their national constituencies. This paper deals with the latter. INGOs pursue them through field work (projects, fellowship awards, etc.). One IO may pursue more than one goal at a time. Table 1 concerns their global activities.

From Table 1 we learn that air transport INGO involvement takes the form of conducting research on pertinent problems, disseminating the knowledge acquired to members, and undertaking developmental programs which vary from projects in member states to fellowships awarded to Third World nationals to study abroad. Though the percentage of air transport INGOs pursuing a particular goal does not show a consistent pattern, the "best fitting curve" appears to be a negative one over time. This trend is best exemplified by research involvement, which dropped from 60% to 47% during the period. The one goal pursued by most IOs was information dissemination, but even this did not completely escape the ax: There was a drop of twelve percentage points between 1966 and 1973. The proportion involved in developmental programs dipped in 1966 but it was more than made up for in 1973.

Perhaps even more relevant to our concerns is the information presented in Table 2. This information pertains to the percentage of air transport organizations with a specific goal which focused on West Africa. For instance, of all the organizations in which West
<table>
<thead>
<tr>
<th>Goal</th>
<th>1959</th>
<th>1966</th>
<th>1973</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Research</td>
<td>60%</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>2. Information Dissemination</td>
<td>76</td>
<td>79</td>
<td>67</td>
</tr>
<tr>
<td>3. Promotion of Individual Member's Identity</td>
<td>48</td>
<td>37</td>
<td>39</td>
</tr>
<tr>
<td>4. Alternative Future Goal Specifications</td>
<td>52</td>
<td>29</td>
<td>26</td>
</tr>
<tr>
<td>5. Development Programs</td>
<td>56</td>
<td>42</td>
<td>60</td>
</tr>
<tr>
<td>6. Promotion of General Cooperation and Friendship between Members</td>
<td>64</td>
<td>37</td>
<td>49</td>
</tr>
</tbody>
</table>

| N  | (25) | (38) | (57) |

* In a given year per cents refer to the proportion of INGOS that pursue each goal type. In all cases the denominator is N, the total number of IOs in a given year.
<table>
<thead>
<tr>
<th>Goal</th>
<th>1959</th>
<th>1966</th>
<th>1973</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>40%</td>
<td>26%</td>
<td>25%</td>
</tr>
<tr>
<td>Information Dissemination</td>
<td>38</td>
<td>37</td>
<td>35</td>
</tr>
<tr>
<td>Promotion of Individual Members' Identity</td>
<td>24</td>
<td>21</td>
<td>28</td>
</tr>
<tr>
<td>Alternative Future Goals Specifications</td>
<td>28</td>
<td>21</td>
<td>16</td>
</tr>
<tr>
<td>Developmental Programs</td>
<td>24</td>
<td>26</td>
<td>30</td>
</tr>
<tr>
<td>Promotion of General Cooperation and Friendship between Members</td>
<td>36</td>
<td>18</td>
<td>23</td>
</tr>
</tbody>
</table>

| N                                        | (25) | (38) | (57) |
African countries were members, 40% were research-oriented in 1959, 26% in 1966 and 25% in 1973. That is, these organizations were doing less and less research. Probably in keeping with this negative trend, the amount of knowledge that was disseminated also dropped. At the other extreme more and more developmental programs were undertaken. These trends seem to bear out IFALPA's claim that "those of us who have closely worked with the Federation from early days are convinced that our worldwide impact has been considerable. Much has been processed quietly, without publicity and negotiations..."

On balance, it appears that air transport INGOs were more interested in helping their national constituencies than in promoting their personal interests. This view is supported by the significant research done by these organizations. Among the organizations interested in research to improve the safety of flight are the Flight Safety Foundation (FSF), which is affiliated to the Safety Center of the University of Southern California; the International Federation of Air Line Pilots' Associations (IFALPA) and the International Federation of Air Traffic Controllers' Association (IFATCA). FSF, in particular, supports and participates in the development and execution of programs, policies and procedures effecting safety. This is accomplished by stimulating research into methods of eliminating accident-causing factors, by detailed appraisals of real and potential problem areas in flight and ground safety and by developing possible solutions to those problems.
IFALPA conducts comprehensive surveys for its pilot members of particular aspects of aviation: a height-keeping survey world-wide; an in-flight incapacitation survey; and a survey of airport firefighting and rescue facilities, to name only three. The Federation, besides direct communication with its Member Associations maintains, very important intermediate links—the Regional offices—which handle matters unique to their regions. One such office serves West Africa. IFALPA also takes the position that hijacking constitutes an extremely serious and deliberate hazard to flight safety, an international crime to be tackled vigorously by every possible method and by all organizations concerned. In keeping with this position, it is bringing pressure to bear on world governments to recognize the problem as such and deal with all perpetrators severely.

The connection between safety in flight and socio-economic development is a very important though indirect one: Safety in flight attracts travelers, hazards repel them. The more people travel to a country, the better that country's chances of development. Safety is important to the International Federation of Air Traffic Controller's Associations but it is not its only goal. Like the Institute of Air Transport, helping countries solve problems relating to the stimulation and development of tourism is also on the agenda.

The International Student Travel Conference (ISTC) and the International Bureau of Social Tourism (BITS), are interested in particular in student and youth travel. In personal communication with
this writer, the secretary of ISTC cites the existence of a democratic student movement and (2) a student constituency "with a reasonable economic potential" as prerequisites for the development of student travel organizations (the emphasis is mine). In "Way/BITS Study on Youth Travel", a study commissioned by BITS, the World Assembly of Youth (WAY) finds that the majority of students prefer to travel by air because of speed and convenience. BITS recommend travel as an effective means of fostering understanding between peoples.

But by far the most important contributions to date are the UN and ICAO Studies and the study by the International Union of Official Travel Organizations (name changed to World Tourism Organization (WTO) in 1975). We start with WTO. In *The Impact of International Tourism on the Economic Development of the Developing Countries* (1975), a study undertaken at the invitation of the UN Secretary-General, WTO recognizes tourism as a stimulant to socio-economic development by virtue of the huge tourist receipts which it generates. It refers to earlier studies of its own which found that tourism increased significantly in the developing countries; in Africa alone this increase amounted to 250% between 1962 and 1973. But WTO identifies two major obstacles to further tourism development: (1) the difficulty which some developing countries face in establishing their objectives according to the type of tourism they want to attract; and (2) a lack of experienced personnel to stimulate and coordinate tourism development. In order to deal with these problems, WTO recommends,
inter alia, regional collaboration in the form of joint representations on international bodies; joint commissions to constantly review and make recommendations on all forms of communications pertaining to the development of tourism, and to examine and implement the possible ways in which all aspects of facilitation could be improved for the tourist; and joint personnel training enterprises, etc.

Even closer to home are two ICAO studies, *Development of International Air Passenger Travel-Africa* (1967) and *Air Freight and Air Mail-Africa* (1971). Viewing the problem from another angle, ICAO in its 1967 study argues that no country is likely to develop rapidly without an adequate transportation system. In the African case air transport is the most feasible because it requires the least capital and is not inhibited by difficult conditions of topography and climate. But to realize this, demand for tourist (personal) travel has to be stimulated as distinct from business travel which is inelastic in demand. ICAO thus sees eye to eye with BITS that fares should be held low in order to accelerate the rate of personal passenger travel. Going hand in hand with the development of air passenger traffic is the need to develop air mail and air freight traffic since they are complementary sources of revenue. This point is brought out in ICAO's second study (1971).

Community members also are participating in a number of regional projects. Among these is a $284 million (clinker) project for Togo, Ghana, and the Ivory Coast. Such financing institutions as the
World Bank, African Development Bank, the European Development Bank and the Banque Arabe pour le Developpement en Afrique have agreed to provide technical assistance, co-operate in project evaluation, and to finance development projects. Under an agreement between ECOWAS and the ECA for the coordination and development of transport and communication links between member-states, the latter will carry out studies in the states at a cost of $250,000; ECOWAS will fund the project. The ECOWAS Secretary-General looks forward to the day when it will be possible for "a businessman in Dakar to dial his counterpart in Lagos without the call being routed through Paris or London" (TTPI, November 28, 1977, p. 24).

The ECOWAS-ECA agreement provides also for the construction of 10,000 km of inter-state highways linking all the states except Cape Verde Island. As of now the community has only twelve inter-state roads of all-weather standard with an inadequate network of roads feeding the coastal system. ECA is also to undertake studies in air travel which could possibly lead to the establishment of an ECOWAS airline.

With the International Labor Organization (ILO) the ECA is working together for the establishment of a West African Documentation and Research Center. At the same time, the ILO is involved in efforts to develop a project particularly appropriate for ECOWAS; that is, a West African Bilingual Institute for Management and Public Administration. This will benefit the ECOWAS staff immensely and directly.
The hub of the air transport organization network is the International Civil Aviation Organization (ICAO). ICAO, a UN specialized agency, works with the Economic and Social Council (ECOSOC) and its committee on Nongovernmental Organizations. This committee now handles some matters formerly the responsibility of ECOSOC's functional Commission on Transport and Communication which was dissolved in the early 1960's. Set up in the late 1940's the commission became another arena for Cold War politics until its demise in the 1960's. Its functional work proper is now shared by ECOSOC and the regional economic commissions, while the Committee reviews applications by NGOs for consultative relationship with ECOSOC. As we will see soon, the Committee's discharge of its general responsibility is also marred by Big Power politics.

Since its founding in 1958 the Economic Commission for Africa (ECA), with headquarters in Addis Ababa, has consistently emphasized an improved transportation system as an important factor in general socio-economic development. Translating its stance into action, ECA has sponsored numerous subregional conferences to discuss common transport matters. Two results have been Transport Problems in Relation to Economic Development in West Africa (E/CN. 14/63 and Add. 1) and Concerted Action on Transportation in the African Region (E/CN. 14/94 and Coor. 1), both of which stress the need for an integrated system.
ECOSOC, its Committee on Nongovernmental Organizations, ICAO, and ECA may be regarded as the hub of the air transport network for West Africa. From it radiate, when they do, spokes to a number of lesser known organizations of unequal importance to West Africa. There is no doubt that at least in 1973 coordination was disappointingly low. Of all the transport organizations working in West Africa only one, the International Road Federation (IRF), had any relation to ECA. And as its name very well suggests, IRF specializes in road transport matters not the focus of this study.

On the other hand, two developments remind us that the situation is not hopeless. ECA played a role in the establishment in 1967 of the Association of African Airlines (AAA) to strengthen African representation in the international air transport field and to foster closer regional cooperation. ICAO was instrumental in the creation in 1969 of the African Civil Aviation Commission (AFCAC). AFCAC maintains its headquarters in Dakar, Senegal which also serves as ICAO's African regional office. It is designed to foster cooperation between the two organizations on African air transport problems. But the work of AAA and AFCAC is hardly known. Let us now see how the entire network operates.

Interorganizational relations may be categorized as relations of each INGO to the hub and as relations of one INGO to another. While some form of relation to the hub is a treasure highly valued by almost every INGO, not all INGOs seek the same relation to one
another. The result, as one might expect, is overlapping. But interorganizational relations may take one of many forms. Organizations may participate in one another's conferences, cooperate in research, exchange information. INGOs may also issue joint campaigns to arouse public opinion, and maintain one office or secretary or divide a field of work so as to avoid duplication and conflict. Let us start the discussion with INGO-hub relations.

No doubt ECOSOC recognizes the importance of INGOs to mobilize public opinion and help implement its programs. So do governments, but their views cannot be ascertained with respect to air transport INGOs. As Article 71 of the UN charter makes quite clear,

The Economic and Social Council may make suitable arrangements for consultation with non-governmental organizations which are concerned with matters within its competence. Such arrangements may be made with international organizations after consultation with the Member of the United Nations concerned.

There are three categories of organizations in consultative relationship to ECOSOC: A), organizations which have a basic interest in most of the activities of ECOSOC, and are closely involved in the economic and social life of the areas that they represent; category B, organizations which have a special competence in and are concerned specifically with only a few of the fields of activity covered by ECOSOC; and category C, other organizations, which though not in continuous consultative relationship, are nevertheless on the Secretary General's "register" for the purpose of ad hoc consultation. All
three categories have access to a special Section for NGOs in the Department of Public Information, which accredits some NGOs "observer" status. In return for mobilizing public opinion and helping to implement its programs, ECOCOC gives these NGOs the opportunity to express their views on matters that concern them, and to provide the Council with expert technical advice and information which they have gained through many years of work on specific aspects of air transportation. Some NGOs especially the ones in category A, sometimes make recommendations for inclusion on ECOSOC's agenda.

FSF shares and/or exchanges information with ICAO, IATA, and its member-airlines in order to increase the safety of all air travel. This cooperative arrangement is especially beneficial to the developing countries because their airlines--like Ethiopian Airlines--do not have their own expanded safety organization. IFALPA attends meetings of ICAO and IATA on an informal basis. The International Council of Aircraft Owner and Pilot Associations (IAOPA) also attends ICAO meetings as an observer. As mentioned earlier, none of the air transport organizations operating in West Africa have any type of cooperative arrangement with ECA, the most important regional organization on transport questions.

On the INGO-INGO level the modal relationship appears to be attendance at each other's annual meeting in an observer capacity. This is the type of relationship between IAOPA on the one hand and IFALPA and IFATCA on the other. AFCAC conferences are also attended
by representatives of the International Air Carrier Association (IACA), an arrangement which IACA is "endeavoring to even further improve." Though ISTC is aware of AFCAC's existence, it has had no dealings with it. As a matter of fact, the only contact ISTC has had with sub-Saharan Africa came in the form of student charter flights which some of its members arranged between Europe and Nairobi some years ago when they dealt with the Transportation Secretariat of the East African Community. A few other INGOs, such as the Airport Operators Council International, INC. (AOCI) and IFATCA, maintain good and professional working relations with many other unspecified organizations. But as IFATCA's executive secretary T.H. Harrison writes, this arrangement gives them "platforms upon which we can speak to the assembled members of these organizations" about pressures on the air traffic controller as he tries to maintain safety in the air, a subject that has attracted the attention of the medical profession, psychiatrists, and sociologists. What Mr. Harrison is not aware of is that this cross-disciplinary concern has a transnational dimension.

**Evaluation of INGO Performances**

In this transnational area of air transportation governments, IGOs INGOs and multinational airlines (MNAs, the subject of another chapter) are involved. But the role of INGOs is emphasized in this paper if only because they represent the modal actor-type. Nevertheless, this evaluation of air transport INGO performance considers the
views of governments to a limited extent, besides those of observers and of INGOs themselves. We will proceed in reverse order.

**INGO Assessment of Own Role.** In the questionnaire referred to earlier, air transport INGOs were asked to rate their own performance and to cite the primary barriers if that performance was considered not optimal. Though the response rate was very low, the response itself is worth mentioning here. But to appreciate this self-assessment, it is necessary to recall the goals which INGOs pursue; that is, the ways in which they contribute to development in West Africa. However, the recall pertains to only the organizations that responded to the questionnaire.

An adequate transportation network, it has been noted, may be a key to rapid socio-economic development. Some organizations have pointed out this fact to African countries in their research. The works of ICAO and ECA have been reported on, but it is also important to mention IAT which tries to help its members by doing research on how to stimulate and develop tourism. This represents the direct approach to development.

The indirect, multi-faceted method is designed to promote safety in air travel. As a research goal it is followed rigidly by FSF. It would appear that IFATCA and IFALPA, on the other hand, use more of the pressure on governments and official agencies to reach the same goal. IFALPA in particular, is concerned about both safety and provision of support services, such as fixed and mobile
telecommunications networks in West Africa, training for personnel (air traffic controllers), engineers, operations experts, and fire and rescue teams. To achieve these goals, a trained manpower to fly sophisticated aircraft and money to provide support services are required. Still other air transport organizations (AOCI, BITS, and ISTC) seek friendly relations and understanding by organizing worldwide travel.

Not surprisingly, none of the organizations claim to have achieved complete success in their work. For one thing the hurdles are many and very difficult to jump; for another, with the complete solution of a problem the death knell might toll for the organization in question since its raison d'être is no longer valid, unless it finds something new to do. But the mere fact that the number of air transport organizations has been increasing leads to the speculation that the problem is an "on-going" one. This apart, some organizations, like IAT, could not assess their performance in the absence of feedback from their national member organizations. Some, like IFALPA, were quietly effective and could boast of considerable worldwide impact which, however, could not be measured in finite terms. The only clear-cut self-assessment was made by the FSF which cited the individual safety records of its members and the fact that they renewed their membership annually, as the yardstick of its very good performance.
But even the FSF was buffeted by problems of staff limitations and its inability to travel to Africa, in order to check on its members' safety needs. Other organizations experienced more serious problems than the FSF. These ranged from governmental unwillingness to assist INGOs in their work to the lack of African membership. The reluctance of some States to provide funds for the support services mentioned above together with low pay and poor working conditions were lamented by some organizations. Of course, this reliance on States for funding, inevitable though it might be, suggests far-reaching implications for the work of INGOs which we will get into later. It is mentioned here, from the point of view of some air transport INGOs such as IFALPA, as a hindrance to their work.

But the fact of low pay and poor working conditions is also important as a manifestation of the general problem of poverty and low standards of living in West Africa which these organizations try to ameliorate. ISTC argues that the incidence of (student travel) organizations is conditional on two key factors: 1) the existence of a democratic student movement that provides services for its student constituents and 2) the availability of "reasonable economic potential". There are no special travel facilities for students in West Africa because these two factors are missing. A similar position is taken by IAOPA who blames the absence of African national organizations on poverty—the number of pilots and plane owners are insufficient to support a national organization financially. And even
when the personnel exist. AOCI asserts that it may be difficult to communicate with them because of their impermanence.

The evidence presented here is both inconclusive and controversial. There is no reason to believe that it is representative of the network of air transport organizations. The organizations whose work has been reviewed do research and/or try to bring pressure to bear on governments and official agencies to promote tourism and safety in air travel. But the broad spectrum of organizational interests ranges from research on tourism and air safety, through information dissemination to developmental programs.

**INGOs and Politics.** By design or not, INGOs' relationship to the nation-state is a double-edged sword: sometimes it helps them in their work, at other times it hinders their work. There are two primary reasons for this: 1) funding and 2) the ideological division of the international political system.

In order to operate effectively, INGOs need financial resources, besides a qualified personnel to do their work, and a clientele to serve. The single most important resource is, of course, money which comes from three different sources: 1) voluntary, covering private donations; 2) public, including governments, local governments, and similar sources; 3) other, including subscriptions, fees, contracts, etc. (ICVA, 1967: 12).

INGOs vary in the amount of funding they receive from each of these sources. Take the International Press Institute, (IPI) for
instance. IPI was founded in 1951 in order to safeguard the freedom of the press, promote the free exchange of information and news and help improve journalistic practices. In Africa it had members in Kenya and Nigeria in 1965. 70% of its $326,400 budget came from public sources while it provided only three percent itself. This is not a unique situation.

The fact that many INGOs are funded by governments has created fears of governmental interference and charges by some Third World countries that INGOs are "Western-oriented". Perhaps the refusal of States to fund the support services sought by IFALPA and other concerned air transport INGOs is a blessing in disguise. On the other hand, a view in appreciation of the work that INGOs do was offered by President Kaunda of Zambia at an NGO-sponsored Conference on Human Resources held in Paris September 1968: "We are still too nationalistic in our thinking and outlook...the efforts of NGOs...must be directed towards strengthening the world body and increasing its capability to solve problems which continue to bedevil human development..." (Campbell, 1969: 37).

The situation is aggravated by ideological divisions, and it is exemplified by Big Power politicking in multilateral forums. At the Forty-First Session of ECOSOC, held from July 5 to August 5, 1966 (Official Records), the head of the U.S. delegation, Mr. Curtis Roosevelt justified his delegation's decision to vote against the applications of the Women's International Federation and the
International Association of Democratic Lawyers, for consultative status on the grounds that the two organizations were not *bona fide* nongovernmental organizations but rather political fronts serving the foreign-policy interests of a single State, and had provided the Committee with evidence of that contention.

According to the report of a conference held on the MIT campus in the summer of 1968 to discuss ways of implementing Title IX of the U.S. Foreign Assistance Act, to qualify for U.S. aid a country should foster democratic change in its social and political life as well as economic growth by allowing its people the right to participate at all levels of government: policy-making, sharing in the benefits of growth, and policy-implementation. The new policy was to be administered by the Agency for International Development (AID), in part drawing on U.S. nongovernmental organizations and their experiences. To allay fears of having their image tarnished in the Third World, the conference proposed that the independence of the NGOs should be preserved through secret funding (Hapgood, 1968).  

The instances referred to here of wanton interference with the work of INGOs should not be interpreted as an indictment of the Big Powers alone. Though they are simply the most glaring commissions, there is reason to believe that the practice is rampant. For instance, *To The Point*, a European weekly magazine that concentrates on Third World affairs, reports in its July 11, 1977 issue that many labor unions in Africa are virtually controlled by their governments.
It is developments like these which have prompted ECOSOC to seek remedial action through its Committee on Nongovernmental Organizations. (Campbell, 1969: 36-7). Unfortunately only NGOs in consultative relationship or seeking for it are affected. Council Resolution 1296 (LXLV), adopted on May 23, 1968 but not coming into effect until June 3, 1969, in effect created two sets of criteria, one against which to evaluate new applications by NGOs for consultative status and the other for reviewing the status of NGOs already in consultative relationship.

The criteria for assessing new applications were first developed in 1950 and they assign NGOs on the basis of their international reach and the extent of their involvement in the work of the UN. To deal with the problem of governmental "undue influence", ECOSOC now requires new applicants to disclose all their sources of income. Only NGOs which fund themselves for the most part—subscriptions, sale of publications, contracts—will be considered. But as suggested earlier, ECOSOC's action is inadequate if for no other reason than the fact that it does not cover independent organizations which function outside the United Nations' preview.

The second set of criteria requires NGOs already in consultative status to report on their activities every fourth year. Their consultative status may be suspended or revoked if there is substantial evidence of 1) secret governmental funding; 2) systematic engagement in politically motivated acts against UN Members contrary to and
incompatible with the Charter; and 3) no positive or effective contribution to ECOSOC's work during the preceding three years (my emphasis).

Summary and Conclusion

The preceding discussion about IOs, especially INGOs, is not a clue to their relative importance in the drive for development in West Africa. As a matter of fact, all that can be said is that it requires concerted action by all the relevant actors—the nation-state, IGO, INGO, and national organizations/associations—to make positive progress towards these goals. In other words, credit for progress made so far and yet to be made is not the nation-state's alone but rather belongs to all the actors involved; how much of this credit belongs to which actor is a question that cannot be answered now. The system, by implication, is interdependent. Indeed all suggestions for improving INGO performance take this point into consideration, and pertain to INGO-INGO, INGO-governmental and INGO-INGO relationships.

As we saw earlier, in order for an INGO to retain its consultative status there must be substantiated evidence of its effective contribution to ECOSOC's work. This is a long-standing controversial issue on which agreement does not seem to be forthcoming. The issue is this: The UN relies on NGOs to mobilize public support for its programs and size up public reaction to those programs. On the
other hand, NGOs feel strongly that they will become more effective in their work only if they are involved in all aspects of policy-making.

A team of UN experts met to consider the matter in Geneva in December, 1972. Stressing the need for a new relationship, its recommendations not only saw eye to eye with the NGOs but also called for developing relations with a broader range of NGOs than those presently granted consultative status, and for coordination within the UN system (UN Experts, 1973: 413). But progress has been so slow that it has prompted the following indictment:

If there is any inclination towards an improvement to UN-NGO relations initiated from the UN side, it would require a considerable feat of imagination to determine a means by which it could be accomplished via the Committee (on Non-governmental organizations). The whole procedural style and approach of the committee is designed to alienate all but the most sycophantic NGOs from any attempt to relate more effectively to the UN system... (Judge, 1973b: 423).

Elsewhere (1973a: 399) Judge has made two suggestions to improve NGO performance: a switchboard function to direct NGO program proposals to the appropriate agency divisions, and to speed up information distribution and exchange by including NGOs on the mailing lists of all relevant agencies. These proposals would foster coordination and thereby strengthen organizational capacity to contribute to national development.

Other than President Kaunda's favorable comment referred to earlier, the explicit views of West African governments on the work
of air transport INGOs are not known. However, these may range from appreciation through indifference to outright abhorrence.

Judge (1973a: 404) also suggests that another way to improve INGO action is to grant them legal recognition and all the privileges that go with it. So far, he points out, Belgium is the only country to have special legislation giving favorable recognition and facilities to several classes of INGOs. But Lador-Lederer raises the specter that granting INGOs legal recognition would jeopardize the security of the granting State and deprive it of its citizens' loyalty; in his own words,

Thus a Government is required to recognize certain immunities and privileges and, by means of this recognition, to recognize this NGO's own legal system. Therefore, a request for recognition, examined in the light of the principles which it involves, is of the greatest danger to the State, for it empowers its own nationals to become members of various NGOs which may then start laying claims against that very State; and a right of intervention is given to foreign entities and nationals in respect of which there is no shock-absorber in the form of equality and reciprocity (1963: 213).

Insecure as many African governments feel, they would probably accept this anti-Functionalist argument. The point of this argument seems to be numbers (the large size of NGOs), because IGOs enjoy legal recognition, and Lador-Lederer's fear has not come to fruition. Since the populations in these societies are mainly illiterate and unaware of the INGO presence, though they benefit from their work, it may be difficult if not impossible to test their attitudes towards
these entities. However, recognition is advocated simply to facilitate the work of INGOs and, in our view, will not threaten any State's existence.

At the INGO level other steps which may improve performance are the holding of conferences by different organizations in the same "physical complex of building;" this would maximize the amount of informal contact between them. Second, "transnational centres" with facilities and equipment, such as computer information and communication systems, open to a number of organizations, would attract resources and experts to a few major cities within each of the participating organizations. In the process suspicion, duplication, and unnecessary competition for limited resources would give way to coordination (Judge, 1973a: 398-399). Last but by no means least, from the air transport INGO point of view, increased capacity and West African membership are crucial to INGO's effective contribution to development in that region: capacity to fund support services and sponsor conferences and better communication between members, and African membership because only then will West African countries benefit from INGO activities.

Meanwhile the integration movement in West Africa has come a long way. From the pre-World War II days when concerned Black Americans initiated efforts to liberate Africa from colonial rule, the movement has undergone several crises. Chief among these were disagreement about the strategy for political unification - federalism or
functionalism; the size of the prospective union - regional or continental; and strong links to the metropoles.

The choice of functionalism to pursue political unification on a regional basis seemed to presage an end to all differences about integration in West Africa. But that was wrong. The division of the region into French- and English-speaking states represented a spoke in the wheel of the integration movement. The French-speaking states, egged on by their metropole France, created (functional) organizations that other West African states, notably Ghana, considered an impediment to integration.

This unfortunate situation prevailed until 1975 when Togo and Nigeria launched a drive that led to the creation of ECOWAS. Since all West African countries are members of ECOWAS, it is believed to have bridged the language barrier to integration and development.

Today relations between member-states are peaceful (non-violent). To preserve this atmosphere ECOWAS states have established institutions to settle amicably differences between member-states. Efforts are also being made to facilitate collaboration in the form of easier travel by community citizens. But there is still a major barrier to break down - national sovereignty. Sovereignty's overarching presence is worrisome to transnationalists.
FOOTNOTES

1 For definitions of concepts used here see the relevant sections of the literature review, chapter two.

2 The Secretary-General is an Ivorian, and the Head of the Fund a Liberian.

3 Following the Committee of Statistical Experts of the League of Nations, 1933, the IUOTO defines "tourist" to mean any person traveling for a period of twenty-four hours or more in a country other than that in which he usually resides:

"(i) Persons traveling for pleasure, for domestic reasons, for health, etc.

"(ii) Persons traveling to meetings, or in a representative capacity of any kind (scientific, administrative, diplomatic, religious, athletic, etc.

"(iii) Persons traveling for business purposes.

"(iv) Persons arriving in the course of a sea cruise, even when they stay less than twenty-four hours. The latter should be reckoned as a separate group, disregarding if necessary their usual place of residence" (1972: 1).

4 "The break-even load factor is the load factor at which an aircraft must be operated in order exactly to cover costs at prevailing revenue rates. In other words, if unit costs are exactly half unit revenues these costs will be covered when half the aircraft's capacity is sold, the break-even load factor will be 50 per cent, and profit or loss will result when the actual load factor exceeds or falls short of this figure. Theoretically the costs considered should be all costs, both operating and non-operating; the capacity should be the whole capacity of the aircraft, available for passengers, freight and mail; and the revenue the total revenue, operating and non-operating. In practice, however, to obtain a rough approximation, the calculation is often based, as it is here, on unit operating costs and revenues for the passenger traffic and on passenger seat capacity, it being assumed that all other costs will be covered by the revenue from freight and mail" (ICAO, 1967: Fn. 5, p. 41).
This discussion is based on both quantitative and qualitative data. The quantitative data pertaining to INGOs were coded from 1959, 1966, and 1973 editions of the Yearbook of International Organizations. Published by the Brussels-based Union of International Associations (UIA) the Yearbook is the authoritative source of data on international organizations, specifically INGOs. Since practically all INGOs are members of or are at least related to the UIA, it has ready access to information on them and their activities. But the UIA's information is incomplete. For instance, there are no data on the field work of organizations. The Directory of Development Aid of Nongovernmental, Non-profit Organizations is an invaluable source of detailed information on projects implemented, and fellowships awarded by INGOs active in Africa and other developing regions. To cite a few examples, the International Road Federation awarded fellowships for graduate engineers as follows: Cameroon and Ethiopia, 1 each, Nigeria 3 (p. 767); the ICFTU spent about $2.75 million in development aid—all from voluntary sources (p. 426); and the International Planned Parenthood Federations, about $3.5 million.

But there are two drawbacks to the Directory's use here: 1) its definition of an NGO is broad enough to cover organizations which are "wholly subsidized by governments or even, to some extent, part of a governmental system" (p. 8); and 2) its information covers only one year—and the wrong one at that—1965. Were the Directory published as frequently as the Yearbook, the two could complement each other, if they covered the same organizations. We have, therefore, had to supplement data from the Yearbook with qualitative data supplied by some air transport INGOs whose names were taken from the 1973 edition of the Yearbook.

An open-ended questionnaire that sought answers to the following questions, was mailed to the 57 air transport organizations all over the world: 1) How successful has your organization been in achieving its objectives, especially in West Africa? 2) If your organization's performance is not optimal, what do you see as the primary barriers? 3) In your opinion, how may these barriers best be reduced or eliminated? 4) What do your relations with other international organizations concerning this problem (transport) involve? How helpful are these relations to your work? Only fifteen responded.

The decision to make the questionnaire open-ended was based on knowledge that IOs deal with different aspects of air transport, and on the assumptions that IOs were likely to have different degrees of "success" rate, to have encountered different obstacles to their work, and therefore required different solutions to these problems. The answers which we received largely proved us correct.

IOs were also asked for a complete listing of the names and addresses of their African national members. This information was to have enabled the present writer to delve into the grass-roots activities of the national members, with special interest in integration,
and socio-economic development in West Africa. This aspect of research failed to get off the ground because the necessary information was not forthcoming.

The typical explanation was that this was privileged information that required the prior knowledge and consent of the national members themselves for public release. The problem, however, may be more serious than this. Azkin (1955: 41-2) believes that the hesitation of INGOs to disclose information on their national members and affiliates may be due to 1) the INGOs' lack of knowledge of the precise situation of their affiliates and members in individual countries or 2) their reluctance to expose the weakness of their affiliates. "Whatever the reason, this circumstance cannot help but strengthen then the doubt concerning the real scope and importance of the organizations in question. And this element of doubt will appear the more justified the smaller the educated and internationally-interested stratum in a country's population. Since in most of the new States this stratum is extremely small, the element of doubt concerning the reality and the effectiveness of their contacts with non-governmental international organizations is accordingly reinforced." Thus very often the national members enjoy "paper-existence only" (p. 164).

Raymond Peladan, director of the Paris-based Institute of Air Transport, agrees in part to Azkin's indictment. In personal correspondence with this writer—RP/RB-7 765, June 24, 1976—he refers to the difficulty in knowing precisely what his organization's research has accomplished since "we are not systematically kept informed of further developments." And where names and addresses of national members were provided very frequently they pertained to countries not included in this research.

6ICAO, an IGO, is the single most important IO in air transport matters. Founded in 1944, its Objects are basically to develop the principles and techniques of international air navigation and to foster the planning and development of international air transport with a view to promoting flight safety, preventing economic waste caused by unnecessary waste, avoiding discrimination between Contracting States, encouraging the development of airways, airports, and air navigation facilities, ensuring the safe and orderly growth of air transportation throughout the world, and satisfying popular needs for safe, regular, efficient and economical air transport (ICAO, 1975: 11). IATA, on the other hand, is an organization of international and domestic airlines with the responsibility for setting fares. Repeated requests sent by this writer to IATA for information on its work elicited only unproductive referrals to other organizations.

Data problems preclude extending this discussion to West African governments, because of their disappointing response rate to the questionnaire.
A year earlier it had been disclosed that the U.S. National Student Association (NSA), a member of the International Student Conference (ISC), had for years been secretly funded by the CIA to provide information on foreign student leaders. The agency used the information to draw psychological profiles of prospective political leaders in critical areas of the world, in its drive to develop alternatives to communism. With over 55 national student unions over half of whom were from the Third World, ISC had a huge budget that provided for many programs of technical assistance, education and student exchanges. Urged on by assurances of draft deferment, the NSA was instrumental in ISC's failure to take stands on controversial issues like racism and colonialism (Stern, 1967).
CHAPTER TWO

REVIEW OF THE LITERATURE

A. Socio-Economic Development

One obnoxious characteristic of the contemporary international system is the underdevelopment or extreme economic poverty, "in the sense of failure to assure adequate subsistence and material comfort to most of a country's population" (Kuznets, 1968: 2, Fn. 2), of Asia, Africa, and Latin America in sharp contrast to the development of North America, Europe, Japan, and Australia. While the latter group basks in the attendant amenities of development and wealth, the Third World, especially black Africa, continues to wallow in poverty, illiteracy and disease. In the some twenty years that most of them have been independent, the gap between them and the rich countries of the "North" has continued to increase unabated.

In his book International Stratification and Underdeveloped Countries (1963), Gustavo Lagos distinguishes between the formal and real status of nations. Formal status refers to legal equality or sovereignty of nations, the supreme authority of each nation to conduct its external and internal affairs without outside interference, "in so far as it is not limited by treaty or... common... international law." Real status, on the other hand, signifies each nation's ranking
on economic, power, and prestige dimensions. Each nation's real status is determined by the complex that results from the three dimensions. According to Lagos, the atimic process, refers to the loss of real status that some nations, the United Kingdom for instance, have suffered over the years; this is partial atima.

West African countries cannot be said to have lost real status; they never had it to start with. This is total atimia. On gaining political independence in the late 1950s and early 1960s, they were born into the lower class of an international system already stratified as top dog (developed) and underdog (developing) nations. In view of this, the difficult task facing West Africa is "getting out from under." According to Lagos, the prescription is to acquire economic development, the primary element of real status; it is the "open sesame" to power and prestige.

Granted economic development is the key to real status in international politics the questions that are exercising the minds of policy-makers and scholars alike are: i) what is [socio-] economic development; ii) is economic progress necessary; and iii) why does the rich-poor gap continue to widen? The first two questions will be addressed in this section of the literature review; the third and final question will be examined in the related, next section on the causes of Third World underdevelopment.

Development is a hotly debated issue in the world. (See next section.) This is despite the fact that there is concerted effort made to achieve it in the developing countries. Thus the absence of
consensus on the precise meaning of the concept of socio-economic development may strike one as odd. As with every intellectual concept the reason may be that different researchers and decision makers have different research goals and policies and therefore tend to define the concept to suit those ends. What is generally agreed on is that development refers to the process of improving the living conditions of a national population. Thus, nations may be ranked according to their levels of development, or a single nation's development may be examined over time. Myrdal (1971: 428) defines development as the "upward movement of the entire social system." But when we come to specifics, confusion reigns supreme. Two views prevail: GNP/c and non-monetary indicators.

According to N.S. Ginsburg, *Atlas of Economic Development*, by far the most commonly employed measure of development is per capita wealth or GNP/c. No less a distinguished economist than Kindleberger (1965: 3-9) conceives of development as unidimensional and measures it in terms of increases in national income per capita. Kindleberger's position appears puzzling since he is well aware of the limitations of GNP/c as a measure of development and even argues subsequently that social changes are an important dimension of development.

There are many limitations to GNP/c as a measure of development yet its use until recently has been widespread. First, income per capita data falsely assume an equal distribution of income in a society; and that different countries are equally developed if they have the same GNP/c. According to Robin Jenkins, *Exploitation: The
World Power Structure and Inequality of Nations (1970: 32): "Both of these statements are true: Kuwait has the highest income per head of all nations. The majority of people living in Kuwait are desperately poor" (cited in Whynes, 1974: 99). Therefore, ranking Kuwait as the most developed nation in the world simply because it has the highest GNP/c would violate all common sense notions of development, to say the least. As the International Labor Organization discovered in its sponsored study of the problem in Colombia (1971), rises in GNP are frequently accompanied by high unemployment, widening rich-poor gap, and "possibly by actual increases in the numbers of people living below some poverty line, wherever this is drawn."

Second, as a market-based concept, GNP/c does not readily apply to subsistence or centrally planned economies. In the former, the individual can be considered to combine work in several industries: The grower of grain and the maker of hoe may be one and the same person (Whynes, 1974: 91). In these societies, many families produce and consume their own goods and services. That is, output hardly reaches the market-place. Even in market economies GNP/c does not cover income from such economic activities as baby-sitting. The concept is no less problematic when applied to centrally-planned economies.

Third, GNP/c fails to take full account of "externalities" or non-monetary values. The most flagrantly obvious example of this limitation is the inadequate reflection of pollution in income
statistics. If an individual suffers from smoke or smells or noise that is generated in the course of productive activities, then his welfare is reduced but GNP/c remains unaffected. To deal with this and related problems a redefinition of national security has been called for that includes both military capability and protection against food scarcities, climate modification, and so on (Brown, 1977).

It would appear, therefore, that GNP/c is an invalid measure of development. But replacing it with more appropriate indicators has not been easy. Viner's comments tell the whole story (1953: 100):

Were I to insist, however, that the reduction of mass poverty be made a crucial test of the realization of economic development, I would be separating myself from the whole body of literature in this field. In all the literature on economic development I have seen, I have not found a single instance where statistical data in terms of aggregates and of averages have not been treated as providing adequate tests of the degree of achievement of economic development.

On the other hand, GNP/c ought not to be abandoned altogether. This is because it is a part of socio-economic development. It is true, of course, that poverty is associated in various ways with per capita income. If GNP/c is falling, then absolute poverty can hardly be reduced much.

All of the problems associated with the use of GNP/c are aggravated by the lack of data. This situation has generated serious dissatisfaction with the concept which current research seeks to alleviate by the use of non-monetary indicators of socio-economic development; and the concept is by common agreement a multi-dimensional phenomenon.
Representative of this trend is Meier's definition of development as the "process whereby the real per capita income of a country increases over a long period of time -- subject to the stipulation that the number below an 'absolute poverty line' does not increase, and that the distribution of income does not become more unequal" (1976: 6). That is, the quality of life or standard of living of a national population is measured best by rising GNP/c, by decreases in poverty levels and by equalization of the distribution of income. (Meier suggests that the process may take two to three decades). Seers agrees with Meier; and he identifies declining levels of unemployment as another condition for the realization of development, which he conceives of as "the potential of human personality" (1973: 6-7). In the final analysis, quality of life is measured by non-monetary indicators such as newspaper circulation per 1,000 population, agricultural production per male agricultural worker, and energy consumption per capita, to name only three.

A recent study of socio-economic development using non-monetary indicators is McGranahan (1972). The McGranahan study was designed to implement three main tasks:

1. To select the best available indicators of social and economic development;

2. To establish the relationships among these indicators at different levels of development; and

3. To combine them into a synthetic indicator of development (1972: 11).
Selection of indicators for the study was both subjective and objective. On the one hand, they were subjective because development is a goal of current international and national policy. IOs, notably the UN and its specialized agencies, are doing all they can to help nations improve their standards of living; this process is going on all the time. McGranahan and his associates were guided in their selection by previous international inquiries. The choice of social indicators was based on the recommendations made in two UN reports: a) Report on International Definition and Measurement of Standards of Living (E/CN.3/179), 1954; and b) International Definition and Measurement of Levels of Living -- An Interim Guide (E/CN.5/353), 1961. The choice of economic indicators followed earlier quantitative studies such as Simon Kuznets, Quantitative Aspects of Economic Development (published as supplements to Economic Development and Cultural Change during 1954-68). On the other hand, the selection of indicators was empirical in that measures for the subjectively chosen components of development are available in published sources including those of the UN and its specialized agencies. They are indicators which reflect international values and distinguish empirically between countries having different levels of development.

The non-monetary indicator approach is applied in this study. Data on thirteen indicators were collected, following McGranahan's guidelines, and factor analyzed (to be described later). The indicators are energy consumption per capita, electricity consumption/c, female as % of total primary enrollment, pupil/teacher ratio in
primary education, combined primary and secondary enrollment as % of age group 5-19, daily newspaper circulation/1000 population, radios/1000 population, agricultural production /male agricultural worker, phones/100,000 population, motor vehicles/1000 population, manufacturing as % of Gross Domestic Product, population/hospital bed, and population/physician. 7

The Debate about Development.

Since World War II, and with Indian independence, development has been a subject of world-wide interest: To Third World governments who want to alleviate the poverty, hunger and illiteracy of their people; to the governments of developed countries who almost to a man have extended aid programs to the emergent nations; and to international organizations, especially the UN and its agencies, who provide technical assistance and loans for development. Indeed, the UN declared the 1960s the First Development Decade, and the 1970s the Second.

But despite this international and national concern, development has in the last decade come under heavy fire. The question is: Why? The "no-growthers," as opponents of development are called, point to the problems of continued growth: fouling of the atmosphere, dangers to health, rising prices for scarce non-renewable resources and the products that use them, crowding, and less of recreational resources and beauty spots. On the other hand, the "growthers," proponents of continued development, point to the dangers of no growth: the lack of
improvement in economic well-being and the resultant increases in social turmoil among the poor as their convictions that they play in a zero sum game are confirmed; and the increased rigidity and more forceful political control on the part of the super rich who neither wish nor feel the need to accept a more slender share of the economic pie. The present writer accepts the pro-growth position.

The Case Against Development. Arguments against development run along two lines: that it is i) undesirable and ii) impossible. Development, it is argued, not only does not make us any happier, but also that it makes us less happy, because of overcrowding and pollution of the environment. On this account, development is undesirable. But it is also impossible. It is contended that development cannot continue much longer anyway, because sooner or later it will come up against the limits set by the exhaustion of resources or the accumulation of destructive and poisonous pollutants.

In a highly publicized study, The Limits to Growth, sponsored by the Club of Rome, Meadows and Associates call for an immediate halt to development, since it should otherwise lead to some global catastrophe as a result of the fact that it would come up against one or other (or all) of three basic constraints: i) pollution; ii) supply of raw materials; and iii) the balance between population and food supplies. They assert that "Population cannot grow without food, food production is increased by growth of capital, more capital requires more resources, discarded resources become pollution, pollution interferes with the growth of both population and food" (1974: 89).
There is no doubt in anyone no-growther's mind that growth is responsible for what E. J. Mishan refers to as a "confluence of crises": technological, ecological, and social pollutants, population explosion, and balance of terror. Mishan is convinced that "the continued pursuit of economic growth by the 'advanced' nations is itself almost wholly responsible for the crisis." The crisis passes unrecognized. In Mishan's opinion this is due to i) the entrenchment in society of existing institutions and the apparently irresistible momentum they set up toward further economic and technological development; and ii) historical and scientific complacency, which holds that there is nothing to be alarmed about because of the potency of technological solutions (1971: 34-35).8

No-growthers believe that if development continues unchecked, it will have dire consequences for mankind. Meadows and Associates try to demonstrate, by impressive computer printouts and diagrams, that in about one hundred years or so the growth process will come to a disastrous halt, and standards of living will collapse (1974: 24). E. J. Mishan contends that economic growth violates the biblical call for abstinence by creating wants; that it robs the individual of his self-respect by substituting his muscular and mental exertions with machines; and by creating an impersonal society lacking in mutual understanding and sympathy (1971: 51-55). No-growthers are worried that with economic growth, the rich-poor gap will continue to widen, to the detriment of Third World countries.
But the anti-growth camp is optimistic that the situation, at least as they see it, "can be reversed and a condition of ecological and economic stability established that is sustainable far into the future" (Meadows, et. al., 1974: 24). Various proposals have been made for reaching this goal.

First and foremost is the three-point proposal advanced by Mishan. First, man has to realize that the earth, his only refuge, has limited resources. Second, survival of whatever civilization mankind chooses to adopt is incompatible with the current distribution of natural resources. Finally, the future is not pre-empted (emphasis provided); it is necessary first to be clear about the type of society to be created and then assess the consequences for science and technology (Mishan, 1971: 60).

There seems to be consensus among no-growthers about the need for advanced countries to provide the Third World with investment aid. In another report to the Club of Rome, Mesarovic and Pestel argue that this is necessary to narrow the rich-poor gap (1976: 58). In still another report to the Club of Rome, Timbergen concurs. But he cautions (1976: 71) that to

conceive the objectives of development in terms of Western living standards may only compound confusion. The poor countries should reject the aim of imitating Western patterns of life. Development is not a linear process, and the aim of development is not to 'catch up', economically, socially, politically or culturally. Many aspects of Western life have become wasteful and senseless and do not contribute to people's real happiness. For the poor nations to attempt to imitate the rich may only mean that they trade one set of problems for another and in doing so discard or destroy much that is valuable in terms of their human resources and values (emphasis in original).
The overriding concern of no-growthers is apparently the fate of future generations. No-growthers liken natural resources to a finite cake which provides man with his sole means of subsistence. They argue that consumption implies depletion, and when the cake is exhausted, life terminates. Therefore, no-growthers demand an immediate halt to economic growth, since raw materials are not only in short supply but also non-renewable. Thus, their agenda for saving the world pointedly calls for constraints on population growth in line with available food supplies, and raw materials and capital usage. If implemented, this policy would cleanse the environment.

