

REGIONAL VARIATIONS IN THIRD WORLD DEVELOPMENT

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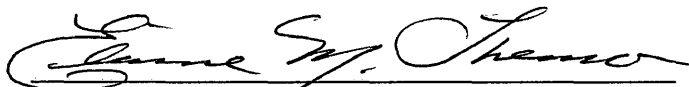
Approved, April 1996



Edwin H. Rhyne



Satoshi Ito



Elaine M. Themo

To Mom and Dad. For all your love and support, and the sacrifices you have made for me.

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ABSTRACT

The vast majority of quantitative developmental studies in sociology have tended to downplay, or at worst ignore, differences within the Third World. With data from 89 countries provided by the World Bank, this paper illustrates the developmental contrasts within the Third World according to geographic region.

One-way analysis of variance and Tukey's Honest Significant Difference (HSD) demonstrate that many of the regional means for the 27 selected demographic, social, and economic variables are significantly different. Discriminant analysis indirectly asserts the validity of geographic region as a classification scheme. Additionally, this procedure demonstrates that geographic region is a more accurate classification strategy for the Third World than world-system theory's "periphery" and "semi-periphery." Lastly, correlation analysis is conducted at both the Third World and regional level, illustrating how unreliable conclusions drawn from the former level of analysis can be.

It is concluded that the Third World is not a collection of homogeneous countries. Consequently, all Third World countries should not be pooled together when conducting quantitative studies. Geographic region must be considered.

REGIONAL VARIATIONS IN THIRD WORLD DEVELOPMENT

INTRODUCTION

With few exceptions, quantitative, cross-national studies of Third World development ignore the rich diversity of the Third World by placing a large number of dissimilar countries into one group for statistical analysis. This is due, in no small part, to the theories that have informed them. Both the modernization school and dependency theory view the countries of the Third World as analytically similar.

The modernization perspective, which emerged in the United States during the 1950s, understood industrialization as the most recent phase in the evolution of human society. Modernizationists contended that the less developed countries (LDCs) were at an earlier stage of social evolution, and that they eventually would undergo the same development as the industrialized nations. Thus, they argued that it was beneficial for the Third World countries to emulate and interact with the industrialized nations. Dependency theory, the product of Latin America scholars in the 1960s, challenges modernization theory. It argues that the lack of development in LDCs is not indicative of an earlier stage of social evolution, but is the result of their exploitation by the capitalist nations. Hence, it is not increased contact with the industrialized nations that is needed, but little or no contact. Though there could be no two theories more opposed to each other, they do possess one similar characteristic. Both perceive Third World countries as analytically indistinguishable from one another, except in terms of

their theories. Either all LDCs will develop like the industrialized nations, or all are at the mercy of the industrialized nations.

A third major perspective, Immanuel Wallerstein's world-system theory, does not fall into this pattern. Wallerstein recognizes that some Third World countries are more developed than others. He divides the world economy into three zones: the core, the periphery, and the semi-periphery. The highly industrialized capitalist nations reside in the core. The poorer developing countries are placed in the "periphery," while the more economically mature developing countries are located in the "semi-periphery." Like dependency theory, however, Wallerstein places great weight on the power of external forces in the development of LDCs, resulting in the subordination of his recognition that all non-core countries are not alike. Moreover, his trichotomy is still not as sensitive a classification scheme as needed. Even world-system theorists themselves have noted that there is a great amount of diversity within these economic zones (Gereffi and Fonda 1992).

The scarcely used ecological-evolutionary theory (Lenski and Lenski 1982) provides a good key to examining more of the Third World's diversity because of its sensitivity to the indigenous differences of the Third World. Ecological-evolutionary theory divides the Third World according a county's level of production technology attained upon entering the world economy. The countries which utilized the plow are labeled "industrializing agrarian," and those that used the hoe or stick are considered "industrializing horticultural." Ecological-evolutionary contends that this internal variable has an effect on a country's developmental trajectory, independent of its present world-system

position. Gerhard Lenski and Patrick Nolan (1984) support this contention by demonstrating that sub-Saharan Africa's horticultural heritage helps account for its different developmental path *vis-à-vis* the other Third World countries, which were agrarian when they came into contact with the industrialized nations.

Though ecological-evolutionary theory does not provide for a more detailed categorization of the Third World, Lenski and Nolan (1984) demonstrate that at least one geographic region differs substantially. This is a difference not noted by any other developmental theory. Proceeding with these findings, this paper argues that dividing the Third World into geographic regions is a viable classification scheme for capturing some of the Third World's diversity. Furthermore, it is contended that geographical region is more discriminating than world-system position.

Several studies (Stoneman 1975; Bornschier, Chase-Dunn, and Rubinson 1978; Bornschier and Chase-Dunn 1985) have found that correlation and regression coefficients differ by geographic region. These studies, however, were informed by dependency/world-system theory. Because of this perspective's emphasis on external economic forces, these studies either ignored or attempted to explain away the regional differences found. To provide regional differences the undivided attention they deserve, this investigation is conducted in an exploratory manner, without any specific theory or hypothesis as a guide.

This paper demonstrates that regional differences should not be brushed aside. In addition, dividing the Third World by its geographic

regions allows for a meso-level of analysis; one which is more inclusive than national or regional case studies, but more sophisticated than large Third World samples.

The first chapter is a review of the four developmental theories previously mentioned as well as illustrative studies. Chapter Two discusses the data and the statistical procedures employed. The findings of the various statistical tests are presented in Chapter Three. The paper concludes with a discussion of the findings, their relevance to future cross-national analyses of Third World development, and recommendations for future research.

CHAPTER I

THEORY AND LITERATURE REVIEW

Modern developmental studies have been informed by three main theories: 1) modernization, 2) dependency, and 3) world-system. During the 1950s and into the 1960s the modernization school was the predominant perspective. Dependency theory rose to the fore in the 1960s, challenging the very heart of modernization's assumptions. Wallerstein, borrowing heavily from dependency theory as well as the French Annales school, devised his world-system theory in the 1970s (So 1990). Though world-system theory's origin is distinct from that of dependency theory, they will be treated as one perspective, as much of the literature does (Evans and Stephans 1988; Rhyne 1990; Firebaugh and Beck 1994), because of their shared assumptions.

These three main theories will be presented chronologically. It is not the intention of this review to address all the arguments and assumptions of these theoretical perspectives. The aspects of each theory which affect its level of analysis and the assumptions which hinder their full appreciation of the Third World's diversity will be examined.

Modernization School

Numerous countries gained their independence from colonial rule in the post-World War II era. The United States emerged as a global superpower at this time, also. As a nation concerned about the future of these newly independent countries, and the global political environment in general, its social scientists focused their energies toward formulating developmental models for the less developed countries (LDCs). These first attempts by American social scientists to examine the lack of development in the Third World came to be known as "modernization theory." However, this term is a slight misnomer. Modernization theory was not so much a theory *per se*, with an explicit theoretical statement about the development of the Third World. Instead, it was an amorphous collection of studies by sociologists, political scientists, social-psychologists, and economists.

In the manner of Max Weber's *The Protestant Ethic and the Spirit of Capitalism* (1976), Robert Bellah (1957) studied the effect of Tokugawa religion on Japanese modernization. Similarly, Seymour Martin Lipset (1986) argued that Latin America's lack of development was due to its dominant, Catholic belief system. Alex Inkeles and David Smith (1974) examined the role of school and factory as instructors of modern ways. Daniel Lerner (1958) studied the psychological modernization of individuals in the Middle East. And W. W. Rostow (1971) identified five stages of economic development that all nations must go through to become "high mass-consumption societies."

Despite their diverse subject matter, modernization studies shared various assumptions because they drew upon the same group of classical

sociological theorists, mainly Émile Durkheim, Ferdinand Tönnies, and Max Weber's studies on norms and values, as well as the modern functionalist Talcott Parsons. Due to the evolutionary heritage of the twentieth century sociologists, modernization theory understood that all societies were subject to modernization. They explained that the Third World countries were at an earlier stage in the evolutionary process than the industrialized nations. Another assumption of evolutionary theory is that social change is uni-linear. In other words, it is a forward moving, progressive change that is irreversible. Hence, modernization theorists assumed that the Third World nations would develop as the First World nations did before them. Since the First World was viewed as the future of the Third World, modernizationists contended that it was beneficial for the latter to form close relations with the former. The First World possessed the keys to modernization which the Third World countries needed to obtain.

A product of modernization theory's functionalist character is the assumption that development is inevitable. Once the less developed nations encounter the developed nations, they will not be able to maintain their traditional ways. This caused modernization studies to be concerned with the internal processes of development. Conversely, external forces were ignored. But, even though internal processes were examined, the universality of evolutionary theory combined with functionalism resulted in the modernization school's underestimation of the power of the indigenous cultural forces of Third World societies. This is demonstrated by the word most associated with modernization, "diffusion." Diffusion implies a lack of friction or conflict. In

retrospect it seems that "diffraction" would have been a more accurate term to explain the interaction between the modern industrialized nations and the Third World for Western culture was not wholly transplanted abroad. As the process has unfolded, it is clear that each Third World society has modified modern Western ways to make them more compatible with their own social and value structures.