A less drastic approach to the problems of declining resources, population explosion, and so on, divides the world into regions where these problems carry an unequal impact (Mesarovic and Pestel, 1974). According to this conception, the world is interdependent: Developed countries need raw materials from the Third World, and the latter need capital and technology from the former for development. Assuming that rates of economic growth in the Third World are not so closely tied to those in the industrial countries as before (Brown is thinking especially of OPEC, the Organization of Petroleum Exporting Countries), Lester Brown has suggested a two-pronged remedy to the multifaceted problem of economic growth: i) slow the growth in consumption of material goods among the rich while accelerating it among the poor countries; and ii) stabilize world population (1973: 160-162).
The Case for Development. Pro-growthers reject anti-growth arguments on the grounds of fact, logic and scientific method. The no-growth contention that development should be halted now because of declining non-renewable resources, is seriously questioned by the pro-growth school of thought. According to this school, there is no reason to believe that supplies are running out. Indeed, this school argues that the anti-growth camp is misinterpreting published estimates of available resources.

For instance, known copper reserves were estimated at 100 million metric tons in 1945. Over the following twenty-five years, 93 million metric tons were mined. If the no-growthers' sort of analysis were accepted, the world should have exhausted its copper supplies by now. "But no, present known reserves are over 300 million tons, i.e. three times what they were twenty-five years ago" (Beckerman, 1975: 177).

Known copper reserves are not the only mineral estimates that have been misinterpreted by the no-growthers. No-growthers have been wrong about all "non-renewable [mineral] resources." Pro-growthers argue that we do not know the absolute limits of our resources. According to the World Bank, the reason "is simple and does not even require recourse to elaborate arguments about the wonders of technology. We do not know because no one has as yet found it necessary to know and therefore went about taking an accurate inventory" (emphasis in original) (Report on the Limits to Growth, 1974: 41; cited in Beckerman, 1975: 175). This would require incentives to new exploration.
Pro-growthers concede two reasons for thinking that society should pay more attention to preserving the environment than has been the case in the past. First, the need for a better environment grows in importance as societies become more affluent and satisfy their basic needs. Second, the rate at which the environment is being polluted has reached the point where the absorptive capacity of the environment can no longer be assumed to be unlimited (Beckerman, 1975: 94-95).

On the other hand, pro-growthers criticize no-growthers for failing to recognize the many favorable feedback mechanisms available to society for adjusting to changes in the supply of and demand for materials, and for ignoring current techniques already known to scientists that will increase food yields to keep pace with (declining) the world's population.

In The Limits to Growth Meadows and Associates, as mentioned earlier, look for ways to improve and sustain man's life on earth. But their investigation of five major trends of global concern leads them to classify some of the variables as "bad" and others as "good". That is, they let population growth, pollution and use of raw materials rise exponentially, and food supplies and technology arithmetically. They allow the "good" variables (techniques for reducing pollution, adding to raw materials, or reducing demand), to rise by finite amounts.

Critics of this method point out that looking at past trends and projecting them into the future, on the assumption that these
trends and the interaction among them will remain unchanged, is a hazardous enterprise. They make the case that there is actually no scientific justification for conceiving some of these trends as exponential and others as arithmetic in strict Malthusian fashion. More pointedly Klein has argued that the use by Meadows and Associates of global aggregates could be misleading in not telling the distribution (Klein, 1972: 40). Perhaps in response to this criticism, Mesarovic and Pestel divide the world into regions. However, the general conclusions of their 1974 study are the same as Meadows and Associates'.

Pro-growthers agree with no-growthers that advances in medicine lead to a fall in death rates and an extension of life expectancy. Thus, with birthrates unchanged there will obviously be rapid increases in population. Beyond this, however, pro-growthers contend that with economic growth, population growth is followed by higher standards of literacy which in turn cause birth rates to drop. In West Africa a large number of children are considered an old-age insurance. Furthermore, large families are raised because the chances that all of them will survive are very slim.

No doubt, there is an imbalance between food supplies and population growth. But as we have just seen, this problem may be accommodated by development. As a matter of fact, experience is continually being gained in techniques to raise agricultural productivity.

The International Atomic Energy Agency and the UN Food and Agricultural Organization, in cooperation with laboratories at Leobersdorf,
Austria, have recently developed a technique that will use radioactivity to sterilize male insects such as mosquitoes and tsetse flies. These insects destroy valuable food crops, or are vectors of the infectious diseases of malaria and sleeping sickness. Female insects that mate with the sterilized males do not reproduce. Repeated releases of the latter in an infested area are one certain way of reducing the population of the insect pest (TTPI, April 28, 1978, p. 25).

Further evidence of the versatility of scientific techniques to improve agricultural yields pertains to maize, which is one of the world's major food sources. Maize is not considered highly nutritive. Scientists have attacked this problem by breeding new specimens with a higher protein content and by fortifying the end product with additional proteins and minerals. One notable example is the Mexican variety known as "super-small." It yields 19 tons of unthreshed ears a hectare, compared with the national average of only five tons obtained from conventional varieties (To The Point International, April 28, 1978, p. 25).

Another problem with the crusade against growth is its logic. No-growthers pay no attention to what a policy of no-growth would carry in its wake. Klein has visualized such a situation:

In place of an apocalyptic view of a globe ravaged by famine and environmental decay, it would not be difficult to sketch out a vision of a world where the main problem was to persuade people to work in factories—where the revolt against materialism had gone so far as to produce a pot-smoking population too dozy to engage in either procreation or production (1972: 40).
In other words, a policy of no-growth might generate an indolent, crime-ridden society.

Calls for no-growth appear to be based on concern for tomorrow's generation. The logical problem is that once society has decided to halt growth, no-growthers offer no guide as to when the lights should be turned on again. Is it when crime becomes rampant or when famine and disease whittle down the population to non-procreating and non-producing levels? Thus, the question of when growth should be resumed is one that anti-growthers hedge.

In any case, even if resources were non-renewable and present consumption rates were bound to end in global catastrophe, as no-growthers want us to believe, armageddon could not really be postponed forever: Future generations could not possibly be saved by halting or slowing down growth. Sooner or later some generation would have to address the question of who would turn off the lights for good. The truth of the matter is that the world is not running out of resources.

Furthermore, even if the no-growth case were valid, it would still not follow that attempts should be made to bring growth to a halt. A political party that campaigned for office on a platform of no-growth would, from all indications, be digging its own grave. This maxim applies especially to Third World countries where one-party regimes define their raison d'être partly as socio-economic development (Finer, 1966). The reason is simply that man strives to increases in the goods and services that are enjoyed. As Beckerman has aptly
observed, "To some people this goal [of economic growth] is a denial of holiness; to others it is a testament of the infinite variety of the human spirit. Only an altogether unparalleled optimism can lead one to believe that the vast mass of the population will voluntarily accept an abandonment of the goal of economic growth, at least for the foreseeable future" (1975: 91).

To be sure, no-growthers ignore the concerns of the poor. As already mentioned, they argue that Third World countries should not follow the bad example of the now advanced countries and pursue economic growth despite its adverse social or environmental effects, and that they should not be ensnared by "rising expectations". It is also claimed that if Third World countries sought to emulate Western life styles, there would simply not be enough resources to go around.

From this it might be concluded that Third World countries must not be encouraged to believe that they can acquire high levels of prosperity. That is because the affluent countries can hardly be expected to rein in their levels of prosperity. As a result, Third World countries should accord environmental preservation precedence over economic growth. In giving priority to environmental questions, anti-growthers blur between "pollution of poverty" and "pollution of affluence;" that is, problems of sanitation, congestion, nutrition and shelter, on the one hand, and abandoned cars and noxious emissions, on the other (UN Conference on the Human Environment, 1972: 143).
As might be expected, Third World countries reject this view. As pointed out in the Founex Report, drawn up by a group of experts convened by the UN to prepare a report on Development and the Environment for the 1972 UN Conference on the Human Environment,

The developing countries would clearly wish to avoid, as far as is feasible, the mistakes and distortions that have characterized the patterns of development of the industrialized societies...the major environmental problems of developing countries are essentially of a different kind. They are predominantly problems that reflect the very poverty and very lack of development of their societies. They are problems, in other words, of both rural and urban poverty. In both the towns and in the countryside, not merely the "quality of life", but life itself is endangered by poor water, housing, sanitation and nutrition, by sickness and disease and by natural disasters...It is evident that, in large measure, the kind of environmental problems that are of importance in developing countries are those that can be overcome by the process of development itself (Founex Report, 1972: 5-6).

Therefore, Third World countries see no conflict between economic growth and the preservation of the environment. Growth is required to preserve life and to remedy some of the worst features of the environment from which Third World countries suffer. Even if there were conflict, Third World countries would still be justified in giving priority to economic growth.

Thus, Third World countries know that continued growth is essential in their countries so as to eliminate abject poverty and disease and to raise educational levels. But continued growth is necessary in the advanced countries as well, so that it may provide expanding markets for the primary products of Third World countries while they try to integrate their economies regionally. A pro-growth
policy stands a chance, albeit a small one, of bridging the rich-poor gap if appropriate steps in this direction are taken. (See next section.) But a no-growth policy would definitely freeze the status quo, evidently to the detriment of Third World countries.
B. Dependency

There are two highly contrasting perspectives on the causes of Third World underdevelopment. The first perspective locates the causes of Third World underdevelopment within these countries themselves. Typical of most of the writings of the 1950s and early 1960s, this viewpoint cites lack of capital, technology, managerial skills, and natural resources, and cultural conservatism as the principal barriers to Third World development. According to the second perspective, Third World underdevelopment is the direct result of their unequal relations (imperialism) with the industrialized countries, especially Western Europe and North America. Unlike traditional marxist-leninist theory, which depicts imperialism as an economic dominant relationship driven by the need for expanding markets, this view conceives of imperialism as a structural relationship whose success depends very much on collaboration between the imperialist(s) and the local elite. Let us now examine these two perspectives more closely.

Intra-national Causes of Underdevelopment.

If a society is underdeveloped, it has only itself to blame. This may be due to lack of capital and natural resources, and/or cultural conservatism. The need for capital is at the center of two approaches to development. One approach views development as largely determined by capital accumulation; the other, stages-of-growth approach, portrays history as a predictable sequence of necessarily successive stages.
In his still highly influential work, The Theory of Economic Growth, Arthur Lewis identifies three proximate causes of development: 1) the will to economize, either by reducing the cost of any given product, or by increasing the yield from any given input of effort or of any other resources; 2) increase of knowledge and its application in production; and 3) capital accumulation. Lewis contends that the model of an economic system has two sectors, capitalist and subsistence. In the capitalist sector, which may be private or state-owned, capital, income and wages per head, proportion of income saved, and rate of technical progress are all much higher than in the stagnant subsistence sector. The process of development, therefore, involves basically the growth of the capitalist sector at the expense of the subsistence sector. Thus, Lewis argues that capital is the key to development since only the capitalist sector generates the needed savings and investment. He concludes that poor countries "save little not because they are poor, but because their capitalist sectors are so small. Productive investment is small not because of absence of surplus but because of conspicuous consumption" (Lewis, 1955: 236).

The stages-of-growth model is the work of Walt Rostow (1960). Rostow maintains that every nation may be placed into one of five economic systems: 1) The traditional society is a predominantly agricultural society whose future growth is impeded by fatalism, the popular assumption of "limited range of possibilities" open to one's offspring. These traditional obstacles to development start to crumble
down to 2) the **preconditions for take-off** when the insights of modern science begin to improve both agricultural and industrial production functions. Capital-mobilizing institutions, such as banks, appear; investment increases. The impetus for this stage of development is external intrusion by more developed countries. In 3) the **take-off** stage, all traditional barriers disappear completely. On the positive side, social overhead capital builds up; technology continues to revolutionize agriculture and industry; and investment and savings jump from 5% to 10%. The fourth stage, the **drive to maturity**, is gained "some sixty years after take-off begins (say, forty years after the end of take-off)." In this period not only is 10-20% of national income invested but also goods previously imported are produced domestically.

The final stage in the development process, the **age of high mass-consumption**, is characterized by the shift by the leading economic sectors towards durable consumers' goods and services. This society, which is dominated by office and factory workers, allocates more and more of its resources to social welfare and security.

Rostow's model suggests that development is an inexorable process; it therefore fails to account for the loss of atimia suffered by many developed countries, including the United Kingdom, over the years. On the other hand, the model is dynamic and more comprehensive than Lewis' accumulation-of-capital model. Despite these differences the two models have enough in common that bears directly on this study.
Firstly, both models consider capital as momentous to development; and preferably it should be mobilized locally. But in a dissentient opinion Bauer and Yamey argue that emphasis on the positive role of capital accumulation ignores other equally necessary factors such as urbanization, increase in percentage of trained or skilled personnel, and an adequate infrastructure. In their view capital is created in the process of development; development is not a function of capital accumulation. Indeed development is "the result of a combination of social, cultural, political, and economic changes which in turn brings about future changes" (1957: 128).11

Secondly, both models view cultural attitudes as a barrier to growth, but the point is not stressed. As a matter of fact, Lewis asserts specifically that cultural conservatism is of peripheral concern only. In his study, Why is the Third World Poor?, Pero Gheddo offers a quite different explanation of underdevelopment in the Third World. Dismissing cries of foreign exploitation, and lack of capital and natural resources as sham excuses, Gheddo focuses on cultural differences as the primary cause of underdevelopment. According to Gheddo, in Western culture the influence of Judaeo-Christian thought accentuates the transcendence of God. This philosophy sees man as the king of creation and as made in God's image; consequently, man not only is superior to all other creatures, who are at his service, but also has the historical task to control nature and create a just society. This philosophy has been responsible for Western man's experience of four revolutions which explain the West's rapid
development: 1) ideas of equality and dignity of each individual; 2) progress; 2) population control with better health care and adequate food production; and 4) science and technology.

On the other hand, non-Western cultures view God as immanent in the world. All reality is mythologized and divinized. Occupying the lowest rung of the supernatural world, man's destiny is to free himself and become spirit, to lose himself to God (Gheddo, 1973: 43). To exemplify his point, Gheddo quotes a fellow missionary as telling him during his travels in Africa that "I cannot bring a tractor here. The concept these people have of nature as something divine to be respected cannot be brutally violated. The change must come about little by little, preserving a certain contemplative value and a respect for the elements of nature" (p. 44).

Finally, the accumulation-of-capital and stages-of-growth approaches stress the importance of the international demonstration effect. But whereas Lewis argues that it is inimical to growth in that meager resources are wasted in imitating foreign life-styles, both Rostow and Bauer and Yamey suggest that it is conducive to development. If foreign life-styles can be imitated, why not foreign saving and investment habits? In black Africa, as elsewhere, this may take the form of sacrificing present consumption tendencies to investment in education. Not mincing words on this point, Rostow asserts that

There is no doubt that without the affront to human and national dignity caused by the intrusion of more advanced powers, the rate of modernization of traditional societies over the past century-and-a-half would have been slower than, in fact, it has been (Rostow, 1960: 28).
In other words, the international demonstration effect -- broadly speaking, foreign contact -- may or may not dismantle cultural barriers to development. But when it does it can have serious political and economic repercussions. In this regard, the central argument is that societal changes sparked off by the international demonstration effect create political instability which in turn hampers development.

Thus, there is a transition from traditional to modern ways of life. This transition (or social mobilization) is defined by Karl Deutsch as "the process in which major clusters of old social, economic and psychological commitments are eroded or broken and people become available for new patterns of socialization and behavior." Social mobilization is, therefore, a two-stage process. Firstly, traditional ties and old habits are severed; secondly, the mobilized persons learn some relatively stable new patterns of group membership, organization and commitment (Deutsch, 1961: 494). Of course, all of this is predicated upon the efficacy of the international demonstration effect. Social mobilization expands political participation. This takes the form of 1) pressures for political and administrative reform; that is, for an enlarged and competent bureaucracy; and 2) demands for a wide range and large amounts of new services which the government alone can provide in most developing countries (Deutsch, pp. 498, 501).

Failure to meet these demands may lead to popular alienation and disaffection from the State. And this is only the tip of the iceberg. Of far greater concern is the resultant climate of political instability
which by many accounts hinders development by scaring off foreign investors. According to Samuel Huntington, whenever "the rates of mobilization and participation are high; [and] the rates of organization and institutionalization are low," the result is political instability.\(^\text{13}\)

To deal with this deleterious problem, Huntington suggests policies of 1) slowing down mobilization and limiting or reducing communication in the society; and 2) building up institutions (1965: 386, 418).

To recapitulate, one perspective on Third World underdevelopment locates the obstacles to development inside these societies themselves. They lack capital (and natural resources, for some) and remain glued to incomprehensible cultural attitudes. Furthermore, their regimes' inability to handle mobilization creates political instability. No doubt, capital -- foreign or domestic -- is a critical factor in development. (More will be said about this later.) However, some, including the present writer, take issue with the cultural attitudes and political instability theses.

To suggest, as Father Gheddo in particular has done, that cultural attitudes represent the primary obstacle to Third World development is unquestionably a sweeping statement. For one thing, it does not tally with this writer's experiences in West Africa. Secondly, it fails to account for the varying levels of development in the "christian North." Indeed one is reminded of the extreme poverty and backwardness of southern Italy so vividly described by Banfield (1958). Banfield attributes it to "amoral familism," a self-defeating state of affairs which explains the villagers' inability to act together in their common
interest or, indeed, for anything transcending the immediate material interest of the nuclear family. Such behavior is based on the assumption that everyone else is doing likewise. Finally, black Africa is known to have had viable economic and political systems before contact with Europeans (Amin, 1972; Davidson, 1966). Besides, the diligence and receptivity to change of black Africans is attested to in a number of works such as Smock (1969).

**International Causes of Underdevelopment.**

That political instability impairs economic growth is beyond doubt. However, to lay the blame for it entirely on the shoulders of Third World politicians is unfair to say the least. The role of outside forces, eager to protect their interests, simply should not be overlooked; they are not above interfering in the domestic politics of developing countries so as to achieve their objectives. This is all part of the pervasive problem of structural imperialism which not only relegates the Third World, black Africa in particular, to the bottom of the international division of labor but also seeks to perpetuate this division through such mechanisms as establishing "liaison elites" in the Third World.

In taking this position we are arguing, in effect, that underdevelopment in West Africa stems from the region's unequal exchange relationships with Western Europe (France and the United Kingdom in particular) and North America to a lesser degree. In other words, West Africa is underdeveloped primarily because of foreign exploitation, not because of cultural barriers nor of lack of capital and natural
resources. Fortunately, the situation is not hopeless. Indeed, it is argued elsewhere (Section C) that West Africa can accelerate its own socio-economic development by means of regional integration, the success of which may very well lead to political unification as envisaged by (ECOWAS) the Economic Community of West African States.

The second perspective on underdevelopment in West Africa ascribes it to exploitative external relations. This structural view asserts that poverty, disease, illiteracy, and other indicators of structural violence are the result of the region's low position on the international totem pole. It argues that peace means more than the "absence of war"; rather it involves social justice, the equitable distribution of the world's resources. Symmetric relations between and within nations are required in order to achieve this objective. As presently conceived, this perspective is a synthesis of economic, cultural, political, military, and communication theories of imperialism. As a background, classical imperialism, the forerunner of structural imperialism, will be recalled briefly.

Classical imperialism was of two basic types—political and economic. These studies were eurocentric, that is, written by Europeans about Europe. Both political and economic imperialism had their origin in proclamations made by prominent European leaders -- Benjamin Disraeli, Cecil Rhodes, etc. -- and writers, such as Rudyard Kipling ("The White Man's Burden"), that imperial expansion was necessary to preserve the existing social order of the developed countries, civilize backward areas which could also serve as foreign
markets and sources of raw materials, and to maintain employment and capital exports (Owen and Sutcliffe, 1972; Koebner and Schmidt, 1964).

In his book Imperialism: A Study (1902), John A. Hobson denied the necessity of imperialism. In Hobson's view, imperialism is primarily underconsumption. It results from monopolies developed by large groups of entrepreneurs who underpay their workers. As the metropolitan working population is thus unable to consume enough, the resultant unsaleable surplus of goods is exported abroad mainly as capital and to a lesser extent sales, to colonies which have to be acquired militarily and placed under direct political control of the mother country. But since every metropolis is doing the same thing, war is inevitable between them. These wars, which benefit only monopoly interests and not the entire society, are costly both in terms of human life and capital.

Hobson's ideas, and those of other writers and political leaders before him, were grist to the marxists' mill. Like Hobson marxists argued that war was bad and since imperialism caused war, it was bad, too. On the other hand, marxists agreed with pre-Hobson writers (the conservatives) that capitalism required imperialism. But unlike the conservatives, they concluded that since imperialism was bad capitalism was bad too. In his Imperialism: The Highest State of Capitalism, V.I. Lenin agrees to Hobson's underconsumption thesis and argues the impossibility of investing capital abroad without direct political and military control. The metropolis would decay because imperialism would force capital to be exported to the colonies more profitably on
account of cheap labor. In time the situation would be reversed to make the colonies more powerful than the metropolis in terms of technology and modern infrastructure. Now at the bottom of the heap, the (former) metropolis would continue to suffer from underconsumption but would no longer be able to export capital on privileged terms.

As far as Schumpeter is concerned, imperialism is learned, not necessary behavior. He defines it as "objectless disposition on the part of a state to unlimited forcible expansion" (1951: 7). Imperialism as objectless expansion refers to the continuing process of military and economic expansion which becomes more important than its changing territorial objects. It is produced by an atavistic warrior class who convince their government of the need to expand their frontiers in order to protect those same frontiers. Schumpeter contends that such a warrior class is either inherited from the remote past or arises to defend a previously non-militaristic society against external aggression.

Schumpeter's notions of imperialism may be likened to the modern concept of "national security". It is in this sense that the mantle is still carried more than fifty years after he first put his thoughts on paper in 1918. Classical imperialism has been defined recently as "any relationship of effective domination or control, political or economic, direct or indirect of one nation over another" (Cohen, 1973: 17; emphasis in original). In Cohen's view, imperialism explains the readiness of people and groups to take advantage of a disparity of power in international relations. In other words, imperialism is a
rational foreign policy behavior in an anarchic system. Concern about national security, "the absence of fear of external threats" (p. 237), is posited as the impetus for imperialism. Every State, Cohen cautions, should try to use its foreign policy to reduce its dependence on others and at the same time to increase its influence over them. "Imperialistic behavior is a perfectly rational strategy of foreign policy" (p. 242).

Many observations are in order about this very brief review of the literature on classical imperialism, for together they map out the scenario for structural imperialism, the second perspective on West African underdevelopment.

Firstly, the classical theory of imperialism is eurocentric; hence from the Third World's point of view, it is tantamount to "exploitation without consultation". It considers its impact on the metropolis only. Secondly, contrary to Hobson's thesis, imperialism benefits the mother country tremendously at the expense of its (former) colonies. Thirdly, on the basis of current knowledge, imperialism is structural. It is an indirect system of exploitation which does not require the physical presence of the dominant power to be efficacious. It only needs to establish a local bridgehead or liaison elite. Finally, considering the tremendous inequality in the contemporary system, Cohen's ideas on imperialism have serious implications. To start with, an imperialistic foreign policy would only serve to introduce anarchy into the system. It is perhaps safe to speculate that the underdog nations might quickly become extinct in such a
dog-eat-dog world: Since "security depends on power and power depends on resources" (Cohen, p. 249), the Third World's resources would systematically be pillaged by the industrialized countries in the name of national security. The Third World could not possibly militarily avert such a catastrophe, according to Cohen. But if they should let their resources be depleted, they would be left to rut, literally speaking. Moreover, the exploiters might very well turn upon one another.

Dependency Relations. Dependency has been, and still is, an inter-disciplinary research focus for a number of years. This research has been disparate, but perhaps the best insight into how dependency operates is a 1971 paper by Johann Galtung. Here we attempt to review this literature in order to see how it fits Galtung's theoretical contribution.

As mentioned earlier, one objectionable characteristic of the present international system is the gross income and living condition inequalities between and within nations. It stems from an international division of labor in which the rich industrial countries exploit the poor primary-producing ones. Thus, it renders Third World development contingent upon development in the industrial nations. According to Dos Santos (1971: 226), dependence means

a situation in which the economy of certain countries is conditioned by the development and expansion of another economy to which the former is subjected. The relation of interdependence between two or more economies, and between these and world trade, assumes the form of dependence when some countries (the dominant ones) can expand and can be self-starting, 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.
In other words, dependency\textsuperscript{14} means "power without responsibility [on the part of exploiters] and for those who suffer from it, it means exploitation without redress" (Nkrumah, 1966: ix). Nkrumah's argument is that the Third World supply most of the raw materials for the developed countries' industrial growth but receive very little in return. On the other hand, they pay exorbitant prices for their imports of manufactured goods from the developed countries. In this kind of situation the underdog tend to feel that their imports of topdog manufactured products are indispensable and cannot be obtained elsewhere (Galtung, 1973: 45-46). In Nkumah's view, such dependency amounts to exploitation that can be corrected only by [the] federation [of black African countries].

No less an authority than the United Nations has observed, in its \textit{World Economic Survey, 1962}, that

\begin{quote}
The reasons for the unfavorable trends in the external trade of the underdeveloped countries are rooted in the basic structure of this trade itself. Thus, primary products comprising foodstuffs, agricultural raw materials, ores and fuels account for well over four fifths of the total exports of the underdeveloped countries. For the industrially developed countries on the other hand, over two thirds of the foreign exchange earnings come from exports of manufactured goods. Only for the group of centrally planned economies are the exports of primary products roughly of the same order as those of manufactured goods...The structure of the trade of the underdeveloped countries obliges them to export mainly primary products and import manufactured goods. For no other group does the exchange of exports for imports rest on such an uneven keel; a good part of the international trade in other groups represents exchange of manufactured goods for manufactured goods (cited in Jalee, 1968:35).
\end{quote}

That is, Third World countries export primary products and import manufactured goods from the industrialized nations of Western Europe and North America. Thus, they trade mainly with the topdog nations
and hardly at all with one another. This is "the world that Europe built" between 1860 and 1914 (Green, 1967: 244).

Recently there has occurred a relative decline in the importance of agricultural materials in general. At the same time energy resources, especially oil, and their major suppliers in the Third World have become more important to the industrialized nations whose enormous industrial expansion is based on steel manufacture and metallurgy. Needless to say, the raw materials for this tremendous growth — high-grade iron ore, tin, manganese, chromium, cobalt, etc. — come chiefly from the Third World (Jalee, 1972; Nkrumah, 1966).

Despite their growing importance to the industrialized countries, the Third World continue to experience "worsening terms of trade"; that is, they pay more for their imports and receive less for their exports. According to one source, this is because they are poor countries, not because of the nature of their primary exports.

Emmanuel contends that

The "worsening of the terms of trade for primary products" is an optical illusion. It results from a mistaken identification of the exports of the rich countries with the export of manufactured goods and of the exports of the poor countries with the export of primary products.

Emmanuel adds that

The cooper of Zambia or the Congo and the gold of South Africa are no more primary than coal, which was only yesterday one of the chief exports of Great Britain; sugar is about as much "manufactured" as soap or margarine and certainly more "manufactured" than Scotch whisky or the great wines
of France; before they are exported, coffee, cocoa, and cotton, (especially cotton) have to undergo a machine processing no less considerable, if not more so, than in the case of Swedish or Canadian timber; petroleum necessitates installations just as expensive as steel; bananas and spices are no more primary than meat or dairy products. And yet the prices of the former decline while those of the latter rise, and the only common characteristic in each case is that they are, respectively, the products of poor countries and the products of rich countries (Emmanuel, 1972: xxx).

The conclusion is that the rich get richer and the poor get poorer. This inequitable system exposes the underdog nations to coercion, manipulation, and compromise of sovereignty, all with the combined effect of exacerbating their living conditions. In one particular case, Latin America, development is argued to have been greatest when the region's links with its metropolis were weakest (Bodenheimer, 1971: 160; Frank, 1969: 9-10).

The international division of labor not only discriminates against poor countries but it is also resistant to change. Singly or in concert, the industrialized nations are taking steps to ensure stagnation or deterioration in the status of Third World countries. And it is all done in the name of power and prestige (Galtung, 1973; Cohen, 1973).

This system is maintained in many ways. To start with, the top-dog nations establish an "infrastructure of dependency" (Bodenheimer, 1971: 162) in the dependent country, designed to respond favorably to their needs and interests. As Fanon has observed (1966: 89), this privileged class is self-centered. It is this group that is affected most by the international demonstration effect. It would rather imitate foreign life-styles than, say, consume domestically produced
goods which they believe are inferior to their imported counterparts.\textsuperscript{15} But it is precisely such luxury imports which drain scarce foreign exchange.

Secondly, as suggested earlier, the system precludes frequent interaction between Third World countries. There is, indeed, little basis for trade. Besides, communications links are a rarity. For instance, a telephone call from Sierra Leone to Guinea next door would have to pass through London and Paris. This is a clearcut case of "enforced bilateralism" (Myrdal, 1957). Each metropolis handles nearly all of its (former) colony's links with the outside world. The foreign newspapers read by the local elite are published mainly in the metropolis; consequently, it tends to view the world through metropolitan lenses.

With the granting of associate membership to most black African countries by the European Common Market (ECM), enforced bilateralism has recently assumed a multilateral form. The agreement provides for tariff preferences on trade between each of the "Nine" and each African associate member. In other words, each African associate undertakes to treat all ECM members, metropolis or not, on an equal basis. Furthermore, the "right of establishment" gives nations and companies of the "Nine" the same investment rights in each African associate territory. The terms of the agreement are "fair": Black African governments and companies may also invest in any ECM country (Rivkin, 1966; Zartman, 1976). As one might expect, Europe benefits from this revised relationship far more than does black Africa; indeed, it is designed to keep the apron strings intact.
First of all, black Africa cannot in all honesty be expected to be able to exercise its reciprocal rights of investment. They lack the capital to invest at home, much less abroad.

Secondly, the agreement is the incarnation of the policy of "divide and rule". A united Western Europe — that is, ECM — deals with black African countries separately. Unless black Africa follows the European example to harmonize their interests in a regional framework, the short end of the stick will be theirs permanently.

Finally, the relationship frowns upon black African industrialization efforts; rather black Africa is expected to continue in its role as "hewers of wood and drawers of water" — suppliers of raw materials. As Galtung has indicated, processed goods are allowed into the ECM only under stringent conditions: 1) that they do not compete with industry because they are no longer produced inside the ECM, such as textiles and goods produced by highly-polluting industries; 2) that they are produced within multinational companies (MNCs) with headquarters in ECM countries; and 3) that the ECM countries will still be able to export goods at a higher level of processing than what they import from Third World countries (Galtung, 1973: 71-2).

Following Britain's application for ECM membership in 1963, the Economic Commission for Africa (ECA), a long-time proponent of African regional integration, issued the following warning regarding African associate membership:

If the associated countries were to diversify their economies by increasing the protection of their local industry against the competition of the EEC countries, it is doubtful if the EEC countries would continue to offer the same advantages to the export of primary products by the associated countries.
The ECA noted further that "association with EEC can easily tend to perpetuate economic dependency and thus turn out to be a long-term disadvantage to the country concerned" (cited in Mazrui, 1967: 89-90). The ECA could not have been more right: dependency retards socio-economic development.

Alternative Solutions to Underdevelopment. No doubt, black Africa's ECM connection is only one facet of the intractable problem of structural imperialism. Dependency may be bi- or multi-lateral, as we have just seen; and it comes under a variety of guises -- cultural, economic, political, military and communication. The pertinent question is: Can Third World countries, West African in particular, do anything about it? There are at least two alternative solutions.

The first solution is the do-nothing approach. Lacking capital, technology, and managerial skills, West Africa may regard the situation as hopeless and resign itself to it. Of course, such an obscurantist policy would doom the region to wallow permanently in the quagmire of underdevelopment. But considering the high priority which the region's member-states accord development, this is not a viable answer to the problem.

Alternatively West Africa may adopt an active strategy to alleviate the situation by increasing the total resources at its disposal. Several options are available under this strategy: 1) position itself inside a "great power's orbit" (Liska, 1957); 2) violence (Frank, 1969; Fanon, 1966); or 3) regional integration. Only the third course is practical.
Alliance with a great power may or may not be socio-economically advantageous. Even if it is, it is highly likely to compromise the weaker partner's sovereignty in the process, as the case of Latin America demonstrates quite convincingly (Claude, 1968; Miller, 1968).

Advocates of outright revolution identify the liaison elite and foreign exploiters as the obstacles to progress in Third World countries. They argue that in order to get the external enemy, its local collaborators must be eliminated and replaced with patriotic leaders. The problem with this thesis is that since the privileged class includes the political leadership, it will certainly survive a change in government. A revolution needs dedicated leaders and since these are invariably recruited from the elite class, they are unlikely to volunteer to overthrow themselves. Changes in political leadership in West Africa do not assure a larger national pie, nor the pie's equitable distribution among the population irrespective of the pie's size. Rulers all come from the same elite class. In any case, what follows the revolution, if it succeeds, is a question that its proponents ignore.

All of this appears to suggest that the sun may never set on structural imperialism, but this is not true. Progress, albeit slow, can be made if West African countries vigorously pursue a policy of regional integration. Regional integration may or may not guarantee a more equitable distribution of the pie, intra-nationally, but it will certainly increase its size and assure its fair distribution between member-states. As mentioned earlier, this is contingent upon the
availability of resources. Much of this resource base is provided by MNCs, especially in the area of technology transfer. (Every nation, even the United States, has at one time or another during its development had to use foreign capital). Do MNCs help raise standards of living in Third World countries?

In his influential book *Sovereignty at Bay* (1971), Raymond Vernon argues that MNCs have a positive role to play in Third World development. Writing in the liberal tradition Vernon argues that because of a convergence of national and MNC interests, states should not interfere with the flow of transnational economic transactions. Everyone stands to benefit from the removal of barriers to the free flow of investment, a free exchange of commodities, and an international division of labor because the world's scarce resources will be more efficiently utilized. Establishing subsidiaries abroad gives an MNC two distinct advantages: 1) proximity to the local market, and 2) enhancement, by access to cheaper labor, of its ability to compete on the home market. MNCs transfer capital and technology in the form of product sales, product imitation, and training of workers and local managers.

On the other hand, marxist and mercantilist conceptions of the MNC view it as a perpetrator of inequality among nations respectively. They therefore call for equitably redistributing the world's wealth. The marxist perspective is based on three assumptions: 1) MNCs are forced to expand in search of new markets and raw materials; 2) United States foreign policy mirrors the expansionist interests
of the dominant capitalist class; and 3) this class is interested mainly to eliminate all barriers to corporate expansion and to increase at the expense of Third World countries. Mercantilists conceive of the MNC as a means of expansion of particular powerful nation-states. In their view, MNCs have identical interests with their home governments (Gilpin, 1976).

The view that MNCs hinder an improvement in Third World living conditions is not unjustifiable. Statistics show that MNCs transfer most of their profits back home. According to World Bank figures, this amounted to $4 billion and $5 billion in 1964 and 1965 respectively, in contrast to the influx of $970 million and $1360 million for the same years (Jalee, 1972: 72). Third World countries' industrialization programs are hampered by the MNCs' refusal to sell them machinery and processed raw materials as simple merchandise; rather either these poor countries are required to pay royalties or the capital goods are introduced as investments (Dos Santos, 1971: 231). At the same time, raw materials continue to play a declining role in world trade. This is due to the 1) growing importance of artificial substitutes; 2) increase in yield per unit of raw materials; and 3) wider life-span of materials because of technological progress (Jalee, 1972: 54; Nkrumah, 1966: 9). To make matters worse, Third World countries are finding it increasingly difficult to deal with subsidiaries whose decision-making centers are located outside their borders (Huntington, 1973; Wells, 1971).
All of these ideas must now be brought together under one theoretical roof so as to facilitate the subsequent construction of an axiomatic theory of regional integration for empirical investigation.

A Theory of Dependency. In his oft-cited paper, "A Structural Theory of Imperialism", Galtung defines imperialism as a system "that splits up collectivities and relates some of the parts to each other in relations of harmony of interest, and other parts in relations of disharmony of interest, or conflict of interest" (1971: 81). Galtung divides the world into Center and Periphery nations, or industrialized and primary-producing countries. According to him, inequality is created by the vertical division of labor and maintained by the feudal interaction structure. This division is the basic root of the disparities between rich and poor countries. (Third World countries experience "worsening terms of trade" mainly because they are poor countries and not simply because of the nature of their products.) Each country in turn has its center and periphery areas. This creates gaps in living standards between and within nations.

Of greater significance are the "spin-off" effects of the division of labor. Processing in Center nations requires and stimulates high levels of technology, skill, education, and sophisticated systems of transportation and communication. But as spin-off effects in raw materials are practically nil, gaps in living conditions between them and Center nations may never decrease. For instance, the skills acquired in shoveling bauxite and iron ore in Guinea and Sierra Leone generate no spin-off effects, whereas in
Center nations airplane manufacture has spun off into space exploration and satellite communication.

Galtung shows that vertical division of labor creates unequal exchange relations between and within nations which are perpetuated by feudal interaction patterns. Feudal patterns are of two basic types: "fragmentation" and "penetration". Fragmentation "means that whereas the center is well coordinated, even unified in the European Community, the periphery, the developing countries, are split many ways" (Galtung, 1973: 76). It stems from the colonial vestiges of little or no trade and indirect or very expensive communication and transportation ties. There is infrequent periphery-to-periphery interaction relatively to the centers.

Penetration refers to the metropolis' indirect control of periphery resources in its own interest. It does so in collusion with the local elite who generally aspire to foreign life-styles and have a stake in the maintenance of the contemporary economic relations with the center. Galtung is, therefore, pessimistic about the chances of Third World countries to transform their relations with the industrialized countries of Europe and North America barring, of course, a policy of regional integration which he and Gustavo Lagos agree to partially. This is precisely the solution which ECOWAS and other West African regional organizations have been seeking for almost twenty years.
C. Regional Political and Economic Integration

One of the chief developments in the world since World War II has been the creation of regional communities in many parts of the world. These range from the growth of multilateral military alliances to the establishment of free-trade areas. This development has raised the perplexing problem of just how viable social relationships may be created and sustained. What indeed are the processes of community formation in an international system that comprises nation-states which, according to some scholars (Hoffmann, 1965), are obstinate? As Karl Deutsch has observed,

The fundamental problem of international politics and organization is the creation of conditions under which stable peaceful relations among nation states are possible and likely. Ultimately each nation's security must be assured through the existence of a community embracing all nations (1954: 33).

In other words, a community (regional or global) is required to assure national security. But the traditional notion of security strictly in terms of a state's capability to survive militarily has come under fire. Recently it has been suggested that the concept should be broad enough to include protection from energy shortages, food scarcities, environmental pollution and increasing economic difficulties (SID, 1977). On this theme Galtung and other scholars define peace as social justice or the equitable redistribution of the world's resources. How may such a goal be best achieved? The literature of integration is replete with proposals for dealing with this problem.
Until the early 1960s the integration movement in Western Europe (the European Economic Community) was the focus of scholarly attention. The belief was widespread that only advanced economies could gain any degree of integration; pre-conditions were presumed absent in the developing world. Of course, events have since exposed the shortcomings of the Europe-centric model of regional integration. Indeed in black Africa integration is commonplace, though its advancement varies from one region to another. In this section the literature on regional integration will be reviewed with special attention to the African variant and the concept of region.

**Definitions of Integration.** If the size of the literature is a yardstick, integration is a very important sub-field of international relations. No doubt, this is because of common agreement among scholars as well as policy-makers that regional integration is an intermediate step to peace ("absence of war"), and an effective key to socio-economic development or social justice (positive peace). Indeed, one book is entitled *Peace in Parts* (Nye, 1971). On the other hand, since its inception over two decades ago, progress in behavioral research on integration has been characterized by a divergence of approaches, and fettered by definitional dissension and contradictory propositions.

Integration is an ambiguous concept; it means different things to different scholars. Integration is defined as either a process (Haas; 1958; 1961), a condition (Etzioni, 1965) or both (Balassa, 1961; Deutsch, 1957, 1954). Following is a sample of these definitions: (a) Haas (1958; 1961: 366–367) defines it as "the process whereby
political actors in several distinct national settings are persuaded to shift their loyalties, expectations, and political activities toward a new and larger center, whose institutions possess or demand jurisdiction over the pre-existing nation-states." By Haas' definition integration involves the loss by the nation-states of popular loyalties, expectations, and political activities to new superseding institutions. A political community is created once the process is completed. In such a community contending groups agree on rules for peacefully reaching their incompatible goals and settling their differences.

(b) Etzioni (1965: 3) defines integration as "the ability of a unit or system to maintain itself in the face of internal and external changes." Such a unit or system's capacity for self-maintenance depends on three self-sufficient integrative mechanisms: 1) monopolization of force; 2) allocation of resources; and 3) dominant political identification (of the people with the system) (p. 4). Etzioni views unification -- whether economic, military or political -- as the process "to increase or strengthen the bonds among the units" of a system (p. 3).

(c) In *The Theory of Economic Integration*, Balassa (1961: 1-2) defines integration as i) a condition characterized by the absence of barriers to flows (of peoples, goods and information) between nations, and ii) as the process or steps taken to reach that condition.
Karl Deutsch, the leading exponent of the pluralistic approach to integration, defines integration as the condition under which "integrated" states have renounced the use of violence as a method of settling their differences (1957: 5; 1954: 33). Deutsch also views integration as a process, that is, the flow of transactions in terms of volume, whereby this condition is attained (1954: 38). The result is that the same indicators serve to identify the final condition and to define the process.

Approaches to Integration. Disagreement as to what constitutes integration is only one of many constraints on research progress. Integration is also marked by a multiplicity of approaches to its study. These approaches are federalism, pluralism (transaction), functionalism and neo-functionalism.

a) Federalism. Carl Friedrich (1968: 177; 1964: 119), one of the foremost students of federalism, defines the concept as both a condition and a process: "an intergroup pattern of relations between more or less autonomous entities and the process or processes by which such a pattern gets established and continues to operate and change." In a federated state, the central government alone is responsible for foreign and defense policy while the several units of the federation "retain or have reserved some irreducible powers operative within the same territory and regulating the same population" as the federal government. A federal constitution spells out the powers of central and sub-units (Trager, 1968: x-xi).
The federal approach views integration as an end state of political unification. Led by Etzioni (1965), federalism derives its inspiration from the success of federations like Germany, Italy, Canada, Australia, and the United States. Thus, much research has been conducted on these federations for an insight into the failure of contemporary federations such as the West Indies, Malaysia and Central Africa.

A number of conditions have been identified as necessary to create and maintain federations, but by far the most important appear to be 1) the presence of a common enemy; 2) non-sovereignty of prospective members; and 3) positive charisma, the vision of almost limitless conquests and wealth (Franck, 1968: 185). Of overriding importance is the presence of a positive political or ideological commitment to the success of the federation (Franck, pp. 173-4; Friedrich, 1968: 175-6). If a federation is to survive, the members must share a "federal feeling" of oneness or common self-interest. This would guarantee a peaceful solution to all ensuing conflicts. Thus, the general conclusion is that contemporary Third World efforts at federation have failed because the partners were interested only in short-term benefits. "If the practical advantages accrue, the need for federation may be at an end. If, as more often proved the case, they do not, the federation stands exposed as a fraud" (Franck, 1968: 182).

b) Pluralism. A second important contribution to integration theory is Deutsch's transaction approach. In their seminal work
already referred to, Deutsch and his associates (1957) define integration as a "security-community" that has foregone the use of violence as a method of resolving interstate disputes. This peaceful community is of two types: 1) pluralistic, and 2) amalgamated. In a pluralistic security community, the "integrated" units retain their separate legal independence (p. 6). But the area possesses enough amity, communication, and transaction between its members to rule out recourse to war to settle their differences. Relations between the United States and Canada since 1815 and between Sweden and Norway after 1905, are frequently cited as classic examples of a pluralistic security community. An amalgamated security-community, on the other hand, is one in which the formerly independent political units merge into a larger one, governed by some form of central government. Thus both pluralistic and amalgamated security-communities have the common characteristic of peaceful relations between constituents units. The amalgamated type has the added distinction of being ruled by a common government.

Deutsch and his colleagues identify nine essential conditions for the success of an amalgamated security-community: 1) elite complementarity; 2) a distinctive way of life; 3) expectations of stronger economic advantages; 4) the presence of a core unit; 5) a great increase in political and administrative capabilities of at least one unit; 6) continuous social communication links, horizontally between territories and vertically between different social strata; 7) a widening of the political elite; 8) personal social mobility; and 9) many types of communication and transaction. The Deutsch team also found the following to be essential: 1) a compensation of
flows of communications and transactions; 11) a fairly regular interchange of group roles; and 12) mutual predictability of behavior (pp. 22-58).

Of the twelve conditions only three are essential for a pluralistic security-community: 1) compatibility of major values, 2) mutual predictability of behavior; and 3) mutual responsiveness (pp. 66-67).

In other words, pluralism is much easier to accomplish than amalgamation (p. 200). Pluralists caution, however, that

When we call certain conditions "essential," we mean that success to us seems extremely impossible in their absence. Though essential, they also seem to us insufficient: even if all of them were present, we do not know whether any other conditions might be required which we may well have overlooked.

A similar consideration applies to those conditions that we called helpful but not essential: we found that integration occurred in their absence, and might well recur in this way in future cases (pp. 12-13).

Finally, pluralists propose that integration may be measured by the frequency or general expectation of armed conflict, or by the intensity, duration, and perceived beneficence of patterns of exchange—trade, mobility, and communication. However, they concede that "states might cross and recross this threshold [of integration] several times in their relations with each other" (p. 33).

But since the absence of violence in interstate relations together with increased transaction flows does not guarantee the success of integration, a few other scholars focus on attitudes and perceptions of either key governmental policy-makers (Haas, 1958) or the "politically aware" segment of society (Etzioni, 1965: 4). Deutsch and his
associates contend that the views of both groups may be crucial (1957: 93). This perspective, attitudinal integration, stresses the need to view other people positively and also support for integrative efforts.

Finally, it is believed that the degree to which supranational bureaucrats are free to go about their business unhindered by national policy-makers is a key to the success of integration (Etzioni, 1965: 233). Haas argues (1958: 5-16) that the impetus of secretariat discretion in a supranational institution will result in spillover.

c) **Functionalism.** Special interests aside, the goal of INGOs, all IOs for that matter, is to help developing countries improve their living standards, eradicate disease and famine, wipe out illiteracy, and promote human values. But on the basis of traditional international relations research, this goal is less important than eliminating violence in international affairs. However, functionalists argue that only by first solving socio-economic problems can peace be achieved in the world.

There are many functionalists but, of course, the foremost writer is David Mitrany (1966: 1971; 1944). This discussion is, therefore, based mainly on Mitrany.

The problem of the contemporary world, according to Mitrany, is the "baffling division between the peoples." This division is the result of 1) the rise of the nation-state, 2) a rapid and growing division of labor (interdependence) (1966: 25), and 3) a nuclear technology (1971: 532) all of which pose a serious threat to the future of mankind. Functionalists also see war as the result of
objective conditions of human society, such as poverty, misery, and economic insecurity which individual nation-states are institutionally incapable of dealing with effectively.