Dependency/World-System Theory

For the past twenty years, quantitative cross-national studies of Third World development have been dominated by dependency/world-system theory. Dependency theory was introduced in the late 1960s by Latin American scholars in direct response to the modernization school (Frank 1969; dos Santos 1970). Frustrated by the brief period of development experienced by the Latin American countries that followed the recommendations of the United Nations' Economic Commission for Latin America (ECLA), scholars of this region searched for an explanation different from the one put forth by the modernization school (So 1990). Drawing upon Nikolai Lenin (1929), dependency theory contends that the lack of development in the LDCs is not indicative of an early phase of development, but the direct result of their being exploited by the First World. In other words, underdevelopment is not an evolutionary stage, but a malignant process. This understanding is expressed most concisely by Andre Gunder Frank's phrase "the development of underdevelopment" (Frank 1969:29). Hence, contrary to the modernization school, dependency theorists argue that the relations between the First and Third World have been, and will continue to be, detrimental to Third

World countries.

The emergence of dependency theory brought about two shifts in the study of Third World development. One, external forces, instead of internal variables, came to be seen as having the greatest explanatory power. Two, the amount of independent variables was reduced considerably. Instead of examining the effects of religion, economy, culture, and social structure, dependency theorists focused on economic variables solely.

Immanuel Wallerstein's world-system theory (Wallerstein 1974, 1979) was influenced by the neo-Marxian, dependency literature of the 1960s and 1970s. Accordingly, it shares dependency theory's contention of the development of underdevelopment. World-system theory, like dependency theory, is concerned with the economic forces outside the LDCs. Wallerstein, however, places the phenomenon of dependency within the larger context of the world capitalist economy. Like Lenin (1929), he contends that capitalism is an international phenomenon, and must be analyzed at the global level. Thus, while dependency theory's unit of analysis is the nation, world-system theory's is the world economy. There is another key difference between the two theories. During the formulation of Wallerstein's theory, several nations began to experience considerable growth. Realizing that these non-core countries were not the same developmentally as the rest of the periphery, Wallerstein constructed the concept of the "semi-periphery." The semi-periphery consists of those nations more developed than the peripheral countries, but with economies less mature than those in the core.

Despite their differences, dependency and world-system theories are

basically the same. In fact, it is difficult to differentiate between dependency and world-system theorists since they use each other's concepts and terminologies. But more importantly, they both grant analytical primacy to the world capitalist economy. It is in the relations with the highly developed, capitalist nations that the explanations for the Third World's problems lie.

The dependency argument has been modified in both form and kind over the years. Originally, trade was viewed as the source of dependence (Emmanuel 1972). "Classical dependency," as it is presently known, argued that international exchange is unequal because of the different productivities of nations. The superior productive capabilities of the capitalist nations guarantee an unequal exchange in their favor. "In other words, autocentric economies [i.e., the capitalist nations] impose a type of unequal international specialization for their own benefit" (Amin 1976:191). The exotic agricultural goods and raw materials the LDCs provided to the developed nations contained less surplus value than the manufactured goods they imported, resulting in a greater accumulation of capital in the core than in the periphery. Thus, contrary to the classical economic theory of comparative advantage, productive specialization is not in the best interest of peripheral nations. It causes dependence upon the First World and prohibits development (Frank 1969; dos Santos 1970).

But, it turns out that trade dependence does not prohibit development. Economic progress took place in several LDCs, despite trade dependence. Dependency theorists, however, make clear their assertion that this development, which they call "dependent

development," is not a complete refutation of their thesis. Dependent development "is not the negation of dependence. It is rather dependence combined with development" (Evans 1979:32-3). Hence, now dependence limits or distorts the development of less developed countries (Amin 1976). With this shift from dependency precluding development to it limiting or distorting development, there has come a change in the kind of dependency from which peripheral countries suffer. The focus has shifted from trade to transnational corporations, direct foreign investment, and technology.

It is important to note that while dependent development resulted in a substantial modification of the dependency argument, it does not pose a fundamental challenge to world-system theory. According to world-system theory, the world economy is continuously changing. A country's position in the world economy can rise and fall over time. In addition, countries which resemble neither the lack of development of peripheral countries nor the development of core countries have a position of their own in world-system theory, the semi-periphery. Therefore, countries undergoing dependent development are placed easily in the semi-periphery.

Because of their dependence upon the capitalist nations, the industrialization of LDCs is not like the industrialization that took place in the core. Samir Amin (1976) explains that unequal international specialization has caused four distortions in the economic development of Third World countries: 1) "extraversion," 2) the prominence of light industries, 3) the hypertrophy of the tertiary sector (services, administration, etc.), and 4) "disarticulation."

Unlike the economies of the capitalist nations, which emerged because of internal forces, the impetus of peripheral economies was external. The developed nations, driven by capitalism's tendency to expand its markets in the search for greater profit, penetrated the precapitalist societies. Ever since then, Amin contends, the economies of LDCs have been orientated towards exporting goods and capital to the Atlantic metropole. This is what Amin means by "extraversion." In the beginning, Third World countries provided primary goods to the core. Over time, the lower organic composition and cheaper labor of the undeveloped nations made it more profitable for the capitalist nations to produce light, consumer goods abroad than to produce these goods domestically. The capital that accumulated locally from the export sector resulted in an internal market. With the existence of an internal market, the peripheral countries began to produce goods domestically which they had previously imported. This form of industrialization, known as "import-substitution," does not end the extraversion of the economy, Amin contends, for the industries established through import-substitution are usually light, consumer goods industries that utilize modern technologies and are capital intensive. Thus, the LDCs continue to import capital goods with greater surplus value than the primary and consumer goods they export. Furthermore, only a small group of local capitalists benefit from the exporting activities. This results in establishing a market distorted toward the production of luxury goods, not mass consumer goods.

The extraversion of the peripheral economy results in the "hypertrophy of the tertiary sector" (services, administration, etc.).

This term means that, at comparable levels of development, the tertiary in the peripheral economy employs a larger percentage of the work force and accounts for a larger proportion of economic production than in the advanced capitalist nations. This is because the industrial sector in the periphery is small due to its dependence upon the industrial goods of the capitalist nations. Because of its small size, local industry is unable to absorb the large numbers of agricultural workers displaced by the development of underdevelopment. Many find jobs in the service sector. However, the tertiary is not large enough to fully accommodate the masses either. Furthermore, many jobs in the service sector require a level of education that the majority of the population does not possess. All these circumstances perpetuate the high rates of unemployed and underemployed in Third World nations, or what Amin calls "the marginalization of the masses."

Amin admits that an unequal accumulation of capital among the sectors of the economy should be expected when a nation experiences development late. What is of greater importance is the economy's lack of integration, for unity is "the very precondition of development" (Amin 1976:232). Unlike the core economy, where each sector is linked with the other so that they constitute a whole, the peripheral economy is "disarticulated." Its sectors are "juxtaposed and not highly integrated among themselves, but are . . . strongly integrated into . . . the centers of the capitalist world" (Amin 1976:238). Amin warns that the consequences of disarticulation are disastrous. The multiplier effect is transferred to the core. Progress that begins in one area of the economy does not spread to the others.

Dependency/world-system theorists contend that these malformations have serious social ramifications. They deny the masses of these countries the benefits of economic development which, under normal circumstances, they would receive. These malformations increase income inequality (Fiala 1983; Evans and Timberlake 1980; London and Rubinson 1989), and have a deleterious effect on secondary school enrollment (Stokes and Anderson 1990), food consumption (Wimberley 1991; Wimberley and Bello 1992), life expectancy at age one (Wimberley 1990), fertility rates (London 1988), and infant mortality rates (Wimberley 1990; Stokes and Anderson 1990).

Critique of Dependency/World-System Theory

Regardless of whether it is world-system theory or any one of the various shades of dependency theory, they all contend that the external economic force, whether it be the First World or the world economy, is the key variable in explaining the problems of Third World. This assumption however, carries with it two problematic implications. One, like modernization theory, it implies that development is the normal state of Third World nations (Rhyne 1990). Since the capitalist core is the sole reason for underdevelopment, it logically follows that the Third World should experience development if left alone. This implied belief is explicitly illustrated in Frank's second hypothesis of the development of underdevelopment.

[S]atellites [peripheral nations] experience their greatest economic development and especially their most classically capitalist industrial development if and when their ties to the metropolis [core] are weakest (Frank 1969:9-10).

Hence, development is the normal state of Third World countries. The

reason it is not occurring is because of the inhibiting forces of the capitalist core.

The second consequence of viewing the capitalist core as the sole source of the Third World's problems is that it results in treating the Third World as otherwise a homogeneous group of nations (Rhyne 1990). Because the defining characteristic of Third World nations is their dependence upon the core (an external variable), internal variables unique to each society are regarded as much less important. Amin (1976) provides an excellent example of this. He begins by describing the different social formations of pre-capitalist Asia, Africa, Arabia, and Latin America. He goes on to explain that the different social formations caused these regions to interact differently with the capitalist core, ultimately resulting in slightly different developmental paths. However, Amin concludes that these differences are too minuscule to be considered significant.