In view of this, the functionalist prescreeption is for "technically-self-determined" international organs to be assigned specific tasks in areas of common interest to the states. Success in one functionalist task will "spillover" into other areas. As this piecemeal web, "federalism by installments" (Mitrany, p. 83), spreads, the international organs which perform these common tasks will rob states of their popular loyalties. Mitrany writes (p. 31):

Sovereignty cannot in fact be transferred effectively through a formula, only through a function. This gradual but systematic transfer of authority to international organization will ultimately lead to the demise of the nation-state as people shift their loyalties to these new centers which satisfy their needs. The accumulation of such partial transfers in time brings about a translation of the true seat of authority.

Functionalists separate technical from "controversial" or political matters. But this is only a temporary device to circumvent the opposition of sovereignty. The two are ultimately inseparable. As a matter of fact, governments are simply asked to cooperate in matters of common concern, not to give up their sovereignty or stop defending their citizens.

Elsewhere, Mitrany argues that the same organizations that perform functional tasks for social justice or socio-economic development, will also be able to prevent aggression and to stop it should it occur merely by denying services to the aggressors. "We are here to give you these services but as you are misusing them it is also our duty to stop them as long as this abuse goes on" (1944: 8).
Mitrany sees no need for an advanced formal plan for the coordination of various functions. But IOs performing similar functional tasks may be coordinated, and with any international planning agencies, as and when the need arises. Such coordination, however, requires no overall political authority.

What empirical light has been shed on functionalism has been by way of case studies: Haas on the ILO and Sewell on the World Bank group. Sewell, for one, observed that the Bank's shift in responsibility from the nation-state to the private sector, and its attendant financial arrangements, was the tap root of its autonomy. But he found no evidence of spillover. Sewell suggests that functionalism is correct, only that "it does not take us far enough" (1966: 25). On the other hand, most recent studies on INGOs seem to operationalize functionalism in terms of growth in membership and in number of organizations.

Neo-functionalism is the intellectual off-spring of functionalism. Indeed it owes its development to both policy-makers and students of integration. As a variant of integration, neo-functionalism differs from functionalism in several important respects.27

The first important difference is the neo-functionalist emphasis on the role of political variables: "powers of the union," "governmental purpose," and "decision making style" in the integration process (Haas and Schmitter, 1964). It must be pointed out, however, that in their paradigm which occupies centerstage in neo-functionalist
thought, Haas and Schmitter refer specifically to low or welfare politics dominated by experts and transnational groups.

The second important difference is recognition on the part of neo-functionalists that spillover from the economic into the political sector is not automatic; experience is not transferrable. In other words, they realize that the integration process may require a strong political push. Claude doubts the ability of new institutions to create new loyalties (1971). Haas, on the other hand, believes that this is possible in politically unmobilized societies. But he notes that experts and/or voluntary groups may very well be allowed to function provided they are aware of the political implications of their work and the task is to be performed by regional organizations with homogeneous values (1964: 47-50).

In line with this thinking, neo-functionalists set up, or advocate, supranational institutions designed to accelerate the integration process. When French Foreign Minister Schuman announced his famous plan in 1950 to place the coal and steel markets of six European countries under one supranational authority, it marked the abandonment of federalism in favour of the neo-functional approach to European integration. Neo-functional policy-makers have, therefore, discarded functionalist hopes of slowly opening the gates from within through "technical self-determination" or "federalism by installments" (Mitrany, 1966), but retained the federalist frontal attack on sovereignty. As Joseph Nye has aptly described them, "neo-functionalists were federalists in functionalist clothing, pursuing federal ends through what appeared to be functionalist means" (1971: 51).
The third neo-functionalist contribution to integration theory is the sheer number of variables. (Haas and Schmitter, 1964; Nye, 1971). Of the nine variables in the original Haas/Schmitter formulation four are background, two are activated at the time of economic union, and three follow economic union.

Finally, neo-functionalist scholars have formulated hypotheses for empirical testing. To underscore this point it is necessary to concentrate on the two articles by Haas and Schmitter as the principal contribution in this respect. Contributions by other scholars serve mainly as critical reactions to or extensions of the Haas and Schmitter model.

To start with, Haas and Schmitter pose a very important question: "Does the economic integration of a group of nations automatically trigger political unity? Or are the two processes quite distinct, requiring deliberate political steps because purely economic arrangements are generally inadequate for ushering in political unity?" (1964: 705). In response to this question, they assert the thesis that "under modern conditions the relationship between economic and political union had best be treated as a continuum" (p. 707). Haas and Schmitter go on to characterize integration as the gradual politization of the actors' purposes which were initially considered "technical" or "non-controversial". Politization implies that the actors, in respect to the initial purposes, agree to widen the spectrum of means considered appropriate to attain them. This tends to increase the controversial component, i.e., those additional fields of action which require political choices concerning how much national autonomy to delegate to the union. Politization implies
that the actors seek to resolve their problems so as to upgrade common interests and, in the process, delegate more authority to the center (p. 707.).

Haas and Schmitter then offer nine variables to explain the integration process from economic to political union and distinguish them as follows: A) background conditions: 1) relative military or industrial size (power) of units, 2) rate of transaction, 3) pluralism, 4) elite complementarity; B) conditions at time of economic union: 5) governmental purposes, 6) powers of union; C) process conditions: 7) decision-making style, 8) rate of transaction, and 9) adaptability of government. (pp. 711-719). 30

Many criticisms 31 have been leveled at the Haas-Schmitter neo-functionalist model. Three of these are especially relevant to this study. First, the model does not adequately consider the importance of the distinction between "high politics" (foreign- and defense policy matters) and "low politics" (welfare issues). Second, some of the integration hypotheses are not applicable to economic and political conditions in developing countries. Finally, the model ignores the importance of extra-regional variables.

Ernst Haas is implacable in his non-recognition of a distinction between political and economic matters. He denies the existence of a "distinctly political function, separate from economics, welfare or education, a function which finds its reason for being in the sublime heights of foreign policy, defense, constitution-making" (1958b: 17). Five years later in his paper "Technocracy, Pluralism and the New Europe," he asserts the view that "the advent of
supranationality [within the EEC institutions] symbolizes the victory of economics over politics, over that familiar ethnocentric nationalism which used to subordinate butter to guns, reason to passion, statistical bargaining to excited demands" (cited in Hansen, 1969: 247).

Thus Haas, clearly one of the foremost students of integration, not only denies a separate existence for politics but also proposes that security and power issues - "high politics" -- do not help explain a nation's integration policy. Politics, he believes, is even less important than welfare. In Haas' conceptualization high politics is associated with nationalism, which is not a determinant of the success of integration. High and low politics, he contends, are one and the same thing. All of this is in sharp contrast to Stanley Hoffmann's position. Hoffmann is credited with making the distinction between high and low politics (1968; 1965). Nations, he asserts, cooperate in low politics because of their convergent welfare interests and because the related supranational institutions are manned by highly qualified personnel. These two pressures are reinforced by transnational interests and parties. (1965: 90). But the moment that integration moves from welfare into diplomatic and strategic matters, the "essential interests of the nation," governments become more vigilant (1968: 201).

Hoffman's distinction raises two questions. First, does it resolve the issue? Haas, for one, remains unconvinced. After observing that premature politicization of African actor expectations hinders incremental bargaining on relatively non-controversial
shared objectives, he goes on to rationalize his "contempt" for high politics in this rejoinder:

The devotees of high politics are thus forced to conclude that while common markets may flourish because of some men's grubby and greedy minds, such mundane arrangements will never lead to political union because that status demands that the pride and fury associated with nationalism be eliminated first. This, clearly, is argument by definition alone (1971: 14, 25).

Hoffmann's distinction between high and low politics raises another question: Is it applicable to Third World integration schemes? Haas' observation about the premature politicization of African actor expectations is diametrically opposed to the neofunctionalist delineation of the "gradual politicization" of the integration process.

Two comments are in order. First, according to Nye, the integration process is not one of gradual politicization because autonomous bureaucrats lack complete opportunity to go quietly about their business (1968: 336) and because gradualism or the notion of a lower level implies, falsely perhaps, a primary or more easily achieved stage of integration (1968b: 857). Second, Nye agrees with Haas that African actor expectations are over politicized, but for a different reason: Welfare politics in developing countries is "tinged with emotive and symbolic content that is usually associated with national security politics" (1968: 335). In other words, Nye, unlike Haas, accepts the distinction between high and low politics but does not think that it is so clear-cut in the developing countries.
However, the implication that these countries are even less likely to agree on defense and foreign policy matters is not entirely borne out by the facts.

In principle black African countries pursue a foreign policy of positive non-alignment. It is a policy that allows them to interact simultaneously with both East and West on equal terms without exposing themselves to the pro-East or pro-West label and the stigma it often carries. But in many specific cases this policy is belied by their unequal transaction flows to East and West. Black Africa is also united in its aversion to apartheid and colonialism in southern Africa, and to neo-colonialism in all its guises. But freedom for all of black Africa is only one goal of pan-Africanism. The other goal is political unification on a regional or continent-wide basis. Black Africa may, therefore, be said to agree in the area of high politics, vis-a-vis the outside world. They agree on the need for integration for purposes of welfare now to be followed by political unification. ECOWAS is a notable example. In the sense that not all black African countries consider political unity now a matter of first priority, they can be said to disagree in the sphere of high politics.

Given that black African countries disagree over welfare politics as Haas and Nye believe, but see eye to eye on many high political issues, does this situation signify a reversal of the integration process from "gradual politization" into "gradual de-politicization?" The present writer does not think so for
three reasons. First, as will be shown later, conflict over welfare issues is a natural reaction to "backwash" or "polarization" effects (Myrdal, 1957; Hirschman, 1958), that is, unequal gains from integration. Second, Haas' observation of premature politicization presupposes the existence of supranational institutions run by capable technocrats whose goal of promoting integration may be untrammelled by governmental policies, whereas the speed of the African integration process has in the past been dictated exclusively by governments per se. Finally, the evidence appears to support Hoffmann's contention (1968: 182, 201) that nationalism is inimical to the integration process. That is, nationalism operates at variance with pan-Africanist goals of political unification. Let us examine this point more closely.

The immediate pre- and post-independence years in black Africa were dominated by a controversy about African unity and how to achieve it. As to agreement on the pan-African goal of political unification there was no doubt in any African leader's mind. It was felt strongly that unity was desirable as the answer to the continent's political and economic weakness. But the method for achieving that unity was quite another matter. Questions of timing and size of the prospective union created a chasm in inter-African politics, to be solved only by the founding of the Organization of African Unity in May 1963. The first question centered around the approach to political union. Was it to be federal or functional? Was union to be established
immediately, as espoused by Nkrumah, or approached in piece-meal fashion, as preferred by gradualists such as Nyerere and Balewa? Second, was the union to embrace the entire continent or to be sought on a regional basis?

To Nkrumah the attainment of continental unity was an imminent, immediate goal. As a matter of fact, so fervent was he that the Republican Constitution of Ghana of 1960 made provision for the surrender of sovereignty to a union of African states. Nkrumah saw the achievement of continental union government as the panacea for Africa's ills—imperialism, neo-colonialism, racism, poverty, border disputes and the like. Then and only then could those functional problems be successfully tackled. In a speech to the OAU on May 24, 1963, he saw African unity as, "above all, a political kingdom, which can only be gained by political means. The social and economic development of Africa will come only within the political kingdom, not the other way around" (cited in Aluko, 1976: 106). In his book Africa Must Unite (1963: 214-215), Nkrumah dismisses regionalism as fraught with many dangers:

We must endeavour to eradicate quickly the forces that have kept us apart. The best means of doing so is to begin to create a larger and all-embracing loyalty which will hold Africa together as a united people with one government and one destiny.

He feared that regionalism in creating regional loyalties might impede continentalism and even create breeding grounds for inter-regional disputes (Mazrui, 1967: 17). Such a situation might very well play into the hands of Africa's enemies (Nkrumah,
1963: 215). Thus, Nkrumah was the leading exponent of immediate political unification and on a continent-wide basis. To indicate his commitment to his cause, he spearheaded the formation of the (ephemeral) "union" with Guinea and Mali in the late 1950s and early 1960s. Strictly speaking, that venture was not regional; indeed Nkrumah himself saw it only as the "nucleus" of a continental union government.

Gradualists, on the other hand, argued that functionalism was the only practicable approach to African unity. The case for the piece-meal approach to political unification was made by Nyerere, among others, in a paper for the very first issue of *The Journal of Modern African Studies*. Nyerere observed that though valuable, functionalism in and of itself was meaningless unless it was linked to political unification in black Africa as the custodian of sovereignty and the use of African resources for the benefit of Africans. But in preferring functionalism to Nkrumah's idea of unity now, Nyerere cautioned that like the national independence movement, the process must take varying local conditions into account if it was to succeed. By advocating "steps towards unity in different areas of Africa," (1963: 1-6) he proposed regional functionalism as the practical approach to African unity. Nyerere's view was to prevail at the founding of the OAU in Addis Ababa later that year.

But there is a more compelling reason for the overwhelming preference for gradualism. It is the bedrock of national sovereignty. 

In a statement made in parliament in 1960 shortly after Nigeria
attained her independence the federal premier, Sir Abubakar, dismissed immediate union as impractical for three reasons: diversity of Africa, the personal ambitions of various African leaders, and the unequivocal reluctance on the part of African countries to surrender their sovereignty after becoming UN members (Aluko, 1976: 107; the emphasis is mine). African leaders have time and again affirmed their confidence in political unification. But they are simply not ready to sacrifice national sovereignty to a remote goal. Indeed the point is so important that one of the leaders, late President Olympio of Togo, will be quoted at some length:

In their struggle against the colonial powers the new African states, arbitrary and unrealistic as their original boundaries may have been, managed at least to mobilize the will of their citizens towards the attainment of national independence. Achieved at great sacrifice, such a reward is not to be cast away lightly; nor should the national will, once unified, be diluted by the formation of nebulous political units (Emerson, 1966: 443).

This brings us back again to Hoffmann’s distinction between high and low politics, and his argument that nationalism is an impediment to the integration process. In the African context nationalism is an obstacle to immediate political unification. Unification is perceived as a remote goal to be approached piece-meal. For this purpose, and in keeping with the OAU Charter, regionalism is being tried vigorously. (The Economic Community of West African States, ECOWAS, looks determined to succeed; it is dealt with in the first chapter.) A related question, and one which Hoffmann properly raises (1965: 93), is whether successful welfare integration will
"serve as the basis for a joint political action...or as the instrument which the separate nations will use for their separate political ends?" Will members of ECOWAS be forced to go their separate ways or will they forge political unification following the welfare stage? Whether or not nationalism will obstruct spillover, as Hoffman contends, truly remains to be seen.

The third major criticism against the neofunctional model is that it tends to foreclose environmental factors. Once again Hoffmann (1968: 179-181) is credited with calling this point to our attention. Integration theory ignores relations between the regional scheme and its external environment. Hoffmann breaks these relations down into 1) the universal factor of "diversity of domestic determinants, geo-historical situations, and outside aims among its units"; 2) interdependence, and reduced sub-system autonomy; and 3) nuclear age and East-West conflict that characterize the present international system. Accepting this criticism in good faith, Haas also observes that perceptions of being victimized by the international system help explain the integration movement [in the developing countries] as a way of "getting out from under" (Haas, 1971: 16). The pertinence of this point to this study cannot be over-emphasized. As we have seen in the section on underdevelopment, black Africa is fully cognizant of the gross economic inequalities that separate them from the industrialized nations. Their dependence on the latter for a number of things such as manufactured products and as a market for their primary products, is all a matter of public record. It is in
hopes of redressing this outrageous socioeconomic imbalance that the integration process is resorted to.

But before we pick up this fundamental issue, (i.e., the hypothesis that integration promotes socioeconomic development) two matters still remain to be addressed in this chapter. These are i) the definition of the "region" concept; and ii) the methodology of integration research. Let us start by defining what we mean by region.

Definition of Region. Two different points of view have been adopted by international relations scholars to define region. One view is to define region essentially in geographic terms, and the other is to describe it in broad terms as any international behavior that is less than global.

To start with, Morton Kaplan conceptualized the international system of the 1950s as bipolar (1957). Kaplan's model provided the launching pad for regional studies. Rejecting the universality of Kaplan's model, Binder (1958) argued that considering the nonbipolar perspective of small powers and their efforts to manipulate their environment to their own advantage, their behavior could not be sufficiently explained at the systemic nor the nation-state level. And building on Binder's pioneer analysis, later studies have explicated geographic contiguity or proximity as a necessary criterion in defining region (Zartman, 1967; Brecher, 1963; Bowman, 1968). These studies have also identified a number of social, cultural, economic, ethnic and other traits that are peculiar to these regions.
But by far the most ambitious effort since Binder is Cantori and Spielgel's comparative analysis (1973; 1970), which forms the basis for their inductively deriving fifteen subsystems. Cantori and Spiegel identify four pattern variables in delineating a region: 1) **Level of Cohesion** refers to the similarity in the properties, and the degree of interaction between the political units under consideration. 2) **Nature of Communications** signifies personal communications, the mass media, and elite exchanges: 3) **Level of Power** is the "present and potential ability [material, military, and motivational resources] and the willingness of one nation to alter the internal decision-making processes of other countries in accordance with its own policies." 4) **Structure of Relations**, that is, the character of intra-regional relations, comprise a conflict-cooperation continuum, the major issues involved, and the means to pursue the issues.

The actors in regional affairs are the members themselves (core and periphery) and the intrusive system—the outside power(s) that participate(s) significantly in regional affairs.

The second view of region defines it as any international behavior that is less than global irrespective of geographic content (Miller, 1973). Obviously less prevalent, it includes such organizations as the Commonwealth, a pluralistic security-community (Bull, 1959), and the more geographically limited European Economic Community. Thus, it is so broad that its research utility becomes questionable. In this regard, reference to research by Russett appears appropriate.
In order to test for the presence of contemporary world regions, Russett (1967) derives five criteria from the extant literature for factor analysis. These are political interdependence, in the form of common international organization membership; economic interdependence; social and cultural homogeneity; shared political attitudes and behavior; and geographic proximity. Russett expects the boundaries of regions to coincide in terms of these criteria; and since they do not, he concludes that no region can be identified as a subsystem of the international system (1967: 168).

Russett has been severely criticized for ignoring the importance of geography in delineating a region: "a conception of region that abandons the notion of physical contiguity as a necessary characteristic opens up the possibility that any entities related to each other with respect to one or more attributes will meet the requirements for consideration as a region" (Young, 1969: 486).

In the only extensive review of the concept known to the present writer, Boals expresses dissatisfaction with the criteria currently used in delineating international regions, including geographic proximity and international organization membership. Region, according to Boals, should be defined rather with two questions in mind: 1) whether or not members of the region and members of its environment recognize it as a distinctive entity; and 2) whether or not the region "refracts" dominant system power as it affects their interests? Boals then proposes a "potential national system" (1973: 409) to delineate a region. This transnational perspective,
she argues, focuses on the intimate interrelatedness of domestic and regional politics, on transnational parties and political movements, and on incumbent- and counter-elites and their interactions.

In a related but independent paper, Thompson agrees to Boals' first criterion, describing the region in question as a "theatre of operation" (1973). There is, however, one serious drawback to this criterion. It is that neither Boals nor Thompson offers a single suggestion for measuring regional or environmental perception of a distinctive regional existence. Indeed the Boals' proposal in general is not sufficiently developed for use in research.

But from his inventory of twenty-one attributes from the extant literature that are used to identify a region, Thompson proposes four, including the one referred to above, as necessary and sufficient. The other three are interdependence, geographic proximity, and membership of at least two units.

The definition of region applied in this study is necessarily eclectic; it borrows from a diversity of sources. This is because these sources, as reviewed above, are separately inadequate. The primary component of our definition is geographic proximity. It refers to West Africa, that part of Africa which is enclosed by the Sahara desert to the north, the Nigeria-Cameroon border to the east, and the Atlantic ocean to the south and west. Thus, it coincides with the classification used by the UN Economic Commission for Africa (ECA).
Besides proximity, other factors are proposed for consideration in further delimiting the region West Africa. First, common intergovernmental organization membership, ECOWAS in this study, excludes the state of Chad; rather it refers only to the countries mentioned above. Second, in consideration of the fact that this study is a longitudinal one covering the period 1959-1973 during which most, but not all, of the countries of West Africa achieved independence and did so one by one, it is important to further restrict the region in terms of sovereign statehood. In this respect, Guinea-Bissau fails to qualify for inclusion in the region, though it is a member of ECOWAS. Guinea-Bissau has only recently joined the West African integration movement which had been afloat for over fifteen years, though through no fault of her own. Region is therefore defined as a limited number of geographically proximate sovereign states which are linked by voluntary membership in one common IGO in order to pursue their common interests.

As mentioned earlier, regions are delineated also in terms of common economic, social, political, and other values. However, it appears impossible to delimit West Africa in these terms because they are applicable to other parts of black Africa as well. Thus, it is misleading to, as Plessz does (1968), define West Africa in terms of poverty, the government as largest employer, unequal distribution of income, and political differences between governments. These features are common to all of black Africa.
On the other hand, West Africa has its own distinctive characteristics. The accident of climate enabled the region not only to accede to political independence without racial complications but also forge a primarily indigenous economy with Africans in full economic and political control. The home of some of the greatest accomplishments of early Negro civilizations, West Africa has for some time been fragmented politically and economically, at least superficially, into French- and English-speaking Africa which appeared to be at cross-purposes (Adedeji, 1970).

Operationalizing regional integration is not easy. This difficulty stems directly from disagreement on the meaning of the concept.

For instance, Haas' definition (1958: 16) of integration as "the process whereby political actors in several distinct national settings are persuaded to shift their loyalties, expectations and political activities to a new center whose institutions possess or demand jurisdiction over the pre-existing national states," puts in the same box three different indicators of integration: political activities, loyalties and new institutions possessing jurisdiction. Furthermore, Alker and Puchala exemplify the use of the single indicator argument that "the level of economic interaction between nations can serve as a reliable indicator of their degree of political integration" (1968: 288).

It would appear, however, that the concept regional integration is more complex than has been treated in the literature. Alker and Puchala's single indicator approach or Haas' method of indiscriminately
lumping diverse measures together fails to capture the essence of regional integration. It is for this reason that Nye (1971: 26–27) suggests disaggregating the concept into its economic, social and political components and developing separate measures for them. In keeping with Nye's suggestion, this study has broken down regional integration into its component parts and collected data on two of them -- economic and political.

The Case for Regional Integration.

As may be clear by now, integration is viewed as a process or movement from economic to political unification. The process is not, however, necessarily inexorable: It may move very slowly, standstill, or even retrogress. Recent African history is littered with the remains of these failures and half-successes. The East African Community easily comes to mind. One primary cause of failure or retarded progress, as in the East African case, has been the seemingly irreconcilable differences generated by backwash effects, that is, unequal beneficial returns from integration. But given spread effects, would welfare politics spillover into political unification or would members of the integration scheme use their welfare success for their separate political ends?

This question has been the subject of much controversy in integration theory. But so far the mechanics of the welfare stage itself remain ignored largely by regional integration theorists. How, indeed does integration promote welfare, i.e., socio-economic development? Even Cobb and Elder (1970), perhaps the most
comprehensive propositional examination of integration theory, is remiss in this respect. To this issue we now turn our attention.

Let us begin the discussion with Jacob Viner's pioneer study. In his book, The Customs Union Issue, Viner characterizes a customs union as one with 1) no barriers (tariffs) to intra-regional trade, 2) a common tariff on outside imports, and 3) an agreed formular for distributing customs revenue. In ECOWAS, for instance, members are guaranteed access to one another's market, and the common external tariff is designed to protect local industry against outside competition. (But conflicts arise when some members feel short-changed. As Haas would have us believe, this is premature politicalization.)

Viner argues that economic integration is beneficial if on balance it is trade creating, and harmful if on balance it is trade diverting. Eliminating tariffs on trade between members is highly likely to spur intraregional trade. Viner's distinction is based on the idea of comparative costs. Trade creation takes place when members of an economic union purchase from other members of the union low-cost goods which they themselves used to produce at a higher cost. Trade diversion, on the other hand, occurs when members switch imports from low-cost external suppliers to high-cost sources within the union (Viner, 1950: 5, 41-81). 34

Under the conventional theory of customs union, trade creation is associated with competitive economies. These industrialized nations manufacture much the same range of products but have widely differing comparative advantages. Therefore, the net effect of an economic
union is trade creation. In effect, this means an efficient utilization of resources.

The theory further hypothesizes that 1) economic integration is more likely to promote development if the members have very competitive but potentially very complementary economies (Meade, 1955: 107; Lipsey, 1960: 499); 2) the higher the proportion of intraregional trade to total trade, the more likely is development; 3) development is more likely, the lower the proportion of the foreign trade sector of each member of the union to purchases of domestic products (Lipsey, 1960: 508-509); and 4) the higher the tariffs on trade to be eliminated, the more likely will economic integration be to raise the members' development levels (Meade, 1955: 32-33, 50).

By implication, the formation of an economic union among developing countries is an exercise in futility. West African countries, to be specific, are primary producing countries. As the backbone of the economy agriculture serves "to raise the standard of living of the people initially, to provide the minimum market necessary for manufactures to get a foothold, to earn the necessary foreign exchange to pay for imports, and to provide the revenues to finance needed government services" (Karmarck, 1971: 126).

Since West African countries produce the same range of primary products, there is little basis for intra-regional trade. Rather they trade mainly with the industrialized countries of Europe from which they obtain most of their imports. With the exception of Nigeria, West African countries are small in population. Stated
differently, national markets are small. Like all Third World countries, West African countries also have disparate industrial development levels, and national policies of rapid industrialization to save foreign exchange and create jobs through import-substitution (Mikesell, 1963: 207-208). The average share of the Gross Domestic Product (GDP) that is accounted for by manufacturing is only six percent.

It has, therefore, been suggested that economic integration, that is, the removal of barriers to intra-West African trade, might be "irrelevant, if not positively harmful." It "would not have any redistributive effects on the pattern of production within the customs union, replacing high-cost domestic production by lower-cost supplies from other members of the union. The generally low level of industrialization rules out major adjustments of this kind" (Hazlewood, 1967: 6).

Other than the apparently deleterious effects that the economic characteristics of West African countries could have on integration, other problems will very likely follow in its wake. Since there are hardly any industries initially, trade diversion will probably be greater if for no other reason than the fact that trade with the industrialized countries, mainly the former colonial powers, is greater. This is "enforced bilateralism" (Myrdal, 1957) still at work.

But by far the more important question is the "backwash" or "polarization" effects that may flow from integration (Myrdal,
This refers to the process whereby the growth of industry, income, and employment tends to concentrate in one country. In this case, the returns from integration are distributed inequitably among the members. It helps explain why the poorer members find themselves in a disadvantageous position. There is little industrial activity, consequently they benefit less from it than the more prosperous members. Profits and income taxes accrue in the latter, a position that is worsened by the fact that customs revenue can no longer be collected on intra-regional trade.

The poorer members also bear the brunt of trade diversion through higher prices. To aggravate the imbalance, the more developed members attract the younger and more qualified workers away from the poorer members. These issues are bound to generate conflict in intra-regional relations and when they do, it is inaccurate to brand them as premature politicization.

In view of these negative concerns, what is the case for integration in West Africa? It happens that the case against integration is the case for it. In other words, the conventional theory is inappropriate to integration in West Africa or any other developing region for that matter. There are many gains to be had from integration all of which center around its potential for competitiveness in trade and other forms of transaction.

The arguments for West African integration rest primarily on the stimulus which it may give to economic growth through industrialization.
With the exception of Nigeria, no West African country has a domestic market that is large enough to support its own industries. The need for a regional market cannot, therefore, be over-emphasized. In fact, industry, once established, will have to be protected against external competition by means of a common external tariff. As indicated earlier, this may initially create trade diversion. But as soon as industries achieve a comparative advantage, gains for every member of the union will supplant diversion costs (Walker, 1972: 347). On the other hand, trade diversion may not be all that harmful after all. By decreasing the market price of imports from a member of the union, diversion will increase the volume of those imports (Meade, 1955: 40).

Integration also serves to increase employment and attract capital. This is a corollary of industrialization. It means that the members of the region produce now some of the goods they previously imported. This, import-substitution, enables members to save scarce foreign exchange, especially on non-input or luxury imports, which they can use to enhance economic growth. It is even more advantageous if import-substitution is broad enough to cover "input imports" and "expansion imports" which are necessary to maintain and expand production respectively (Linder, 1966: 32-39). (Input imports, replacement capital goods and raw materials, are required to keep production running and to ensure absolute utilization of the domestic factors, such as savings and expanded labor force, into productive use.)
Finally, the developmental imbalance discussed above can be countered by appropriate policy measures on the part of the regional governments: 1) direct income transfers from the more prosperous to the disadvantaged members; and 2) agreement on allocation of new industries (Robson, 1968: 44-45). Generally, such policy measures are a matter of last resort. They are applied usually when everything else fails including Myrdal's and Hirschman's concepts of "spread" and "trickling down" effects. Under this situation returns from integration are equitably distributed throughout the region. Manufacturing centers fan out on the basis of comparative advantage. So do the attendant external economies: public utility services, a skilled or semi-skilled labor force, and subsidiary service industries like banking and finance develop. Mutual investments and purchases, and hence consumption levels, increase. Employment is also up. Spread effects, though rare, rule out any question of over- or premature-politicization.

In summary, integration research is characterized by a divergence of approaches and definitional dissension. Nevertheless, in this study it is defined as a process of increasing interdependence (that is, mutual association) among partner countries, from economic union to political unification. The achievement of welfare or socio-economic development is viewed as a crucial stepping-stone in this process, since members of the union may view it as an end in itself or let it spillover into political unification. In this regard, the hypothesis to be tested in this study is that an increase in the level of integration leads to an increase in socio-economic development.
Interest in integration is partially a reaction to the inability of individual developing countries "to go it alone", because of the small size of their domestic markets, and the predominant agricultural basis of their economies. The presence of an adequate infrastructure, specifically transportation, plays an important role in the quest for development. This is the subject of the next and final section of the literature review.
D. Transportation

In the last two sections of this literature review we have, first, examined the causes of underdevelopment in the Third World, and then suggested regional integration as the most effective approach to national socio-economic development in West Africa. In order to speed up the process, the need for an adequate infrastructure, specifically transportation, was indicated. But the role of transport in integration and development, especially the latter, is axiomatic. There is no consensus that development requires an adequate and effective transport system. Indeed, a review of the literature suggests three possible relationships between transportation and development: 1) positive, with transportation temporally prior to development; 2) positive but with doubts raised about causality; and 3) negative. On the other hand, it is generally agreed that of the various modes of transportation available, air transportation is the most appropriate to West African development now.

The Positive Case. The prevalent view of transportation in the development process is as a precondition or prerequisite for economic growth. Walt Rostow claims that the railroad was "...historically the most powerful single initiator of take-offs." He argues also that "...the preparation of a viable base for a modern industrial structure requires that quite revolutionary changes be brought about in two nonindustrial sectors: agriculture and social overhead capital, most notably transport" (1960: 55; 25-26). Together with
law enforcement, education, public health, etc., transportation constitutes social overhead capital (SOC), those basic services without which economic activities cannot function. (SOC is provided in all countries by public agencies or by private agencies subject to public regulation). According to this viewpoint, an improvement in transport capacity provides for faster, safer, cheaper and more dependable service which in turn allows a greater movement of goods and people per unit of time.

The overall effect, as Hawkins suggests (1962: 25), is to release working capital which can then be used more productively as fixed capital in other sectors of the economy. Improved transport capacity also opens up new areas which could not be developed without it. It gets land into production, makes forest and mineral wealth accessible, develops industry, and expands trade (Locklin, 1972: 2-5; Owen, 1966: 1). Owen suggests that "Farmers [in developing countries] have no incentive to grow surpluses when they know from experience that what they grow cannot be moved" (1964: 5).

Generally speaking, improved transport — whether in terms of speed, safety, cost or dependability — reduces the total resources required to produce and distribute a given volume and pattern of output per time period; the extra resources are then released for use elsewhere in the economy, thereby spurring economic growth.

The Middle Case. This view concedes to the existence of a positive relationship between improved transport capacity and development but argues that transportation follows, rather than precedes
development. Cootner contends that railroad growth in the United States following 1830 was a response to the strong growth of international demand for cotton for the textile mills of Europe and of the United States, and for food for cotton farmers and developing urban centers. Railroads "were a part of the complex process of economic history, nothing more" (1963: 511). That is, the importance of transport, especially the railroad, has been overstated. A similar conclusion has been reached by Fogel (1964) whose quantitative re-evaluation of the evidence — shipment costs on rivers, lakes, and coastal waterways — casts serious doubt on the role of transport as a prerequisite for economic growth.

Further support for this view is provided by Hunter whose work shows that transportation in the People's Republic of China and in the Soviet Union is considered not as furnishing SCC for the rest of the economy, but as the servant of heavy industry. Rather emphasis is placed on intensifying the use of existing facilities. That is, the Chinese and Soviets regard transport as a concomitant of development, not a precondition for it (Hunter, 1965: 74). More recently, Liberia's economic activity and progress has been ascribed to the impact of port and road development in turn a response to the stationing of United States military forces in the country during World War II, and to the discovery and development of high-grade iron ore deposits (Stanley, 1970).
The lone position is taken by Wilson that causality cannot be established on a priori grounds. Wilson suggests in stead the case approach because transport sometimes precedes and at other times follows development (Wilson, 1966: 12).

The Negative Case. The negative view of the role of transportation in development holds that it may actually pose an obstacle to economic growth. According to this thesis, the creation of transportation capacity may divert scarce resources from more productive sectors, thereby retarding economic development in terms of opportunity cost. This amounts to misdirected investment. Cootner argues that railroads diverted steel and other inputs from alternative uses which showed ample independent strength of their own (Cootner, 1963, 514-521). Though not his primary thesis, Owen suggests nevertheless that sometimes improved transport capacity has been achieved at the expense of higher standards of living (1964: 18).

Errors in resource allocation can occur in any sector of the economy and when they do, as in transport, they may very well be inevitable because some other allocation would have produced better results although this cannot generally be foreseen. Such errors are particularly likely to occur in transportation for two reasons.

First, the lumpiness, specificity, longevity, and externalities often associated with transportation capital pose greater risks in future cost-benefit analysis, and render transport investment decisions irreversible and more difficult to correct than sectors with assets that wear out rapidly or that can be built in small increments (Wilson,
1966: 8). Transportation capital wears out very slowly. Once started it can contribute to economic growth only upon completion. And once it is completed, it may become hard to reverse.

Second, it is believed that transport is a safe investment politically. According to Hirschman, this may be due to the absence of criteria and of sanctions. Since development planning is risky, the leadership in developing countries tend to undertake ventures which "cannot be proven wrong before they are started and that are unlikely even to become obvious failures" (1958: 85). In this vein it has been suggested that developing countries establish national airlines for reasons of prestige (Thornton, 1970; Straszheim, 1969). And it is doubtful whether this — the prestige effect — alone can promote any country's external trade (O'Connor, 1971: 90).

Briefly, the negative view contends that improved transport may divert scarce resources from more productive uses elsewhere in the economy and thus hamper economic growth, as a result of errors in resource allocation. These errors may be inevitable, and investment decisions irreversible. This situation may be aggravated when backwash effects overwhelm spread effects stemming from failure to counterbalance improved transport in one part of the region by equivalent expansion elsewhere.

Critique of the Transportation Literature. This review of the transport literature has centered around two questions. What is the relationship between transport and development? Is it positive or negative? Second, what is the temporal sequence? Does transport precede or follow development? No doubt, both questions are
empirical ones; nonetheless, the literature does provide a clue to their answers.

The prevalent view, that transportation precedes and is positively related to development, has the immediate effect of increasing the income of producers, consumers, or those who provide transportation services. Much, however, depends on the use that the additional income is put to. On the other hand, this view fails to distinguish between modes of transportation. The choice of or emphasis upon a mode appropriate to a specific region or country depends on that region's geographical features and economic structure (Hawkins, 1962: 12). Different modes require different inputs of capital, foreign exchange, managerial talent, and technical skills. They take different lengths of time for completion, and afterwards have varied requirements for maintenance and operation. Where all modes are available, a traveler's choice may depend largely on time and on fare differentials (Gronau, 1970: 3).

The case that improved transport capacity follows development probably appears applicable to developing countries, including those of West Africa. True, transportation is not a deterministic process with development the sole causal factor. However, there is reason to believe that development is temporally prior to transportation.

The view that transportation has a negative effect on development is based on two assumptions. The first assumption is that transportation is essentially different from other industries. Proponents of this assumption seldom specify the difference(s) and when they do,
they cite factors that transportation has in common with many other industries (Wilson, 1966: 11). Some forms of transportation investment are lumpy, indivisible, and durable; but then so is a steel mill or a power facility. This means that they are long-lasting and seldom amenable to reversal. Indeed, this characterization applies hardly at all to air transportation. An air network can be established in stages and is contingent upon bilateral agreements between the countries served. Requiring less capital to construct, errors can be minimized and are easier to correct than in road transportation or a steel mill.

The second assumption, that transportation is a politically safe investment, is also untenable. Transportation is no more politically safe than steel mills, dams, a modern air force, oil refineries, skyscrapers (and nuclear weapons which a few developing countries have and others aspire to) regardless of their economic benefits. As far as air transportation is concerned, the prestige argument mentioned earlier is an old one (Lissitzyn, 1942). First raised towards the end of World War II when European airlines started making their presence felt in the industry, it ignores the many benefits that a country or region stands to gain by possessing its own airline(s). (This point will be picked up again later in this section.) Therefore, errors in resource allocation are not necessarily more likely to happen in transportation than elsewhere in the economy.
In this study the middle case will be tested empirically. But it still remains to determine which transport mode is most likely to contribute to West African integration and development. To this issue we now turn our attention.

Air Transport and West African Development. Granted that transport capacity is improved by development, the question emerges as to which mode -- air, road, and water -- is most appropriate; or are they equally important? As mentioned earlier, the answer to this question depends on the geographic features and economic structure of the region in question. Much depends also on how various transport modes differ in terms of speed, capacity, adaptability, and investment cost (Heflebower, 1965: 34).

In West Africa surface transport facilities are so inadequate as to constitute a serious barrier to national socio-economic development and intra-regional trade. The problems faced by surface transport are legion but are related mainly to climate, topography, population density, and the consequent cost of construction. Tropical rains render long stretches of road impassable but river services operable; dense rain forests, and mountains make the construction of roads and railways difficult and expensive. (In countries with a low population density the costs of constructing roads and railways are exorbitant compared to the number of people served.) In dry weather the opposite situation obtains: The rivers dry up while the roads, still narrow and now also dirt, remain hazardous to traffic. To complicate matters further, surface transport links between French-
and English-speaking West Africa are almost non-existent (Thomas, 1960).

Air transport is free from these problems; under these circumstances it is the best immediate solution to West Africa's transportation problem. Besides, it should especially be beneficial to the land-locked countries. To start with, air transport requires less capital outlay than, say, road transport. According to one estimate, it cost between $100,000 and $200,000 to build one kilometer of railway or asphalt road in 1966, depending on the terrain. By comparison it cost about $6 million to $8 million to construct an airport, like that at Yaounde, capable of handling medium-haul jets; this was equivalent to about 30 to 50 kilometers of road or railway (ICAO, 1971: 7).

Air transport is also faster and relatively safer from pilferage and breakage than surface transport. It is especially suitable for moving goods with a relatively high value per unit of weight. These include chiefly manufactured goods — mechanical, electrical and electronic equipment; clothing, fabrics, shoes and leather; pharmaceuticals — precious stones and minerals, and works of art; to a lesser extent perishable products and newspapers and periodicals, most of which would not be transported at all but for the short time required by air. These goods can easily bear the cost of air transport (ICAO, 1971: 32). Furthermore, air transport offers greater regularity of service.
The critical role which air transport has to play in West Africa's development has been recognized for a long time in view of poorer surface transport and the almost insurmountable physical barriers which the latter mode is faced with. The United States Commerce Department emphasized this point in its 1960 world airline survey. Since its founding in 1958 ECA has been sponsoring regional conferences and carrying out important studies, inter alia, to stress its commitment to West African development. ICAO, the foremost organization in the field, works closely with the ECA and AFCAC on African air transport matters. As far back as 1950 when the first steps were being taken to establish EPTA (Expanded Program of Technical Assistance), the following statement was issued on ICAO's behalf:

Air transport has particular significance for underdeveloped countries whose geographic and climatic features impede access to their natural resources since it is not affected by the natural obstacles which beset the construction of surface transport facilities. The speed of air transport also makes it valuable as an instrument for integrating economically, administratively and politically the widely scattered centers of population of many of the undeveloped countries. Similarly, it can bring any country into close contact with the world centers of economic development (ICAO Bulletin, XX (10), 1965: 3).

Civil Aviation and the Developing Countries

In the preceding section we have demonstrated the significance of improved air transport to achieve practical economic integration and national development in West Africa. To be sure, this is the best immediate solution considering the immense barriers facing surface transport. A collateral issue is, who should provide West Africa with air service? Some transport economists, including Straszheim (1969),
have suggested that the benefits of air transport would accrue to the developing countries regardless of which airlines provided the service. This argument implies that developing countries do not need to establish national airlines in order to promote integration and development. It assumes that LDC airlines operate unprofitably simply because they necessarily rely on external financing of much of their capital investment and subcontract much of their maintenance. No doubt, this argument is fraught with several difficulties.

To start with, the argument is static in that it overlooks the improvement which West African airlines have been able to make since their inception. Air Afrique, West Africa's leading airline, was set up in 1961 mostly with foreign capital. But today it is over 72% African owned, and still operates in the black, as shown in chapter one. As Wheatcroft correctly points out, it takes many years for an airline to be able to establish itself in the international market as a competent and reliable carrier (1964: 72). It helps explain why LDCs have followed the "predetermination" policy of older nations to guarantee their airlines a reasonable share of the traffic on the routes which they operate.36 (This protectionist policy assumes that the right to carry traffic between any two countries belongs equally to carriers of those two countries.) These traffic rights, established by bilateral agreement, determine the frequency of flights and capacity of aircraft. Fares generally are set by IATA.

Secondly, balance of payments is a very important issue in international air transport. The point is that a country stands to lose foreign exchange if it lacks flag carriers, or when it does, if those
national airlines carry less than their share of the national traffic. It is reported that by owning a flag carrier (Alitalia) Italy saved $73 million in 1963 both in net foreign exchange receipts and in net savings of fare payments that Italian travelers would otherwise have made to foreign airlines (Straszheim, 1969: 12-13). The same concern prompted the Johnson Administration in 1968 to submit to Congress a bill that would have restricted overseas tourism for a period of two years. The previous year United States tourists had spent $1.05 billion and paid $795 million to foreign flag-carriers, whereas European tourists spent $260 million and paid just $222 million to the U.S. carriers (Pillai, 1969: 45).

Thirdly, tourism, the largest single item in international trade, is carried chiefly by air. With commodity exports and import substitution, it represents the principal source by which developing countries may earn foreign exchange. But whereas the other two are curtailed by the deteriorating terms of trade, and by limited domestic markets and restricted access to foreign markets respectively, tourism is a virtually unprotected market. The growth of tourism helps produce increased income and employment opportunities. The population at large may enjoy the improved infrastructure, equipment and services which the tourist industry's growth provides, even more so than is often the case for alternative forms of development (IUOTO, 1975: passim). It is also suggested that as massive cargo planes are developed, with consequent lowered air freights costs, the shipment of goods by air may well become a major determinant of the location of industries (O'Connor, 1971: 101).
Air transport is significant with respect to a nation's balance of payments. Owning a flag carrier helps a country earn foreign exchange which otherwise would be lost to foreign airlines. As the primary medium of international tourism, air transport helps create more income and employment opportunities. Furthermore, it improves infrastructure. Against this background it becomes quite easy to understand the developing countries' (especially West Africa) reversal, in effect, of the policy of "relaxing and leaving the flying to Air France, British Airways, and PanAm". True, foreign exchange leakages (in the form of purchase of imported food rather than domestically produced food, remittances by expatriate personnel, leasing of aircraft, etc.) have a negative effect on development. But as the examples of Air Afrique, Ghana Airways, Nigeria Airways, the defunct East African Airways, and other airlines demonstrate, this is an inevitable but temporary price to pay for getting established in the international air transport market.

Measuring the concept of Transportation. Of all the key concepts which underlie this study, the one that enjoys the highest degree of conceptual and operational consensus is transportation. This appears remarkable because intensive empirical research on the relationship between transportation and development is relatively recent. Probably the earliest attempt to measure transportation using graph theoretic indices is Garrison and Marble (1962). Indeed, in the last few years transportation has become an inter-disciplinary concern of geographers, economists, sociologists and political scientists.
On the other hand, research on transportation is for the most part confined to its intra-national aspects (Fogel, 1964; Cootner 1963; Wilson, 1966). Both Kansky (1963) and Garrison and Marble (1962) have a purely intra-national focus, even though the latter examine a number of different countries in Latin America.

Kansky's summary treatment of the (possible) effect of international transport on development comes by way of his spatial analysis of residuals from regression equations (p. 63). What Kansky refers to as the influence of the external factors is really the extension of the national transportation system into the "transportation systems of surrounding political units". He concludes, without concrete proof, that such an influence does not exist. Even noble statements by ICAO (1971; 1967) have failed to galvanize research on the relationship between international transportation and development.37

The result of this neglect is that the transportation indices which have been developed so far apply only to intra-national systems. However, this can only be understood within the context of graph theory. In this regard our task is to prepare symbolic or mathematical statements that are isomorphic of the real air transport system of West Africa.

Graph theory provides the symbolic language that is appropriate for the analysis of the layout or structure of all transportation systems.38 Graph theory deals with systems of lines and points. With the aid of information such as flight statistics and distance in miles, the basic concepts of graph theory (vertices or points and
edges or routes) have been employed to construct simple measures of transportation. According to Garrison and Marble, transportation may be viewed a number of ways (1962: iv):

1. Stock aggregates -- miles of road, number of cars, etc.

2. Structure or layout of transportation routes. What types of routes go where?

3. Flows. What goes where?

4. Intensity of use or the transportation activity as a productive activity. What does transportation use as its inputs, and in what ways does it contribute to the output of the economy?

5. Relations of transportation networks to each other. For instance, how does the railway network relate to the highway network?