The New Comparative Political Economy

In an attempt to address these and other criticisms, as well as explain the development occurring in several Third World countries, dependency/world-system theorists have begun conducting historical studies of individual countries as well as geographic regions. This "new comparative political economy," as it has been termed, has produced numerous case studies and regional studies. Most have focused on Latin America and East Asia. These regions are of special interest because of the different economic strategies adopted by each. Latin America has followed a model of inward-oriented development while East Asia has

concentrated on exports. Many of these comparative analyses have been undertaken in the hope that the success of East Asia's export-oriented economy will provide insight as to how Latin America's worsening situation in the 1980s could be turned around. Conversely, with a better understanding of Latin America's developmental process, it is hoped that East Asia will be able to avoid the problems encountered by Latin America.

These qualitative dependency/world-system studies give considerable attention to internal factors specific to a country. Yet, the power of these indigenous forces, such as the government and local firms, continue to be viewed as defined by the world capitalist economy (Gentleman 1984; Biersteker 1987; Evans 1979). For example, Peter Evans (1979) explains that the intensification and diversification of Brazil's industries is due to a dynamic "triple alliance" between local, state, and foreign capital. Local capital's key resource is its knowledge of local politics and economic markets. The success of the alliance largely depends upon the ability of the state to mediate between the interests of local capital and multinational corporations so that capital accumulates both domestically and abroad. However, Evans leaves no question as to which member of the alliance possesses the definitive power.

Strategic decisions are made in the center. Even if a strategy is first conceived locally it must be validated in the center. The fact remains that long-term plans and the 'larger picture' are put together in the center (Evans 1979:35).

Hence, the capitalist core's position as the key explanatory variable is preserved, despite the recognition of the roles played by local and state capital. This is understandable since acknowledging the

independent force of variables internal to Third World countries is antithetical to the dependency/world-system perspective. To do so would mean that the capitalist core is not the prime source of the Third World's problems. Furthermore, these case studies and comparative analyses examine only a select few nations. They do not address "the big picture" like quantitative cross-national studies.

Dependency/World-System Studies That Address Regional Differences

Because the dependency/world-system theory treats the Third World countries as virtually identical, most quantitative studies from this perspective group all Third World countries together¹. In accordance with world-system theory, however, many test the effect of dependency variables in the core, semi-peripheral, and peripheral countries separately². But only a few dependency/world-system studies have addressed the issue of regional differences. One of the exceptions is by Colin Stoneman (1975), which tests the effects of direct foreign investment (DFI) and foreign aid on the economic growth of Third World countries. Another, by Volker Bornschier, Christopher Chase-Dunn, and Richard Rubinson (1978), attempts to account for the discrepant findings of Stoneman and others.

¹Because of the quantity of such studies, a complete listing would be too lengthy. However, the following are recommended: Delacroix 1977; Evans and Timberlake 1980; Kentor 1981; London 1988, 1992; London and Smith 1988; London and Williams 1988; London and Robinson 1989; Stokes and Anderson 1990; Wimberley 1990, 1991; Wimberley and Bello 1992; Fiala 1992; Firebaugh and Beck 1994.

²Again, a complete listing would be too lengthy. The following studies are recommended: Snyder and Kick 1979; Nemeth and Smith 1985; London 1987, 1991; London and Williams 1990; Lena and London 1993.

Stoneman (1975) tests the effects of 1) domestic savings (i.e., investment), 2) net inflow of DFI, 3) net inflow of foreign aid and other foreign long-term flows, and 4) stock of DFI on economic growth. In addition to conducting correlation and regression analyses with a sample of 188 countries, Stoneman examines the relationship of these variables in Latin America, Africa, Asia, and Mediterranean countries separately. Net inflows of DFI and foreign aid consistently demonstrated a significant positive effect on the growth of the gross domestic product throughout the four regions. Stock of DFI had a slight but, statistically significant, negative effect (-0.029) at the Third World level. However, it failed to reach significance in any of the geographic regions. Furthermore, while stock of DFI exhibited a negative effect on economic growth in Latin America and the Mediterranean, as it did for the 188 Third World countries combined, it had a very slight positive effect on economic growth in Africa and Asia. Although all these coefficients for the regional subsamples were too small to be significant, it suggested that regional differences did exist as early as the 1970s.