These are important questions, yet the transportation measures developed so far pertain only to intra-national systems and would therefore be invalid in international research. This is because the level of analysis is different in either case. For instance, the gamma index (the ratio of the observed number of routes to the maximum number in a given national transport system) would have to treat the region West Africa as the unit of analysis and consider the country members as structural level phenomena in order to be valid. Unfortunately, it would be at variance with the unit of analysis adopted in this study -- the nation-state. Such a procedure would thus make short shrift of each country's "contribution" to the regional transportation system.
What this boils down to is that appropriate measures have to be constructed for the regional air transport system. This study views an air transport system as a system of points on a social map together with the routes which connect them; in effect this means West African countries linked by single-plane service. This definition emphasizes two complementary relations. First, is that of connectivity. Two nations are connected when there is at least one weekly single-plane flight between them. This relation is required to establish an international transport system, but is not sufficient for the system's growth. A second relation, intensity, is required for this purpose. By intensity is meant the frequency of flights in a transport system.
FOOTNOTES

1 Lagos defines his concepts as follows: economic, as GNP, standards of living, and technological maturity; power, as technological maturity, military budget as a proportion, 2-15%, of GNP, and participation in arms race; and prestige, as synthesis of power and economic criteria, and accord between a nation's behavior and internationally held values.

2 There may be another reason. In personal correspondence with this writer Eugen Hauser, a European economist and Head of Executive Service of the Brussels-based International Cooperation for Socio-Economic Development, blames it on attempts by economic theorists to keep politics out. But this writer's request for clarification of this point still remains unanswered.

3 For an excellent review of the literature see Beckerman (1966).

4 For a criticism along this line see McGranahan, et al. (1972). Other problems associated with the use of GNP/c in international comparison are selecting an appropriate exchange rate where full currency convertibility does not exist; or where it does, converting income data between currencies is biased because goods and services traded internationally are not representative of the relation between total goods and services (Kindleberger, 1965: 8-9; Kuznets, 1959: 13-28).

5 Karl Deutsch recalls "the story of the man who ate a chicken in a room while a hungry man stood by and watched him. A statistician coming by looked in through the window and noted in his book that there was half a chicken per capita in the room" (1969: 181).

6 This writer tried initially to use the McGranahan method in order to derive a development index for this study. The attempt had to be abandoned because the first criterion of high average inter-correlations was not met, and because the method was computationally burdensome.

To develop an index for development McGranahan reduced an initial group of 73 indicators to a set of 18 core indicators in two steps. First, a "reservoir" of 42 was obtained on the basis of high average inter-correlations. Next, the core was determined using four criteria such as that each indicator should have a correlation
coefficient of 0.60 or more individually with at least half of the total reservoir, and that no indicator should have a correlation coefficient greater than 0.90 (pp. 69-70).

McGranahan and his associates argued that the components of development should be highly inter-correlated for two reasons: 1) development is naturally a system of interdependent variables; and 2) "if development is what distinguishes more developed countries from less developed countries (up and down the scale), and if the indicators relate to features of development that are common, then these indicators must of necessity be correlated (quite apart from any direct causal influences between them), unless there is a strong central tendency yielding a bell-shaped curve of distribution of countries along the dimension of development -- which there obviously is not" (p. 15).

After deriving the list of 18 core variables, McGranahan prepared a scatterplot of every indicator with every other indicator to find the best fitting curve to the data. The method of moving averages was used for this purpose. The 18 core indicators were then transformed to a common 0-100 scale on the basis of the correspondence points system. According to this system, the highest score on an indicator was assigned a value of 100; the lowest score, 0. Values in between were transformed logarithmically. Each country's development score was, therefore, determined to be its average on all its transformed scores.

Needless to say, none of the developmental variables are flawless. The limitations of some of them have been noted by McGranahan: "Combined primary and secondary school enrollment does not necessarily reflect attendance or quality of education...Newspaper circulation does not reflect the size or contents of the newspapers or what they are read for (information, comics, racing results, etc.) Radio receivers per 1,000 population are measured by licenses, or by estimates of sets in use based on figures from production, sales, imports and exports, with an assumed rate of discard. These different methods of computation do not necessarily yield comparable results, particularly if the recent sudden increase of cheap transistor sets is not covered by the licensing method (licenses not being required) but is covered by the method of production and sales estimates. Furthermore, the inherent importance of radios may be questioned. Agricultural production per male agricultural worker in U.S. dollars is subject to all of the difficulties of measuring (or estimating) such production, particularly in developing countries, as well as the difficulties of conversion to dollar values for international comparison. Energy consumption in terms of kilograms of coal equivalent per capita is an internationally computed aggregative or synthetic indicator which rests on relatively arbitrary but
consequential decisions as to method of aggregation (should electricity be converted to coal in terms of the amount of coal required to generate a given amount of electricity, or in terms of the amount of coal and the amount of electricity required to generate the same amount of heat?)" (1972: 72).

Besides, the fact that different countries use different data collection methods tends to render international comparison extremely difficult. To make matters even worse, the reliability of this information may be questioned on the grounds that it is designed sometimes to improve the image of the countries concerned for purposes of foreign aid. The developmental indicators used in this study must, therefore, be interpreted with caution.

8Mishan's position is amplified in his book The Costs of Economic Growth (1967).

9For excellent reviews of this theory see Deutsch (1974), Mack (1974), and Owen and Sutcliffe (1972).

10Lewis describes the capitalist philosophy in these terms: "restraint in consumption, willingness to produce as much as possible, and a preference for productive investment" (1955: 233).

11See also Bauer (1971).

12At the personal level development refers to empathy, the capacity to identify with new aspects of one's environment. The empathic or mobile personality has the tools needed to cope with new demands upon him which arise outside his habitual experience. It is the modal personal style in developed societies, which are distinctly industrial, urban, literate, and politically and economically participant (Lerner, 1964).

13Huntington defines institutionalization as "the process by which organizations and procedures acquire value and stability;" that is, through 1) adaptability (chronological and generational age), 2) complexity, 3) autonomy, and 4) coherence (1965: 394-405). See also Huntington (1968).

14Dependency is used synonymously with structural imperialism; that is, inequalities in income and living conditions between and within nations.

15There is also a category of collaborators known as "front men". These people circumvent legal restrictions on foreign business activity by acting as partners in or even having foreign firms registered in their names.
According to accounts narrated to the present writer by relatives and friends living in Liberia, Firestone, armed with a 99-year lease on the country's rubber resource, pays its workers a mere twenty-cents-an-hour wage.

The result of this division is that "1) there is harmony of interest between the center in the Center nation and the center in the Periphery nation, 2) there is more disharmony of interest within the Periphery nation than within the Center nation, 3) there is disharmony of interest between the periphery in the Center nation and the periphery in the Periphery nation" (p. 83).

Galtung posits four rules for a feudal interaction system:
1) Interaction between Center and Periphery is vertical;
2) Interaction between Periphery and Periphery is missing;
3) Multilateral interaction involving all three is missing;
4) Interaction with the outside world is monopolized by the Center with two implications:
   a) Periphery interaction with other Center nations is missing;
   b) Center as well as Periphery interaction with Periphery nations belonging to other Center nations is missing (p. 89).

Ernst Haas (1958b: xv), one of the foremost students of regional integration, lists four societal pre-conditions for functional integration: 1) an industrialized economy deeply enmeshed in international trade and finance; 2) Societies in which the masses are fully mobilized politically and then channel their aspirations through permanent economic interest groups and political parties; 3) Societies in which these groups are led by an identifiable elite competing with one another for influence and in agreement on many basic values; 4) Societies in which relations among these elites are governed by the traditions and assumptions of parliamentary (or presidential) democracy and constitutionalism.

Haas also argues elsewhere (1961: 389) that integration is far less likely in developing countries because the necessary background conditions— social pluralism, an industrial economy, and democratic system of government— are lacking. In fairness to Haas, he has changed his views in his more recent writings (1971).

The East African Common Market (EACM), viewed by many as the showcase for integration in Africa, is also believed to have finally breathed its last last year. Among the casualties was East African Airways, an airline that served all of black Africa on a regular basis for over ten years. Observers point to elite non-complementarity as one of the immediate causes of the EACM's collapse. Whether or not this is another surmountable crisis in the organization's turbulent history remains to be seen.
21 Karl Deutsch is skeptical. He asserts that a union formed to oppose an external enemy is highly likely to disintegrate as the threat passes (1957: 44-46).

22 Functionalism as dealt with here, refers to international, not domestic integration.

23 A Working Peace System, the main essay in which Mitrany expounds the functionalist thesis, was originally published in 1943.

24 Agreeing with Mitrany Merrifield (1966: 724) proposes "a general theory of non-coercive power" based on the work of IOs whose "authority" is the understanding that experiments of a limited and specialized kind are a necessary means of transnational integration.

25 Mitrany originally had in mind IGOS, but there is a growing consensus that functionalism is equally applicable to INGOs. See, for instance, Merrifield (1966); Feld and Coate (1976); and Judge and Skjaelsbaek (1975).

26 In an unpublished manuscript Haas defines spillover as a "political process which results in the accretion of new powers and tasks to a central institutional structure, based on changing demands and expectations on the part of such political actors as interest groups, political parties and bureaucracies. It refers to the specific process which originates in one functional context, initially separate from other political concerns, and then expands into related activities as it becomes clear to the chief political actors that the achievement of the initial aims cannot take place without such expansion" (Sewell, 1966: fn. 19, pp. 310-311).

Spillover describes the nature of the linkage between integration in economic and political sectors. In the absence of a spillover mechanism, initial success will remain restricted to the technical sectors. But if this success is to have integrative significance, it must spread into the political arena.

27 It is also contended that war causes social injustice; not vice versa as functionalists assume: "It is not true that war is the consequence of unsatisfactory economic conditions; on the contrary, the unsatisfactory situation of world economy is the consequence of war" (Hans Kelsen, Peace Through Law, 1944, cited in Claude, 1971: 387). However, research by anthropologists (Mead, Malinowski) and by psychologists supports the general theory that war results from the frustration of primary drives such as hunger (Bramson and Goethals, 1968).
Mitrany has not been silent either. In answer to the charges that 1) functionalism is unlikely to lead to integration and 2) that it does not adequately consider the working of politics, he has reiterated recently that our present task is "to bring the nations actively together, not to keep them peacefully apart"; and also traced the reluctance to participate in "visibly beneficial practical arrangements" to politicians' fears that it might shunt aside "old political spites in the minds of their peoples" (1971: 538). Mitrany's position is partially corroborated by Luard (1966: 9-24) who has identified interests of particular individuals in the existing power structure and the political difficulties in introducing controversial changes, as two of the obstacles to a transfer of authority from the nation-state to IOs.

Haas and Schmitter define "economic union" as the removal of barriers to, and desire for more trade and factor mobility between member-states; and "political union", a condition, as the attainment of legitimacy and authority by the politicized (regional) decision-making process (pp. 709-710).

Governmental purpose refers to the combination or converging of identical economic aims, and a strong or weak political commitment; powers of union means the timetable for dismantling obstacles to factor movements may be automatic or negotiable; pluralism, the mode of group conduct within each unit, may be functionally specific, universalist, or achievement-oriented; and decision-making style may be supranational or diplomatic.

One of these criticisms is that the model fails to explicate the processual linkage between economic and political union in terms of task expansion, increased controversiality, and institutionalization of decisional capacities. In response Schmitter in a separate article (1969) spells out three hypotheses: spillover, externalization and politicalization hypotheses. Spillover refers to the process whereby members of an integration scheme try to settle their dissatisfaction with the attainment of their goals by expanding the scope of their collaboration or increasing the level of their commitment to the original sector or both. Externalization refers to the situation in which members adopt common policies toward third parties following agreement on policies pertaining to intraregional relations or the external reaction produced thereby. Politicalization refers to the increase in level of the controversiality of joint decision-making and the "widening of the audience clientele" interested and active in integration that it is likely to create.
From all indications, Guinea and Mali's support for the union was lukewarm at best. They agreed to join only because Nkrumah's loan of $30 million to Guinea unquestionably boosted the latter's economy, following France's withdrawal from her former colony as a result of Guinea's "No" vote in the referendum of September 28, 1958. Mali found solace and support in the union following the collapse of the federation with Senegal. (See chapter one).

The sixteen member-states are Benin, Cape Verde Islands, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Gambia, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo, and Upper Volta.

To tell whether or not trade is on balance creating or diverting, it is necessary to compare the total volume of trade on which costs have been lowered with that on which costs have been raised, and to consider the extent to which costs have been increased on each unit of created or diverted trade (Robson, 1968: 29; Meade, 1955: 35).

Of course, the air transport industry has its own detractors. It has been alleged that passenger lives are "culpably neglected" by airlines simply to minimize costs and increase profits (Godson, 1970). Indeed, transnational terrorism, specifically skyjacking, has thrust the safety issue into international prominence. Late in 1977 the UN General Assembly passed a resolution calling on all its members to do all they could to eliminate skyjacking. The Assembly's action was in response to a threat by IFALPA to go on strike unless measures were taken to tighten airport security.

Secondly, fares, the responsibility of IATA, are believed to be too high to promote public air travel (Pillai, 1971). Throughout its thirty-two-year history IATA has been able to prevent rash competition which might diminish air safety. But as IATA decisions require unanimity, in practice this has meant a fare increase which Pillai contends, only a few people can afford. However, the organization's future looks bleak. IATA failed to foresee the threat to its existence posed by the independent airlines which were not expected to grow big. Alitalia's 26% fare cuts and PanAm's veiled threat to quit IATA are probably due to the serious challenge of Freddie Laker's Skytrain service on the New York-London route. This gave rise to the fear that IATA might not weather its current fare session in Miami (To The Point International, December 5, 1977, p. 12).

There are five traffic freedoms in international air transport: 1) to fly across the territory of another state without landing; 2) to make a technical landing; 3) to carry passengers destined for the country of the airline's nationality; 4) to carry passengers originating from the country of the airline's nationality; and 5) to carry passengers between two foreign countries. The first two traffic freedoms are automatically granted; the third and fourth are subject to bilateral negotiation; the fifth is a rarity.
The two possible exceptions are McConnell (1969) and Linnemann (1966).

The potential applicability of graph theory in international relations research is noted by Harary and Miller (1970) and Doreian (1968). Transnational relations scholars, in particular, recommend its use in analyzing inter-organizational relationships. For provocative discussions see UIA, Handbook of World Problems and Human Potential (1976).
This study utilizes four bodies of literature: development, dependency, integration, and transportation. An interdisciplinary issue which is also a primary concern worldwide, development in West Africa is a difficult problem which may best be solved through a concerted policy of regional integration, given, of course, an adequate transportation infrastructure. As indicated in the literature review chapter, there is no consensus on the causes of underdevelopment nor on the role of integration and transportation in development. But for the purposes of the present study, external dependency is perceived as the principal cause of West African underdevelopment which may be reversed by means of regional integration accompanied by an expanded air transport system.

Development is a matter of national and international policy. Throughout the Third World, and in West Africa especially, it is the prescription for the "pollution of poverty": Development is required to solve problems of mass poverty, malnutrition, illiteracy, disease, inadequate housing, and so on.

But development in West Africa is hampered by the member-states' dependency ties with their metropoles. In this international economic
system West African countries receive less and less for their agricultural exports, and pay more and more for their industrial imports especially from France, the United Kingdom, and the United States of America. Their economic growth is stunted because the metropoles (that is, their multinational corporations) take out more capital than they invest in West Africa.

There are several possible solutions to this problem, but by far the most practical is a policy of regional economic and political integration. This calls for increased interaction among West African countries vis-à-vis the rest of the world. ECOWAS countries are characterized by small domestic markets and, since they are primary-producing countries, little basis for intra-regional trade. But the case for integration rests primarily on the argument that it stimulates industrial growth.

The theory views air transport as a crucial link in the development process in West Africa. This is chosen over land transport because of the astronomical costs of constructing a road network in a mountainous, rainy region. Second, air transport is a faster, less expensive way of transporting news material, works of art, precious minerals and so on. As envisaged by ECOWAS, (air) transport will facilitate travel and promote understanding.

The Form of Axiomatic Theory.

The name of the sociologist Hans Zetterberg is associated with the development of axiomatic theory. In his study, On Theory and Verification in Sociology, first published in 1954, Zetterberg contends
that an axiomatic theory, or deductive-type theory, is capable of organizing existing hypotheses and further of increasing their number. In arguing for the theory he lists five inherent advantages: 1) the concepts and postulates of an axiomatic theory offer the most parsimonious summary of anticipated or actual research findings; 2) the theory has the highest plausibility per amount of supporting empirical data; 3) it locates strategic research problems; 4) it provides a limited area in which we can locate the sources of the failure of a hypothesis to meet the empirical test; and 5) the axiomatic theory makes it easy to distinguish between propositions that are definitions and propositions that are hypotheses (Zetterberg, 1954: 18-25).

An axiomatic theory consists of basic (postulate) and derived hypotheses; that is, axioms and theorems. In geometry and other branches of mathematics, an axiom is a statement the truth of which is taken for granted. It is a set of assumptions that generate theorems. But in the empirical sciences an axiom is viewed simply as an assumption that is almost universally accepted or that is untested.

According to Zetterberg, postulates "are chosen so that all other propositions, the theorems, are capable of derivation from the postulates and no postulate is capable of derivation from other postulates" (1965: 97). Broadly speaking, theorems may also be derived from combinations of postulates and theorems, or from other theorems. The basic postulates of the axiomatic theory are those statements of relationships between the variables of the system which are selected on the basis of existing empirical knowledge. In
choosing them the theorist does so with an eye to deducing from them all the logical possibilities of relationships among all of the variables in the system (Schwirian and Prehn, 1962: 814). If postulates are true, then the derived theorem is true. If a postulate is false, then the theorem is false. In this situation either the theory must be modified or the pertinent axioms dropped. If, on the other hand, the theorems are true, it does not necessarily "verify" the theory unless all possible competing alternatives can be rejected.

Where the number of variables in the axiomatic theory is n, the number of resulting postulates is \((n-1)\). Given \((n-1)\) axioms, the total number of hypotheses, both basic and derived, is given by the formula \(n(n-1)/2\). The theory can be expanded by the addition of one or more variables. Generally, however, a large number of variables yields a large number of hypotheses. As might be expected, this would violate the axiomatic theory's advantage of parsimony; it would, therefore, weaken the theory. Under these circumstances it is generally recommended to use as few axioms as possible (Zetterberg, 1965: 97).

On the other hand, the property of deriving theorems helps to uncover logical relationships which might otherwise pass undetected. This logical inter-relationship makes it unnecessary to test each hypothesis in the theory; as a matter of fact, theorems may be eliminated from the axiomatic theory without being tested directly. Nevertheless, if a postulate is found to be erroneous, the error will pervade that postulate's system of theorems. The answer is to remove the postulate in question from the axiomatic theory.
Zetterberg considers the axiomatic theory as verified "if; (a) its hypotheses are uncontradictory, and (b) its hypotheses are empirically true or probable" (1954: 10). In one application (Schwirian and Prehn, 1962: 821) two criteria are used to test each hypothesis: 1) The hypothesis of independence was rejected when the value of any correlation was equal to or greater than an arbitrarily-established \( r \) of .200;\(^2\) and 2) given (1) above, the direction of the obtained correlation was required to be in the direction predicted by the hypothesis.

One flaw in most axiomatic theories is their failure to go beyond demonstrating evidence of association or simple correlation. As will be argued in the research design chapter, cross-sectional analysis does not indicate the direction of causality beyond merely stating that the variables are correlated.

Indeed, Zetterberg does not explicate a rule for deduction, suggesting only that "derivation rules implied in ordinary language" will be sufficient (1954: 17). Costner and Leik summarize this suggestion as the sign rule: "The sign of the deduced relationship is the algebraic product of the signs of the postulated relationships" (1964: 820). For instance, theorem 5 (a negative relationship) is the algebraic product of postulates 3 and 1 (see below).

Of course, the important question is: How does one go about selecting certain propositions as axioms? As already mentioned, Zetterberg is silent on this matter, yet his selection leaves the unfortunate impression that any set that could imply the remainder would be satisfactory.
Costner and Leik make two observations regarding this issue. First, propositions of the form "the greater the X, the greater the Y" are ambiguous because it is seldom clear if causal asymmetry is implied. Second, the strict deductive argument implied by an axiomatic theory does not apply to an error or unexplained variation found in an empirical attempt to test the theory.

Costner and Leik, besides suggesting the use of partial correlation, argue that to make deductions from postulated relationships between variables through the application of the sign rule, it is sufficient to i) state postulates in asymmetric causal form; ii) make deductions only from postulates in which the common variable is prior to one but not to both of the other two variables included in two postulates; and iii) assume a "closed system," that is, there is no "connection" (causal or "spurious") between the variables in the postulates except those stated or implied in the postulates (1964: 827). In practical terms empirical knowledge also is crucial to the selection of certain propositions as axioms or postulates.

To illustrate the axiomatic theory, 1) An increase in A leads to an increase in B (postulate). 2) An increase in B leads to an increase in C (postulate). 3. An increase in A leads to an increase in C (theorem). In this example the postulates are stated in asymmetric causal form; neither postulate is derivable from the other; they are uncontradictory; and both postulates have a common variable B, thereby making the derivation of one theorem. The total number of hypotheses, 3, is perfectly in keeping with the rules.
The Axiomatic Theory of Regional Integration.

This study comprises four key variables: development, integration, dependency, and transportation. According to the axiomatic format \[n(n-1)/2\], this yields a total of six bivariate hypotheses, both basic and derived. The three postulates have been selected on the basis of the rules specified earlier. Figure 3 presents the entire system of basic and deduced relationships.

Figure 3: An Axiomatic Theory of Regional Integration, where E is Development; I Integration; D Dependency; and T Transportation.

The very first postulate is that "An increase in the level of integration leads to a rise in the level of development." West African countries are characterized by uneven resource endowments, predominantly agricultural economies, and small domestic markets with the possible exception of Nigeria. This means a limited individual ability to pursue the goal of national development. It also emphasizes the need for the more efficacious alternative of regional economic integration.
The formation of an economic union among developing countries creates the potential for competitiveness in trade and other forms of transaction. Integration provides the stimulus for economic growth through industrialization. Once infant industries are established, it behoves the regional community to protect them against external competition by means of a common external tariff (Walker, 1972). This will cater to the larger regional market.

Other benefits that may follow in the wake of the establishment of the union include increased employment and foreign capital opportunities. Integration enables the regional partners to save scarce foreign exchange through import-substitution; that is, the domestic production of goods (especially "luxury imports") which they used to import (Linder, 1966: 32-39).

According to the second postulate, "An increase in the level of development leads to an improvement in (air) transport capacity." This hypothesis is based on quantitative re-analyses of data for the United States and elsewhere.

Cootner (1963) has demonstrated that post-1830 railroad growth in the United States was a result of the strong growth in demand for cotton for European and United States' textile mills. Supporting evidence for this position is provided by Fogel (1964), and by Hunter (1965) in his work on Chinese and Soviet transportation systems. And of more relevance to the present study is the finding that Liberia's economic activity and progress preceded its port and road development (Stanley, 1970).
The third and final postulate in the axiomatic theory states that "An increase in dependency leads to a decrease in the level of integration." According to Myrdal's concept of "enforced bilateralism" (1957), developing countries interact primarily with their respective metropoles and hardly at all with one another. The metropoles control their relations with their peripheries to the latter's disadvantage.

Groupings such as the EEC, the Commonwealth and the French Community have for a long time served to fragment intra-West African relations and to foster much closer ties between the West African peripheries and their metropoles. Needless to say, this is both very expensive and time-consuming especially with regards to the limited intra-West African transactions which are "allowed" to occur, as a telephone call from Ghana to the Ivory Coast (which has to be routed through London and Paris) well indicates. On the other hand, if integration levels increase, then dependency will be expected to decrease. Thus, the relationship between dependency and integration appears to be an invariably inverse one.

As the name very well suggests, a derived hypothesis is a theorem deduced from other hypotheses. According to the derivation rules discussed earlier, a theorem may be deduced from a combination of i) postulates or basic hypotheses (first order derivation); ii) a postulate and a theorem (second order derivation); and iii) theorems (third order derivation). A theory of four variables generates three theorems.
The first theorem is derived from postulates 1 and 2; that is, it is a first order theorem. It states that "An increase in the level of integration leads to an improvement in air transport capacity."

As might be expected, it follows directly from the postulates. Regional partners may not find it necessary to try to improve their common transportation system if there is little or nothing to transact.

This theorem suggests that if there is no basis for trade, for instance, the transport system will very likely remain undeveloped. But once the volume of transaction increases, regional members will work to facilitate transaction flows by means of an improved air transport system. This is the case in West Africa where the partners have for a long time been involved in a concerted effort to improve transportation and communication facilities. (The data analysis chapter will treat this point in detail.)

The second theorem also is a first order derived hypothesis. But it is based on postulates 3 and 1. According to this theorem, "An increase in dependency leads to a fall in the level of development."

As was seen earlier (in the review chapter), the causes of Third World underdevelopment are a hotly-debated issue in international relations. But the hypothesis that forms part of the axiomatic theory identifies West African countries' unequal relations with their external environment, specifically the (former) metropoles, as the primary barrier to their development. According to this perspective, the result of much recent research on structural imperialism chiefly
by Johan Galtung (1973; 1971; 1967; 1964) and others, West African undevelopment stems from close collaboration between the local elite and the imperialist (external enemy).

By unashamedly imitating foreign life-styles local elites help drain off scarce foreign exchange. This tends to retard domestic production of goods which the local elites in any case regard as inferior to their imported counterparts. Another consequence is political instability. Governmental failure to meet popular demands for a fair share of the national pie and for efficiency in an expanded bureaucracy generates disaffection and alienation from the State. The resultant climate of political instability is enough to scare off foreign investors.

In "the world that Europe built" between 1860 and 1914 (Green, 1967: 244), West African countries export primary products and import manufactured goods mainly from their (former) metropoles. Their "terms of trade" are horrendous in that they receive less for their exports and pay more for their imports. According to Emmanuel this is because they are poor countries, not because of the nature of their exports (1972). This situation is unlikely to improve because the developed countries dampen West African industrialization efforts (Galtung, 1973: 71-72) and because of the growing importance of artificial substitutes (Jalee, 1972). Thus, external dependency is inimical to national development.

The third and final theorem is a second order derivation based on theorem 5 and postulate 2. It hypothesizes that "An increase
in dependency leads to a worsening of air transport capacity." With each regional partner's interactions externally-oriented, it removes the impetus to improve the regional transportation system. Such a basis will become apparent only when the volume of intra-regional transaction flows increases; that is, as integration proceeds by leaps and bounds. But by definition this is incompatible with dependency relations.

Below the six bivariate hypotheses are presented together for the sake of convenience and also stated in symbolic form:

1. "An increase in the level of integration leads to an increase in the level of development."

2. "A rise in the level of development leads to an improvement in air transport capacity."

3. "An increase in dependency leads to a decrease in the level of integration."

4. "An increase in the level of integration leads to an improvement in air transport capacity."

5. "An increase in dependency leads to a fall in the level of development."

6. "An increase in dependency leads to a worsening of air transport capacity."

In mathematical form these hypotheses are reproduced as follows:

1. \( E_{t+n} = \alpha + \beta I_t + u_t \) (postulate 1)
2. \( T_{t+n} = \alpha + \beta E_t + u_t \) (postulate 2)
3. \( I_{t+n} = \alpha - \beta D_t + u_t \) (postulate 3)
4. \( T_{t+n} = \alpha + \beta I_t + u_t \) (1st order theorem, derived from postulates 1 and 2)

5. \( E_{t+n} = \alpha - \beta D_t + u_t \) (1st order theorem, derived from postulates 3 and 1)

6. \( T_{t+n} = \alpha - \beta D_t + u_t \) (2nd order theorem, derived from theorem 5 and postulate 2),

where, \( E \) is Development; \( I \) Integration; \( T \) Transportation; \( D \) Dependency; \( \alpha \) and \( \beta \), the intercept and slope of the function; and \( u_t \) is the error term.

Beyond the axiomatic theory and as depicted in Figure 1 above, two other sets of equations are highlighted. The first set portrays two multiple regression equations. In symbolic form they are:

7. \( E_t = \alpha + \beta_0 I_t - \beta_1 D_t + u_t \)

8. \( T_t = \alpha + \beta_0 I_t + \beta_1 E_t - \beta_2 D_t + u_t \)

The two relations may be simultaneous. This means that either dependent variable's present values depend upon the present values of the independent variable in the relevant equation. On the other hand, either equation may be dynamic; that is, the values of the dependent variable depend on present and/or lagged values of the independent variable. This makes sense when one considers the fact that decisions about anything take time to be implemented. For instance, the founding of the Council of Entente (in West Africa) in 1959 did not lead to dramatic increases in the level of integration in that year.

The other set of equations conceives of three indirect effects between the variables in the axiomatic theory. (The axiomatic theory
represents direct effects only). Stated differently, the effect of one variable upon another is mediated through a third variable. The pertinent equations are as follows:

9. \( E_t = \alpha - \beta_0 D_t \cdot \beta_1 I_t + u_t \)

10. \( T_t = \alpha + \beta_0 I_t \cdot \beta_1 E_t + u_t \)

11. \( T_t = \alpha - \beta_0 D_t \cdot \beta_1 E_t \beta_2 I_t + u_t \)

The effect of Dependency on Development is mediated through Integration; the effect of Integration on Transport passes through Development; and Dependency affects Transport when the effects of Development and Integration are controlled for.
FOOTNOTES

1 By theory Zetterberg means "a system of inter-related definitions and hypotheses" that is assumed to possess the properties of universal validity and the capability of being empirically verified (1954: 10).

2 Schwirian, chairman of the OSU Department of Sociology, has since revised this $r$ upwards. In personal discussion with this writer he suggested that any correlation lower than .500 might be an indication of "noise" or measurement error in the system.

3 Costner and Leik suggest that the common variable may also be prior to both of the other variables. In this case, however, the derived hypothesis is "spurious" rather than "causal". This deduced relationship is not in asymmetric form but in simple covariation form. Its drawback is that it precludes inferences about partials (1964: 828).

4 Blalock (1969: 18) makes two similar rules on the basis of which to choose propositions as axioms:

"Rule 1: Select as axioms those propositions that involve variables that are taken to be directly linked causally; axioms should therefore be statements that imply direct causal links among variables."

"Rule 2: State theorems in terms of covariation and temporal sequences, thereby making them testable provided adequate measures of all variables can be obtained."

5 This or any other asymmetrical hypothesis can also be presented symbolically as $E_t = \alpha + \beta I_{t-n} + u_t$. The only difference between the two is procedural, not substantive: In one present values of the independent variable are correlated with the future (lead) values of the dependent variable. In the other past (lagged) values of the independent variable are used to predict present values of the dependent variable. However, the analytical results are the same.
In the previous chapter an axiomatic theory of regional integration is developed. It represents the first of two steps in investigating international relations phenomena. The second step involves concretizing the theoretical relationships deduced in step one; that is, to give the theory empirical content. It requires a three-stage process: 1) specifying the unit of analysis; 2) operationalizing the concepts and indicating the data sources; and 3) identifying data analysis techniques. The present chapter seeks to show how the axiomatic theory will be applied in this study. The research findings will follow in another chapter.

The Data. With West Africa specified as the region, it is only fitting and proper to add that not every member-state qualified for inclusion in the study. The acid test, it turned out, was data availability. The critical variable in this regard was the index of socio-economic development. Data on integration, transportation, and dependency were available for most countries. An attempt was made
to collect data on as many indicators of socio-economic development as possible to meet our research needs. That attempt was also in keeping with the guidelines suggested by McGranahan, as we shall see below. But our exhaustive search yielded only thirteen indicators. It thus went the way of previous efforts, particularly in research on developing countries.

Unit of Analysis

This section is a discussion about the distinction between units and levels of analysis. It seeks to show why some variables in the present study will be defined operationally at the contextual (higher) level and others at the national level. The distinction is useful to the researcher as an aid in the search for information that bears on his analysis.

In his oft-cited article Singer (1961) distinguishes between the systemic and national levels of analysis and compares them in terms of three analytic requirements: description, explanation, and prediction. Whereas the systemic level is comprehensive in its coverage of systemic actors and their interactions, this is achieved at the expense of detail. The national level, on the other hand, provides for detailed but incomprehensive coverage. Neither level is necessarily preferable to the other because of their fairly equal explanatory and predictive power. Singer is quick to suggest that many other levels are possible. The problem with his analysis, however, is his failure to properly define "level-of-analysis", with the result that his caution against shifting from one level to another "in the midst of a study" (1961: 90) is denied the serious attention which it deserves.
More recent social science research has shed light on this problem (Rokkan, 1970; Dogan and Rokkan, 1969). But perhaps the best treatment of the question is Eulau (1969). Eulau and other scholars distinguish between unit of analysis (the unit whose behavior the investigator wants to explain) and unit of observation (that is, level of analysis, the unit whose behavior the investigator observes in order to understand the unit of analysis or object unit). Stated differently, the distinction between unit and level of analysis is one between dependent and independent variables.

Scholarly consensus has it that the unit of analysis should be held constant in an analysis though the researcher may shift his units of observation. Therefore, unit of analysis probably is what Singer has in mind when he warns against shifting levels in the course of one study. Nevertheless, the distinction yields a minimum of three different units of observation or levels of analysis.

First, an object unit may be analyzed at its own "level" of analysis. In this instance unit of analysis coincides with level of analysis (unit of observation). It is illustrated in the hypothesis that the more democratic a country, the higher its level of socio-economic development. The unit of analysis or object unit in this example is the nation-state: Both "degree of democracy" and "level of socio-economic development" are national (independent and dependent) variables.

Second, in contextual analysis the researcher examines higher level observation units (independent variables) in order to explain lower units of analysis. Regional integration and fluctuations in
world commodity prices, for instance, affect national socio-economic
development. A country's membership in international organizations
and its diplomatic ties are also contextual variables.

There are three types of contextual or higher level variables
characteristics describe the higher level unit per se, for instance,
the number of military alliances in the world at any given point in
time; 2) relational properties between units; and 3) aggregated
characteristics which are derived indirectly from information about
sub-units or individuals, such as the average number of INGO membership
per nation.

Finally, structural analysis references variables at lower level
units of observation so as to explain higher level object units. When
events data scholars observe and measure the behavior of the Jewish
Defense League in their study of the United States policy in the Middle
East, they are doing structural analysis. As another example, Deutsch
asserts that mass attitudes and a nation's propensity to interact with
other nations are related (1962).

In all of these examples the unit of analysis is the same -- the
nation-state. Of course, other units (and levels) of analysis are
possible. For instance, one may study an INGO structurally at the
level of its component parts or national members. As indicated else­
where in this study, this type of analysis is not possible here because
the required data are unavailable. Burgess' contribution has been to
use the concepts discussed here to construct a table of units pertinent
to international relations research (1975: xviii). The table (Figure 4) is a highly accurate depiction of this discussion. Five different units of analysis and five different levels of analysis are featured. The table shows quite convincingly that the nation-state (object unit #3), for instance, may be studied at its "own" level -- the shaded area -- contextually at the global polity and regional bloc levels, and structurally at the subnational and individual levels.

Very briefly then, the distinction between unit of analysis and level of analysis is a very useful one which permits the researcher to move up and down the "levels-ladder" in search of information (independent variables) that would help him explain the behavior of his chosen unit of analysis. No doubt, these levels should be theoretically determined. As Eulau points out (1969: 10), observing a unit only at its own level would deprive us of "a powerful mode of analysis," but he cautions (p. 8) that we shift to other levels because a unit's properties are not available at its own level of analysis.

As indicated earlier, the unit of analysis in this study is the nation-state. Of the four variables in the study, however, only one (national socio-economic development) falls on the same level as the unit of analysis. In order to account for increases in the level of development over time, the study makes recourse to contextual variables: As its name very well implies, regional integration is a "regional bloc" or relational property; so is dependency, which refers to relations between West African countries and their metropoles.
### Figure 4: A Table of Units for Micro Analytic Designs

<table>
<thead>
<tr>
<th>Subject Units</th>
<th>1: Global Polity</th>
<th>2: Regional Blocs</th>
<th>3: The Nation</th>
<th>4: Sub-National Groups</th>
<th>5: Individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Polity</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional Blocs</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Nation</td>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-National Groups</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individuals</td>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Unit of Observation

- **Global Polity**: A
- **Regional Blocs**: B
- **The Nation**: C
- **Sub-National Groups**: D
- **Individuals**: E

Source: Burgess (1975: xviii).
Transportation is an aggregated characteristic in that it is derived from information about cities within the countries in the study.

Operational Definitions and Data Sources

In quantitative research one of the researcher's prior objectives is to operationalize his concepts with a view to gathering data to test his hypotheses. The simplest case of a hypothesis is the bivariate one in which one variable is linked to another. "An increase in the level of regional integration leads to an increase in the level of socio-economic development," is a case in point. On the other hand, the variables regional integration and social-economic development are abstract properties whose conceptional definitions are tautologous: They can never be proven right or wrong; rather they are used in theoretical thinking.

In view of this severe restriction, the investigator seeks to measure his variables to meet the principal criteria of validity and reliability. In international relations research as in any type of research, conceptual definitions of one variable may be many and the only way to "settle the quarrel" is to operationalize that variable. Operational definitions actually spell out the procedures used in measurement (Blalock, 1972: 12).

Validity refers to how well a measure or indicator represents a variable. It means the one-to-one relationship between an indicator and the variable it represents. The question then emerges: How do we determine validity? Though there are many criteria validity may, nevertheless, be ascertained on the basis of theoretical and empirical
The theoretical evidence or face validity, is a theoretically and substantively plausible argument that shows how and why a measure stands for a variable.

The second type of evidence, empirical ("reconstruct") validity is, as the name suggests, empirical evidence of validity of an indicator as demonstrated by:

1. Convergent validation, which seeks to establish whether different indicators of the same variable yield similar data. In other words, are the indicators of a given variable highly intercorrelated but not so with the indicators of other variables? and

2. Criterion validation states that an indicator is valid if it proves to be related to measures of other variables in the predicted ways, that is, if the hypothesis in which it is used is confirmed by the data. Gurr suggests that criterion validation is more convincing and satisfying than convergent validation (1972: 47).

Reliability, on the other hand, means that the operational definition of a variable should be straightforward enough to let all persons using the procedure achieve the same results. As mentioned earlier, the researcher operationalizes his concepts with the criteria of validity and reliability in mind. Once he has done this, he may then proceed to collect the necessary data.

Letters were mailed to all West African governments requesting data on mail flows, telephone calls and elite flows such as student exchanges. The idea was partially to supplement the main public
sources of data discussed below. Only seven of them responded; of these only Ghana provided useful travel data.

Many governments did not bother to reply at all. Of those who did, some provided incomplete data on intra-West African travel. Nigeria claimed to have all the data that this writer desired but suggested that he would have to travel there to collate them himself. Airlines were of no help either. The Nairobi-based Association of African Airlines refused this writer's request for travel data on the grounds that it would be commercially harmful to release it.

The search was later widened to include the appropriate ministries and Washington, D.C.-based embassies of former colonial powers and one or two Commonwealth agencies. Nothing was forthcoming from this source either. The search elicited mostly promissory or referential responses.

Travel data of all types from an unexpected quarter, the United States Immigration and Naturalization Service, covered the entire fifteen-year period of the present study, but they could not be utilized here for the simple fact that they represented just one point on the world social map with which a handful of West African countries (Nigeria, Ghana, Senegal and the Ivory Coast) interacted. The popular common international organization-membership indicator of social integration could not be utilized either because the data were at best incomplete.

1. Regional Integration. Earlier, regional integration was defined conceptually as the process of increasing mutual association between the participating units. This means that the welfare of each unit depends on the welfare of all together.
In this regard, the economist Balassa's partial definition of integration as the abolition of discrimination between economic units belonging to different national states seems appropriate to the situation. At one time or another, various combinations of West African countries have reached decisions to dismantle barriers to trade between them. It is only fitting, therefore, to operationalize economic integration as the proportion of intra-regional trade to world total. This proportion is expected to increase over time at the expense of trade with non-regional members.

In a study of the type undertaken here, the researcher has a choice between import and export trade statistics as a measure of economic integration. But on the basis of previous research (Linnemann, 1966), the latter appear more reliable. However, the problem with data generally is that frequently what is relevant may not be available and what is available may not be relevant. Fortunately, export trade statistics are available and are, therefore, used in this study (Table 3).

This information comes mainly from ECA, Foreign Trade Statistics: Direction of Trade, and IMF, Direction of Trade Annual. For each year both sources provide information on the origin and destination of trade and the value of that trade expressed in million U.S. dollars. The ECA source is particularly valuable because it provides detailed data on intra-African trade which are not available in most other sources.

Our measure of the political component of regional integration is perhaps the less reliable of the two given the various indicators of the concept that have been suggested in the literature. Indeed, in
Table 3
Intra-regional (export) Trade as a Proportion of World Trade

<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>3.2</td>
<td>3.8</td>
<td>3.5</td>
<td>1.7</td>
<td>2.1</td>
<td>1.7</td>
<td>1.8</td>
<td>1.0</td>
<td>1.5</td>
<td>1.2</td>
<td>2.3</td>
<td>1.5</td>
<td>1.7</td>
<td>8.3</td>
<td>8.6</td>
</tr>
<tr>
<td>Ghana</td>
<td>0.8</td>
<td>1.4</td>
<td>1.5</td>
<td>1.1</td>
<td>1.9</td>
<td>3.6</td>
<td>2.1</td>
<td>1.2</td>
<td>1.0</td>
<td>0.7</td>
<td>1.4</td>
<td>1.1</td>
<td>2.1</td>
<td>3.9</td>
<td>4.8</td>
</tr>
<tr>
<td>Guinea</td>
<td>0.3</td>
<td>6.0</td>
<td>8.3</td>
<td>7.3</td>
<td>6.5</td>
<td>8.8</td>
<td>5.7</td>
<td>7.5</td>
<td>8.9</td>
<td>8.4</td>
<td>9.4</td>
<td>8.6</td>
<td>8.5</td>
<td>7.2</td>
<td>8.6</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>1.5</td>
<td>1.5</td>
<td>10.5</td>
<td>6.8</td>
<td>5.2</td>
<td>3.3</td>
<td>2.8</td>
<td>4.2</td>
<td>5.0</td>
<td>5.1</td>
<td>5.6</td>
<td>4.7</td>
<td>5.2</td>
<td>6.0</td>
<td>5.2</td>
</tr>
<tr>
<td>Liberia</td>
<td>0.2</td>
<td>0.6</td>
<td>0.6</td>
<td>0.7</td>
<td>0.7</td>
<td>0.5</td>
<td>1.1</td>
<td>1.3</td>
<td>1.0</td>
<td>1.2</td>
<td>1.2</td>
<td>3.9</td>
<td>8.6</td>
<td>7.2</td>
<td>7.8</td>
</tr>
<tr>
<td>Niger</td>
<td>5.2</td>
<td>5.5</td>
<td>3.2</td>
<td>4.0</td>
<td>4.2</td>
<td>3.4</td>
<td>4.4</td>
<td>4.9</td>
<td>3.3</td>
<td>3.4</td>
<td>1.9</td>
<td>2.1</td>
<td>2.1</td>
<td>2.6</td>
<td>3.9</td>
</tr>
<tr>
<td>Nigeria</td>
<td>0.6</td>
<td>0.5</td>
<td>0.8</td>
<td>0.7</td>
<td>0.3</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
<td>0.7</td>
<td>1.1</td>
<td>0.1</td>
<td>0.5</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
</tr>
<tr>
<td>Senegal</td>
<td>0.7</td>
<td>5.6</td>
<td>5.9</td>
<td>7.2</td>
<td>4.9</td>
<td>5.4</td>
<td>6.2</td>
<td>6.6</td>
<td>8.7</td>
<td>9.6</td>
<td>12.0</td>
<td>9.4</td>
<td>5.4</td>
<td>4.3</td>
<td>8.8</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>0.9</td>
<td>1.6</td>
<td>1.5</td>
<td>1.8</td>
<td>1.1</td>
<td>1.3</td>
<td>1.7</td>
<td>1.5</td>
<td>1.6</td>
<td>2.3</td>
<td>1.8</td>
<td>4.4</td>
<td>6.6</td>
<td>8.9</td>
<td>3.4</td>
</tr>
<tr>
<td>Togo</td>
<td>2.0</td>
<td>2.8</td>
<td>3.1</td>
<td>3.0</td>
<td>3.1</td>
<td>1.3</td>
<td>1.1</td>
<td>1.8</td>
<td>3.1</td>
<td>5.6</td>
<td>6.3</td>
<td>6.3</td>
<td>6.4</td>
<td>6.0</td>
<td>6.3</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>0.5</td>
<td>0.5</td>
<td>0.6</td>
<td>0.5</td>
<td>0.8</td>
<td>0.6</td>
<td>0.5</td>
<td>0.5</td>
<td>0.8</td>
<td>1.4</td>
<td>2.2</td>
<td>1.7</td>
<td>2.1</td>
<td>2.2</td>
<td></td>
</tr>
</tbody>
</table>

Sources: Compiled from ECA, Foreign Trade Statistics: Direction of Trade; IMF, Direction of Trade Annual.
large part it reflects the paucity of relevant data in research on developing countries. Diplomatic activity is by no means the best indicator of political integration in West Africa or anywhere else for that matter. It is used here, nonetheless, simply because it is all that is available.

Though it is not the ideal measure of political integration, diplomatic activity may still be useful to this study for one very important reason. Previous research (John, 1973, 1972; McGowan, 1969) has shown that diplomatic activity in black Africa seeks to accomplish a number of goals: 1) to establish a pattern of diplomatic activity so that the predominant position of the former metropole is reduced to a status roughly equal to other international interests; 2) so that apart from ties with non-African states, proper emphasis is given to relations with neighbors and with regional and continentally powerful states. This paper stresses intra-West African diplomatic relations. In McGowan's words, they are intended in part to "decolonise [the region's] international relations" by fostering political cohesion in West Africa.

In view of this, political integration is operationalized as the ratio of diplomatic missions sent in West Africa to the maximum possible. For instance, for a region consisting of five countries this relation is expressed mathematically as (observed missions sent/5x4). If only three members sent missions (3, 4, and 2) at time 1, the region's level of diplomatic activity would be 9/20 or 45%. This, rather than the popular n(n-1)/2 formula is used to compute scores
because this type of activity is not necessarily reciprocal. Thus, while nation A may set up a mission in nation B, the latter may not reciprocate for political and/or economic reasons.

Secondly, unlike economic integration, the issue here is simply "occurrence" and not the value of the "goods traded"; consequently, the use of the economic integration regional-trade-as-proportion-of-world-total type measure would have done gross injustice to the level of intra-West African diplomatic activity. As an example, consider that all West African countries exchange missions. This level will not be accurately reflected by changes in the level of the region's world diplomatic activity. In effect, the total number of country missions (that is, the denominator) in West Africa is severely limited relative to the world.