Bornschier, Chase-Dunn, and Rubinson (1978) attempt to explain the contradictory findings of Stoneman and others in the dependency literature. In all tests which utilized large unrestricted samples, the stock of DFI had a negative effect on economic growth (Bornschier 1978; Chase-Dunn 1975; Stoneman 1975). Meanwhile, those that examined specific geographic regions of the Third World reported positive effects in some regions (Kaufman, Chernotsky, and Geller 1975; Ray and Webster 1978; Szymanski 1976; McGowan and Smith 1978; Stoneman 1975) and

negative effects in other regions (Alschuler 1976; Stoneman 1975). Bornschier *et al.*, offer four possible explanations for these contradictory findings. One, DFI actually may have a different effect on economic growth in the different regions. Two, "variables which should be controlled on theoretical grounds are not associated with foreign capital in world samples but are in regional subsamples" (Bornschier, Chase-Dunn, and Rubinson 1978:671). To remedy this Bornschier *et al.*, recommend that the same set of variables be used in testing the relationship in all the regions. Three, the different regional findings are an artifact of economic level, pointing out that certain regions are associated with different economic levels. Four, they hypothesize that the regional differences "may be a 'statistical artifact' produced by the limited range of variation and small sample sizes" of the regions (Bornschier *et al.*, 1978:671). An additional explanation is hypothesized in a subsequent book by Bornschier and Chase-Dunn (1985). They state that in some of the geographic subsamples there are "special cases" such as war regions, city-states, and countries that specialize in the exportation of petroleum which account for the discrepant findings for region.

In an effort to determine which one of the five hypotheses is the most sound, as well as to clarify the discrepant findings, Bornschier *et al.*, conduct several tests. First, regression equations were conducted for 1) the entire sample of seventy-six developing countries, 2) the thirty-nine countries whose gross national product (GNP) per capita is above the mean GNP per capita for the seventy-six countries, 3) the thirty-seven countries below the mean GNP per capita, 4) the twenty

Latin American countries, 5) the seventeen Asian countries, and 6) the thirty-three African countries. The results of these tests confirm those of the previous studies. When all developing countries are considered, DFI has a significant negative effect on economic growth, beyond the 0.1 level of probability. The effect of DFI on economic growth remains when both economic level and region are considered, but it is only statistically significant for the richer developing countries and Asian countries.

To overcome the small number of cases in the five subsamples, and, therefore test the fourth hypothesis, Bornschier, *et al.*, introduce region and economic level dummy variables. DFI has a negative, but non-significant, effect when the economic level dummy variable is introduced. However, the coefficient of the dummy variable was significantly negative, supporting their previous finding that DFI has a significantly more negative effect in the richer LDCs than the poorer LDCs. For all three equations that involved a region dummy variable, DFI demonstrated a significant negative effect on economic growth. Africa, however, exhibited a significant positive effect on economic growth. This is the opposite of DFI's effect elsewhere.

Lastly, the economic level dummy variable is combined with each region dummy variable separately to determine which interacts with DFI the most, development level or geographic region. Economic level sustains its significance in all of the regions except Africa. Additionally, Latin America is the only region dummy variable that is statistically significant. Bornschier *et al.*, conclude that the effect of DFI on economic growth is contingent upon level of economic

development, not region. The contradictory findings for region are merely a result of the fact that Latin American countries tend to be richer than the countries of sub-Saharan Africa.

Ecological-Evolutionary Theory

The study by Gerhard Lenski and Patrick Nolan (1984) is unique in that it examines the effect an internal variable has on the development of Third World countries. Drawing upon ecological-evolutionary theory (Lenski and Lenski 1982), Lenski and Nolan contend that the indigenous technological and economic heritage of a society affects its current levels, rates, and directions of development independent of current position in the world capitalist economy.

Ecological-evolutionary theory divides the Third World according to the level of production technology attained by each country upon contact with the industrialized nations. Societies which employed the plow to cultivate their land are classified as "industrializing agrarian" nations. Those which used a hoe or stick are labeled "industrializing horticultural" countries. This criterion, in effect, divides the Third World into "sub-Saharan Africa" (industrializing horticultural) and "the rest of the Third World" (industrializing agrarian). The one exception is Papua New Guinea, the only industrializing horticultural society not found in Sub-Saharan Africa.

Because ecological-evolutionary theory views change as a cumulative process, Lenski and Nolan hypothesize that industrializing agrarian societies are more likely to possess the resources needed for economic development than the industrializing horticultural nations. Thus, the

agrarian societies will have 1) higher levels of current technological and economic development, 2) more informational resources and literacy, 3) greater economic growth rates, 4) superior vital rates, and 5) less trade dependence than the historically horticultural societies. Their findings supported these five hypotheses. The forty-two countries identified as industrializing agrarian were more technologically and economically developed than the thirty-two industrializing horticultural societies. They also possessed more informational resources, and exhibited higher rates of literacy. And not only did the industrializing agrarian societies have higher rates of economic growth, but their rates were greater in the 1970s than in the 1960s, while the economic growth of horticultural societies were lower in the 1970s than in the prior decade. Also, the industrializing agricultural societies had a higher life expectancy, as well as lower crude birth rates, total fertility rates, crude death rates, and child mortality rates than horticultural societies. Lastly, the proportion of GNP from trade, concentration of export commodities, and concentration of trading partners were less for agrarian societies than horticultural societies, indicating that the former is less dependent than the latter.