The problem with our operational measure is that it merely indicates the presence or absence of ties between the units. The ideal indicator would have been the appropriate use of statistics on number and rank of diplomats sent or exchanged. But in the real world of international relations research, such a requirement is seldom met if at all.³

Data on diplomatic exchanges were obtained from Europa Year Book, volume II. This source is published annually by the London-based Europa Publications, Ltd. Data for later years are also available in Africa South of the Sahara, another publication of the Europa group. Europa has been involved in collecting and publishing diplomatic exchange data for nearly twenty years and since it is an
Table 4
Diplomatic Exchange Data

<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>N/A</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>13</td>
<td>13</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>27</td>
<td>33</td>
<td>40</td>
<td>40</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
<td>100</td>
<td>30</td>
<td>50</td>
<td>62</td>
<td>53</td>
<td>53</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>53</td>
<td>53</td>
<td>53</td>
<td>60</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Guinea</td>
<td>100</td>
<td>40</td>
<td>40</td>
<td>50</td>
<td>55</td>
<td>60</td>
<td>55</td>
<td>55</td>
<td>53</td>
<td>55</td>
<td>55</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>N/A</td>
<td>0</td>
<td>25</td>
<td>38</td>
<td>14</td>
<td>33</td>
<td>33</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>53</td>
<td>73</td>
<td>73</td>
</tr>
<tr>
<td>Liberia</td>
<td>100</td>
<td>30</td>
<td>58</td>
<td>54</td>
<td>50</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>60</td>
<td>67</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Niger</td>
<td>N/A</td>
<td>0</td>
<td>8</td>
<td>8</td>
<td>14</td>
<td>20</td>
<td>13</td>
<td>20</td>
<td>72</td>
<td>33</td>
<td>33</td>
<td>40</td>
<td>40</td>
<td>47</td>
<td>47</td>
</tr>
<tr>
<td>Nigeria</td>
<td>N/A</td>
<td>40</td>
<td>50</td>
<td>62</td>
<td>57</td>
<td>60</td>
<td>60</td>
<td>67</td>
<td>73</td>
<td>66</td>
<td>66</td>
<td>66</td>
<td>73</td>
<td>87</td>
<td>87</td>
</tr>
<tr>
<td>Senegal</td>
<td>N/A</td>
<td>20</td>
<td>33</td>
<td>31</td>
<td>29</td>
<td>40</td>
<td>40</td>
<td>47</td>
<td>53</td>
<td>53</td>
<td>60</td>
<td>60</td>
<td>67</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>N/A</td>
<td>N/A</td>
<td>25</td>
<td>31</td>
<td>36</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>47</td>
<td>53</td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Togo</td>
<td>N/A</td>
<td>20</td>
<td>17</td>
<td>23</td>
<td>28</td>
<td>33</td>
<td>33</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>53</td>
<td>53</td>
<td>53</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>N/A</td>
<td>30</td>
<td>25</td>
<td>23</td>
<td>36</td>
<td>33</td>
<td>33</td>
<td>40</td>
<td>40</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>50</td>
<td>50</td>
<td>53</td>
</tr>
</tbody>
</table>

Sources: Compiled from Europa, Yearbook, Vol. 2; Africa South of the Sahara. The "N/A" value means that the member-state in question was not yet independent in the year indicated.
oft-cited source in international relations research, its data may be accepted as reliable.

On the basis of these data a list was complied indicating the number of other ECOWAS countries to which each West African country sent a diplomatic mission (Table 4). No distinction was made as to rank, or as to whether or not the accredited mission took up residence.

2. **Socio-economic Development.** This variable is measured in terms of social and economic indicators of development in keeping with McGranahan's example, but bearing in mind their limitations. The selection of social indicators was based on the recommendations of two UN reports. Economic indicators were chosen as suggested by Simon Kuznets. These data were available on only thirteen social and economic indicators. As might be expected, there were gaps in some of them for one West African country or another, but they were not too many to jeopardize this study. Important as GNP/c may be in helping reduce poverty levels, for instance, this information was too limited to be included in the present study (Tables 5-17).

3. **Transportation.** This variable is measured in terms of flights. Flight refers to **single-plane service.** That is, though the flight may make intermediate stops, there is no change in 'flight number'. This specification is less restrictive than the **direct flight** without intermediate stops but more inclusive than the **connected flight.** While the direct flight omits too many countries, the connected flight involves the use of two or more plane services. Therefore, neither
<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>25</td>
<td>40</td>
<td>29</td>
<td>29</td>
<td>27</td>
<td>30</td>
<td>31</td>
<td>23</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>38</td>
<td>34</td>
<td>33</td>
<td>32</td>
</tr>
<tr>
<td>Ghana</td>
<td>97</td>
<td>99</td>
<td>92</td>
<td>98</td>
<td>118</td>
<td>104</td>
<td>100</td>
<td>92</td>
<td>107</td>
<td>126</td>
<td>144</td>
<td>174</td>
<td>146</td>
<td>160</td>
<td>175</td>
</tr>
<tr>
<td>Guinea</td>
<td>26</td>
<td>28</td>
<td>96</td>
<td>100</td>
<td>103</td>
<td>101</td>
<td>98</td>
<td>99</td>
<td>97</td>
<td>99</td>
<td>97</td>
<td>98</td>
<td>102</td>
<td>98</td>
<td>92</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>82</td>
<td>68</td>
<td>80</td>
<td>84</td>
<td>83</td>
<td>98</td>
<td>143</td>
<td>148</td>
<td>156</td>
<td>158</td>
<td>192</td>
<td>228</td>
<td>314</td>
<td>334</td>
<td>368</td>
</tr>
<tr>
<td>Liberia</td>
<td>53</td>
<td>61</td>
<td>80</td>
<td>123</td>
<td>171</td>
<td>231</td>
<td>259</td>
<td>280</td>
<td>286</td>
<td>302</td>
<td>308</td>
<td>430</td>
<td>450</td>
<td>531</td>
<td>463</td>
</tr>
<tr>
<td>Niger</td>
<td>3</td>
<td>4</td>
<td>9</td>
<td>10</td>
<td>14</td>
<td>13</td>
<td>12</td>
<td>17</td>
<td>16</td>
<td>18</td>
<td>15</td>
<td>19</td>
<td>26</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>Nigeria</td>
<td>44</td>
<td>40</td>
<td>38</td>
<td>36</td>
<td>39</td>
<td>46</td>
<td>53</td>
<td>61</td>
<td>38</td>
<td>33</td>
<td>35</td>
<td>47</td>
<td>61</td>
<td>65</td>
<td>63</td>
</tr>
<tr>
<td>Senegal</td>
<td>129</td>
<td>93</td>
<td>103</td>
<td>116</td>
<td>147</td>
<td>135</td>
<td>149</td>
<td>148</td>
<td>146</td>
<td>149</td>
<td>138</td>
<td>140</td>
<td>146</td>
<td>159</td>
<td>158</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>54</td>
<td>41</td>
<td>62</td>
<td>73</td>
<td>86</td>
<td>66</td>
<td>64</td>
<td>38</td>
<td>42</td>
<td>58</td>
<td>113</td>
<td>137</td>
<td>140</td>
<td>133</td>
<td>153</td>
</tr>
<tr>
<td>Togo</td>
<td>19</td>
<td>22</td>
<td>30</td>
<td>30</td>
<td>35</td>
<td>41</td>
<td>41</td>
<td>53</td>
<td>57</td>
<td>55</td>
<td>66</td>
<td>62</td>
<td>74</td>
<td>76</td>
<td>72</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>10</td>
<td>11</td>
<td>10</td>
<td>10</td>
<td>11</td>
<td>13</td>
<td>14</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>

Source: Compiled from UN, *World Energy Supplies*, Statistical Papers, Series J.
<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>10</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Ghana</td>
<td>49</td>
<td>55</td>
<td>56</td>
<td>60</td>
<td>64</td>
<td>65</td>
<td>68</td>
<td>72</td>
<td>192</td>
<td>309</td>
<td>328</td>
<td>328</td>
<td>332</td>
<td>368</td>
<td>385</td>
</tr>
<tr>
<td>Guinea</td>
<td>30</td>
<td>33</td>
<td>42</td>
<td>45</td>
<td>46</td>
<td>49</td>
<td>50</td>
<td>49</td>
<td>54</td>
<td>54</td>
<td>61</td>
<td>99</td>
<td>112</td>
<td>110</td>
<td>107</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>16</td>
<td>21</td>
<td>28</td>
<td>35</td>
<td>42</td>
<td>49</td>
<td>57</td>
<td>70</td>
<td>78</td>
<td>91</td>
<td>105</td>
<td>120</td>
<td>133</td>
<td>153</td>
<td>171</td>
</tr>
<tr>
<td>Liberia</td>
<td>98</td>
<td>105</td>
<td>114</td>
<td>132</td>
<td>177</td>
<td>204</td>
<td>261</td>
<td>311</td>
<td>352</td>
<td>507</td>
<td>428</td>
<td>330</td>
<td>414</td>
<td>532</td>
<td>521</td>
</tr>
<tr>
<td>Niger</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Nigeria</td>
<td>8</td>
<td>11</td>
<td>15</td>
<td>17</td>
<td>19</td>
<td>22</td>
<td>24</td>
<td>26</td>
<td>22</td>
<td>21</td>
<td>23</td>
<td>28</td>
<td>32</td>
<td>37</td>
<td>44</td>
</tr>
<tr>
<td>Senegal</td>
<td>43</td>
<td>47</td>
<td>55</td>
<td>54</td>
<td>54</td>
<td>65</td>
<td>66</td>
<td>73</td>
<td>76</td>
<td>79</td>
<td>74</td>
<td>73</td>
<td>75</td>
<td>77</td>
<td>84</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>17</td>
<td>19</td>
<td>25</td>
<td>28</td>
<td>31</td>
<td>36</td>
<td>45</td>
<td>45</td>
<td>53</td>
<td>58</td>
<td>67</td>
<td>78</td>
<td>80</td>
<td>81</td>
<td>82</td>
</tr>
<tr>
<td>Togo</td>
<td>0</td>
<td>3</td>
<td>12</td>
<td>14</td>
<td>17</td>
<td>21</td>
<td>24</td>
<td>28</td>
<td>28</td>
<td>31</td>
<td>32</td>
<td>40</td>
<td>43</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Upper Volta</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

Source: Compiled from UN, *World Energy Supplies*, Statistical Papers, Series J.
Table 7

Female as Percent of Total Primary Enrollment

<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>26</td>
<td>27</td>
<td>27</td>
<td>-</td>
<td>30</td>
<td>31</td>
<td>31</td>
<td>31</td>
<td>31</td>
<td>31</td>
<td>31</td>
<td>-</td>
<td>-</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
<td>33</td>
<td>33</td>
<td>-</td>
<td>35</td>
<td>37</td>
<td>45</td>
<td>42</td>
<td>43</td>
<td>43</td>
<td>-</td>
<td>43</td>
<td>43</td>
<td>43</td>
<td>44</td>
<td>43</td>
</tr>
<tr>
<td>Guinea</td>
<td>16</td>
<td>26</td>
<td>27</td>
<td>25</td>
<td>30</td>
<td>48</td>
<td>31</td>
<td>-</td>
<td>31</td>
<td>31</td>
<td>-</td>
<td>32</td>
<td>32</td>
<td>34</td>
<td>33</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>25</td>
<td>26</td>
<td>28</td>
<td>-</td>
<td>32</td>
<td>-</td>
<td>34</td>
<td>35</td>
<td>35</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>37</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>Liberia</td>
<td>27</td>
<td>23</td>
<td>23</td>
<td>25</td>
<td>30</td>
<td>29</td>
<td>27</td>
<td>30</td>
<td>31</td>
<td>32</td>
<td>31</td>
<td>30</td>
<td>31</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Niger</td>
<td>29</td>
<td>29</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>32</td>
<td>31</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>34</td>
<td>34</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Nigeria</td>
<td>37</td>
<td>37</td>
<td>38</td>
<td>38</td>
<td>39</td>
<td>39</td>
<td>38</td>
<td>39</td>
<td>38</td>
<td>24</td>
<td>37</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>40</td>
</tr>
<tr>
<td>Senegal</td>
<td>33</td>
<td>-</td>
<td>33</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>36</td>
<td>37</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>39</td>
<td>39</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>34</td>
<td>34</td>
<td>35</td>
<td>35</td>
<td>33</td>
<td>35</td>
<td>36</td>
<td>36</td>
<td>-</td>
<td>37</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>39</td>
<td>41</td>
</tr>
<tr>
<td>Togo</td>
<td>26</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>29</td>
<td>29</td>
<td>29</td>
<td>30</td>
<td>30</td>
<td>31</td>
<td>31</td>
<td>31</td>
<td>32</td>
<td>-</td>
<td>32</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>28</td>
<td>29</td>
<td>-</td>
<td>27</td>
<td>28</td>
<td>28</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>35</td>
<td>36</td>
<td>36</td>
<td>37</td>
<td>37</td>
<td>37</td>
</tr>
</tbody>
</table>

Source: Compiled from UNESCO, *Statistical Yearbook.*
Table 8

Pupil/Teacher Ratio in Primary Education

<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>44</td>
<td>41</td>
<td>38</td>
<td>38</td>
<td>41</td>
<td>41</td>
<td>42</td>
<td>40</td>
<td>41</td>
<td>42</td>
<td>41</td>
<td>44</td>
<td>46</td>
<td>50</td>
<td>52</td>
</tr>
<tr>
<td>Ghana</td>
<td>31</td>
<td>31</td>
<td>29</td>
<td>26</td>
<td>36</td>
<td>33</td>
<td>32</td>
<td>26</td>
<td>29</td>
<td>28</td>
<td>30</td>
<td>30</td>
<td>29</td>
<td>30</td>
<td>29</td>
</tr>
<tr>
<td>Guinea</td>
<td>71</td>
<td>66</td>
<td>46</td>
<td>70</td>
<td>49</td>
<td>46</td>
<td>41</td>
<td>-</td>
<td>-</td>
<td>41</td>
<td>40</td>
<td>36</td>
<td>35</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>44</td>
<td>41</td>
<td>40</td>
<td>-</td>
<td>46</td>
<td>-</td>
<td>47</td>
<td>46</td>
<td>46</td>
<td>44</td>
<td>46</td>
<td>46</td>
<td>44</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td>Liberia</td>
<td>31</td>
<td>32</td>
<td>38</td>
<td>35</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>35</td>
<td>34</td>
<td>37</td>
<td>46</td>
<td>25</td>
<td>26</td>
<td>26</td>
<td>25</td>
</tr>
<tr>
<td>Niger</td>
<td>41</td>
<td>40</td>
<td>42</td>
<td>43</td>
<td>46</td>
<td>41</td>
<td>42</td>
<td>44</td>
<td>36</td>
<td>38</td>
<td>40</td>
<td>39</td>
<td>37</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Nigeria</td>
<td>29</td>
<td>30</td>
<td>29</td>
<td>28</td>
<td>31</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>31</td>
<td>26</td>
<td>33</td>
<td>34</td>
<td>33</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>Senegal</td>
<td>35</td>
<td>-</td>
<td>-</td>
<td>43</td>
<td>47</td>
<td>43</td>
<td>43</td>
<td>51</td>
<td>54</td>
<td>46</td>
<td>45</td>
<td>41</td>
<td>41</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>34</td>
<td>36</td>
<td>35</td>
<td>33</td>
<td>36</td>
<td>32</td>
<td>32</td>
<td>30</td>
<td>29</td>
<td>29</td>
<td>31</td>
<td>32</td>
<td>32</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>Togo</td>
<td>-</td>
<td>63</td>
<td>60</td>
<td>98</td>
<td>98</td>
<td>98</td>
<td>56</td>
<td>58</td>
<td>52</td>
<td>57</td>
<td>56</td>
<td>58</td>
<td>60</td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>54</td>
<td>47</td>
<td>49</td>
<td>-</td>
<td>66</td>
<td>63</td>
<td>49</td>
<td>51</td>
<td>45</td>
<td>44</td>
<td>46</td>
<td>44</td>
<td>47</td>
<td>45</td>
<td>47</td>
</tr>
</tbody>
</table>

Source: Compiled from UNESCO, Statistical Yearbook.
<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>14</td>
<td>14</td>
<td>15</td>
<td>-</td>
<td>19</td>
<td>20</td>
<td>19</td>
<td>19</td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>23</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>Ghana</td>
<td>30</td>
<td>30</td>
<td>-</td>
<td>50</td>
<td>52</td>
<td>61</td>
<td>57</td>
<td>54</td>
<td>52</td>
<td>-</td>
<td>40</td>
<td>43</td>
<td>44</td>
<td>44</td>
<td>43</td>
</tr>
<tr>
<td>Guinea</td>
<td>-</td>
<td>11</td>
<td>15</td>
<td>17</td>
<td>33</td>
<td>31</td>
<td>18</td>
<td>18</td>
<td>-</td>
<td>20</td>
<td>21</td>
<td>24</td>
<td>24</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>-</td>
<td>24</td>
<td>-</td>
<td>30</td>
<td>33</td>
<td>-</td>
<td>34</td>
<td>38</td>
<td>40</td>
<td>40</td>
<td>42</td>
<td>44</td>
<td>49</td>
<td>48</td>
<td>50</td>
</tr>
<tr>
<td>Liberia</td>
<td>19</td>
<td>21</td>
<td>20</td>
<td>-</td>
<td>20</td>
<td>23</td>
<td>29</td>
<td>43</td>
<td>41</td>
<td>45</td>
<td>39</td>
<td>29</td>
<td>33</td>
<td>35</td>
<td>36</td>
</tr>
<tr>
<td>Niger</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>-</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Nigeria</td>
<td>20</td>
<td>21</td>
<td>23</td>
<td>25</td>
<td>27</td>
<td>26</td>
<td>19</td>
<td>17</td>
<td>17</td>
<td>-</td>
<td>-</td>
<td>21</td>
<td>23</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>-</td>
<td>14</td>
<td>14</td>
<td>15</td>
<td>15</td>
<td>16</td>
<td>18</td>
<td>18</td>
<td>19</td>
<td>19</td>
<td>21</td>
<td>23</td>
<td>24</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>Togo</td>
<td>24</td>
<td>24</td>
<td>27</td>
<td>-</td>
<td>30</td>
<td>31</td>
<td>33</td>
<td>32</td>
<td>34</td>
<td>37</td>
<td>39</td>
<td>43</td>
<td>47</td>
<td>46</td>
<td>47</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>-</td>
<td>8</td>
</tr>
</tbody>
</table>

Source: Compiled from UNESCO, Statistical Yearbook.
Table 10

<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ghana</td>
<td>30</td>
<td>30</td>
<td>32</td>
<td>28</td>
<td>31</td>
<td>32</td>
<td>29</td>
<td>37</td>
<td>36</td>
<td>42</td>
<td>34</td>
<td>46</td>
<td>42</td>
<td>35</td>
<td>41</td>
</tr>
<tr>
<td>Guinea</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>8</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Liberia</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>-</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Niger</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nigeria</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>-</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>17</td>
</tr>
<tr>
<td>Senegal</td>
<td>8</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>6</td>
<td>8</td>
<td>7</td>
<td>10</td>
<td>5</td>
<td>9</td>
<td>16</td>
<td>17</td>
<td>7</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Togo</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>-</td>
<td>9</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>-</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>


*UNESCO defines "daily general interest newspaper" as a publication devoted mainly to recording news of current events in public affairs, international affairs, politics, etc., and which is published at least four times a week.
Table 11

<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>3</td>
<td>13</td>
<td>15</td>
<td>16</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>18</td>
<td>23</td>
<td>28</td>
<td>32</td>
<td>35</td>
<td>52</td>
<td>54</td>
</tr>
<tr>
<td>Ghana</td>
<td>17</td>
<td>17</td>
<td>43</td>
<td>56</td>
<td>69</td>
<td>74</td>
<td>65</td>
<td>68</td>
<td>84</td>
<td>81</td>
<td>78</td>
<td>85</td>
<td>85</td>
<td>106</td>
<td></td>
</tr>
<tr>
<td>Guinea</td>
<td>9</td>
<td>13</td>
<td>13</td>
<td>14</td>
<td>14</td>
<td>15</td>
<td>21</td>
<td>-</td>
<td>20</td>
<td>22</td>
<td>23</td>
<td>23</td>
<td>23</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>16</td>
<td>17</td>
<td>-</td>
<td>22</td>
<td>24</td>
<td>15</td>
<td>16</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>17</td>
<td>18</td>
<td>18</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Liberia</td>
<td>62</td>
<td>77</td>
<td>41</td>
<td>-</td>
<td>98</td>
<td>120</td>
<td>140</td>
<td>137</td>
<td>108</td>
<td>108</td>
<td>132</td>
<td>132</td>
<td>99</td>
<td>97</td>
<td>156</td>
</tr>
<tr>
<td>Niger</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>12</td>
<td>13</td>
<td>20</td>
<td>21</td>
<td>20</td>
<td>26</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>38</td>
</tr>
<tr>
<td>Nigeria</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>9</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>28</td>
<td>20</td>
<td>20</td>
<td>23</td>
<td>27</td>
<td>27</td>
<td>49</td>
</tr>
<tr>
<td>Senegal</td>
<td>47</td>
<td>47</td>
<td>39</td>
<td>-</td>
<td>45</td>
<td>59</td>
<td>59</td>
<td>73</td>
<td>71</td>
<td>72</td>
<td>71</td>
<td>69</td>
<td>68</td>
<td>68</td>
<td>67</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>9</td>
<td>11</td>
<td>46</td>
<td>62</td>
<td>74</td>
<td>55</td>
<td>56</td>
<td>11</td>
<td>19</td>
<td>19</td>
<td>21</td>
</tr>
<tr>
<td>Togo</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>-</td>
<td>5</td>
<td>5</td>
<td>18</td>
<td>18</td>
<td>20</td>
<td>22</td>
<td>22</td>
<td>22</td>
<td>22</td>
<td>22</td>
<td>24</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>10</td>
<td>11</td>
<td>10</td>
<td>10</td>
<td>14</td>
<td>15</td>
<td>15</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>17</td>
</tr>
</tbody>
</table>

Sources: Compiled from UNESCO, Statistical Yearbook; Europa Yearbook, vol. 2. This information pertains to all types of receivers for radio broadcasts to the general public including receivers connected to a redistribution system.
Table 12
Agricultural Production per Male Agricultural Worker

<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>101</td>
<td>100</td>
<td>104</td>
<td>99</td>
<td>95</td>
<td>101</td>
<td>101</td>
<td>102</td>
<td>108</td>
<td>104</td>
<td>110</td>
<td>111</td>
<td>113</td>
<td>111</td>
<td>113</td>
</tr>
<tr>
<td>Ghana</td>
<td>90</td>
<td>98</td>
<td>118</td>
<td>122</td>
<td>124</td>
<td>135</td>
<td>94</td>
<td>99</td>
<td>99</td>
<td>90</td>
<td>92</td>
<td>104</td>
<td>109</td>
<td>109</td>
<td>99</td>
</tr>
<tr>
<td>Guinea</td>
<td>92</td>
<td>96</td>
<td>102</td>
<td>100</td>
<td>99</td>
<td>110</td>
<td>89</td>
<td>98</td>
<td>104</td>
<td>107</td>
<td>105</td>
<td>104</td>
<td>103</td>
<td>86</td>
<td>92</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>93</td>
<td>95</td>
<td>90</td>
<td>138</td>
<td>136</td>
<td>135</td>
<td>111</td>
<td>97</td>
<td>114</td>
<td>105</td>
<td>116</td>
<td>113</td>
<td>123</td>
<td>120</td>
<td>115</td>
</tr>
<tr>
<td>Liberia</td>
<td>85</td>
<td>97</td>
<td>91</td>
<td>101</td>
<td>101</td>
<td>102</td>
<td>104</td>
<td>103</td>
<td>104</td>
<td>105</td>
<td>116</td>
<td>108</td>
<td>102</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Niger</td>
<td>87</td>
<td>91</td>
<td>95</td>
<td>101</td>
<td>102</td>
<td>99</td>
<td>104</td>
<td>108</td>
<td>106</td>
<td>99</td>
<td>96</td>
<td>96</td>
<td>93</td>
<td>89</td>
<td>70</td>
</tr>
<tr>
<td>Nigeria</td>
<td>98</td>
<td>100</td>
<td>102</td>
<td>105</td>
<td>104</td>
<td>103</td>
<td>99</td>
<td>101</td>
<td>92</td>
<td>89</td>
<td>106</td>
<td>89</td>
<td>88</td>
<td>88</td>
<td>33</td>
</tr>
<tr>
<td>Senegal</td>
<td>92</td>
<td>94</td>
<td>108</td>
<td>102</td>
<td>108</td>
<td>112</td>
<td>109</td>
<td>88</td>
<td>106</td>
<td>83</td>
<td>91</td>
<td>68</td>
<td>91</td>
<td>56</td>
<td>70</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>95</td>
<td>99</td>
<td>94</td>
<td>98</td>
<td>99</td>
<td>103</td>
<td>106</td>
<td>106</td>
<td>104</td>
<td>109</td>
<td>106</td>
<td>105</td>
<td>104</td>
<td>107</td>
<td></td>
</tr>
<tr>
<td>Togo</td>
<td>70</td>
<td>74</td>
<td>75</td>
<td>102</td>
<td>113</td>
<td>109</td>
<td>102</td>
<td>104</td>
<td>109</td>
<td>114</td>
<td>116</td>
<td>113</td>
<td>112</td>
<td>92</td>
<td>88</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>80</td>
<td>83</td>
<td>86</td>
<td>99</td>
<td>100</td>
<td>111</td>
<td>104</td>
<td>106</td>
<td>107</td>
<td>109</td>
<td>105</td>
<td>104</td>
<td>107</td>
<td>104</td>
<td>61</td>
</tr>
</tbody>
</table>

Sources: Compiled from FAO, Food and Agricultural Statistics; AID, Economic Data Book: Africa.
Table 13

<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>10</td>
<td>100</td>
<td>100</td>
<td>180</td>
<td>140</td>
<td>150</td>
<td>150</td>
<td>180</td>
<td>180</td>
<td>180</td>
<td>200</td>
<td>240</td>
<td>300</td>
<td>300</td>
<td>280</td>
</tr>
<tr>
<td>Ghana</td>
<td>510</td>
<td>340</td>
<td>370</td>
<td>400</td>
<td>410</td>
<td>420</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>540</td>
<td>500</td>
<td>680</td>
<td>550</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Guinea</td>
<td>110</td>
<td>100</td>
<td>130</td>
<td>120</td>
<td>120</td>
<td>170</td>
<td>180</td>
<td>170</td>
<td>170</td>
<td>170</td>
<td>180</td>
<td>200</td>
<td>180</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>200</td>
<td>210</td>
<td>280</td>
<td>310</td>
<td>330</td>
<td>470</td>
<td>450</td>
<td>490</td>
<td>530</td>
<td>600</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>800</td>
<td>560</td>
</tr>
<tr>
<td>Liberia</td>
<td>150</td>
<td>160</td>
<td>170</td>
<td>210</td>
<td>270</td>
<td>280</td>
<td>300</td>
<td>300</td>
<td>310</td>
<td>320</td>
<td>500</td>
<td>450</td>
<td>210</td>
<td>200</td>
<td>210</td>
</tr>
<tr>
<td>Niger</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>70</td>
<td>70</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>110</td>
<td>110</td>
</tr>
<tr>
<td>Nigeria</td>
<td>110</td>
<td>120</td>
<td>130</td>
<td>150</td>
<td>110</td>
<td>110</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>200</td>
<td>120</td>
<td>130</td>
<td>140</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Senegal</td>
<td>640</td>
<td>530</td>
<td>750</td>
<td>760</td>
<td>710</td>
<td>730</td>
<td>710</td>
<td>700</td>
<td>690</td>
<td>780</td>
<td>700</td>
<td>800</td>
<td>700</td>
<td>760</td>
<td>750</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>170</td>
<td>190</td>
<td>180</td>
<td>210</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>190</td>
<td>260</td>
<td>300</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>270</td>
<td></td>
</tr>
<tr>
<td>Togo</td>
<td>140</td>
<td>120</td>
<td>150</td>
<td>150</td>
<td>160</td>
<td>170</td>
<td>180</td>
<td>180</td>
<td>160</td>
<td>160</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>30</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>30</td>
<td>50</td>
</tr>
</tbody>
</table>

Source: Derived from AT&T, *The World's Telephones*. 
Table 14

Motor Vehicles Per 1,000 Population

<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Ghana</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Guinea</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>8</td>
<td>7</td>
<td>8</td>
<td>10</td>
<td>11</td>
<td>13</td>
<td>14</td>
<td>19</td>
<td>18</td>
<td>17</td>
<td>18</td>
<td>18</td>
<td>20</td>
<td>23</td>
<td>28</td>
</tr>
<tr>
<td>Liberia</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>10</td>
<td>11</td>
<td>10</td>
<td>11</td>
<td>10</td>
<td>14</td>
<td>15</td>
<td>12</td>
<td>14</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Niger</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Nigeria</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Senegal</td>
<td>11</td>
<td>11</td>
<td>12</td>
<td>12</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>9</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>11</td>
<td>12</td>
<td>11</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Togo</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: Derived From UN, Statistical Yearbook.
<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>-</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>-</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Ghana</td>
<td>8</td>
<td>9</td>
<td>-</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>13</td>
<td>12</td>
<td>11</td>
<td>11</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Guinea</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>11</td>
<td>21</td>
<td>22</td>
<td>8</td>
<td>14</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Liberia</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Niger</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>-</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>-</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Nigeria</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Senegal</td>
<td>-</td>
<td>10</td>
<td>11</td>
<td>13</td>
<td>15</td>
<td>15</td>
<td>14</td>
<td>15</td>
<td>15</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>14</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Togo</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>11</td>
<td>11</td>
<td>-</td>
<td>11</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>-</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>-</td>
<td>8</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>10</td>
<td>10</td>
<td>-</td>
<td>10</td>
<td>11</td>
<td>11</td>
</tr>
</tbody>
</table>

Sources: Compiled from UN, Yearbook of National Accounts Statistics; ECA, Statistical Yearbook
Table 16

<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>-</td>
<td>710</td>
<td>-</td>
<td>930</td>
<td>940</td>
<td>880</td>
<td>770</td>
<td>790</td>
<td>850</td>
<td>-</td>
<td>1050</td>
<td>860</td>
<td>860</td>
<td>850</td>
<td>860</td>
</tr>
<tr>
<td>Ghana</td>
<td>1700</td>
<td>1350</td>
<td>-</td>
<td>1050</td>
<td>970</td>
<td>960</td>
<td>830</td>
<td>770</td>
<td>840</td>
<td>930</td>
<td>930</td>
<td>760</td>
<td>780</td>
<td>750</td>
<td>695</td>
</tr>
<tr>
<td>Guinea</td>
<td>1480</td>
<td>1120</td>
<td>-</td>
<td>1090</td>
<td>-</td>
<td>750</td>
<td>690</td>
<td>530</td>
<td>680</td>
<td>820</td>
<td>-</td>
<td>620</td>
<td>580</td>
<td>600</td>
<td>610</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>610</td>
<td>600</td>
<td>590</td>
<td>580</td>
<td>570</td>
<td>550</td>
<td>460</td>
<td>510</td>
<td>510</td>
<td>496</td>
<td>660</td>
<td>620</td>
<td>640</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liberia</td>
<td>-</td>
<td>720</td>
<td>690</td>
<td>-</td>
<td>640</td>
<td>600</td>
<td>630</td>
<td>520</td>
<td>510</td>
<td>540</td>
<td>530</td>
<td>-</td>
<td>530</td>
<td>520</td>
<td>510</td>
</tr>
<tr>
<td>Niger</td>
<td>2390</td>
<td>2200</td>
<td>2200</td>
<td>-</td>
<td>1880</td>
<td>1760</td>
<td>1780</td>
<td>1410</td>
<td>-</td>
<td>1850</td>
<td>1900</td>
<td>2230</td>
<td>1790</td>
<td>1670</td>
<td>1526</td>
</tr>
<tr>
<td>Nigeria</td>
<td>2150</td>
<td>2060</td>
<td>1800</td>
<td>1860</td>
<td>2160</td>
<td>2380</td>
<td>2410</td>
<td>-</td>
<td>2310</td>
<td>2230</td>
<td>1940</td>
<td>1850</td>
<td>1580</td>
<td>1378</td>
<td>1340</td>
</tr>
<tr>
<td>Senegal</td>
<td>1390</td>
<td>940</td>
<td>880</td>
<td>760</td>
<td>710</td>
<td>710</td>
<td>720</td>
<td>-</td>
<td>720</td>
<td>730</td>
<td>740</td>
<td>730</td>
<td>750</td>
<td>760</td>
<td>769</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>1350</td>
<td>1880</td>
<td>1450</td>
<td>1240</td>
<td>1160</td>
<td>-</td>
<td>-</td>
<td>1120</td>
<td>1080</td>
<td>1070</td>
<td>930</td>
<td>1040</td>
<td>980</td>
<td>930</td>
<td>910</td>
</tr>
<tr>
<td>Togo</td>
<td>790</td>
<td>780</td>
<td>590</td>
<td>580</td>
<td>610</td>
<td>640</td>
<td>740</td>
<td>740</td>
<td>820</td>
<td>-</td>
<td>820</td>
<td>780</td>
<td>650</td>
<td>680</td>
<td>660</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>-</td>
<td>-</td>
<td>1500</td>
<td>1890</td>
<td>1830</td>
<td>1830</td>
<td>1660</td>
<td>1680</td>
<td>2360</td>
<td>2130</td>
<td>2170</td>
<td>1670</td>
<td>1170</td>
<td>1180</td>
<td>1160</td>
</tr>
</tbody>
</table>

Sources: Compiled from WHO, Annual Epidemiological and Vital Statistics, 1959-1961; World Health Statistics Annual, 1962-1973; World Health Statistics Report. From time to time, WHO has revised, added to, or annotated information on inhabitants per hospital bed and on inhabitants per physician in the light of more detailed data.
<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>47</td>
<td>47</td>
<td>27</td>
<td>20</td>
<td>-</td>
<td>32</td>
<td>29</td>
<td>27</td>
<td>29</td>
<td>28</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
<td>22</td>
<td>21</td>
<td>-</td>
<td>12</td>
<td>14</td>
<td>13</td>
<td>14</td>
<td>13</td>
<td>16</td>
<td>16</td>
<td>15</td>
<td>13</td>
<td>12</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Guinea</td>
<td>50</td>
<td>48</td>
<td>21</td>
<td>21</td>
<td>24</td>
<td>26</td>
<td>-</td>
<td>-</td>
<td>42</td>
<td>48</td>
<td>50</td>
<td>46</td>
<td>31</td>
<td>29</td>
<td>28</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>31</td>
<td>-</td>
<td>25</td>
<td>23</td>
<td>22</td>
<td>19</td>
<td>19</td>
<td>18</td>
<td>18</td>
<td>-</td>
<td>20</td>
<td>12</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Liberia</td>
<td>-</td>
<td>18</td>
<td>16</td>
<td>16</td>
<td>14</td>
<td>12</td>
<td>11</td>
<td>9</td>
<td>-</td>
<td>11</td>
<td>10</td>
<td>10</td>
<td>11</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Niger</td>
<td>91</td>
<td>103</td>
<td>65</td>
<td>71</td>
<td>64</td>
<td>65</td>
<td>-</td>
<td>58</td>
<td>56</td>
<td>56</td>
<td>57</td>
<td>58</td>
<td>60</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>Nigeria</td>
<td>35</td>
<td>33</td>
<td>30</td>
<td>27</td>
<td>50</td>
<td>32</td>
<td>44</td>
<td>33</td>
<td>31</td>
<td>29</td>
<td>22</td>
<td>20</td>
<td>43</td>
<td>26</td>
<td>25</td>
</tr>
<tr>
<td>Senegal</td>
<td>-</td>
<td>26</td>
<td>27</td>
<td>19</td>
<td>19</td>
<td>18</td>
<td>16</td>
<td>17</td>
<td>37</td>
<td>18</td>
<td>16</td>
<td>17</td>
<td>-</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Togo</td>
<td>58</td>
<td>-</td>
<td>37</td>
<td>34</td>
<td>33</td>
<td>36</td>
<td>23</td>
<td>27</td>
<td>26</td>
<td>26</td>
<td>28</td>
<td>28</td>
<td>22</td>
<td>23</td>
<td>21</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>-</td>
<td>100</td>
<td>84</td>
<td>-</td>
<td>64</td>
<td>63</td>
<td>77</td>
<td>76</td>
<td>74</td>
<td>88</td>
<td>89</td>
<td>93</td>
<td>75</td>
<td>64</td>
<td>60</td>
</tr>
</tbody>
</table>

Sources: Compiled from WHO, Annual Epidemiological and Vital Statistics, 1959-1961; World Health Statistics Annual, 1962-1973; World Health Statistics Report. From time to time, WHO has revised, added to, or annotated information on inhabitants per hospital bed and on inhabitants per physician in the light of more detailed data.
the direct flight nor the connected flight accurately measures the
development of an air transport system. In this respect connectivity
is measured by the ratio of the number of other West African countries
with which each ECOWAS member is linked by one weekly single-plane
service, to the maximum number possible. Intensity is operationalized
as the proportion of regional flights to world total. Both measures
are complementary and serve to indicate how developed the regional
transport system is vis-à-vis the rest of the world (Tables 18 and 19).

As might be expected, the fact that no systematic study has in
the past been done of the relationship between international air
transport and national socio-economic development means that the
relevant transport data exist only in raw form. Therefore, the
transport data utilized in this study have had to be coded afresh. It
was a challenging effort in view of how the data are recorded. The
sources, A.B.C. World Airways Guide and Official Airline Guide,
contain identical flight information for virtually every international
commercial airline and many domestic airlines. Though easily accessible
and available over a long period of time, yet this information is
published apparently only with the traveling public in mind;
consequently, it poses serious coding difficulties in international
transport research.

The first of these difficulties is that the basic data, single-
plane flights by airlines between international cities, may appear in
a number of different places: the flight schedule of the airline in
question and the schedules of airlines with which it may have coopera-
tive agreements. The same international flight information may
Table 18

Air Transport: Connectivity

<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>72</td>
<td>53</td>
<td>53</td>
<td>47</td>
<td>40</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
<td>47</td>
<td>47</td>
<td>53</td>
<td>53</td>
<td>47</td>
<td>53</td>
<td>53</td>
<td>73</td>
<td>73</td>
<td>80</td>
<td>80</td>
<td>73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guinea</td>
<td>27</td>
<td>27</td>
<td>40</td>
<td>45</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>57</td>
<td>60</td>
<td>60</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>33</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>53</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Liberia</td>
<td>27</td>
<td>33</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>40</td>
<td>53</td>
<td>67</td>
<td>67</td>
<td>67</td>
<td>60</td>
<td>67</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>Niger</td>
<td>20</td>
<td>20</td>
<td>13</td>
<td>20</td>
<td>7</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>20</td>
<td>13</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Nigeria</td>
<td>40</td>
<td>40</td>
<td>53</td>
<td>53</td>
<td>60</td>
<td>60</td>
<td>67</td>
<td>73</td>
<td>80</td>
<td>80</td>
<td>87</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Senegal</td>
<td>27</td>
<td>33</td>
<td>33</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>47</td>
<td>53</td>
<td>67</td>
<td>67</td>
<td>67</td>
<td>60</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>27</td>
<td>33</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Togo</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>20</td>
<td>53</td>
<td>53</td>
<td>60</td>
<td>47</td>
<td>53</td>
<td>53</td>
<td>60</td>
<td>67</td>
<td>67</td>
<td>80</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>7</td>
<td>7</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>20</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td>40</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

Sources: Derived from A.B.C. World Airways Guide; Official Airline Guide.
<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>50</td>
<td>45</td>
<td>46</td>
<td>40</td>
<td>42</td>
<td>44</td>
<td>44</td>
<td>46</td>
<td>38</td>
<td>44</td>
<td>49</td>
<td>40</td>
<td>39</td>
<td>36</td>
<td>44</td>
</tr>
<tr>
<td>Ghana</td>
<td>58</td>
<td>55</td>
<td>53</td>
<td>44</td>
<td>6</td>
<td>51</td>
<td>49</td>
<td>51</td>
<td>57</td>
<td>61</td>
<td>61</td>
<td>62</td>
<td>58</td>
<td>60</td>
<td>63</td>
</tr>
<tr>
<td>Guinea</td>
<td>70</td>
<td>71</td>
<td>75</td>
<td>70</td>
<td>63</td>
<td>65</td>
<td>65</td>
<td>68</td>
<td>63</td>
<td>60</td>
<td>64</td>
<td>60</td>
<td>61</td>
<td>56</td>
<td>60</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>38</td>
<td>35</td>
<td>45</td>
<td>45</td>
<td>38</td>
<td>47</td>
<td>45</td>
<td>48</td>
<td>47</td>
<td>53</td>
<td>47</td>
<td>52</td>
<td>51</td>
<td>53</td>
<td>50</td>
</tr>
<tr>
<td>Liberia</td>
<td>62</td>
<td>62</td>
<td>34</td>
<td>54</td>
<td>52</td>
<td>51</td>
<td>41</td>
<td>49</td>
<td>51</td>
<td>60</td>
<td>59</td>
<td>65</td>
<td>66</td>
<td>62</td>
<td>64</td>
</tr>
<tr>
<td>Niger</td>
<td>45</td>
<td>52</td>
<td>54</td>
<td>47</td>
<td>30</td>
<td>50</td>
<td>44</td>
<td>50</td>
<td>50</td>
<td>54</td>
<td>42</td>
<td>50</td>
<td>37</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>Nigeria</td>
<td>36</td>
<td>33</td>
<td>41</td>
<td>39</td>
<td>40</td>
<td>48</td>
<td>44</td>
<td>46</td>
<td>46</td>
<td>57</td>
<td>57</td>
<td>54</td>
<td>52</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Senegal</td>
<td>19</td>
<td>16</td>
<td>18</td>
<td>23</td>
<td>26</td>
<td>21</td>
<td>25</td>
<td>31</td>
<td>30</td>
<td>43</td>
<td>34</td>
<td>31</td>
<td>32</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>80</td>
<td>48</td>
<td>52</td>
<td>47</td>
<td>59</td>
<td>58</td>
<td>62</td>
<td>67</td>
<td>73</td>
<td>70</td>
<td>58</td>
<td>61</td>
<td>48</td>
<td>56</td>
<td>58</td>
</tr>
<tr>
<td>Togo</td>
<td>72</td>
<td>59</td>
<td>58</td>
<td>62</td>
<td>67</td>
<td>52</td>
<td>62</td>
<td>54</td>
<td>58</td>
<td>51</td>
<td>50</td>
<td>48</td>
<td>57</td>
<td>63</td>
<td>70</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>5</td>
<td>5</td>
<td>12</td>
<td>12</td>
<td>10</td>
<td>20</td>
<td>19</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>21</td>
<td>22</td>
<td>22</td>
<td>24</td>
<td>27</td>
</tr>
</tbody>
</table>

also be broken down into segments for the convenience of regional travelers. The researcher's task here is to reconstruct such a flight as one piece of information so that it may not get coded more than once; in this regard the 'flight number' is the key.\textsuperscript{6}

Second, the points or nodes served by an airline are cities, and more than one city may be served in one country. In its raw form this information is inconsistent with the stipulated level of analysis and thus intractable. To illustrate, Air Afrique RK06 in 1973 linked Abidjan (Ivory Coast) with Nice and Paris in France, besides cities in other countries. This raises the question: Was Air Afrique flight RK06 one flight (Ivory Coast-France) or three flights (Abidjan-Nice, Abidjan-Paris, and Nice-Paris)? In keeping with our unit of analysis, the obvious answer is that it was one flight. This study considers nations as the points on the international air transport map, not cities, so that flight RK06 is coded as one flight datum. For the sake of simplicity, one city-pair represents one nation-pair; all other links are considered redundant. For instance, the Nice-Paris segment of flight RK06 is "domestic" and therefore is not valid datum for this study.

Finally, an airline may or may not have traffic rights on some segments of a route or flight. Since this study is only concerned with flights with traffic rights, care has been taken to code only this information.
To recapitulate, our raw transport data are plagued by several difficulties: 1) fractionalization or the manifold appearance of the same transport data in the flight schedules of many different airlines; 2) the fact that air service as recorded in the data sources is provided to cities as such; and 3) the lumping together of flights with and without traffic rights. In response to these problems the following rules have been developed and strictly adhered to in coding the data:

a) To piece together the flight data of each commercial airline serving West Africa on the basis of i) flight number, ii) day of flight, and iii) arrival-departure time information. All three pieces of information are required inputs in constructing each flight datum.

b) Flights with traffic rights. The absence of flights with traffic rights is indicated by a "diamond" sign in the data sources.

c) Nation-to-nation air service. Traffic rights notwithstanding, a flight from city 1 (making an intermediate stop in city 2) in country A to cities in country B counts as one and only one flight. This rule is based not on the number of cities served but on the nations which they represent.

4. Dependency. This refers to the extensive interaction between a West African periphery nation and its European or North American center nation. Dependency is invariably a relic of colonialism which manifests itself in a system of bilateral agreements between the periphery and its center. Singer (1972) reports that Third World
countries retained after independence religious, linguistic, racial, class, ideological, and education ties with their former metropoles.

There are a great number of indicators, such as bilateral aid of various types, which might be incorporated in a measure of dependency. When this study was begun, two separate letters were mailed to West African governments and airlines requesting statistics on telephone, telegram and telex links, and on nationality of pilots respectively. But the response was promissory at best. Because of this, the practical consideration has been to use export trade to measure dependency.

For purposes of the present study, the choice of country "s" is a theoretical one in the sense that a West African country is more likely to trade with the (former) mother country than with another. As a matter of fact, such ties are hard to break because even after political independence, the African country's external ties have continued to be dominated by its former colonial master. This turns out to be the United Kingdom in the case of English-speaking West Africa (except Liberia whose metropole is the United States), and France for French-speaking West Africa.

A country whose export trade is primarily with one country is dependent upon that country's markets. Following Hirschman (1945) and Michaely (1962) dependency is operationalized here as

\[
D_{jx} = 100 \sqrt{\frac{\sum X_{sj}^2}{\sum X_{j}^2}}, \quad \text{where } X_{sj} \text{ is the value of country } j \text{'s exports to country } s, \text{ and } X_{j} \text{ is the value of country } j \text{'s exports to all countries.}
\]
Dependency is a direct function of the relative inequality of dispersion but also a reciprocal function of the number of units. Hirschman and Michaely's measure is, thus, the square root of the sum of the square of both exports to the center nation and of total exports. This widely-used measure theoretically ranges from 0 to 1 and since it takes into account the size of the units, it is also preferable to the plain measure proportion of a periphery's total trade that is accounted for by the center nation. (Table 20).

Methods of Data Reduction

This study will apply the technique of time series regression, specifically partial correlation, to analyze the data. But before we discuss this sophisticated technique, a word or two is in order about the method for deriving indices of socio-economic development.

Factor Analysis. Development, one of the four key variables in the axiomatic theory, actually has social and deonomic component which are based on thirteen indicators. Relating these developmental measures separately to the other variables in the theory would in this writer's view be too difficult if not impossible to interpret. How, for instance, would one evaluate three countries each of which ranked higher than the others on one indicator rather than another? The problem of mass-indicator variables has given rise to various statistical methods to reduce data for comparative analysis. Beckerman's review (1966) of various uses of GNP/c and non-monetary indicators to rank nations on the development scale, readily comes to mind. Currently two approaches prevail: the single index and
<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>54</td>
<td>48</td>
<td>64</td>
<td>71</td>
<td>61</td>
<td>56</td>
<td>61</td>
<td>61</td>
<td>54</td>
<td>58</td>
<td>57</td>
<td>53</td>
<td>49</td>
<td>63</td>
<td>50</td>
</tr>
<tr>
<td>Ghana</td>
<td>40</td>
<td>37</td>
<td>37</td>
<td>34</td>
<td>33</td>
<td>28</td>
<td>26</td>
<td>29</td>
<td>30</td>
<td>28</td>
<td>27</td>
<td>23</td>
<td>25</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Guinea</td>
<td>31</td>
<td>27</td>
<td>30</td>
<td>36</td>
<td>32</td>
<td>31</td>
<td>32</td>
<td>36</td>
<td>29</td>
<td>28</td>
<td>27</td>
<td>25</td>
<td>25</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>64</td>
<td>71</td>
<td>70</td>
<td>67</td>
<td>65</td>
<td>62</td>
<td>62</td>
<td>58</td>
<td>55</td>
<td>50</td>
<td>46</td>
<td>46</td>
<td>47</td>
<td>47</td>
<td>44</td>
</tr>
<tr>
<td>Liberia</td>
<td>50</td>
<td>29</td>
<td>42</td>
<td>34</td>
<td>36</td>
<td>40</td>
<td>47</td>
<td>45</td>
<td>44</td>
<td>41</td>
<td>34</td>
<td>31</td>
<td>32</td>
<td>30</td>
<td>28</td>
</tr>
<tr>
<td>Niger</td>
<td>62</td>
<td>61</td>
<td>59</td>
<td>46</td>
<td>60</td>
<td>59</td>
<td>61</td>
<td>63</td>
<td>63</td>
<td>60</td>
<td>55</td>
<td>56</td>
<td>59</td>
<td>57</td>
<td>57</td>
</tr>
<tr>
<td>Nigeria</td>
<td>46</td>
<td>42</td>
<td>38</td>
<td>36</td>
<td>34</td>
<td>31</td>
<td>31</td>
<td>30</td>
<td>29</td>
<td>31</td>
<td>35</td>
<td>31</td>
<td>32</td>
<td>29</td>
<td>27</td>
</tr>
<tr>
<td>Senegal</td>
<td>66</td>
<td>69</td>
<td>65</td>
<td>65</td>
<td>66</td>
<td>59</td>
<td>53</td>
<td>51</td>
<td>48</td>
<td>44</td>
<td>41</td>
<td>52</td>
<td>47</td>
<td>49</td>
<td>46</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>44</td>
<td>42</td>
<td>45</td>
<td>39</td>
<td>43</td>
<td>38</td>
<td>33</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>31</td>
<td>29</td>
<td>29</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>Togo</td>
<td>61</td>
<td>58</td>
<td>54</td>
<td>48</td>
<td>48</td>
<td>52</td>
<td>51</td>
<td>52</td>
<td>54</td>
<td>53</td>
<td>50</td>
<td>50</td>
<td>49</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>60</td>
<td>59</td>
<td>61</td>
<td>58</td>
<td>59</td>
<td>54</td>
<td>53</td>
<td>54</td>
<td>53</td>
<td>51</td>
<td>48</td>
<td>47</td>
<td>45</td>
<td>45</td>
<td>41</td>
</tr>
</tbody>
</table>

Sources: Derived from ECA, Foreign Trade Statistics: Direction of Trade; IMF, Direction of Trade Annual.
multiple factor approaches, both of which may be categorized as non-monetary.

The single-index method is relatively new and still has to make its presence known. The product of a United Nations Research Institute for Social Development (UNRISD) staff study, this approach was developed as a counter substantively to GNP/c, and methodologically to factor analysis. So far its application is restricted to developmental variables; its utility in other research areas is an open question. This method was tried initially in this study but had to be abandoned because the data failed to satisfy its first criterion of high average inter-correlations. As this method is also computationally burdensome, its appeal as a research tool is doubtful. On the other hand, the single-index approach is probably easier to interpret.

The multiple-factor approach to the problem of mass-indicator variables is also known as factor analysis. It can yield any number of factors (indices) if certain criteria (to be discussed below) are met. Developed originally by psychologists about forty years ago, factor analysis has been applied widely in international relations research. Russett (1967) and Rummel's DON (Dimensionality of Nations) Project easily come to mind. Berry (1961; 1960) has done much factor analytic work on development and the problem of measurement. His derived indices (demography and technology) provided an input for two frequently cited transportation studies (Kansky, 1963) and Garrison and Marble (1962).
There is not one factor analysis but many (Harmon, 1971; Rummel, 1967; Russett, 1967). Of these the best known are: 1) Q-factor analysis, used to discern patterns of similarity in nations, groups and individuals; 2) R-factor analysis, used to delineate patterns of variation in characteristics. Principal component, the analysis applied in this study, is designed to extract the best linear combination of variables to explain as much of the variance in the data as possible. It is, therefore, the single best summary of linear relationships in the data. Furthermore, extraction is orthogonal; that is, principal component analysis seeks to make the factors independent of one another. The new variables or extracted factors may be considered exact mathematical transformations of the original data.

Irrespective of which factor analysis is used, the technique generally has tremendous capabilities. By far the best known of these is the technique's data-reduction capability. This capability is useful for 1) exploring for and detecting variable patterns with a view to discovering new concepts and to reduce the data; 2) hypothesis testing; 3) constructing indices to be used as new variables in later analysis. This is accomplished in three steps: i) preparing the correlation matrix; ii) extracting the initial factors; and iii) rotating the factors to a terminal solution.

Factor analysis is based on the correlation matrix which is routinely provided. Though often presented without comment, the matrix nevertheless provides useful information on the linear relationship between each pair of variables. A zero coefficient means no
relationship; the closer to 1, the higher the relationship; the plus or minus sign indicates the direction of the relationship.

Like the correlation matrix the unrotated factor matrix is usually presented without comment. It defines the most general patterns of relationship in the data. Consider this actual example of the unrotated matrix which is based on the developmental data (for West Africa) utilized in the present study. (See Table 21). The factors are the patterns extracted from the data. At the intersection of each variable and factor is the factor loading, which is a measure of the relationship between the pair. At the extreme right is the communality \( (h^2) \). It is the proportion of variance in each variable that is accounted for jointly by both factors. The variables load differently on each factor. For example, energy consumption per capita loads higher on Factor 1; and agricultural production per male agricultural worker on Factor 2. Both factors together explain 73% of the variance in the data in the following proportions: 61 and 12. These figures are derived by dividing either factor's eigenvalue by the number of variables. Proportion of common variance refers to variance explained by all the common factors. It is obtained by dividing each factor's eigenvalue by the sum of eigenvalues.

The rotated factor matrix is the real object of interest. Unlike the unrotated matrix, it delineates distinct patterns of relationships in the data. Factor rotation is, therefore, designed to make the initial extraction more meaningful; varimax rotation is used in this study. The rotated matrix retains several features
Table 21
Unrotated Matrix of Developmental Data on West Africa

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>FACTORS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1. Energy consumption/capita</td>
<td>.89</td>
<td>.29</td>
</tr>
<tr>
<td>2. Electricity consumption/capita</td>
<td>.54</td>
<td>-0.16</td>
</tr>
<tr>
<td>3. Female as % of total primary enrollment</td>
<td>.97</td>
<td>.84</td>
</tr>
<tr>
<td>4. Phones/100,000 population</td>
<td>.94</td>
<td>.17</td>
</tr>
<tr>
<td>5. Radios/1,000 population</td>
<td>.94</td>
<td>.02</td>
</tr>
<tr>
<td>6. Agricultural production/male agricultural worker</td>
<td>-0.17</td>
<td>.81</td>
</tr>
<tr>
<td>7. Newspaper circulation/1,000</td>
<td>.62</td>
<td>.31</td>
</tr>
<tr>
<td>8. Primary and secondary enrollment as % of age group 5-19</td>
<td>.85</td>
<td>-0.43</td>
</tr>
<tr>
<td>9. Pupil/teacher ratio</td>
<td>.68</td>
<td>-0.01</td>
</tr>
<tr>
<td>10. Manufacturing as % of Gross Domestic Product</td>
<td>.91</td>
<td>.12</td>
</tr>
<tr>
<td>11. Motor vehicles/1,000 population</td>
<td>.92</td>
<td>.23</td>
</tr>
<tr>
<td>12. Population/hospital bed</td>
<td>-0.54</td>
<td>.44</td>
</tr>
<tr>
<td>13. Population/physician</td>
<td>-0.75</td>
<td>.41</td>
</tr>
</tbody>
</table>

% Total Variance: 61 12 73.0

% Common Variance: 93.5 16.5

Eigenvalues: 7.92 1.56
of the unrotated matrix. These include the communality values, independence among the factors, and the number of factors.

The number of factors is based on certain criteria. Generally, the information pertaining to the unrotated matrix (specifically the proportion of variance explained by each factor and the cumulative percentage that is accounted for by the first \( m \) significant factors) provides a valuable clue. In their widely-read study Adelman and Morris (1967: 145) established two criteria for determining the number of factors to be rotated: 1) for runs with less than twenty variables (as in the present study) the percentage of total variance accounted for by the factors included in the rotated matrix was fixed at least 60%; and 2) given (1) any factor that explained less than 10% of the over-all proportion was to be dropped. Alternatively the eigenvalue of 1.0 might be used as the cut-off point. The two sets of criteria may or may not agree in practice. The two factors rotated for application in this study together explained 73% of the variance in the developmental data. The lower eigenvalue and the smaller proportion of total variance were 1.56 and 12% respectively; both pertained to Factor 2. On the other hand, Factor 3 (not reported) met the eigenvalue requirement (1.1) but was still dropped for contributing less than 10% to the total variance in the data. Thus, the Adelman-Morris rules were employed to choose two factors for the present study. The rotated factor matrix (for West Africa) is presented below; all the features of the unrotated matrix, already discussed, also apply (Table 22).
Table 22
Rotated Factor Matrix of Developmental Data on West Africa

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>FACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Energy consumption/capita</td>
<td>(0.93)</td>
</tr>
<tr>
<td>2. Electricity consumption/capita</td>
<td>(0.51)</td>
</tr>
<tr>
<td>3. Female as % of total primary enrollment</td>
<td>(0.95)</td>
</tr>
<tr>
<td>4. Phones/100,000 population</td>
<td>(0.92)</td>
</tr>
<tr>
<td>5. Radios/1,000 population</td>
<td>(0.85)</td>
</tr>
<tr>
<td>6. Agricultural production per male agricultural worker</td>
<td>0.21</td>
</tr>
<tr>
<td>7. Newspaper circulation/1,000 population</td>
<td>(0.69)</td>
</tr>
<tr>
<td>8. Primary and secondary enrollment as % of age group 5-19</td>
<td>0.56</td>
</tr>
<tr>
<td>9. Pupil/teacher ratio in primary education</td>
<td>(0.60)</td>
</tr>
<tr>
<td>10. Manufacturing as % of GDP</td>
<td>(0.87)</td>
</tr>
<tr>
<td>11. Motor vehicles/1,000 population</td>
<td>(0.92)</td>
</tr>
<tr>
<td>12. Population per hospital bed</td>
<td>-0.28</td>
</tr>
<tr>
<td>13. Population per physician</td>
<td>-0.48</td>
</tr>
</tbody>
</table>
For each variable the loading in parentheses indicates the factor with which that variable is more closely associated. Factor rotation is designed precisely to delineate distinct patterns of relationships in the data. However, two variables (electricity consumption/capita and primary and secondary enrollment as % of age groups 5-19) fall short of this expectation because they load fairly equally on both factors. But as they are the only deviant cases the factors may still be interpreted with confidence. Nine variables load higher on Factor 1 and four on Factor 2. For want of better names the factors have been labeled economic and social development respectively.

The factor score matrix gives a score for each case (country) on each of these factors. Each variable's weight on a factor depends on its loading. The higher the loading, the higher the score, and vice versa. Thus, each case's score on a given pattern or factor is the product of its data on each variable and the pattern weight for that variable. Therefore, a factor score is a datum for one case where the datum stands for the joint single value for a dimension consisting of many indicators. Factor scores may be interpreted as data on any variable.

Of course, some of the developmental variables have missing observations. In the calculation of factor scores for a given case, factor analysis will replace missing observations by the mean of the variable in question.

Number of missing observations for this case   proportion of
Number of variables to be factored   missing data allowed
If the proportion of missing variables exceeds the proportion of missing data allowed (as chosen and specified by the analyst), then the factor scores for that case will receive the (missing) value of 999.00.

But this method has the tendency to reduce the magnitude of the factor scores in direct proportion to the number of variables with missing observations. Alternatively, if an analyst is confident that the missing values, if available, would follow the patterns of interrelationships found among the variables in the factor analysis, the factor score may be estimated by taking a weighted product of the existing data.

Under this procedure, the one followed in the present study, the number of variables to be factored is summed over the number of non-missing observations for a given case. The proportion of missing data allowed was indicated as 25% in this study (Tables 23 and 24).

Techniques of Analysis

Time Series Analysis. Contemporary (quantitative) research in international relations employs two principal techniques of analysis: synchronic and diachronic types of analysis. Regardless of which type the researcher chooses, the object is still to answer the crucial question: How may one study what (unit of analysis) one decides to study? In other words, once the data are in how should they be analyzed? Should the unit be studied synchronically or diachronically?
<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>-1.56</td>
<td>-1.76</td>
<td>-1.56</td>
<td>-0.93</td>
<td>-0.78</td>
<td>-0.14</td>
<td>0.18</td>
<td>0.37</td>
<td>0.49</td>
<td>0.25</td>
<td>0.77</td>
<td>0.84</td>
<td>1.12</td>
<td>0.94</td>
<td>1.09</td>
</tr>
<tr>
<td>Ghana</td>
<td>-1.51</td>
<td>-1.95</td>
<td>-1.14</td>
<td>-0.57</td>
<td>-0.11</td>
<td>0.99</td>
<td>0.22</td>
<td>-0.05</td>
<td>-0.27</td>
<td>0.14</td>
<td>0.86</td>
<td>0.81</td>
<td>1.05</td>
<td>1.22</td>
<td></td>
</tr>
<tr>
<td>Guinea</td>
<td>-1.86</td>
<td>-1.63</td>
<td>-1.26</td>
<td>-0.76</td>
<td>-0.09</td>
<td>-0.38</td>
<td>-0.04</td>
<td>0.08</td>
<td>0.78</td>
<td>0.28</td>
<td>0.48</td>
<td>0.38</td>
<td>0.80</td>
<td>1.10</td>
<td>1.56</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>-1.25</td>
<td>-1.48</td>
<td>-1.32</td>
<td>-0.86</td>
<td>-0.40</td>
<td>-0.51</td>
<td>-0.25</td>
<td>-0.35</td>
<td>0.00</td>
<td>0.26</td>
<td>0.52</td>
<td>0.77</td>
<td>1.41</td>
<td>1.60</td>
<td>1.63</td>
</tr>
<tr>
<td>Liberia</td>
<td>-1.40</td>
<td>-1.08</td>
<td>-1.81</td>
<td>-1.11</td>
<td>-0.43</td>
<td>-0.17</td>
<td>0.20</td>
<td>-0.00</td>
<td>0.02</td>
<td>0.34</td>
<td>-0.33</td>
<td>1.46</td>
<td>1.00</td>
<td>0.93</td>
<td>2.02</td>
</tr>
<tr>
<td>Niger</td>
<td>-0.84</td>
<td>-1.25</td>
<td>-1.12</td>
<td>-0.93</td>
<td>-0.71</td>
<td>-0.90</td>
<td>-0.76</td>
<td>-0.56</td>
<td>0.15</td>
<td>0.40</td>
<td>1.02</td>
<td>1.14</td>
<td>1.26</td>
<td>1.07</td>
<td>1.40</td>
</tr>
<tr>
<td>Nigeria</td>
<td>-1.30</td>
<td>-1.09</td>
<td>-0.93</td>
<td>-0.76</td>
<td>-1.22</td>
<td>-0.76</td>
<td>-0.50</td>
<td>0.41</td>
<td>0.42</td>
<td>0.14</td>
<td>0.67</td>
<td>0.90</td>
<td>0.66</td>
<td>1.48</td>
<td>1.82</td>
</tr>
<tr>
<td>Senegal</td>
<td>-1.33</td>
<td>-2.02</td>
<td>-1.21</td>
<td>-0.84</td>
<td>-0.48</td>
<td>-0.02</td>
<td>-0.20</td>
<td>0.08</td>
<td>-0.05</td>
<td>0.47</td>
<td>0.50</td>
<td>1.22</td>
<td>0.60</td>
<td>1.24</td>
<td>1.30</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>-0.97</td>
<td>-1.28</td>
<td>-0.82</td>
<td>-0.33</td>
<td>-0.36</td>
<td>-0.38</td>
<td>-0.13</td>
<td>-0.73</td>
<td>-1.10</td>
<td>-0.24</td>
<td>0.76</td>
<td>1.50</td>
<td>1.36</td>
<td>1.28</td>
<td>1.03</td>
</tr>
<tr>
<td>Togo</td>
<td>-2.11</td>
<td>-1.05</td>
<td>-1.38</td>
<td>-0.99</td>
<td>-0.95</td>
<td>-0.46</td>
<td>-0.10</td>
<td>0.42</td>
<td>0.62</td>
<td>0.78</td>
<td>0.64</td>
<td>0.39</td>
<td>0.76</td>
<td>1.27</td>
<td>1.21</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>-1.33</td>
<td>-1.43</td>
<td>-1.14</td>
<td>-1.21</td>
<td>-0.90</td>
<td>-0.58</td>
<td>-0.45</td>
<td>-0.40</td>
<td>0.35</td>
<td>0.71</td>
<td>0.83</td>
<td>0.85</td>
<td>1.43</td>
<td>1.18</td>
<td>1.40</td>
</tr>
</tbody>
</table>
Table 24

<table>
<thead>
<tr>
<th>Social Development Index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
</tr>
<tr>
<td>Benin</td>
</tr>
<tr>
<td>-0.63 -0.12 -0.43 0.17 -0.60 -0.16 2.01 1.75 0.90 0.79 -0.60 -0.04 -0.84 -1.17 -1.13</td>
</tr>
<tr>
<td>Ghana</td>
</tr>
<tr>
<td>-0.46 0.18 -0.24 -0.10 -0.81 -1.88 -1.27 -0.88 -0.13 1.03 0.90 1.24 0.51 0.85 1.19</td>
</tr>
<tr>
<td>Guinea</td>
</tr>
<tr>
<td>0.95 0.96 -0.60 -0.96 -1.62 -1.00 -1.23 -0.59 -0.65 0.60 1.06 1.50 1.01 0.54 -0.16</td>
</tr>
<tr>
<td>Ivory Coast</td>
</tr>
<tr>
<td>-0.77 -0.63 -0.93 -0.63 -0.96 0.48 1.26 1.71 1.38 -0.08 0.69 0.31 -1.06 -0.55 -0.46</td>
</tr>
<tr>
<td>Liberia</td>
</tr>
<tr>
<td>-0.83 -0.80 -0.57 -0.07 -0.17 0.19 0.14 1.38 0.88 0.89 1.85 -0.77 -0.77 -0.78 -1.14</td>
</tr>
<tr>
<td>Niger</td>
</tr>
<tr>
<td>-1.56 -1.03 -1.45 -0.39 -0.57 0.50 1.16 1.99 1.21 0.56 -0.45 -0.64 0.06 -0.50 0.28</td>
</tr>
<tr>
<td>Nigeria</td>
</tr>
<tr>
<td>-0.08 -0.08 0.08 -0.23 0.98 0.89 0.27 -0.09 -0.74 -2.45 -1.19 -0.40 0.57 0.50 1.86</td>
</tr>
<tr>
<td>Senegal</td>
</tr>
<tr>
<td>-2.87 -0.00 -0.47 -0.11 0.59 0.37 0.66 1.18 1.87 0.43 0.33 -0.90 -0.05 -0.79 -0.71</td>
</tr>
<tr>
<td>Sierra Leone</td>
</tr>
<tr>
<td>-0.39 -1.02 -1.15 -1.12 -1.30 -0.44 0.18 1.02 2.23 1.30 0.91 -0.40 -0.42 0.14 0.40</td>
</tr>
<tr>
<td>Togo</td>
</tr>
<tr>
<td>0.42 -0.96 -0.47 -0.92 0.94 0.96 -0.66 -0.91 -1.17 -1.20 -0.15 1.18 0.90 0.93 0.87</td>
</tr>
<tr>
<td>Upper Volta</td>
</tr>
<tr>
<td>1.79 1.10 1.27 -0.10 -1.38 -1.54 -0.20 -0.93 -0.63 -0.57 0.36 -0.06 0.56 0.60 -0.01</td>
</tr>
</tbody>
</table>
Synchronic or cross-sectional analysis focuses on the unit of analysis at more or less the same point in time. For instance, the foreign policies of Latin American countries in 1973 may be compared; but no attempt is made to trace changes or development in these policies. Synchronic analysis dominates international relations research. This might be because of data limitations and/or, as Galtung suggests (1969: 261), the belief that a unit's behavior is best understood in its own context. In any case, inferences are made about change over time on the basis of synchronic or cross-sectional data. For instance, the entire set of correlations in the World Handbook of Social and Political Indicators (Russett, et al., 1964) are based on synchronic data.

It is for this reason that the widespread use of cross-sectional analysis has been lamented. Robert Burrowes has suggested that the use of this technique is proper only when the researcher has i) a statistically sufficient number of cases or observations, ii) operational, valid, and theoretically relevant indicators, and iii) reliable and comparable data (1970: 465-480).

Diachronic analysis, on the other hand, focuses on a particular unit's behavior and follows it through time; thus changes in that behavior are noted. The hypothesis that increases in integration lead to increases in development suggests that integration is temporally prior to development.8

This technique (multiple time series) has several distinct advantages. First, it frees the analyst from the uncertainties of
basing longitudinal inferences upon simultaneous cross-sectional data. Second, it enables the researcher to ascertain directionality of relations between variables. Finally, time series allows for empirically determining both the appropriate length of time intervals and the number of intervals required for an independent variable's effect to be felt.

The appeal of time series analysis has not escaped notice. As reflected in Caporaso and Pelowski's (1971) study of economic and political integration in Europe, Smoker's (1969) analysis of Sino-Indian relations, and Mueller's (1971) study of trends in popular support for American involvement in the Korean and Vietnam wars, to name only three, it is slowly but surely gaining ground in international relations research.

However, neither synchronic nor diachronic analysis is a perfect research strategy. Indeed as indicated by Galtung (1969), there is dire need for more nomothetic, diachronic research with sufficient reliable, longitudinal data on several units to yield general propositions. (Idiographic research deals with one unit; it is rich in detail with propositions embracing many variables but at the same time poor in rigor with respect to the number of units. Nomothetic research, on the other hand, is poor in detail but rich in rigor). As in Singer and Small's study of balance of power since 1815, the researcher chooses a time interval and tests the hypotheses for combinations of states or alliances existing in the world or in a particular region today. (This type of research is different from trend or panel study where the same social unit is studied through time so as to trace its
changes or development.) Because of the trade-offs between idio-
graphic and nomothetic research, one approach is to combine both
synchronic and diachronic analyses in the same study.

The Case. As used in this study "case" or observation, in one
instance, refers to the entire region of West Africa, so that there
is only one data value for each time point. Since there are fifteen
consecutive data points for each variable -- the data cover the
fifteen-year period from 1959 to 1973 -- this means fifteen data points
for each of the four variables comprising the axiomatic theory of regional
integration. Alternatively it means that there are sixty data
values for West Africa. It is in this sense that the present study
is idiographic, diachronic.

But idiographic, diachronic research on the West African case may
hide some inter-country differences. To see if this is true, this
analysis will be repeated with respect to each of the eleven West
African countries in this study. Thus the number of data-points is
still sixty, for each country. As in the case of the West African case,
it is possible here to ascertain the causal relationship between the
variables in each bivariate hypothesis. Furthermore, this application
should help us in ranking all eleven countries in terms of their
"contributions" to the West African regional scores (correlation
coefficients). Some of them will probably fall above, and others below
the regional scores.

Synchronic analysis is impossible on the West African case
because one data value (variable X) cannot be correlated with another
data value (variable Y). But it is possible with regards to the region's eleven member-states collectively, where the data are arranged by year and the analysis is performed on the eleven cases for each time point separately. This will amount to fifteen separate analyses.

Alternatively the axiomatic theory may, and will in this study, be tested synchronically-cum-diachronically. This type of analysis involves, first, examining changes in all variables for all eleven cases together, with the 660 data points arranged by year. Second, this analysis can be done with respect to the West African case as well. Here, however, the analyst takes one comprehensive view of the evidence but he makes no attempt to ascertain causality. Synchronic-cum-diachronic analysis is a way of verifying the findings of the (regional) idiographic, diachronic research. Its only drawback is that it forecloses ascertaining causality, especially as regards to the eleven West African cases. Since there are eleven cases, a lagged value of one variable cannot possibly refer to the same case.

Despite its wide appeal, time series analysis has several drawbacks which the researcher must beware of if his analysis is to be meaningful. These difficulties, essentially violations of the general linear regression model, are: 1) errors in observations or variables; 2) multicollinearity; and 3) autocorrelation. The following paragraphs examine these flaws, the consequences which they produce, and the alternative statistical procedures to employ in their presence.
The general linear regression model,

\[ Y_t = \alpha + \beta X_t + e_t \]

is based on several crucial assumptions: 1) \( E(U)=0 \); 2) \( E(UU')=\sigma^2 I \); 3) \( X \) has rank \( k<n \). In plain language, these assumptions state that the variables have zero expectation; that there is constant variance (Homoscedasticity); that the number of cases/observations exceeds the number of parameters to be estimated and no linear dependence exists between the independent variables. But frequently in time series analysis these assumptions are not met, thereby creating multi-collinearity and autocorrelation problems.

Multicollinearity is produced by linear dependence between the explanatory variables. When this happens, a) a fall in the precision of estimation makes it very difficult, if not impossible, to determine the relative influences of the explanatory variables; b) researchers are sometimes led to drop variables incorrectly just because their coefficients are not significantly different from zero; and c) particular sets of sample data tend to influence estimates of coefficients some of which may change dramatically with the addition of a few more observations.

Tests for the presence of multicollinearity are invariably the same, but there seems to be no absolute cure to the problem. Where an equation involves only two explanatory variables, the presence of multicollinearity may be indicated by the correlation coefficient. Generally multicollinearity is regarded as harmful if at the 5% level of significance the value of the F statistic is significantly
different from zero but none of the t statistics for the regression coefficients are (Kmenta, 1971: 390). When the presence of multi-
collinearity has been established, the suggested remedy is to acquire new data, if possible (Johnston, 1972: 163) or transform the original data to take first differences (Kmenta, p. 390). However, Kmenta cautions that this method has the drawback of introducing autoregression in the disturbances.

The practical solution adopted in the present study has been to drop any explanatory variable that appeared to be insignificantly related to the dependent variable since neither suggested remedy was possible nor appropriate. Furthermore, the Kmenta method is similar to the transforming procedure when the data are serially correlated. The statistical implications of transforming data twice with the same procedure may be enormous.

By far the biggest difficulty that besets time series data is autocorrelation in the disturbance term. By definition, time series data are observations made at regular intervals in time. Most statistical analyses assume independence between data values (Quenouille, 1952: ch. 11). Time series data, however, are characterized by a dependence or similarity of data values. Each observation depends, to some extent, on the previous observation and will in turn help determine the next observation. That is, a disturbance in one observation carries over into another observation. A violation of the ordinary least squares (OLS) assumption of independence in the data, autocorrelation distorts the true relationship.
Autoregression is caused by two things: 1) An incorrect specification of the form of the relationship between the variables. Specifying a quadratic relationship as linear is a special case of "the problem of omitted variables." The second cause of autocorrelation is measurement error in the "explained" or dependent variable.

The consequences of applying OLS to a serially correlated model are grave. First, though estimates of $\beta$ remain unbiased, yet their sampling variances may be larger than those obtained by a slightly different method of estimation. Second, OLS will seriously underestimate these variances. Finally, OLS predictions can no longer be viewed with confidence (Johnston, 1972: 246). To deal effectively with autocorrelation the researcher has to determine the process that is generating the disturbance in the data, and then to transform the data so that they conform to OLS requirements.

The time-dependence model that econometricians have accorded the widest attention is the first-order autoregressive process or AR(1). By this is meant that each error depends only on its own previous value and a small perturbation:

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

Though higher-level orders may occur, the fact still remains that the AR(1) process is the most common, unless the data are cyclically or seasonally variable. Generally the researcher proceeds by taking successive lags to determine which level-order is the process at work (Box and Jenkins, 1970: ch. 3). It must be remembered, however, that the length of the series (that is, the number of time-
points covered by the data) may influence the number of lags to be taken because for each lag that is taken, one degree of freedom is lost. In the present study the AR(1) process was established as the time-dependence model.

The theoretical optimum solution to serially correlated time series data is generalized least squares (GLS). Originally formulated by A.C. Aitken in 1935, the GLS estimator \( \hat{B}^* \) is the best linear unbiased estimator of the true parameter vector \( B \) with regards the four assumptions of the general linear regression model:\(^{10}\)

\[
\hat{B}^* = (X^\dagger \Omega^{-1} X)^{-1} X^\dagger \Omega^{-1} Y
\]

The GLS estimator also has minimum variance and yields an unbiased estimate of the error variance \( \sigma^2 \) when the data are serially correlated. Despite all these advantages, GLS is only a theoretical solution; indeed it assumes prior knowledge of the error variance-covariance matrix \( \Omega \). Since \( \Omega \) is generally not known, it has to be deduced from sample data by examining residuals that fall out of OLS regressions. GLS is, therefore, OLS after transformation.

Of course, the important question is: How may serially correlated data be transformed to meet OLS requirements? This depends very much on whether the presence of autocorrelation in the data has been established. To accomplish this the researcher applies OLS to the general linear model, obtaining estimates of \( \hat{\alpha}, \hat{\beta} \) and \( \hat{\rho} \). \( \hat{\rho} \) is the coefficient for the residual.

Perhaps the single most popular test of autocorrelation is the Durbin-Watson test statistic \( d \) which is routinely obtained in regression analysis. \( d \) has upper \( (d_U) \) and lower \( (d_L) \) limits for
its significance levels. They are used in testing the hypothesis of zero autocorrelation against the alternative of positive autocorrelation:

i) If \( d < d_L \) the data are positively autocorrelated;

ii) if \( d > d_U \) the data are not autocorrelated; and

iii) if \( d_L < d < d_U \) the test is inconclusive.

The first of these requires data transformation. The second means that OLS estimates can be viewed with considerable confidence. The third speaks for itself and suggests one of the drawbacks of the Durbin-Watson test statistic. The other is that \( d \) is inappropriate for stochastic models (Johnston, 1972: 252).

In response to the inconclusive region of \( d \), the analyst may decide to ignore it if it is closer to \( d_U \), or to transform the data if \( d \) is closer to \( d_L \). A much simpler test is to estimate \( \rho \) from

\[
\hat{e}_t = \rho \hat{e}_{t-1} + v_t
\]

If \( \rho \) is low (close to zero or less than \( \rho = .3 \) as Hibbs (1973) and Box and Jenkins (1970) suggest) the OLS estimates are accurate. But if \( \rho \) is high, the data have to be transformed by appropriate use of \( \rho \).

Transforming autocorrelated data takes the form of taking "generalized differences". Again consider the general linear model

\[
Y_t = \alpha + \beta X_t + e_t \quad \ldots \ldots \ldots \ldots \quad (1)
\]

This is multiplied by \( \rho \) for time \( (t-1) \)

\[
\rho Y_{t-1} = \rho \alpha + \rho \beta X_{t-1} + \rho e_t \quad \ldots \ldots \ldots \ldots \quad (2)
\]
Equation (2) is then subtracted from equation (1)

\[ Y_t - \rho Y_{t-1} = \alpha(1-\rho) + \beta(X_t-\rho X_{t-1}) + (e_t - \rho e_{t-1}) \] ........................ (3)

Equation (3) is also defined as

\[ Y_t - \rho Y_{t-1} \triangleq \tau Y_t \]
\[ X_t - \rho X_{t-1} \triangleq \tau X_t \]

and may also be expressed as

\[ \tau Y_t = \alpha(1-\rho) + \beta \tau X_t + \nu_t \] ........................ (5)

The transformation procedure discussed here pertains to the bivariate regression equation, but it is also applicable to the multiple case. Furthermore, the first observed value of each variable is transformed differently from the remaining values of that variable as in equation 5. This is because the previous value of the first observed value is not available. Thus,

\[ \sqrt{1 - \rho^2} Y_1 \triangleq \tau Y_1 \]
\[ \sqrt{1 - \rho^2} X_1 \triangleq \tau X_1 \] ........................ (6)

for the first observed values, and

\[ \tau Y_t = Y_t - \rho Y_{t-1} \]
\[ \tau X_t = X_t - \rho X_{t-1} \] for \( t-2, 3, 4, \ldots n \) ........................ (7)

The next stage is to apply OLS to the transformed data. The estimates hereby obtained are, as mentioned earlier, much more accurate than those obtained from the normal OLS regression. This entire procedure has been vividly illustrated by Hibbs (1973: 284-9) in his re-analysis of Mueller's 1970 study of presidential popularity from Truman to Johnson. In point of fact, as time series is really a
sophisticated version of regression analysis, it is only fitting and proper to close this section with a discussion of this very popular technique.

**Regression (correlation) analysis** is a technique for analyzing interval-level variables. It is useful for both descriptive and inferential (predictive) purposes. As a descriptive tool, the technique is used to describe the strength and direction of the relationship between the variables. If this is the researcher's goal, then he should examine the correlation coefficient \( r \) and the coefficient of determination \( r^2 \).

The result of the regression of one variable on another is known as \( r \). \( r \) ranges in value from 1.00 to -1.00. A value of 1.00 means a perfect positive relationship between the variables; a value of -1.00, a perfect negative relationship. Values in between show low or moderate relationships; but as they do not accurately reflect curvilinear relationships, it is advisable to examine one's scatterplots before drawing conclusions about correlation coefficients. A value of zero means the absence of a relationship. \( r^2 \) indicates the amount of variance in the dependent variable that is accounted for by the independent variable(s).

One may also want to predict values of the dependent variable from data on the explanatory variables. For this purpose the \( a \) and \( b \) statistics are required. \( a \), the intercept, represents the point where \( X = 0 \); that is, where the least squares line crosses the Y axis. \( b \) is the slope of the regression line. It indicates by how much \( Y \) changes
for every unit change in X. In statistical inference one cannot attach too much meaning to $r$ without taking into consideration the size of the sample and the sampling distribution of the coefficient (Roscoe, 1969). In other words, a test of significance of the relationship between the variables is required before conclusions may be drawn about population parameters on the basis of sample data. A significant relationship exists if the observed $r$ equals or exceeds the tabled value at the desired level of significance with $N - 2$ degrees of freedom, where $N$ is the number of cases. A one- or two-tailed test may be used. The former is used when the investigator has specified beforehand that only a positive coefficient is of interest.

Nevertheless, $r$ is simply a measure of association and does not necessarily prove causality (Blalock, 1972). As a matter of fact, causality is very difficult to prove. By saying that two variables X and Y are related, all that one can possibly mean is that Y is present whenever X is present, or vice versa. On the other hand, by means of partial correlation one can still determine whether $r$ (zero order correlation between two variables) is spurious or real. If $r$ remains unaffected by plugging a control variable into the equation ($r_{xy,z}$), then one may infer that $r$ probably accurately reflects the true relationship. If, on the other hand, $r_{xy,z}$ drops to zero or close to it, then one may conclude that the zero order $r$ is spurious.
But even partial correlation does not prove the causal direction: \( r_{xy} \) or \( r_{yx} \)? On the basis of theory one may infer causality but there is no empirical justification for doing so. Thus the question becomes: Which of the variables is temporally prior to the other? If \( X \) (see diagram), the diagonal \( a \) would be expected to be greater in correlational value than the diagonal \( b \); if \( Y \), then the reverse order would hold.

The diagram illustrates one of the appeals of time series analysis: It enables one to ascertain causality. Thus in the hypothesis "An increase in the level of integration leads to a rise in the level of socio-economic development," we would expect \( r_{xt+kyt+k} > r_{yt+xt+k} \).

In the diagram above showing the six possible correlations between \( X \) and \( Y \), \( r_{xt+xt+k} \) and \( r_{yt+yt+k} \) are the autocorrelations; they reflect the degree of similarity in the time series data. The higher the autocorrelation, the more consistent or similar are the data on that specific variable. \( r_{xt+yt} \) and \( r_{xt+k+yt+k} \) are the simultaneous correlations and should be about equal. As noted above, the diagonals are the correlations of special interest in the present study.

But the matter does not end here because spuriousness remains a big problem. The cross-lags or diagonals ignore the possibility of the best predictors of \( xt+k \) and \( yt+k \) being \( xt \) and \( yt \) respectively.
As Bohrnstedt observes (1968: 119), "If y is assumed to be the cause of x but a time lag is needed for the change in x to occur, then the simultaneous correlations between x and y can be regarded as 'spurious'." In other words, $r_{x_t y_{t+k}}$ and $r_{y_t x_{t+k}}$ are usually positive. Therefore, in examining $r_{x_t y_{t+k}}$, one should control for $y_t$ because it is an artifact of the time-lagged causation existing between x and y. That is, since the past in each dependent variable poses an undue influence, it is important to have it removed. In the present study the partials $r_{x_t y_{t+k}} \cdot y_t$ and $r_{y_t x_{t+k}} \cdot x_t$ will be compared for causality in testing each hypothesis in the axiomatic theory.

But in comparing the influence of X on Y and of Y on X in the attempt to ascertain causality, we do not expect to find complete zero correlation in one relationship as opposed to another. No doubt, the two variables can influence each other. However, what is even of more importance to this study is the magnitude of the absolute difference between the two correlation coefficients.

The theory will be tested first at a one-year lead. For instance, the impact of integration in 1959 was probably not felt until 1960. The theory will also be tested at a two-year lead. The results of the two leads will be compared to see which one better supports the theory. A lead of three or more years will not be attempted here because for each lead that is taken one degree of freedom is lost. Remembering that we have only fifteen annual observations to start with, a long lead or lag is a luxury that this study can ill-afford. In any case, the influence of one variable upon another probably decreases with a long lead or lag.
The axiomatic theory will be considered supported by the data if the following conditions are met: i) first and foremost, if causality is in the sequence predicted by the hypothesis; ii) if the direction of the obtained correlation (that is, negative or positive) is as predicted by each hypothesis, and iii) if the effects of other variables in the axiomatic theory are controlled for. In view of obvious data limitations, the theory is not considered "closed". Stated differently, the possible influence of excluded variables is fully recognized. Therefore, the hypothesis of independence will be rejected when the value of any correlation is equal to or greater than an (arbitrarily-established) \( r \) of .200.

Trends in the Variables. Remembering that the data utilized in the present study are diachronic data for ECOWAS covering the period 1959-1973, the best way to approach the question in our view is to follow the changes or development in each and every variable in the theory. Stated differently, the scatterplot is a vivid, invaluable forerunner of the correlational analysis proper. Trend analysis, as this is also called, may help the researcher decide which indicators to retain or drop from further analysis. It anticipates the results of the real test of the theory, besides helping verify the correlation coefficient for changes in each variable measured against time.

All the indicators or variables for the West African case generally met the linearity assumption of the general linear regression model (Figures 5-10). That is, all observed values lay very close to the prediction line. They are based on data presented in Table 25.
<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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic Development</strong></td>
<td>-0.63</td>
<td>-1.51</td>
<td>-1.54</td>
<td>-1.36</td>
<td>-0.65</td>
<td>-0.09</td>
<td>-0.06</td>
<td>-0.05</td>
<td>0.26</td>
<td>-0.08</td>
<td>1.01</td>
<td>1.22</td>
<td>0.99</td>
<td>1.13</td>
<td>1.36</td>
</tr>
<tr>
<td><strong>Social Development</strong></td>
<td>-3.12</td>
<td>-0.12</td>
<td>-0.20</td>
<td>1.28</td>
<td>0.13</td>
<td>-0.01</td>
<td>-0.01</td>
<td>1.25</td>
<td>0.40</td>
<td>0.85</td>
<td>-0.05</td>
<td>-0.30</td>
<td>-0.00</td>
<td>0.03</td>
<td>-0.18</td>
</tr>
<tr>
<td><strong>Economic Integration</strong></td>
<td>1.4</td>
<td>4.5</td>
<td>5.4</td>
<td>5.8</td>
<td>5.2</td>
<td>5.6</td>
<td>5.1</td>
<td>4.5</td>
<td>6.3</td>
<td>5.2</td>
<td>5.7</td>
<td>3.9</td>
<td>4.3</td>
<td>7.4</td>
<td>7.8</td>
</tr>
<tr>
<td><strong>Political Integration</strong></td>
<td>100.0</td>
<td>18.9</td>
<td>26.4</td>
<td>32.3</td>
<td>31.8</td>
<td>37.0</td>
<td>36.2</td>
<td>45.5</td>
<td>46.7</td>
<td>47.3</td>
<td>47.2</td>
<td>50.9</td>
<td>56.8</td>
<td>64.9</td>
<td>66.2</td>
</tr>
<tr>
<td><strong>Transportation:</strong></td>
<td></td>
<td></td>
<td></td>
<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><strong>Connectivity</strong></td>
<td>30.4</td>
<td>31.5</td>
<td>35.0</td>
<td>36.4</td>
<td>32.8</td>
<td>37.5</td>
<td>37.5</td>
<td>42.3</td>
<td>48.4</td>
<td>49.0</td>
<td>54.0</td>
<td>52.0</td>
<td>54.6</td>
<td>52.7</td>
<td>55.7</td>
</tr>
<tr>
<td><strong>Intensity</strong></td>
<td>49.5</td>
<td>44.8</td>
<td>45.7</td>
<td>43.9</td>
<td>43.5</td>
<td>46.7</td>
<td>45.9</td>
<td>48.5</td>
<td>49.8</td>
<td>53.2</td>
<td>49.3</td>
<td>49.6</td>
<td>47.6</td>
<td>54.4</td>
<td>58.6</td>
</tr>
<tr>
<td><strong>Dependency</strong></td>
<td>48.6</td>
<td>45.4</td>
<td>44.2</td>
<td>43.8</td>
<td>44.4</td>
<td>43.3</td>
<td>43.2</td>
<td>42.8</td>
<td>41.9</td>
<td>39.9</td>
<td>38.0</td>
<td>37.0</td>
<td>36.6</td>
<td>36.3</td>
<td>32.9</td>
</tr>
</tbody>
</table>
The economic development variable (Figure 5) showed an undulating trend, registering its lowest point early in 1960 and 1961. One possible explanation for this dip is that West African countries as a group were apparently experiencing their immediate post-independence teething problems. The schism between continentalists and regionalists did not help matters either. But as indicated by the prediction line, the trend was a highly positive one. From another angle, the first half of the period might be viewed as recovery from a slump; net gains in economic development might be marked from 1967 onwards.

Social development (Figure 6) registered a very unimpressive trend. This is attested to by both the correlation coefficient (.283) and the prediction line near which most of the variable's values lay, except for one outlier, the value for 1959. The 1959 value was the lowest in the entire period.

In other words, the level of economic development in West Africa was considerably higher than that of social development. Indeed, but for the outlier (already mentioned) and the peaks of 1962 and 1966, social development might very well have been stagnant.

There was steadfast but moderate improvement in the level of economic integration among West African states during the period. Over the entire period it clambered from 1.4% in 1959 to a mere 8% in 1973. In between (from 1960 until 1971) economic integration was virtually at a standstill. Thus, at an annual rate of progress of 0.3%, it may take forever to reach 40%. This forecast is, of course, based on the prediction line (Figure 7).
Figure 5: Changes in Economic Development in West Africa
Figure 6: Changes in Social Development in West Africa
Figure 7: Changes in Economic Integration in West Africa
Like social development political integration had an initial outlier, but unlike social development it registered steady growth (Figure 8). However, at an annual rate of 0.16%, this growth was not as fast as that of economic integration. It therefore means that the level of intra-West African diplomatic activity was extremely low in the period. The lone high value, for 1959, is explained by the fact only two member-states, Liberia and Ghana, were sovereign states and, therefore, could and did have diplomatic ties. But as the number of independent states increased sharply in West Africa, the level of political integration in that region plummeted to 19%, recovering slowly until the high of 64% was attained in 1973.

As indicated in the previous chapter, connectivity (Figure 9) refers to the proportion of West African countries served by single-plane transport. This grew quite healthily from around 30% in 1959 to about 56% in 1973. That the West African air transport system was poor early in the period is not surprising. Communication and transportation routes were distorted to prevent goods from traveling through the possessions of another colonial power (Hoskyns, 1967: 358).

But the achievement of political independence accorded the new states the chance to forge their common links more forcefully than their colonial bosses had allowed. And according to the prediction line, at an annual rate of growth of 2.0%, the West African air transportation system should become completely developed in 1994, ceteris paribus.
Figure 8: Changes in Political Integration in West Africa
Figure 9: Changes in Transport (Connectivity) in West Africa
Apparently it is not enough simply for one West African country to have single-plane service with another. The intensity or frequency of the service is probably more important. This is because one flight cannot possibly accommodate the volume of all transactions in goods and information, and tourist flows between the country-pair. This problem is taken into account by the intensity variable (Figure 10). As it turns out (see the correlation analysis below), this variable (intensity) is a more accurate reflection of the growth of the West African air transportation system than is connectivity. Since both variables are based on the same flight data, the intensity variable is evidently more inclusive of the West African air transport system.