Next, Lenski and Nolan test whether techno-economic heritage's effect is independent of current position in the world capitalist economy. Not only did techno-economic heritage affect a nation's development independent of its current economic and political interactions with other nations (the dependency/world-system variables), it demonstrated a stronger effect. Furthermore, the effect of techno-economic heritage persisted with the introduction of a world-system

dummy variable.

Lenski and Nolan's findings are important for two reasons. First, they demonstrate how dependency/world-system theory's concern with external economic forces limits their sensitivity to other variables that might account for levels of economic development. Second, they provide a theoretical explanation for what Bornschier, Chase-Dunn, and Rubinson (1978) observed. The GNP of African countries tends to be below the mean for the Third World because of sub-Saharan Africa's techno-economic heritage.

Summary

Both modernization and classical dependency theorists offer a crude view of the world in which all Third World countries are lumped together. With the addition of the semi-periphery to this dichotomy, world-system theory provides a slightly more advanced understanding of the Third World than the two latter theories. Still, world-system theory's three economic regions leave much to be desired. Of the theories proposed heretofore, ecological-evolutionary theory provides the best guidance for constructing a more complex classification of Third World countries. Though the theory discerns only two types of Third World countries, by demonstrating that one geographic region differs from the rest of the Third World, the question is raised as to whether or not the other geographic regions of the Third World differ substantially from one another. The findings of Stoneman (1975), Bornschier, Chase-Dunn, and Rubinson (1978) and Bornschier and Chase-Dunn (1985) already have demonstrated that the effect of certain

variables differs according to geographic region. However, the issue of regional differences has not been the focus of a quantitative study. Gereffi and Fonda (1992) contended that there are distinct regional paths of development, but they only examined the regional means for a handful of variables. No statistical analyses were conducted. This thesis will grant regional differences the undivided attention they need.

CHAPTER II

DATA AND RESEARCH DESIGN

Data were drawn from the 1989 and 1992 editions of The World Bank's *World Development Report*. All Third World countries with a population of one million or larger are considered. Those countries that did not provide adequate data to the World Bank either because of war or various internal crises are not included. Israel and South Africa are excluded also since they are more like the nations of the First World than those of the Third World. This leaves eighty-nine Third World countries for analysis. See Table 1 for the complete alphabetical listing of these nations.

These cases are divided into the five geographic regions recognized by the *World Development Report*: 1) Latin America and the Caribbean, 2) sub-Saharan Africa, 3) the Middle East and North Africa, 4) South Asia, centering around Indian culture, and 5) East and Southeast, which is all Asian countries east of and including China, Thailand, and Malaysia. To make the presentation simpler Latin America and the Caribbean will be referred to as "Latin America," the Middle East and North Africa as "Dry Islam," and East and Southeast Asia as "East Asia." As Lenski and Nolan (1984) note, Papua New Guinea's techno-economic heritage is more like that of Sub-Saharan Africa than its Asian neighbors. To respect both its heritage and its geographical location, Papua New Guinea is excluded from the regional analyses. See Table 2 for the listing of the

countries in each of the five regions.

Twenty-seven various demographic, social welfare, and economic variables are employed. See Table 3 for the complete listing of variables. No criteria were set to either include or exclude variables. They were chosen to provide a range of the demographic, social, and economic characteristics of the regions. All the vital rates from the *World Development Report* are presented. Also included are conventional measures of economic development and growth, as well as the structure of production variables. Most of the data are for 1990. The exceptions are size of agricultural labor force, which are for 1980, and daily calorie supply and the five education variables, which are for 1989. Most growth measures cover the time period of 1980 to 1990. The two exceptions are mean annual growth in the value of imports and mean annual growth in the value of exports, which are taken from the *World Development Report 1989*. They are measured from 1980 to 1987. Furthermore, figures for Myanmar, Liberia, Sudan, Nicaragua, Yemen, Iraq, Libya, Oman, and Kuwait are for years other than those noted. The World Bank does not specify which year.

The various statistical analyses performed can be divided into three sections. The first section focuses on describing the type and degree of regional differences. It begins with the unweighted arithmetic means of the five geographic regions. Though it would be helpful to weight the regional means by population, it is quite difficult to weight means for correlation analysis. Thus, for the sake of consistency, regional means are not weighted. One-way analysis of variance is conducted next to determine if the regional differences for

each variable are statistically significant. That a statistically significant F-ratio is obtained from a one-way analysis of variance does not mean that the differences between each region are statistically significant. Analysis of variance sums the differences between all the regional means and compares this number to the sum of differences within each sample, or in this case, Third World region. In other words, it is an overall difference that the analysis of variance tests. Thus, it is possible that a statistically significant F-ratio could be the product of only one significantly different regional pairing. It cannot be determined from an F-ratio how many regional pairings are responsible for a significant F-score, let alone identify the regional pairings. This is the function of Tukey's Honestly Significant Difference (HSD). It pinpoints which regional pairings are significantly different.