Returning again to Figure 10, 1959 through 1963 actually showed a deterioration in the system. The system did not start to improve until after 1963. It was about this time that the regional airlines, notably Air Afrique, Ghana Airways, and Nigeria Airways, started to operate in earnest. This is not meant to detract from the contribution made by non-regional airlines such as PanAm, Air France, and British Airways. The fact remains, however, that the former group of airlines have always been more regional-oriented in service.

Figure 11 reveals that dependency, the geographic concentration of the external trade of West African countries, was as high as 49% in 1959 but declined grudgingly to about 33% in 1973. This drop represented an annual rate of decrease of just under one per cent. At this snail's pace and barring other developments, it will take ECOWAS until the late 1980s to cut down dependency to about 20%.
Figure 10: Changes in Transport (Intensity) in West Africa
Figure 11: Changes in Dependency in West Africa
Indeed apron strings are hard to sever. In his opening speech at a recent ECOWAS Council of Ministers' meeting the Federal Nigerian Commissioner for Economic Development, Dr. O. Adewoye, reminded his colleagues that "the new kind of economic elite interested in the perpetuation of the status quo" was alive and well. He also dismissed what he called the advice of neo-colonialist experts that Africa should now concentrate on agriculture to the neglect of industry (West Africa, November 28, 1977, p. 2401).

On the other hand, protracted as the death of dependency may be, it simply cannot pass unnoticed. This very slow but steadfast annual rate of decline of under one per cent is probably due to West African countries' diversification of their external trade as insurance against fluctuations in home market conditions of their metropoles, and to a policy of regional economic integration. If the latter, it certainly is taking a very long time to be felt, as we saw earlier.

Nevertheless, the situation appears to be improving for the region. The Ivory Coast, perhaps the member with the closest ties with France, has been slowly reversing its position in order to accommodate its African interests (McGowan, 1969). In an interview on the ABC News program, Issues and Answers (March 13, 1977), British Prime Minister James Callaghan discounted suggestions of British domination of the Commonwealth: "Britain is one member of a group of thirty-six nations and we have no more influence than the fact that we are one member."
The Member-States

Trends in the original list of variables on the eleven countries in the present study justify the choice of variables to constitute the axiomatic theory of regional integration. Stated differently, trends in the data on the member-states of West Africa for the most part are the same as those for the West African case, with slight variations. However, the variations make no difference to the final selection of variables for inclusion in the theory.

The variables Connectivity, Political Integration, and Social Development, it will be recalled, were dropped following the trend analysis with respect to the West African case. The trend analysis of these variables pertaining to the member-states justifies that decision.

In the case of political integration, the trend analysis uncovers another reason for dropping this variable: missing data. This variable was marked by enough missing information to warrant its exclusion from the regression analysis. As it was measured, Political Integration related to only independent states.

Connectivity was dropped because it tended to duplicate the intensity variable. The present trend analysis of this variable reveals that the various member-states of the region "contributed" unequally to the regional variable. Of all eleven countries only Ghana, Nigeria, and Senegal made impressive contributions. The role of the remaining countries was essentially fluctuant.
West African countries showed uneven levels of social development and at different times during the period. But in most member-states social development fluctuated much. Only in Ghana and Upper Volta was the pattern slightly different. In those two countries social development levels actually dropped in the early years, but were on the rise afterwards. In Nigeria social development was stagnant for four years. Then in 1963 it improved a little only to decline steadily over the next couple of years. However, after 1968 social development in Nigeria improved steadily.

Of the four variables in the theory the level of economic development rose (with slight variations) in all countries throughout the period with the exception of two countries. In Sierra Leone economic development rose from 1960 until 1962. Until 1964 it became a plateau; then it improved a little only to decline until 1967. After that year economic development in Sierra Leone rose sharply to peak in 1969. The remainder of the period was characterized by decline.

In the Ivory Coast economic development peaked early, in 1961. Between 1961 and 1965 it declined steadily. For the rest of the period economic development in the Ivory Coast was essentially stagnant.

Sierra Leone, Upper Volta, Togo, Liberia, and Benin hardly contributed to economic integration in West Africa for about the first half of the period. But this was compensated for in the second half. So did Ghana, except that its first half was marked by a peak in 1964.
Senegal made a positive contribution until 1969. Over the next three years this contribution dropped and flattened out. But then Senegal's contribution picked up again by the end of the period.

Niger and Nigeria played an unsteady role. Their contributions to West African economic integration fluctuated over the entire period. The Republic of Guinea, on the other hand, made a positive contribution until 1964. This was followed by decline.

As far as air transport is concerned, only Guinea's contribution declined over the years. The remaining ten countries gave a helping hand to the regional cause, but in varying amounts. However, the efforts made by Benin, Niger and Togo tended to fluctuate over the period.

Like economic development dependency was marked by an almost consistent pattern. In the present case, however, the pattern was a negative trend. Only a handful of countries deviated from this trend. Benin and Togo registered two peaks though in different years. For Upper Volta the trend was a step-like pattern during the first half of the period. In the case of Niger the trend was almost flat except for the valley in 1961. Other than this, the trend in dependency was generally negative as in the West African case.
FOOTNOTES

1. Nye defines political integration in terms of common institutions; common decision-making; a sense of common identity and mutual obligation, and reliable expectations of non-violent relations to refer to institutional, policy, attitudinal integration, and security-community (1971: 36-48).

2. Diplomatic activity is important for another reason. Besides being the political agent of his government, the diplomat also can and does play an important role in the transnational integration of communities. For a detailed discussion of this point see especially Horst Mendershausen (1973).

3. As a matter of fact, only one study (Alger and Brams, 1967) has used quantitative data on number of diplomats exchanged. Alger and Brams observe that participation in international organizations provides most nations with much greater access to the outside world than do diplomatic relations. However, the data utilized in the Alger-Brams study are for only one time point and are therefore not particularly helpful here.

4. The data source, World Energy Supplies, invariably carries this caveat: "The data on consumption usually refer to 'apparent inland' consumption which is the purely arithmetic result of subtracting, from the sum of production and imports, the sum of exports, additions to stocks (where known) and international bunkers. Apparent consumption therefore, may occasionally give little more than an indication of the magnitude of actual (i.e. 'measured') consumption; this is particularly true when either (i) there are no reliable stock data, or (ii) apparent consumption is a small difference between large aggregates and is thus sensitive to small errors in the aggregates. The production, trade and stock data for coal, petroleum products, natural gas and hydroelectricity enter into the calculation of the apparent inland consumption, in units of coal equivalent, of all sources of energy together; in addition external trade in coke and manufactured gas is subtracted from the consumption of the exporting country and added to that of the importing country. Data on the production of crude petroleum do not enter the calculation of consumption. External trade in electricity is of minor importance and it was therefore not considered to be necessary to estimate a division of it into hydro and thermal components; it was all treated as though it were hydro-electricity."
UNESCO warns that "the combined ratio [for both primary and secondary enrollment] is based on the total enrollment ratio for both levels related to the estimated population 5-19 years old. The adjusted school enrollment ratio for both levels has been computed according to the same principles, but on the basis of a population figure adjusted to correspond to the actual duration of schooling. It should be borne in mind, in interpreting these ratios, that the actual age ranges of the pupils enrolled in primary and secondary schools do not exactly correspond to the arbitrary age groups 5-14, 15-19, 5-19. Furthermore, the length of schooling at each level of education and in each type of school varies widely from one country to another. It follows that the maximum value for any particular enrollment ratio may be either above or below 100... The adjusted ratio is an attempt to minimize the effect in the calculation of differences in the national school systems, thereby improving the international comparison of these data."

It contains the following: 1) arrival-departure time; 2) day of flight; and 3) flight number, all of which must always be present to constitute a flight. A discrepancy in any of them signifies another flight datum.

East African Airways and Nigeria Airways pilot data were unfortunately, available only for more recent years. But if this information is any valid indication, East Africa is at least 90% dependent on the United Kingdom.

In his study, referred to earlier, Kansky concedes the point but can do nothing about it. Thus, the result of his cross-sectional analysis "carries no implication as to the temporal order of the transportation networks and regional economy. Both are functionally conjoined, i.e., a transportation network a may exist prior to an economic activity b or vice versa" (1963: 114). It can be said for cross-sectional analysis that it enables the researcher to test propositions about the entire universe of nations, whereas generalizations made in time series analysis apply to only the nations in the study. But this restriction (on generalizations in time series) does not hold when all nations, or a representative sample are studied.

Burrowes (1970) contains an excellent bibliography on this subject.

Proofs of this and other theorems presented here can be found in any standard econometric text. The interested reader is referred especially to Johnston (1972) and Kmenta (1971).
This procedure is straightforward. See, for instance, Wonnacott and Wonnacott (1970: 140-143; 326-335). It is also easily accomplished given statistical packages with the necessary lead/lag facilities, such as OSIRIS and SPSS.

In demonstration of this point, two simple regression analyses were performed using transportation and economic development (for West Africa) alternately as dependent and independent variables. The tests yielded identical statistics (including an $r$ of .649), with the exception of the standard error.

Because of space limitations these trends, a total of 77, are not displayed as in the West African case; they are simply recounted here.
CHAPTER FIVE
RESEARCH FINDINGS

The usefulness of any theory seems to lie exclusively in its fit to observational data. If the data do not bear out the theory, then the theory must either be discarded or modified to fit the data. But one test of a theory does not verify or disprove it completely. As a matter of fact, it may take many repeated tests either way to do so. In any case, the theory must be testable; that is, capable of being checked out in observational data.

This chapter presents the research findings in answer to the very important question: Do the data bear out the axiomatic theory of regional integration? In the discussion of trends in the variables for the West African case at the end of the previous chapter, several salient points emerged.

First, all variables met the linearity assumption of the general linear regression model. Second, all correlation coefficients were high and in the predicted direction except those for social development and political integration, which were disappointingly low. These two variables turned out to be uncorrelated with the others in the theory. Finally, connectivity was high but was dropped, nevertheless, like social development and political integration because
of low association. The remaining variables² constitute the axiomatic theory.

The research findings are presented in two parts. The first part relates to the West African case, and the second part to the individual member-states of the region. Either part comprises the six hypotheses (direct effects) of the axiomatic theory and synchronic-cum-diachronic analysis³. The direct-effect findings are diagrammed regarding the West African case and then summarized for discussion. But they are not diagrammed as regards the member-states for lack of space; however, the pertinent hypotheses are spelled out. Synchronic-cum-diachronic analysis encompasses two multiple regression equations (hypotheses 7 and 8), and the indirect effects (hypotheses 9 through 11), besides the axiomatic theory.

The West African Case

A. Direct Effects. The six hypotheses of the axiomatic theory are diagrammed below together with the analytic results. The first set of diagrams relate to the one-year lead.

A. Empirical Display: One-Year lead

Hypothesis 1: $E_{t+1} = \alpha + I_t + u_t$

![Diagram of Hypothesis 1]

$r_{E_{t+1}I_t,E_t} = .552$  
$r_{I_t+E_{t+1},I_t} = .092$
Hypothesis 2: \( T_{t+1} = \alpha + \beta E_t + u_t \)

\[
\begin{array}{c}
T_t \\
.670 \\
.649 \\
E_t \\
.880 \\
\end{array}
\begin{array}{c}
.751 \\
.721 \\
.600 \\
.669 \\
E_{t+1} \\
\end{array}
\]

\( r_{T_{t+1}E_t} \cdot T_t = .561 \)

\[
\begin{array}{c}
I_t \\
.347 \\
-0.452 \\
D_t \\
.055 \\
\end{array}
\begin{array}{c}
I_{t+1} \\
-0.356 \\
-0.409 \\
D_{t+1} \\
\end{array}
\]

\( r_{I_{t+1}D_t}.I_t = -0.238 \)

\( r_{D_{t+1}I_t}.D_t = .088 \)

Hypothesis 3: \( I_{t+1} = \alpha + \beta E_t + u_t \)

Hypothesis 4: \( T_{t+1} = \alpha + \beta I_t + u_t \)

\[
\begin{array}{c}
T_t \\
.670 \\
.139 \\
I_t \\
.347 \\
\end{array}
\begin{array}{c}
.450 \\
.265 \\
I_{t+1} \\
\end{array}
\]

\( r_{T_{t+1}I_t}.T_t = .485 \)

\( r_{I_{t+1}I_t}.I_t = .233 \)
Hypothesis 5: $E_{t+1} = \alpha - \beta D_t + u_t$

\[ r_{E_{t+1}D_t} E_t = -0.681 \]

\[ r_{D_{t+1}E_t} D_t = -0.516 \]

Hypothesis 6: $T_{t+1} = \alpha - \beta D_t + u_t$

\[ r_{T_{t+1}D_t} T_t = -0.840 \]

\[ r_{D_{t+1}T_t} D_t = -0.575 \]

B. Empirical Display: Two-Year Lead

Hypothesis 1: $E_{t+2} = \alpha + \beta I_t + u_t$

\[ r_{E_{t+2}I_t} E_t = 0.755 \]

\[ r_{I_{t+2}I_t} I_t = 0.325 \]
Hypothesis 2: \( T_{t+2} = \alpha + \beta E_t + u_t \)

\[
\begin{array}{c}
T_t \\
.575 \\
E_t \\
.792 \\
D_t \\
.920 \\
I_t \\
-0.201 \\
T_{t+2} \\
.783 \\
.720 \\
.480 \\
-0.106 \\
-0.353 \\
-0.333 \\
-0.288 \\
I_{t+2} \\
\end{array}
\]

\( r_{T_t E_t T_{t+2}} = .745 \)

\( r_{E_t T_{t+2}E_t} = .044 \)

Hypothesis 3: \( I_{t+2} = \alpha - \beta D_t + u_t \)

\[
\begin{array}{c}
I_t \\
-0.304 \\
D_t \\
.920 \\
I_{t+2} \\
-0.288 \\
-0.333 \\
-0.353 \\
-0.333 \\
D_{t+2} \\
\end{array}
\]

\( r_{I_t D_t I_t} = -0.461 \)

\( r_{D_t I_{t+2}D_t} = -0.121 \)

Hypothesis 4: \( T_{t+2} = \alpha + \beta I_t + u_t \)

\[
\begin{array}{c}
T_t \\
.380 \\
-0.288 \\
I_t \\
-0.090 \\
-0.178 \\
I_{t+2} \\
T_{t+2} \\
.595 \\
\end{array}
\]

\( r_{T_t I_t T_{t+2}} = -0.014 \)

\( r_{I_t T_{t+2}I_t} = -0.251 \)
Hypothesis 5: \( E_{t+2} = \alpha - \beta D_t + u_t \)

\[ \begin{array}{c}
E_t & \rightarrow & .792 & \rightarrow & E_{t+2} \\
-0.810 & \rightarrow & -0.908 & \rightarrow & -0.881 \\
D_t & \leftarrow & .920 & \leftarrow & D_{t+2}
\end{array} \]

\( r_{E_{t+2}D_tE_t} = -0.745 \quad r_{D_{t+2E_tD_t}} = -0.870 \)

Hypothesis 6: \( T_{t+2} = \alpha - \beta D_t + u_t \)

\[ \begin{array}{c}
T_t & \rightarrow & .380 & \rightarrow & T_{t+2} \\
-0.417 & \rightarrow & -0.737 & \rightarrow & -0.122 \\
D_t & \leftarrow & .920 & \leftarrow & D_{t+2}
\end{array} \]

\( r_{T_{t+2}D_tT_t} = -0.688 \quad r_{D_{t+2T_tD_t}} = -0.711 \)

Table 26 indicates that the data indeed support the axiomatic theory of regional integration at a lead of one year. In other words, it takes this length of time for the independent variable to have an effect on the dependent variable in each and every hypothesis pertaining to the West African case. All correlations are in the predicted direction and also favor each hypothesis against its alternative of "reverse causality."

Whereas, for instance, the effect of economic integration on economic development is a moderate one of .552, the contrary sequence
<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Pearson r's</th>
<th>Absolute Difference</th>
<th>Pearson r's</th>
<th>Absolute Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. $E_{t+n} = \alpha + \beta I_t + u_t$</td>
<td>0.552</td>
<td>0.092</td>
<td>0.460</td>
<td>0.755</td>
</tr>
<tr>
<td>2. $T_{t+n} = \alpha + \beta E_t + u_t$</td>
<td>0.561</td>
<td>0.055</td>
<td>0.506</td>
<td>0.745</td>
</tr>
<tr>
<td>3. $I_{t+n} = \alpha - \beta D_t + u_t$</td>
<td>-0.238</td>
<td>0.088</td>
<td>-0.150</td>
<td>-0.461</td>
</tr>
<tr>
<td>4. $T_{t+n} = \alpha + \beta I_t + u_t$</td>
<td>0.485</td>
<td>0.233</td>
<td>0.252</td>
<td>-0.014</td>
</tr>
<tr>
<td>5. $E_{t+n} = \alpha - \beta D_t + u_t$</td>
<td>-0.681</td>
<td>-0.416</td>
<td>-0.265</td>
<td>-0.745</td>
</tr>
<tr>
<td>6. $T_{t+n} = \alpha - \beta D_t + u_t$</td>
<td>-0.840</td>
<td>-0.575</td>
<td>-0.265</td>
<td>-0.688</td>
</tr>
</tbody>
</table>

*E is Economic Development; I Economic Integration; T Air Transport and D Dependency.
demonstrates that development has practically no effect on economic integration. It could be argued, therefore, that integration is causally prior to development. Hypotheses 2 and 3 indicate also that the dependent variables transport and integration have virtually no influence on their "causes" integration and external dependency respectively. But the fact that in Hypotheses 5 and 6 the reverse correlations are moderate suggests that the relationship in either case is not entirely unidirectional.

The absolute differences range from .150 for the effect of dependency on integration to .506 for the effect of development on transport. This is further evidence of support for the theory. Besides, it suggests that the explanatory variables vary in power.

But how powerful is the theory at a lead of one year? As might be expected, the answer is provided by $r^2$, the amount of variation in each dependent variable that is accounted for by its independent variable. $r^2$ provides a more accurate assessment of the theory than does $r$ (Table 27).

To start with, economic integration is responsible for 32% of the variance in economic development. This figure is remarkable considering the fact that the annual rate of growth in West African integration was very small during the entire fifteen-year period. Thus it renders groundless criticisms of Third World integration. At least in the West African case, integration does indeed pay dividends.
Table 27

Summary of Research Findings: \( r^2 * \)

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>( r^2 )</th>
<th>( H_0 )</th>
<th>( H_a )</th>
<th>( r^2 )</th>
<th>( H_0 )</th>
<th>( H_a )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ( E_{t+n} = \alpha + \beta I_t + u_t )</td>
<td>.31</td>
<td>.01</td>
<td>.57</td>
<td>.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. ( T_{t+n} = \alpha + \beta E_t + u_t )</td>
<td>.32</td>
<td>.003</td>
<td>.56</td>
<td>.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. ( I_{t+n} = \alpha - \beta D_t + u_t )</td>
<td>.06</td>
<td>.008</td>
<td>.21</td>
<td>.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. ( T_{t+n} = \alpha + \beta I_t + u_t )</td>
<td>.24</td>
<td>.05</td>
<td>.002</td>
<td>.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. ( E_{t+n} = \alpha - \beta D_t + u_t )</td>
<td>.46</td>
<td>.17</td>
<td>.56</td>
<td>.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. ( T_{t+n} = \alpha - \beta D_t + u_t )</td>
<td>.71</td>
<td>.33</td>
<td>.47</td>
<td>.51</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*E is Economic Development; I Economic Integration; T Air Transport, and D Dependency.
Though external dependency does have a negative effect on integration as hypothesized, yet this impact represents only six per cent of the variance in integration. Again as suggested earlier, this is probably because of West African countries' geographic diversification of their external trade. Whatever the reason, it occurs, no doubt, at the expense of intra-West African trade.

On the other hand, many writers attest to the fact that some overland trade takes place unrecorded. If West African states are not developing as rapidly as they may desire, one primary cause, as hypothesized, is their unequal exchange relations with their external environment. Dependence on their metropoles for a large proportion of their manufactured imports exposes them to the vicissitudes in the latter's home markets.

However, dependency is not the sole cause of West African under-development. This is by virtue of the fact that dependency explains 46% of the variance in development. But whether or not the error term is due to lack of capital, natural resources, and non-receptivity to change is surely an empirical question.

If the West African air transport system is not optimal, it is due largely to dependency as indicated by the explained variance of 71%. Again this is not surprising. The fact that the transactions of the region, especially trade, are externally-oriented means that the intra-regional transport system has in the past been largely neglected.
But what does it take to expand the regional transport system? Theoretically it requires a drastic reduction in external dependency which in practice means a growing integration. As a matter of fact, integration accounts for 24% of the variance in transport. It also helps the regional partners improve their living conditions as seen earlier. And when living conditions improve, the transport system will also expand as evidenced by the explained variance of just over 31%.

All of these relationships pertain to a lead of one year only. They obtain only when the time lapse between independent and dependent variables is one year. There is a possibility, however, of a change in the situation as a result of increasing the lead. As mentioned above, a lead of two years was also applied in the test to see if this would make any difference in the data's support for the theory. By statistical manipulation a two-year lead means that an independent variable's value in, say, 1961, are correlated to the dependent variable's values in 1963. Does it, in other words, require a lapse of two years in order for the explanatory variable's effect to be felt? If so, does it hold true for our axiomatic theory of regional integration?

Table 27 provides the answer to this very important question. It shows quite convincingly that this time the theory is only "half-right". The data still support hypotheses 1, 2, and 3. What is even more striking is the improved variance explained: 57, 56, and 21 per cent respectively. But the fact that dependency now
has a more inimical effect on integration (21% as opposed to 6%) is certainly nothing to gloat over.

At a two-year lead Hypotheses 4 through 6 are now disconfirmed by the data, even though the variance in development that is accounted for by dependency has jumped to 56% from 46%. Two observations are in order. First, the defeat of Hypotheses 5 and 6 (though by small margins) is really a blessing in disguise. According to the alternative variances explained (76% and 51% respectively), improvement in standards of living and in transportation does in fact result in a waning of the grasp of external dependency. On the other hand, integration's influence on transportation has dropped to nil.

What does all this mean to West Africa? The analysis reveals support for the axiomatic theory at a one-year lead. With respect to the three positive hypotheses, the amount of variance explained in the dependent variables ranges from 24% to 31%. External dependency has a debilitating effect especially on transportation and development. That this is bad news for a region in a hurry to improve its peoples' living conditions is a point that can hardly be over-emphasized. To make matters worse, the effect of integration on transport is reduced to nothing at a two-year lead.

Fortunately, the situation is not completely gloomy for West Africa. Both integration and development become more potent as time glides by. Concomitant with this change is the declining impact of external dependency as the regional partners improve their standards of living. The transport system expands, too. In practical terms,
then, the region's efforts at integration with an eye to better living standards and transportation and communication facilities, fructify at a two-year lead while they try to reduce their dependence on their metropoles. It can, therefore, be argued that at least in the interest of West Africa, the two-year lead longitudinal analysis is supportive of the theory.

B. Synchronic-cum-Diachronic Analysis. Another important question to address here is whether the results of the preceding analysis will stand up under synchronic, diachronic analysis of all eleven hypotheses. The object here is simply to find out if the variables in the equation are associated. No attempt is made to ascertain causality. Though longitudinal data are utilized, yet the analysis as such is not, strictly speaking, dynamic for the simple fact that no lagged or lead variables are involved. One drawback of synchronic, diachronic analysis is that it is susceptible to serial correlation since the data are longitudinal. But this problem may be handled as prescribed in the previous chapter.

Table 28
Pearson r's from Synchronic, Diachronic Analysis: Hypotheses 1-6*

<table>
<thead>
<tr>
<th></th>
<th>E</th>
<th>I</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>.169</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>.649</td>
<td>.139</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>-0.838</td>
<td>-0.452</td>
<td>-0.553</td>
</tr>
</tbody>
</table>

* E is Economic Development; I Economic Integration; T Transportation; and D Dependency.
"Cross-sectional" analysis of the first six hypotheses (Table 28) appears to confirm the theory as revealed by all but two of the six correlations. But before jumping to conclusions, it is absolutely necessary to test these results for the presence of autocorrelation by means of the Durbin-Watson test statistic $d$. In the present study of six bivariate hypotheses, pertaining to the West African case, there are fifteen annual observations and, of course, one explanatory variable in each hypothesis. At the 5% level, then, the lower and upper limits of the critical $d$ are 1.08 and 1.36 respectively (Johnston, 1972: 430). Table 29 shows that the data are serially correlated with respect to two hypotheses, and independent for another two; the test is inconclusive for still another two.

Table 29

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>$\hat{\rho}$</th>
<th>observed $d^*$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. $E_t = \alpha + \beta I_t + u_t$</td>
<td>.8</td>
<td>0.33 (L)</td>
</tr>
<tr>
<td>2. $T_t = \alpha + \beta E_t + u_t$</td>
<td>.2</td>
<td>1.64 (U)</td>
</tr>
<tr>
<td>3. $I_t = \alpha - \beta D_t + u_t$</td>
<td>.1</td>
<td>1.36 (I)</td>
</tr>
<tr>
<td>4. $T_t = \alpha + \beta I_t + u_t$</td>
<td>.6</td>
<td>0.93 (L)</td>
</tr>
<tr>
<td>5. $E_t = \alpha - \beta D_t + u_t$</td>
<td>.2</td>
<td>1.28 (I)</td>
</tr>
<tr>
<td>6. $T_t = \alpha - \beta D_t + u_t$</td>
<td>.2</td>
<td>1.43 (U)</td>
</tr>
</tbody>
</table>

* 'L' means the data are autocorrelated; 'U' means the data are independent and 'I' means that the test is inconclusive.
To deal with the inconclusive region of $d$ and also to confirm the other results, residuals were obtained from all six OLS regressions and entered as new data in a separate analysis. Regressed against the time variable they yielded the correlations shown in Table 29. A $\hat{\rho}$ of .3 or less is regarded as indicative of serial independence in the data. The OLS results may, therefore, be interpreted with confidence. The $\hat{\rho}$'s not only confirmed the Durbin-Watson test showing data for Hypotheses 1 and 4 as autocorrelated and for Hypotheses 2 and 6 as serially independent, but also deciphered the inconclusive region of $d$ for Hypotheses 3 and 5 as serial independence.

The logical next step was to determine the time dependence model in the data for Hypotheses 1 and 4 on the basis of which to transform the data. As expected, this was AR(1); that is, the disturbance in each data value was caused by the immediate preceding value. The autocorrelated data were then transformed as prescribed earlier. This brings us back to Table 28 which has been revised to include analytic results based on the transformed data, and is presented again as Table 30.

The results of the cross-sectional analysis tend to agree with those of the causal analysis performed above. All but two of the correlations are in the predicted direction. In three of the four confirmed hypotheses the $r$'s and per cent variation explained are really higher than those obtained from the causal analysis at a one-year lead. Besides, the $r$'s for the four hypotheses are
significant at the 5% level. The two negated hypotheses involve economic integration which has a very low, negative relationship with development and transport.

However, it must be remembered that all six coefficients merely indicate the presence or lack of association between the variables. As a matter of fact, there is no way of determining the temporal sequence of the variables in any equation. One simply cannot tell, for instance, from the of -0.838 whether development or dependency is prior to the other. All that can be said with any amount of certainty is that the two variables are highly associated. On the other hand, the fact that most of the relationships are significant means that 95% of the time, the variables will be highly associated.

2. Synchronic-cum-diachronic analysis also deals with two multiple regression equations; these are the seventh and eighth hypotheses. The Durbin-Watson test of residual differences yielded a of 1.50 and of 1.63 for the seventh and eighth hypotheses respectively.

Table 30

Pearson r's from Synchronic, Diachronic Analysis, Hypotheses 1-6: Transformed Data*  

<table>
<thead>
<tr>
<th></th>
<th>E</th>
<th>I</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>-0.125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>-0.125</td>
<td>0.649</td>
<td>-0.192</td>
</tr>
<tr>
<td>T</td>
<td>0.649</td>
<td>-0.192</td>
<td>-0.838</td>
</tr>
<tr>
<td>D</td>
<td>-0.838</td>
<td>-0.452</td>
<td>-0.553</td>
</tr>
</tbody>
</table>

*E is Economic Development; I Economic Integration; T Transportation; and D Dependency.
Since the computed $d$'s exceeded the upper bounds of the critical values (1.25 and 1.46) at the one per cent level of significance for two and three explanatory variables respectively, the pertinent regression statistics could be viewed with confidence.

In the seventh hypothesis economic development is posited as a function of economic integration and dependency

$$E_t = \alpha + \beta_0 I_t - \beta_1 D_t + u_t$$

The results of this analysis are present in Table 31.

Table 31

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Economic Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple $R$</td>
<td>.8707</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.7581</td>
</tr>
<tr>
<td>Standard error</td>
<td>.5145</td>
</tr>
</tbody>
</table>

Independent variables  | $B$  | $\beta$ | Standard Error | $B$ | $F$  |
------------------------|------|--------|----------------|-----|------|
Dependency              | -0.2481| -0.9576| .0431          |     | 33.190|
Economic Integration    | -0.1856| -0.2639| .1169          |     | 2.522 |
(Constant A)            | 11.2110|        |                |     |      |

First, are the statistics concerning the degree of linear dependence of the dependent variable on the explanatory variables. Information on the amount of variation in Economic Development that can be explained by linear dependence upon Dependency and Economic Integration operating jointly is provided by $R^2$. Table 31 shows that $R^2 = .7581$, indicating that Dependency and Economic Integration both account for about 76 percent of the variation in Economic Development.
Moreover, \( R^2 \) is important in terms of the overall accuracy of the prediction equation. On the basis of the following information from 1960,

\[
E_t = A + B(D_t) = B(I_t),
\]

(where \( A \) is the constant, and \( B \) the slope), the predicted Economic Development score for West Africa is -1.902. Prediction accuracy in absolute units (B's) is reflected by the Standard Error of Estimate (SEE) for the regression equation. SEE may be interpreted as the standard deviation of residuals. Thus, \( .5145 \) shown in Table 31 reflects, on the average, the extent to which predicted scores of Economic Development deviate from the actual scores.

The \( B \) values given in Table 31 are partial regression coefficients; consequently, they may be used as measures of the influence of either explanatory variable. For instance, the partial for Dependency means that Economic Development drops by -0.2481 for each unit increase in Dependency, when the effect of Economic Integration is controlled statistically.

On the other hand, the explanatory variables may be measured in different units. This renders it difficult to assess the relative importance of Dependency and Economic Integration on the basis of the \( B \) values alone. For this purpose the \( \beta \) values, standardized regression coefficients, are required. Thus, for each unit of change in Dependency, Economic Development in West Africa declines by the amount \( .9576 \). This drop is almost four times as much as that (-0.2639) "caused" by a unit change in Economic Integration. In other words, Dependency
influences Economic Development negatively far more than does Economic Integration. Alternatively, the coefficients demonstrate that Economic Development is hampered far less by Economic Integration than by Dependency. The $\beta$ statistic for Dependency is significant at the five per cent level; that for Economic Integration is not.

The eighth hypothesis features Transport as a function of Economic Integration, Economic Development, and Dependency

$$T_t = \alpha + \beta_0 I_t + \beta_1 E_t - \beta_2 D_t + u_t$$

Table 32

Selected Statistics from Multiple Regression, Hypothesis 8

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Air Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
<td>.6496</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.4220</td>
</tr>
<tr>
<td>Standard error</td>
<td>2.6815</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>$B$</th>
<th>$\beta$</th>
<th>Standard Error</th>
<th>$B$</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Development</td>
<td>2.1700</td>
<td>.6438</td>
<td>.7840</td>
<td>7.602</td>
<td></td>
</tr>
<tr>
<td>Economic Integration</td>
<td>.7197D-01</td>
<td>.0304</td>
<td>.5514</td>
<td>0.017</td>
<td></td>
</tr>
<tr>
<td>Dependency</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>(Constant $A$)</td>
<td>47.8780</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

As far as multiple regression analysis is concerned, Transport is unique in the sense that it is the only variable in the theory that is related directly to the other three. Therefore, it is possible to determine the relative importance of all three explanatory variables, at least on the basis of the standardized regression coefficients.

To start with, Economic Development, Economic Integration and Dependency operating jointly, account for 42 per cent of the variation
in Air Transport. But the standard error of estimate is 2.6815, as shown in Table 32. This means that, on the average, predicted Air Transport scores deviate from the actual scores by 2.6815.

Interestingly enough, virtually all the variation in Air Transport is explained by Economic Development. Both R and R² change negligibly after Economic Integration and Dependency are entered into the analysis. This analytic result is supported completely by the standardized regression coefficients for the independent variables. While Air Transport increases by .6438 for every unit increase in Economic Development, it does so by a mere .0304 for a similar change in Economic Integration. Indeed, the F-level or tolerance level for Dependency is insufficient to compute statistics for this variable; that is, Dependency seems to have no influence on Transport when the effects of Economic Development and Economic Integration are controlled statistically. As might be expected, only the influence of Economic Development is statistically significant, at the five per cent level.

3. The last three hypotheses pertain to indirect effects in the axiomatic theory. Once again, they are

9. \[ E_t = \alpha - \beta_0 D_t \cdot \beta_1 I_t + u_t \]
10. \[ T_t = \alpha + \beta_0 I_t \cdot \beta_1 E_t + u_t \]
11. \[ T_t = \alpha - \beta_0 D_t \cdot \beta_1 E_t \beta_2 I_t + u_t \]

In the analysis up to this point, we have seen that Dependency has a negative effect on Economic Development; and that Integration and Dependency have a positive and negative influence on Air Transport respectively. But the possibility of changes in these influences should
the effects of other variables be removed, simply cannot be overlooked.

Table 33 presents the results of the simple and partial correlational analyses of the last three hypotheses. Economic Development and Dependency are highly associated negatively, according to the simple $r$ of -0.838. But when the effect of Economic Integration is held constant, the correlation between the two variables rises to -0.867. This suggests that Integration is an antidote to Dependency.

### Table 33

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Partial $r$</th>
<th>Simple $r$</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. $E_t = \alpha - \beta_0 D_t \cdot \beta_1 I_t + u_t$</td>
<td>-0.867</td>
<td>-0.838</td>
</tr>
<tr>
<td>10. $T_t = \alpha + \beta_0 I_t \cdot \beta_1 E_t + u_t$</td>
<td>0.039</td>
<td>0.139</td>
</tr>
<tr>
<td>11. $T_t = \alpha - \beta_0 D_t \cdot \beta_1 E_t \beta_2 I_t + u_t$</td>
<td>0.002</td>
<td>-0.553</td>
</tr>
</tbody>
</table>

*E is Economic Development; I Economic Integration; T Air Transport; and D Dependency.

The relationship between Air Transport and Economic Integration is a very small one ($r = 0.139$). Small as it is, this association nevertheless drops to $r = 0.039$ when Economic Development is partialled out. The implication is that the "influence" of Integration on Air Transport, miniscule as it is, is mediated through Economic Development.

Finally, Dependency has a moderate, negative "effect" ($r = -0.553$) on Air Transport. As it turns out, this relationship is spurious. When Economic Integration is held constant, the
association between Air Transport and Dependency edges up to an $r$ of $-0.553$; again it suggests that Integration is a constraint on Dependency. On the other hand, when Economic Development is controlled for, Dependency's association with Air Transport plummets to an $r$ of $-0.021$. This evidence of spuriousness is corroborated when the effects of both Integration and Development are removed. According to the partial correlation ($r = 0.002$), Dependency's effect on Air Transport is essentially wiped out.

**Member-States**

The preceding analyses have revealed support for the axiomatic theory with respect to the West African case. But the region includes many member-states eleven of which constitute the present study. In view of the stark possibility that the analytic results concerning West Africa as a region may hide certain inter-country differences, these analyses have been repeated pertaining to each member-state. All findings are presented relative to the West African region's.

**A. Direct Effects**

**Economic Development and Integration.** The hypothesis that an increase in the level of integration leads to a rise in the level of economic development, holds true for the majority of ECOWAS member-states at both one- and two-year leads. As a matter of fact, a country like Guinea did better at a lead of one year, and with Upper Volta at the two-year lead than the region as a whole (Table 34). But this pattern was not uniform. It is interesting to note that not a single West African country fared badly economically as a
Table 34
Research Findings About Member-States: Economic Development and Integration

<table>
<thead>
<tr>
<th>Member-states</th>
<th>One-Year</th>
<th></th>
<th></th>
<th>Two-Year</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pearson r's</td>
<td>Absolute</td>
<td>Difference</td>
<td>Pearson r's</td>
<td>Absolute</td>
<td>Difference</td>
</tr>
<tr>
<td>Benin</td>
<td>-0.010</td>
<td>0.404</td>
<td>0.394</td>
<td>-0.161</td>
<td>0.541</td>
<td>0.380</td>
</tr>
<tr>
<td>Ghana</td>
<td>0.176</td>
<td>-0.032</td>
<td>0.144</td>
<td>0.432</td>
<td>0.411</td>
<td>0.021</td>
</tr>
<tr>
<td>Guinea</td>
<td>0.622</td>
<td>-0.241</td>
<td>0.381</td>
<td>0.836</td>
<td>-0.251</td>
<td>0.585</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>0.505</td>
<td>-0.111</td>
<td>0.391</td>
<td>0.511</td>
<td>-0.244</td>
<td>0.267</td>
</tr>
<tr>
<td>Liberia</td>
<td>0.471</td>
<td>0.270</td>
<td>0.201</td>
<td>0.378</td>
<td>0.329</td>
<td>0.049</td>
</tr>
<tr>
<td>Niger</td>
<td>0.063</td>
<td>-0.410</td>
<td>0.347</td>
<td>0.111</td>
<td>-0.594</td>
<td>0.483</td>
</tr>
<tr>
<td>Nigeria</td>
<td>-0.167</td>
<td>-0.148</td>
<td>0.019</td>
<td>0.251</td>
<td>-0.021</td>
<td>0.230</td>
</tr>
<tr>
<td>Senegal</td>
<td>0.519</td>
<td>-0.079</td>
<td>0.440</td>
<td>0.245</td>
<td>-0.242</td>
<td>0.003</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>-0.096</td>
<td>0.639</td>
<td>0.543</td>
<td>0.178</td>
<td>0.717</td>
<td>0.539</td>
</tr>
<tr>
<td>Togo</td>
<td>0.482</td>
<td>-0.111</td>
<td>0.371</td>
<td>0.689</td>
<td>0.135</td>
<td>0.554</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>0.111</td>
<td>0.649</td>
<td>0.538</td>
<td>0.780</td>
<td>0.324</td>
<td>0.456</td>
</tr>
<tr>
<td>WEST AFRICA</td>
<td>0.552</td>
<td>0.090</td>
<td>0.460</td>
<td>0.755</td>
<td>0.325</td>
<td>0.430</td>
</tr>
</tbody>
</table>
result of integration. On the other hand, integration seemed to make no difference to the economies of Ghana, and Nigeria and Senegal (both at the two-year lead).

Another observation is that, on the basis of the alternative hypothesis, the integration "input" of Niger declined as its economy improved. On the contrary, Benin and Sierra Leone's integration inputs rose as a result of improvements in their economies. (It will be recalled that the general pattern was the opposite of Benin and Sierra Leone's experience.) This was also true of Upper Volta at the one-year lead.

**Air Transport and Economic Development.** Does an increase in the level of development lead to an improvement in air transport capacity for West African states? According to the research findings, the answer is a qualified yes. This hypothesis was confirmed with respect to most of the West African states (Table 35). But there were a few deviant cases.

Guinea's participation in the regional transport system suffered as a consequence of an improvement in her economy. Nigeria and Upper Volta benefitted economically after air transport improved at the one-year lead. So did Senegal, at the two-year lead. But the situation reversed itself at the two-year lead as far as Nigeria and Upper Volta were concerned. In other words, the hypothesis was confirmed with respect to these two countries only at the two-year lead. In the case of Sierra Leone the relationship between air transport and economic development was practically nil at a lead of
Table 35

Research Findings About Member-States: Air Transport and Economic Development

<table>
<thead>
<tr>
<th>Member-State</th>
<th>$H_0$</th>
<th>$H_a$</th>
<th>Absolute Difference</th>
<th>$H_0$</th>
<th>$H_a$</th>
<th>Absolute Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>.352</td>
<td>-0.056</td>
<td>.296</td>
<td>.370</td>
<td>.263</td>
<td>.116</td>
</tr>
<tr>
<td>Ghana</td>
<td>.425</td>
<td>-0.064</td>
<td>.361</td>
<td>.676</td>
<td>.156</td>
<td>.520</td>
</tr>
<tr>
<td>Guinea</td>
<td>-0.610</td>
<td>-0.423</td>
<td>.187</td>
<td>-0.612</td>
<td>-0.037</td>
<td>.575</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>.571</td>
<td>.061</td>
<td>.510</td>
<td>.467</td>
<td>.360</td>
<td>.107</td>
</tr>
<tr>
<td>Liberia</td>
<td>.331</td>
<td>-0.058</td>
<td>.273</td>
<td>.567</td>
<td>-0.084</td>
<td>.483</td>
</tr>
<tr>
<td>Niger</td>
<td>.564</td>
<td>-0.370</td>
<td>.194</td>
<td>.416</td>
<td>.209</td>
<td>.207</td>
</tr>
<tr>
<td>Nigeria</td>
<td>.116</td>
<td>.263</td>
<td>.147</td>
<td>.665</td>
<td>.436</td>
<td>.229</td>
</tr>
<tr>
<td>Senegal</td>
<td>.328</td>
<td>.294</td>
<td>.034</td>
<td>.399</td>
<td>.569</td>
<td>.170</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>-0.102</td>
<td>-0.041</td>
<td>.061</td>
<td>.254</td>
<td>-0.017</td>
<td>.237</td>
</tr>
<tr>
<td>Togo</td>
<td>.321</td>
<td>.039</td>
<td>.282</td>
<td>-0.192</td>
<td>-0.016</td>
<td>.176</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>.228</td>
<td>.486</td>
<td>.258</td>
<td>.640</td>
<td>.501</td>
<td>.139</td>
</tr>
<tr>
<td>WEST AFRICA</td>
<td>.561</td>
<td>.055</td>
<td>.506</td>
<td>.745</td>
<td>.044</td>
<td>.701</td>
</tr>
</tbody>
</table>
one year. Only after two years was economic development able to have some influence on air transport.

Economic Integration and Dependency. As in the West African case dependency had a negative influence on economic integration for all but three of the West African states in this study (Table 36). Interestingly enough, this influence was greater at a one-year lead than it was for West Africa.

Guinea was unique because its economic integration input rose on the heels of dependency. Nigeria and the Ivory Coast also were anomalous. Unlike their sister-states, their dependency on their metropoles (the United Kingdom and France respectively) declined as a result of regional economic integration. As far as Senegal is concerned, the hypothesis was supported by the data only in terms of the one-year lead. But at an interval of two years this relationship was transformed into one of practically no influence either way.

Air Transport and Economic Integration. The analysis of the hypothesis that an increase in the level of integration leads to an improvement in air transport capacity, revealed quite interesting findings (Table 37). First, as in the West African case the hypothesis was confirmed for the majority of the member-states at an interval of one year, but the absolute differences varied much. Second, whereas the hypothesis was negated by the data at the two-year lead regarding the West African case, it was confirmed for seven out of the eleven member-states. This means that whereas air transport improved for most states as a result of a policy of regional economic integration,
Table 36
Research Findings About Member-States: Economic Integration and Dependency

<table>
<thead>
<tr>
<th>Member-States</th>
<th>( H_0 )</th>
<th>( H_a )</th>
<th>Absolute Difference</th>
<th>( H_0 )</th>
<th>( H_a )</th>
<th>Absolute Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>-0.358</td>
<td>-0.164</td>
<td>.194</td>
<td>-0.527</td>
<td>.467</td>
<td>.060</td>
</tr>
<tr>
<td>Ghana</td>
<td>-0.239</td>
<td>-0.119</td>
<td>.120</td>
<td>-0.356</td>
<td>.137</td>
<td>.219</td>
</tr>
<tr>
<td>Guinea</td>
<td>.584</td>
<td>.366</td>
<td>.218</td>
<td>.357</td>
<td>.323</td>
<td>.034</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>.143</td>
<td>-.423</td>
<td>.280</td>
<td>.026</td>
<td>-.255</td>
<td>.229</td>
</tr>
<tr>
<td>Liberia</td>
<td>-0.458</td>
<td>-0.223</td>
<td>.235</td>
<td>-.487</td>
<td>-.249</td>
<td>.238</td>
</tr>
<tr>
<td>Niger</td>
<td>-0.287</td>
<td>-0.082</td>
<td>.205</td>
<td>-.570</td>
<td>-.246</td>
<td>.324</td>
</tr>
<tr>
<td>Nigeria</td>
<td>.081</td>
<td>-.866</td>
<td>.785</td>
<td>.241</td>
<td>-.418</td>
<td>.177</td>
</tr>
<tr>
<td>Senegal</td>
<td>-0.314</td>
<td>.023</td>
<td>.291</td>
<td>.055</td>
<td>.131</td>
<td>.076</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>-0.489</td>
<td>-0.100</td>
<td>.389</td>
<td>-.469</td>
<td>-.337</td>
<td>.132</td>
</tr>
<tr>
<td>Togo</td>
<td>-0.575</td>
<td>-0.352</td>
<td>.223</td>
<td>-.723</td>
<td>.423</td>
<td>.300</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>-0.435</td>
<td>-0.158</td>
<td>.277</td>
<td>-.360</td>
<td>.248</td>
<td>.112</td>
</tr>
<tr>
<td>WEST AFRICA</td>
<td>-0.238</td>
<td>.088</td>
<td>.150</td>
<td>-.461</td>
<td>-.121</td>
<td>.340</td>
</tr>
</tbody>
</table>
Table 37

Research Findings About Member-States: Air Transport and Economic Integration

<table>
<thead>
<tr>
<th>Member-States</th>
<th>( H_0 )</th>
<th>( H_a )</th>
<th>Absolute Difference</th>
<th>( H_0 )</th>
<th>( H_a )</th>
<th>Absolute Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>.502</td>
<td>.257</td>
<td>.245</td>
<td>.425</td>
<td>.025</td>
<td>.400</td>
</tr>
<tr>
<td>Ghana</td>
<td>.090</td>
<td>.134</td>
<td>.044</td>
<td>-0.063</td>
<td>.122</td>
<td>.059</td>
</tr>
<tr>
<td>Guinea</td>
<td>-0.090</td>
<td>.695</td>
<td>.605</td>
<td>-0.262</td>
<td>.714</td>
<td>.452</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>-0.032</td>
<td>-0.137</td>
<td>.105</td>
<td>-0.743</td>
<td>-0.156</td>
<td>.587</td>
</tr>
<tr>
<td>Liberia</td>
<td>.374</td>
<td>.301</td>
<td>.073</td>
<td>.433</td>
<td>.383</td>
<td>.050</td>
</tr>
<tr>
<td>Niger</td>
<td>.478</td>
<td>-0.196</td>
<td>.282</td>
<td>.710</td>
<td>-0.279</td>
<td>.431</td>
</tr>
<tr>
<td>Nigeria</td>
<td>.395</td>
<td>.084</td>
<td>.311</td>
<td>.183</td>
<td>-0.321</td>
<td>.138</td>
</tr>
<tr>
<td>Senegal</td>
<td>.256</td>
<td>.126</td>
<td>.130</td>
<td>.250</td>
<td>-0.029</td>
<td>.221</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>-0.085</td>
<td>-0.078</td>
<td>.007</td>
<td>.262</td>
<td>.049</td>
<td>.213</td>
</tr>
<tr>
<td>Togo</td>
<td>.218</td>
<td>.091</td>
<td>.127</td>
<td>.424</td>
<td>-0.404</td>
<td>.020</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>.329</td>
<td>.219</td>
<td>.110</td>
<td>.589</td>
<td>.265</td>
<td>.324</td>
</tr>
<tr>
<td>WEST AFRICA</td>
<td>.485</td>
<td>.233</td>
<td>.252</td>
<td>-0.014</td>
<td>-0.251</td>
<td>.237</td>
</tr>
</tbody>
</table>
it was true for the region as such only when the time interval was one year.

On the other hand, the alternative hypothesis, that an improvement in air transport leads to an increase in the level of economic integration, was supported by the data regarding Guinea. There was virtually no significant relationship either way in the case of Ghana and Sierra Leone at the one-year lead. In this regard Nigeria was abnormal: An improved transport capacity actually led to a reduction in the country's integration input.

Economic Development and Dependency. One central hypothesis in the present study pertains to the inimical influence of dependency on economic development. As in the West African case, this hypothesis was confirmed for most of the member-states (Table 38). But the absolute differences (in favor of the hypothesis) were mostly small. However, there were a few deviant cases.

First, with respect to the Ivory Coast (and Benin and Upper Volta at the two-year lead), an increase in the level of development led to a decrease in dependency. Second, again regarding Benin, the analysis revealed (this time concerning the one-year lead) that this country's level of development rose as a result of an increase in dependency. Finally, dependency and economic development hardly had an effect on each other, as far as Niger and Togo were concerned, at an interval of one year.

Air Transport and Dependency. Like the first five bivariate hypotheses, the one pertaining to the influence of dependency on
<table>
<thead>
<tr>
<th>Member-States</th>
<th>H₀</th>
<th>Hₐ</th>
<th>Absolute Difference</th>
<th>H₀</th>
<th>Hₐ</th>
<th>Absolute Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>.304</td>
<td>-0.240</td>
<td>.064</td>
<td>.292</td>
<td>-0.685</td>
<td>.393</td>
</tr>
<tr>
<td>Ghana</td>
<td>-0.415</td>
<td>-0.272</td>
<td>.143</td>
<td>-0.361</td>
<td>-0.116</td>
<td>.245</td>
</tr>
<tr>
<td>Guinea</td>
<td>-0.373</td>
<td>.117</td>
<td>.256</td>
<td>-0.473</td>
<td>-0.401</td>
<td>.072</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>-0.277</td>
<td>-0.396</td>
<td>.119</td>
<td>-0.218</td>
<td>-0.415</td>
<td>.197</td>
</tr>
<tr>
<td>Liberia</td>
<td>-0.251</td>
<td>-0.047</td>
<td>.204</td>
<td>-0.329</td>
<td>-0.137</td>
<td>.192</td>
</tr>
<tr>
<td>Niger</td>
<td>.029</td>
<td>.179</td>
<td>.150</td>
<td>.236</td>
<td>.159</td>
<td>.077</td>
</tr>
<tr>
<td>Nigeria</td>
<td>-0.147</td>
<td>-0.205</td>
<td>.058</td>
<td>-0.368</td>
<td>-0.035</td>
<td>.333</td>
</tr>
<tr>
<td>Senegal</td>
<td>-0.530</td>
<td>-0.317</td>
<td>.213</td>
<td>-0.368</td>
<td>-0.351</td>
<td>.253</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>-0.434</td>
<td>-0.200</td>
<td>.234</td>
<td>-0.681</td>
<td>-0.428</td>
<td>.253</td>
</tr>
<tr>
<td>Togo</td>
<td>-0.008</td>
<td>-0.075</td>
<td>.067</td>
<td>-0.527</td>
<td>-0.194</td>
<td>.333</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>-0.419</td>
<td>-0.270</td>
<td>.149</td>
<td>.346</td>
<td>-0.431</td>
<td>.085</td>
</tr>
<tr>
<td>WEST AFRICA</td>
<td>-0.681</td>
<td>-0.416</td>
<td>.265</td>
<td>-0.745</td>
<td>-0.870</td>
<td>.125</td>
</tr>
</tbody>
</table>
air transport was supported by the data for seven out of eleven West African states (Table 39). Of the remaining four ECOWAS member-states, there was no relationship between economic development and dependency in either the null or alternative hypothesis with respect to Benin.

This finding was true of Upper Volta and Guinea as well, but only at a lead of one-year. At the two-year lead both Guinea and Niger's (especially Niger's) air transport capacity benefitted moderately from their dependency ties. It will be recalled that in the West African case, this hypothesis was supported and negated by the data at the one- and two-year leads respectively.

B. The research findings discussed thus far about the individual West African countries pertained to direct-effects. The remaining five hypotheses deal with synchronic-cum-diachronic analysis. Of these five hypotheses two have to do with multiple regression analysis. However, since the data are longitudinal, the analysis must be preceded by a test for serial correlation.

Table 40 shows quite clearly that on the basis of $\hat{\rho}$, the serial corelation coefficient, the data in the second equation were serially independent for all countries except Nigeria. But this fact was not brought out in the Durbin-Watson test, which was inconclusive regarding the data for Ghana, Liberia, Togo, Upper Volta as well as Nigeria. The first equation fared even worse than the second. Only Ghana and Upper Volta were shown by the test to have non-autocorrelated data. Of the remaining nine member-states five had autocorrelated data. But as far as the Ivory Coast, Liberia, Senegal and Sierra Leone were concerned, the Durbin-Watson test was inconclusive.
Table 39

Research Findings About Member-States: Air Transport and Dependency

<table>
<thead>
<tr>
<th>Member-States</th>
<th>One-Year</th>
<th>Two-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pearson r's</td>
<td>Pearson r's</td>
</tr>
<tr>
<td></td>
<td>$H_0$</td>
<td>$H_a$</td>
</tr>
<tr>
<td>Benin</td>
<td>0.081</td>
<td>-0.067</td>
</tr>
<tr>
<td>Ghana</td>
<td>-0.523</td>
<td>-0.141</td>
</tr>
<tr>
<td>Guinea</td>
<td>0.122</td>
<td>0.123</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>-0.489</td>
<td>-0.276</td>
</tr>
<tr>
<td>Liberia</td>
<td>0.220</td>
<td>-0.446</td>
</tr>
<tr>
<td>Niger</td>
<td>-0.339</td>
<td>-0.044</td>
</tr>
<tr>
<td>Nigeria</td>
<td>-0.437</td>
<td>0.194</td>
</tr>
<tr>
<td>Senegal</td>
<td>-0.598</td>
<td>-0.339</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>-0.468</td>
<td>0.120</td>
</tr>
<tr>
<td>Togo</td>
<td>-0.332</td>
<td>0.195</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>-0.193</td>
<td>-0.097</td>
</tr>
<tr>
<td>WEST AFRICA</td>
<td>-0.840</td>
<td>-0.575</td>
</tr>
</tbody>
</table>
### Table 40

**Member-States: Test for Serial Correlation***

<table>
<thead>
<tr>
<th>Member-States</th>
<th>Equation 1</th>
<th>Equation 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\hat{\rho}$</td>
<td>observed $d$</td>
</tr>
<tr>
<td>Benin</td>
<td>.8</td>
<td>0.16 (L)</td>
</tr>
<tr>
<td>Ghana</td>
<td>.2</td>
<td>1.54 (U)</td>
</tr>
<tr>
<td>Guinea</td>
<td>.7</td>
<td>0.51 (L)</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>.5</td>
<td>0.96 (I)</td>
</tr>
<tr>
<td>Liberia</td>
<td>.3</td>
<td>1.23 (I)</td>
</tr>
<tr>
<td>Niger</td>
<td>.5</td>
<td>0.79 (L)</td>
</tr>
<tr>
<td>Nigeria</td>
<td>.8</td>
<td>0.40 (L)</td>
</tr>
<tr>
<td>Senegal</td>
<td>.2</td>
<td>1.22 (I)</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>.4</td>
<td>1.27 (I)</td>
</tr>
<tr>
<td>Togo</td>
<td>.7</td>
<td>0.53 (L)</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>.1</td>
<td>2.03 (U)</td>
</tr>
</tbody>
</table>

* Equation 1 is $E_t = \alpha + \beta_0I_t - \beta_1D_t + u_t$ and Equation 2 is $T_t = \alpha + \beta_0I_t + \beta_1E_t - \beta_2D_t + u_t$, where $E$ is Economic Development, $I$ is Economic Integration, $T$ is Air Transport and $D$ is Dependency. The letters in parentheses mean as follows: 'U' that the data are serially independent; 'L' that the data are correlated; and 'I' that the test is inconclusive for that particular member-state.
All inconclusive regions were deciphered by $\hat{\rho}$. All serially-correlated data were transformed appropriately. The results of the analyses performed on the transformed and "good" data are presented in Tables 41 and 42.

According to Table 41, economic integration and dependency together had a great impact on economic development in every West African state with the exception of Benin. The proportion of variance in economic development that was accounted for by both independent variables ranged from a low of 43 per cent (for Guinea) to a high of about 88 per cent (for the Ivory Coast). But the Beta coefficients reveal that integration and dependency played an unequal role in the matter.

Dependency had more influence, a negative one, regarding the data for Ghana, Guinea, Ivory Coast, Nigeria and Senegal. For instance, for every unit increase in dependency, the level of economic development in the Ivory Coast dropped by almost one unit ($-0.9279$). But for a similar increase in integration the Ivory Coast's level of development improved very insignificantly ($0.0786$).

In the case of Liberia, Sierra Leone, Togo, and Upper Volta, integration had greater impact. This influence was positive. In Niger whereas dependency made a low positive contribution ($0.3950$) to development, integration had a high, negative effect ($-0.8229$). In Benin, the exception to the general pattern, integration and dependency had almost the same effect but in different directions ($0.1578$ and $-0.1474$ respectively).
### Table 41

The Effect of Economic Integration and Dependency on Economic Development

<table>
<thead>
<tr>
<th>Member-States</th>
<th>R</th>
<th>$R^2$</th>
<th>Beta (Dependency)</th>
<th>Beta (Integration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>.215</td>
<td>.046</td>
<td>-0.1474</td>
<td>.1578</td>
</tr>
<tr>
<td>Ghana</td>
<td>.895</td>
<td>.801</td>
<td>-0.8599</td>
<td>.0498</td>
</tr>
<tr>
<td>Guinea</td>
<td>.654</td>
<td>.427</td>
<td>-0.7530</td>
<td>.2254</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>.937</td>
<td>.878</td>
<td>-0.9279</td>
<td>.0786</td>
</tr>
<tr>
<td>Liberia</td>
<td>.783</td>
<td>.614</td>
<td>.0241</td>
<td>.7978</td>
</tr>
<tr>
<td>Niger</td>
<td>.818</td>
<td>.668</td>
<td>.3950</td>
<td>-0.8229</td>
</tr>
<tr>
<td>Nigeria</td>
<td>.754</td>
<td>.568</td>
<td>-0.7135</td>
<td>-0.1945</td>
</tr>
<tr>
<td>Senegal</td>
<td>.878</td>
<td>.771</td>
<td>-0.9500</td>
<td>-0.3188</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>.811</td>
<td>.658</td>
<td>-0.2920</td>
<td>.6093</td>
</tr>
<tr>
<td>Togo</td>
<td>.689</td>
<td>.474</td>
<td>-0.2239</td>
<td>.5576</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>.872</td>
<td>.761</td>
<td>.3325</td>
<td>.9858</td>
</tr>
<tr>
<td>WEST AFRICA</td>
<td>.871</td>
<td>.758</td>
<td>-0.9576</td>
<td>-0.2639</td>
</tr>
</tbody>
</table>
Air transport is the only variable in the axiomatic theory which relates directly to the other three variables together. The results of the pertinent multiple regression analysis are presented in Table 42 for all eleven member-states.

It is evident from these findings that the proportion of variance in transport that was explained jointly by economic development, integration and dependency varied from one country to another. This proportion ranged from 12 per cent (for Togo) to as high as 85 per cent (for Upper Volta). On the lower end of the range were Niger (17 per cent), and Benin and Sierra Leone (26 per cent). On the higher end were Guinea (69 per cent), the Ivory Coast (74 per cent), and Senegal (80 per cent). In between Ghana had 38 per cent, Nigeria 41 per cent, and Liberia 42 per cent.

Whereas in the bivariate analysis economic development had a positive effect on air transport, its association with this variable when the effects of integration and dependency were controlled for, was negative in six out of the eleven cases: Benin, Ghana, Guinea, Niger, Sierra Leone and Togo. On the other hand, for every unit increase in economic development air transport improved for the other countries. The smallest such increase occurred in the data for the Ivory Coast, and the biggest in the data for Upper Volta.

Economic development had a positive effect (.6438) on transport in the West African case.
Table 42

The Effect on Air Transport of Economic Development, Integration and Dependency

<table>
<thead>
<tr>
<th>Member-States</th>
<th>$R$</th>
<th>$R^2$</th>
<th>Economic Development</th>
<th>Integration</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>.511</td>
<td>.261</td>
<td>-0.4583</td>
<td>-0.0726</td>
<td>-0.2653</td>
</tr>
<tr>
<td>Ghana</td>
<td>.617</td>
<td>.381</td>
<td>-0.7196</td>
<td>-0.2765</td>
<td>-1.3115</td>
</tr>
<tr>
<td>Guinea</td>
<td>.829</td>
<td>.688</td>
<td>-0.6807</td>
<td>-</td>
<td>.2373</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>.859</td>
<td>.739</td>
<td>.0696</td>
<td>.3212</td>
<td>-0.7066</td>
</tr>
<tr>
<td>Liberia</td>
<td>.647</td>
<td>.418</td>
<td>.2369</td>
<td>.1194</td>
<td>-0.3983</td>
</tr>
<tr>
<td>Niger</td>
<td>.411</td>
<td>.169</td>
<td>-0.4838</td>
<td>-0.1757</td>
<td>-0.0774</td>
</tr>
<tr>
<td>Nigeria</td>
<td>.642</td>
<td>.413</td>
<td>.4020</td>
<td>.0937</td>
<td>-0.2997</td>
</tr>
<tr>
<td>Senegal</td>
<td>.896</td>
<td>.802</td>
<td>.3100</td>
<td>.0870</td>
<td>-0.5934</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>.511</td>
<td>.261</td>
<td>-0.3895</td>
<td>-0.3047</td>
<td>-0.5179</td>
</tr>
<tr>
<td>Togo</td>
<td>.354</td>
<td>.125</td>
<td>-0.3894</td>
<td>-</td>
<td>-0.0948</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>.924</td>
<td>.854</td>
<td>.9426</td>
<td>-0.0519</td>
<td>.3563</td>
</tr>
<tr>
<td>WEST AFRICA</td>
<td>.650</td>
<td>.422</td>
<td>.6438</td>
<td>.0304</td>
<td>-</td>
</tr>
</tbody>
</table>
Like economic development for every unit increase in integration transport fell in varying amounts for many (five) member-states. There was no effect in the case of Guinea and Togo. Only in the case of the Ivory Coast was there a moderate increase (.3212). There was virtually no increase in transport with respect to Nigeria and Senegal as in the West African case.

True to form for every unit increase in dependency air transport deteriorated for all but two member-states. The biggest such decline (-1.3115) happened in Ghana. The smallest drop (-0.0774) in air transport occurred in Niger followed by Togo with -0.0948. The two exceptions to this pattern were Guinea and Upper Volta where a unit increase in dependency contributed to an improvement in air transport (.2373 and .3563 respectively).

2. Indirect effects. When these were removed, the data still supported the theory essentially. Three observations are in order with respect to the association between economic development and dependency when the effect of economic integration was controlled for (Table 43). First, the relationship remained negative for all but two cases -- Niger and Upper Volta. In the former case the partial improved to an $r$ of .553, indicating that integration tended to assuage the effect of dependency. With respect to Upper Volta the change was more dramatic because it was from one of a very low, negative association (-0.152) to a moderate, positive one (.509).
Table 43

Indirect Effect of Dependency on Economic Development

<table>
<thead>
<tr>
<th>Member-States</th>
<th>Simple r</th>
<th>Partial r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>-0.146</td>
<td>-0.149</td>
</tr>
<tr>
<td>Ghana</td>
<td>-0.894</td>
<td>-0.812</td>
</tr>
<tr>
<td>Guinea</td>
<td>-0.627</td>
<td>-0.636</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>-0.934</td>
<td>-0.936</td>
</tr>
<tr>
<td>Liberia</td>
<td>-0.461</td>
<td>.031</td>
</tr>
<tr>
<td>Niger</td>
<td>.186</td>
<td>.553</td>
</tr>
<tr>
<td>Nigeria</td>
<td>-0.728</td>
<td>-0.734</td>
</tr>
<tr>
<td>Senegal</td>
<td>-0.827</td>
<td>-0.879</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>-0.637</td>
<td>-0.381</td>
</tr>
<tr>
<td>Togo</td>
<td>-0.477</td>
<td>-0.265</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>-0.152</td>
<td>.509</td>
</tr>
<tr>
<td>WEST AFRICA</td>
<td>-0.838</td>
<td>-0.867</td>
</tr>
</tbody>
</table>
Second, in the case of Liberia the association between economic development dropped essentially to zero (.031). This was indicative of spuriousness. Previously the association was a moderate, negative one (-0.461). But there was virtually no change in the relationship as far as Benin was concerned.

Finally, the relationship between economic development and dependency not only remained negative but also rose in most cases. It was only in the case of Ghana, Sierra Leone and Togo that the partial relationship declined slightly when economic integration was controlled for. For the most part, however, the association remained negative and at least moderate as in the West African case.

According to Table 44, the simple association between air transport and economic integration was low and negative in only four cases: Benin, Nigeria, Sierra Leone, and Togo. With the exception of Nigeria, this association dropped to around zero when economic integration was controlled for. In other words, the "effect" of integration on transport, low as it was to begin with, was mediated through economic development in these three cases.

For the other seven positive cases, two (Ghana and Niger) remained very low, but changed to negative when the effect of economic development was partialled out.

Two others (the Ivory Coast and Senegal) not only remained positive but also actually improved. Still two others (Guinea and Liberia) remained positive but dropped in magnitude. Only
Table 44

Indirect Effect of Economic Integration on Air Transport

<table>
<thead>
<tr>
<th>Member-States</th>
<th>Simple r</th>
<th>Partial r</th>
<th>Control Variable: Economic Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>-0.146</td>
<td>-0.088</td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
<td>0.167</td>
<td>-0.014</td>
<td></td>
</tr>
<tr>
<td>Guinea</td>
<td>0.278</td>
<td>0.208</td>
<td></td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>0.383</td>
<td>0.432</td>
<td></td>
</tr>
<tr>
<td>Liberia</td>
<td>0.547</td>
<td>0.271</td>
<td></td>
</tr>
<tr>
<td>Niger</td>
<td>0.154</td>
<td>-0.178</td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>-0.028</td>
<td>0.154</td>
<td></td>
</tr>
<tr>
<td>Senegal</td>
<td>0.330</td>
<td>0.493</td>
<td></td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>-0.313</td>
<td>-0.139</td>
<td></td>
</tr>
<tr>
<td>Togo</td>
<td>-0.213</td>
<td>0.019</td>
<td></td>
</tr>
<tr>
<td>Upper Volta</td>
<td>0.548</td>
<td>-0.486</td>
<td></td>
</tr>
<tr>
<td>WEST AFRICA</td>
<td>0.139</td>
<td>0.039</td>
<td></td>
</tr>
</tbody>
</table>
in the case of Upper Volta did the partial change from around the mid-point (.548) of the positive end of the spectrum to around the mid-point (-0.486) of the negative end. These results were basically different from those about the West African case.

Table 45 shows that the simple association between air transport and dependency was mostly negative. But there were three exceptions. The relationship was positive and moderate in the case of Guinea; very low in the case of Upper Volta; and non-existent in the case of Togo.

Most of the simple associations remained negative through both first-order and second-order partials. However, the sizes of the partials varied from one country to another. Nevertheless, the relationship between air transport and dependency remained almost nil irrespective of whether the effects of economic development and integration were removed one by one (first-order partial) or together (second-order partial). This finding applied to Togo.

There were two conspicuous, deviant cases. The zero-order correlation, in the case of Upper Volta, improved consistently through both partials. Second, zero-order \( r \) regarding Guinea was .664. This dropped by roughly two-thirds to .264 when economic development was partialled out. On the other hand, the partial was .331 when the control variable was integration. But when the effects of both economic development and economic integration were removed jointly, the partial rose to .639. This means that singly, at least
Table 45

Indirect Effect of Dependency on Air Transport

<table>
<thead>
<tr>
<th>Member-States</th>
<th>Simple r</th>
<th>Economic Development</th>
<th>Partial r</th>
<th>Economic Integration</th>
<th>Partial r</th>
<th>Integration and Economic Development</th>
<th>Partial r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>-0.199</td>
<td>-0.292</td>
<td>-0.293</td>
<td>-0.200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
<td>-0.477</td>
<td>-0.575</td>
<td>-0.536</td>
<td>-0.507</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guinea</td>
<td>.664</td>
<td>.264</td>
<td>.331</td>
<td>.639</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>-0.795</td>
<td>-0.438</td>
<td>-0.311</td>
<td>-0.832</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liberia</td>
<td>-0.580</td>
<td>-0.383</td>
<td>-0.451</td>
<td>-0.372</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Niger</td>
<td>-0.212</td>
<td>-0.068</td>
<td>-0.157</td>
<td>-0.263</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>-0.585</td>
<td>-0.256</td>
<td>-0.274</td>
<td>-0.585</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senegal</td>
<td>-0.893</td>
<td>-0.508</td>
<td>-0.652</td>
<td>-0.868</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>-0.097</td>
<td>-0.417</td>
<td>-0.388</td>
<td>-0.351</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Togo</td>
<td>.091</td>
<td>-0.087</td>
<td>-0.089</td>
<td>-0.007</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Volta</td>
<td>.234</td>
<td>.573</td>
<td>.696</td>
<td>.698</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WEST AFRICA</td>
<td>-0.553</td>
<td>.002</td>
<td>-0.021</td>
<td>-0.555</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
in the case of Guinea, the "effect" of dependency on air transport tended to pass through economic development and integration. But the partial .639 suggests that "in the absence of economic development and integration dependency played."
FOOTNOTES

1Strictly speaking, axioms need not be empirically tested in order to verify a theory. Only the theorems may be tested; if these are supported by the data, then the investigator may consider the axioms true provided all alternative explanations are found wanting. However, in the present study all six hypotheses of the axiomatic theory are being tested if for no other reason than the fact that this area of research is largely unexplored territory, so that nothing may be taken for granted.

2These are economic development, economic integration, air transport, and dependency.

3Direct effects are subsumed under idiographic, diachronic analysis. For a discussion of this and related matters the reader is referred to pages 233 to 234.
CHAPTER SIX

SUMMARY AND CONCLUSIONS

This study has attempted to test empirically an axiomatic theory of regional integration. The theory, an eclectic one that was based on several bodies of literature, laid especial emphasis on regional integration as the most efficacious key to economic development in West Africa. The study also called attention to the need to reduce drastically member-states' dependency ties to their metropoles, a hydra-headed system that not only operates at variance with integration but also retards development and transport.

The axiomatic theory was formulated on the basis of a careful review of four bodies of literature, as we have just mentioned. The research focus was the need for West African countries to develop as a remedy for "the pollution of poverty" (that is, malnutrition, disease, illiteracy, inadequate housing, and so on), and the strategy for realizing development.

The question was why ECOWAS states were (and still are) underdeveloped? One perspective on this question traces the roots of underdevelopment in West Africa to the lack of capital, natural resources, managerial skills, and obscurantist cultural attitudes. But the perspective pursued in this study attributes West African underdevelopment
mainly to structural imperialism (dependency). According to this school of thought, the world is characterized by a division of labor that relegates West African countries (indeed, the Third World) to a role as exporters of cheap raw materials to the industrialized countries and importers of expensive manufactured products. The resultant dependency ties are maintained by liaison elites established in West African countries by the metropoles (primarily France and the United Kingdom) to protect their "common" interests.

Could West African countries help themselves out of this quagmire? Two alternative solutions were suggested. First, there was the do-nothing approach based on a sense of powerlessness; because of this it was rejected. The alternative was for West African countries to increase their production factors by i) violence; ii) positioning themselves inside a great power's orbit; or iii) regional integration. The first two options were dismissed as impractical: violence because it does not guarantee an equitable distribution of resources intranationally and for ignoring the issue of what revolutions carry in their wake, and great power links because they tend to perpetuate dependency ties and because they invariably compromise the weaker partner's political sovereignty.

Regional integration was chosen as the preferred solution to West African underdevelopment for two reasons: i) the inadequate resources available to individual ECOWAS states for development; and ii) as a promoter of industrialization. The investigation centered around the key question: Would economic integration of ECOWAS states stimulate
socio-economic development within individual states and in West Africa as a whole? In other words, what is the relationship between economic union and socio-economic development within states and in a region?

The role of transportation in the axiomatic theory centered on its relationship to development. This had to do with whether that relationship was positive and whether or not transport was temporally prior to development. Thus, three viewpoints emerged: i) transport preceded and had a positive influence on development; ii) development preceded and had a positive influence on transport; and iii) transport preceded and had a negative effect on development. The second view went into constructing the axiomatic theory. Of the three transport modes available (air, sea, and land) air was chosen as the cheapest to construct and because of the difficult topographical and climatic conditions in West Africa.

The four variables (development, integration, dependency, and transport) constituted the axiomatic theory. Axiomatic theories have several distinct advantages not the least of which are parsimony, the ability to detect and correct errors in the theory, and to identify the logical and empirical relationships between the variables. According to Hans Zetterberg's formulation rules, the four variables generated six bivariate hypotheses (direct effects). Besides these were five hypotheses including three indirect effects. Thus, a total of eleven hypotheses were tested in this study.
The study utilized data on eleven West African states for the fifteen-year period 1959-1973 to test the theory both within a time lag model and synchronically-cum-diachronically. The data were obtained primarily from public sources (mainly the United Nations and some of its specialized agencies) and supplemented by travel data provided by the Central Bureau of Statistics, Republic of Ghana. The time lag model was chosen because of its distinct advantages as an invaluable tool to the researcher in his attempt to i) ascertain directionality of relationships; ii) determine the length of time required for one variable to be able to influence another; and iii) because it frees the analyst from the uncertainties of basing longitudinal inferences on cross-sectional data.

Synchronic-cum-diachronic analysis served a dual purpose. First, though the time lag model bore the brunt of the test of the theory, it was still necessary to see if the results would hold up under a comprehensive, "contemporaneous" analysis. Second, synchronic-cum-diachronic analysis uncovered the inter-country differences glossed over in the analyses of the data on the West African case.

The axiomatic theory was tested against four criteria. These were if i) causality was in the sequence predicted by a given hypothesis; ii) the observed correlation (positive or negative) was accurately predicted by the hypothesis; iii) that correlation was equal to or greater than .200; and iv) the effects of other variables in the axiomatic theory were controlled for. The test of the theory pertained to both the entire region and the separate member-states.
There were two reasons behind the adoption of West African and member-state cases in the analysis. As already mentioned, one was to uncover inter-country differences. Second, the findings render unwarranted the "I-already-know-that" type of response that the analytic results pertaining to the West African case alone, might otherwise have provoked. Important as theory-building may be, it is still necessary to know what differences there may be between the observations. As a matter of fact, such knowledge may be critical to theory-building. Comparative analysis is, therefore, an important element of theory-building.

For the most part the findings of the study supported the theory with respect to the West African region even though three variables had been dropped following the trend analysis. Connectivity was dropped from further analysis because it tended to duplicate the transport variable; and social development and political integration because of poor association in the theory. According to the trend analysis for both the West African case and for each member-state, all the variables met the linearity assumption of the general linear regression model.

They started off slowly but wound up generally high and in the predicted direction. Economic development, for instance, began virtually as recovery from a slump. From all indications, West African countries were undergoing their teething problems since attaining political independence. Measured against time, all the variables were positive except dependency which was negative. The trend analysis suggested also that, other things being equal, the rate of progress
in each variable, particularly economic integration, was very slow, and that it would require perseverance on the part of all regional partners to accelerate it. As a matter of fact, ECOWAS plans the elimination of tariffs and some other obstructions to trade over a transitional period of fifteen years. During the first two years (1975-1977) import duties were maintained as they were, and then they were to be eliminated over the next eight years. In the remaining five years all differences between external customs tariffs are to be abolished, leading to a common customs tariffs. Quotas are to be abolished in the first ten years.

On the other hand, it should be pointed out that the findings in connection with the West African case hid inter-country differences. But for the most part the individual member-state analyses were in agreement with the West African case results. Therefore, the data may be considered supportive of the axiomatic theory. This remained essentially true even after indirect effects were removed.

The data bore out the axiomatic theory completely at the one-year lead but only partially at the two-year lead. This pertained to the West African case and most member-states. Every hypothesis was confirmed in the first instance but the potency of the explanatory variable varied from one hypothesis to another. Development explained 32% of the variance in transport, or eight per cent more than did integration. Integration accounted for 31% of the variance in development; that was fifteen per cent less than dependency's. At the same time, dependency was responsible for 71% of transport's variance.
This helps explain why the West African air transport system was poor especially at the beginning of the period. Two very important observations are in order. The first pertains to the role of omitted variables, and the second one is a piece of advice to West African states to intensify their integrative drive.

By resisting "closure" this study has consistently recognized the possible influence of variables excluded from the theory. The decision not to rule out such an effect has been proved correct, of course, by the research findings. It is quite clear, for example, from the 32% of the variance in transport that was accounted for by development, that the error term was big. That might have been due to imprecise measurement. Nonetheless, the role of sea and land transport simply cannot be overlooked, nor that of social development. The theory only sought to demonstrate the importance of air transport given the severe physical and resource limitations particularly on road transport. In this respect the fact that development explained only 32% of the variance in transport is perhaps understandable.

The same reasoning applies to integration with respect to development and transport. The only measure (trade) of integration used was the only one available. The diplomatic interaction measure had to be dropped as imprecise. IO-membership data was too incomplete to be helpful. The inclusion of these and other possible indicators of integration might have made a great difference if available and precise.
Recalling a statement made elsewhere in this study, what is available may not be relevant, and what is relevant may not be available. This is one of the difficulties frequently encountered in quantitative research. This writer did all that he could to obtain the requisite data for this study but to no avail. The impression he gained from his protracted search was that the governments and organizations which he contacted might have provided him with the data that he requested had they had them. An initial, frank admission by them of not having the data would most certainly have saved all parties much precious time. Rather than doing so, they tried to cover up their non-existent records with referrals and promises that were not forthcoming. A few air transport INGOs even told this writer that they had no authority to release the names and addresses of their national member organizations without their prior consent. This information would have been used for structural analysis of INGO contribution to development in West Africa.

But this is only one facet of the data problem. The other is that when the data are available, they may be imprecise. Practically, all United Nations data sources alert the reader to this fact and caution him to interpret the data with extreme care.

There are a variety of reasons. Data collection methods vary, so that it is difficult if not impossible to make international comparisons. Take travel data, for instance. Some governments base them on frontier checks, others on hotel records. Even when collection methods are comparable, some governments and agencies do a poor job
of it. This problem is acute in the developing countries. And to qualify for bilateral and multilateral aid — especially the latter — some developing countries, it is believed, tailor their data to suit the requirements of the donor government or organization.

The question of imprecise data is one reason for considering the findings of this study merely tentative. Together with the influence of omitted variables, it helps explain why certain correlations were low or moderate. But there is a more compelling reason for viewing the analytic results as only provisional. This is that one test of a theory does not and cannot verify or disprove it. As a matter of fact, to do so would require repeated tests either way by the researcher in question and/or other scholars. It underlines the difference between a hypothesis and a proposition, as McGowan and Shapiro (1974) have pointed out. A proposition is a hypothesis that has been replicated successfully in different tests. Of the six hypotheses of the axiomatic theory only two bear some semblance to a proposition. These are the relationships between integration and development and between development and transport. However, the latter relationship is debatable because it involves three different viewpoints. Though much has been written about the inimical influence of dependency especially on development, the phenomenon has been subjected to very little quantitative scrutiny so far.

The second observation about the analytic results concerns the centripetal role of integration in the theory. The results suggest that dependency will decline as and when the rate of integration
increases. Since dependency is the primary obstacle to development, circumscribing it will enable ECOWAS to direct their resources into improving the regional transport system and national development. The principal channel for doing so is, of course, integration. West African countries will, therefore, be advised to pursue vigorously such a policy. Integration not only promotes national development but also expands transport capacity directly. From another viewpoint, higher standards of living also result in improved transport capacity.

In the period before and immediately following independence, transport and communication links in West Africa, especially between French- and English-speaking states, were virtually non-existent. It was a policy of the colonial powers to minimize contact between their West African spheres of influence. But the attainment of political independence placed the new West African states in charge of their own destiny, at least on paper. To realize their dreams of development and unity they have for almost twenty years been trying to pool their resources; this effort culminated apparently in the establishment of ECOWAS in 1975. ECOWAS symbolizes the readiness of the member-states to bury their differences in the interest of their common cause.

However, it is important to remember that the pursuit of the noble goals of development and political unification which ECOWAS has set itself, are certainly no child's play. That the member-states can hardly achieve these goals individually is implicit in the agreement to work together. But even integration is not an open sesame
to these lofty aims. Though West African countries are the ones that stand to benefit (or suffer) in the long run, yet it is crystal clear that ECOWAS may not be able to realize its goals without assistance from international organizations. No doubt, this quarter is dominated by the ECA, whose policy from the beginning has been to promote integration and development in West Africa and other regions in Africa.

Unfortunately, IOs are sometimes hampered in their work by the very governments which they try to help. Unless this situation improves, aid from this quarter, especially that of INGOs, may dry out sooner or later. That is, if INGOs are to contribute as much as they can to development, then their work should not be interfered with by anyone, including governments, whose fear of INGOs is probably groundless to begin with.

The call that governments should not interfere with the work of IOs is based on the view that IOs are balancers and conciliators of conflict in the international system. Amongst other things, this conception argues that IOs contribute to socio-economic development (Morris, 1973; Riggins, 1967; Cobb and Elder, 1970; Luard, 1966). This view was partially tested in this study.

The alternative conception of IOs sees them as reflectors and perpetrators of inequality in the international system, especially between nations. According to this perspective, structural imperialism is a mechanism for establishing and maintaining interaction patterns between a strong nation and a weak nation on the basis of division of labor. The strong nation controls these patterns for its own benefit, using IOs as a critical medium.
Galtung (1971; 1967; 1964) argues that in a world characterized by nation-states of unequal power and level of development and which is too small for the powerful states to confine their activities to within their own borders, structural imperialism (hence IOs) is inevitable. But he believes that because of bitter criticism of this function, IOs will in future be superseded by other forms of instant communication between center nations (1971: 94–98).

Some empirical evidence for this negative view of IOs (Feld, 1972, 1971; Angel, 1969; Skjaelsbaek, 1971) indicates that most IOs are located in, staffed and funded by the center nations even while they conduct their activities in the periphery nations. To redress this gross imbalance and thus defang the periphery charge that IOs are "western-oriented," Knott (1962: 280), Feld and Angell have called for increased periphery participation in IOs. But the extent to which such participation would reduce dependency ties remains to be seen.

Meanwhile, a successful policy of integration would definitely require the concerted involvement of governments, IOs, airlines, supranational institutions and the citizenry at large. This transnational perspective holds that everyone has an important role to play in this endeavor. By common agreement governments are probably the pacesetter for one reason at least. Unfortunate as this may be, governments have the last word on the extent to which ECOWAS will integrate politically, a long-term goal of the community. To reach it, important steps have already been taken, such as the
establishment of the Tribunal and the Fund and the convention designed to make every West African a citizen of the community. These are steps in the right direction, no doubt. Many IOs are doing their best to help, too. It is perhaps a compliment to West African governments that they are not immune to transnational pressure to accelerate progress towards political unification.

Available evidence suggests that together with ECOWAS they are considering seriously calls for furthering integration in the form of such common institutions as banking, insurance and investment. Transnationalists, in particular, cannot wait for the day when one community citizen will be able to communicate directly with a fellow citizen in any party of the community. The only reminder is that like Rome, ECOWAS will not be built in one day. Sovereignty remains a very difficult hurdle to jump.

Evidently integration is not a panacea for the economic and political ills of ECOWAS states for two reasons. First, sovereignty remains a difficult hurdle to jump even though member-states are committed to political unification. In other words, it is crystal clear that political unification will not be achieved overnight. A corollary of this difficulty is the measure of political integration used in this study.

This concept, it will be recalled, was measured by intra-West African diplomatic interactions. Since that measure merely indicated the presence or absence of diplomatic missions, its validity was
questioned. Therefore, its weak association in the axiomatic theory came as no surprise to this writer. Other measures (such as common decision-making) might have served better the purposes of this study if the necessary data had been available.

Second, the level of economic integration in the entire fifteen-year period was low. That was due to obstacles to intra-West African trade. Fortunately, ECOWAS is determined to dismantle these barriers -- the dependency ties of member-states to their metropoles, and trade barriers in the form of customs tariffs.

This seems to suggest the need for supplementing regional integration, or even replacing it altogether, as a strategy for fostering socio-economic development and political unification in West Africa. Indeed, recently a needs-oriented theory of development has been proposed which conceives of development as the development of man and woman everywhere, not the development of things, systems and structures. As will be shown later, this approach is not incompatible with regional integration.

First of all, Galtung in two undated papers (these will be referred to here simply as No. 35 and No. 51) suggests that something is a need if it is a necessary condition for a human being to exist and for a society to exist over longer time. On this basis he identifies four needs: security, welfare, freedom, and identity together with ecological balance. The four needs are proposed as protection from violence, poverty, repression, and alienation respectively (No. 51).
How may these needs, especially welfare, be realized? The 1975 Dag Hammarskjold report on development and international cooperation cites three central elements of such a strategy (1975: 28):

"1. Geared to the satisfaction of needs, beginning with the eradication of poverty.

2. Endogenous and self-reliant, that is, relying on the strength of the societies which undertake it.

3. In harmony with the environment. Finally, it shows that:

4. Another development requires structural transformations.

5. Immediate action is necessary and possible."

The key to the satisfaction of human needs is self-reliance, or the capability of self-sufficiency. This means that the individual pursues his own development relying on his own forces. This excludes dependency. Galtung argues that a policy of self-reliance calls for a "certain amount of decoupling from the Center, for some time, but it also calls for recoupling on more equal terms, e.g. intra-sector exchanges" (Papers, No. 35, p. 18).

Self-reliance applies at local, national, and international levels. But priority is given to horizontal interaction with others at the same level. There is consensus that individuals at the same level should be left free to determine their own destiny. Wignaraja has given a moving example of local self-reliance in Papua New Guinea.

This is the case of a Health Ministry technician who took advantage of a government policy permitting its employees to take one year's leave on half pay to work in their villages. On returning to his
village, the technician organized the people to analyze the causes and find solutions to bowel diseases and malnutrition. The wells were found to contain polluted water because they were not bunded or covered. Once this problem was solved, the people were convinced that the same purpose could be served by collecting rain water in a tank located outside the village as a permanent source of water for drinking and irrigation facilities for agriculture. The results were impressive: an improvement of income, nutrition, and elimination of bowel diseases. Community spirit also was strengthened (Wignaraja, 1977: 44).

Where resources are inadequate or unavailable for pursuing their development, individuals in one community may join forces with others in other communities towards this end. In other words, [human] development should be pursued upwards "from the village to the global order," and not downwards as has been the case.

At the national level self-reliance gives the economic content to political independence. Beyond this self-reliance becomes collective. According to the Dag Hammarskjold report, collective self-reliance is two-pronged. First, Third World countries may form a commodity coalition so as to increase their bargaining power in international negotiations with the industrialized nations. The example that readily comes to mind is OPEC (Organization of Petroleum Exporting Countries). But only time will tell whether OPEC's example can be followed in other commodity areas.

On the other hand, collective self-reliance means that a group of Third World countries launch a concerted effort to eliminate
poverty and thus promote development (Dag Hammarskjold report, 1975: 71). It is in this sense that regional integration is not incompatible with self-reliance.

Both seek to increase the capacity of the members for development by exercising the right of national economic sovereignty over resources to abolish dependency ties. The reader will recall the warning given by the Nigerian Minister of Economic Development to his colleagues at an ECOWAS Ministerial Council Meeting, that structural imperialists in West Africa were alive and well. Both self-reliance and regional integration also seek to end the drain of resources from the Third World to the industrialized countries, beginning with a drastic improvement in the terms of trade.

The idea is not to sever external relations but to bring them under control so that the interests of ECOWAS states will be protected. However, considering the fact that ECOWAS states depend on multinational corporations for their industrialization, the need for self-reliance cannot be over-emphasized. From all indications this will come slowly; levels of development in West Africa are still low. On the other hand, where there is a will there is a way; this is where ECOWAS comes in.

Where does this leave future research on integration in West Africa? There are certainly important lessons to be learned from the present study.

First, the student (and integrationist) should learn to not expect too much from integration now. True, integration does occur in West Africa. The fact still remains that sovereignty, dependency ties and
tariffs are very difficult barriers to dislodge. The main redeeming factor appears to be the commitment of ECOWAS states to the success of integration over the long run.

Second, data problems continue to hamper research. Some of the indicators used in this study were not necessarily valid or the best, such as diplomatic interactions. A two-pronged attempt to deal with this situation would require the student to travel to the study area to conduct personal interviews and comb for relevant data which are sometimes buried in government files. (Of course, this would be contingent on the availability of funds.)

As part of this effort the student would have to convince government officials that his research was in their best interest; this would certainly facilitate the release of vital information. For their part ECOWAS states should intensify their efforts to collect and store data about their societies, and make them available to the interested student as needed.
APPENDICES
### APPENDIX A

**GLOSSARY OF WEST AFRICAN REGIONAL ORGANIZATIONS**

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>ADB</th>
<th>CEAO</th>
<th>CFA</th>
<th>ECA</th>
<th>ECOMOS</th>
<th>Entente</th>
<th>Lomé</th>
<th>OAU</th>
<th>OCAM</th>
<th>OMVS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cape Verde</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gambia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guinea</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guinea-Bissau</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liberia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mali</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mauritania</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Niger</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senegal</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Togo</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper Volta</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Include all African regional organizations of which at least one West African country is a member. Membership given here pertains only to West African states.

**KEY:**
- ADB = African Development Bank
- CEAO = Communauté Economique de l'Afrique de l'Ouest
- CFA = Communauté Financière Africaine
- ECA = Economic Commission for Africa
- ECOMOS = Economic Community of West African States
- Entente = Conseil de l'Entente
- Lomé = Lomé Convention
- OAU = Organization of African Unity
- OCAM = Organisation Commune Africaine et Mauricienne
- OMVS = Organisation pour la Mise en Valeur du Fleuve Sénégal

# APPENDIX B

GLOSSARY OF AIR TRANSPORT ORGANIZATIONS WITH WEST AFRICAN MEMBERS

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>AAA</th>
<th>AFCAC</th>
<th>FIYTO</th>
<th>IASA</th>
<th>IASET</th>
<th>IAT</th>
<th>IATA</th>
<th>ICAA</th>
<th>ICAO</th>
<th>IFALPA</th>
<th>IFATCA</th>
<th>IUOTO</th>
<th>IUTCA</th>
<th>ODAT</th>
<th>UFTAA</th>
<th>WTO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<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>Cape Verde</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>x</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>Chad</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</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>Congo</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</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>Côte d'Ivoire</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</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>Egypt</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>x</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>Fiji</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td>x</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>Gabon</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</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>Ghana</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</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>Guinea</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</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>Guinea-Bissau</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<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>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>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liberia</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</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>Mali</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</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>Mauritania</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</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>Niger</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</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>Nigeria</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</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>Senegal</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</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>Sierra Leone</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</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>Togo</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</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>Upper Volta</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</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>

*Purely African organizations with membership unknown.

+Same as IUOTO.

**KEY:**
- AAA = Association of African Airlines
- AFCAC = African Civil Aviation Commission
- FIYTO = Federation of International Youth Travel Organizations
- IASA = International Air Safety Association
- IASET = International Association of Scientific Experts in Tourism
- IAT = Institute of Air Transport
- IATA = International Air Transport Association
- ICAA = International Civil Airports Association
- ICAO = International Civil Aviation Organization
- IFALPA = International Federation of Air Line Pilots' Associations
- IFATCA = International Federation of Air Traffic Controllers' Associations
- IUOTO = International Union of Official Travel Organizations
- IUTCA = International Union of Tourist and Cultural Associations in the Post and Telecommunication Services
- ODAT = Organization for the Development of African Tourism
- UFTAA = Universal Federation of Travel Agents' Associations
- WTO = World Travel Organization


______. "UN-NGO Relations: A New Departure?" International Associations, August/September 1973b, pp. 421-423.


Keesing's Contemporary Archives, 1975, pp. 27218.


Stern, Sol. "A Short Account of International Student Politics and the Cold War with Particular Reference to the NSA, CIA, etc." Ramparts Magazine (USA), March 1967, pp. 29-38.


Thomas, Benjamin Earl. Transportation and Physical Geography in West Africa. Los Angeles: University of California, Department of Geography, 1960.


To the Point International. July 11, August 15, November 28, December 5, 1977; April 24, 1978.


________. Transport Problems in Relation to Economic Development in West Africa. (E/CN. 14/63 and Add. 1).


________. Development of International Air Passenger Travel—Africa. (Circular 80-AT/13), 1967.


**Data Sources**


Europa. *Yearbook*, vol. 2, various years.

———. *Africa South of the Sahara*, various years.

Official Airline Guide, various years.

Union of International Associations. *Yearbook of International Organizations*, various years.


———. *Yearbook of National Accounts Statistics*, various years.


———. *Statistical Yearbook*, various years.


_____ . World Health Statistics Report, various years.