Having demonstrated that many of the regional means are significantly different, the focus of the study shifts to the validity of region as a classification scheme. Validity is the issue of whether or not the regional means are accurately representing the countries in these regions. In other words, how homogeneous are the countries in each region. Discriminant analysis is used for this purpose because it has the ability to examine each case (country) and determines which regional mean it most resembles.

Discriminant analysis involves various activities which can be divided into two categories: interpretation and classification. The interpretation aspect is concerned with determining the ways in which groups differ. It involves discovering a set of variables which are capable of discriminating between groups. It also determines how well

this set of variables discriminate, and which variables discriminate the best. The other aspect of discriminant analysis, classification, involves the construction of a mathematical equation which allows one to identify the group to which a case most likely belongs (Klecka 1980). In this study, discriminant analysis is employed for its classification capability. It is not this study's intention to determine on which set of variables the Third World regions differ the most. There were batteries of independent variables more discriminating just as there were those less discriminating than the ones presented. Furthermore, because development is a complex process that involves economic, social, and demographic variables, two variables from each of these three categories were chosen.

Prior to classifying countries, however, the interpretative process must be conducted. Discriminant analysis is based on a linear combination of discriminating variables called the canonical discriminant function. This function provides for the greatest amount of difference between the group centroids (means) and the least amount of difference within each group. A group centroid is constructed by entering the scores of those cases whose group membership is known already. Then, the discriminant score for each case whose region is unknown is compared to the group means. Each case is placed in the region whose mean it is most like. In this study, however, each country's group membership, with the exception of Papua New Guinea, is known already. This means that the eighty-eight countries will act as the cases which determine the group centroid and those cases whose region will be predicted. This is, in effect, a self-test that measures

the accuracy of the procedure. It is also an indirect confirmation of the degree of group separation and the similarity of the cases within the groups.

After having established the validity of geographic region as a variable to categorize Third World countries, discriminant analysis is conducted with world-system position as the grouping variable to determine which classification scheme is more valid. The world-system position classifications used are those of Roger Nemeth and David Smith (1985) and David Snyder and Edward Kick (1979). See Tables 4 and 5, respectively, for these classifications. Snyder and Kick's classifications are modified according to findings by Kenneth Bollen (1983). Both Nemeth and Smith and Snyder and Kick employed block modeling techniques to construct their classification schemes. There are three main difference between the two categorical structures, however. One, Snyder and Kick considered economic, military, and political relations, while Nemeth and Smith focused on only economic relations. Two, Nemeth and Smith divided the semi-periphery into "weak semi-periphery" and "strong semi-periphery." Three, the size of Snyder and Kick's sample is larger.

Lastly, zero-order correlations are conducted for the entire Third World and the five geographic regions to determine if the associations between variables differ according to level of analysis. Six correlation matrices are conducted: one for the entire sample of eighty-nine countries, and one for each of the geographical regions. Every possible correlation was run with the twenty-seven variables, resulting in a total of 351 correlations per matrix. Because gross national

product per capita and energy consumption per capita are highly skewed, the logarithms of these two variables were computed for correlation analysis.

The sample size of the five geographical regions is small. This is especially true for South and East Asia. If these regions were probability samples, this would be a matter of concern. But, they are not probability samples. All countries in these regions with a population larger than one million that provided adequate information to The World Bank are included.

CHAPTER III

FINDINGS

Regional Means

The first task is to examine the regional means of Latin America, sub-Saharan Africa, Dry Islam, South Asia, and East Asia for the selected demographic, social, and economic variables. Then, each variable will be subjected to a one-way analysis of variance and Tukey's Honestly Significant Difference (HSD), with geographic region as the grouping variable.

From a quick perusal of Table 6 several general differences clearly present themselves. By comparing the four structure of production variables (percentage of gross domestic product from agriculture, etc.), it is seen that the service sector accounts for the largest percentage of the gross domestic product (GDP) in all regions. However, there appears to be distinct differences in the contributions made by agriculture and industry (Gereffi and Fonda 1992). In Latin America, Dry Islam, and East Asia, the industrial sector contributes more to the GDP than agriculture. In sub-Saharan Africa and South Asia the opposite is true. The agricultural sector accounts for a larger portion of the GDP than industry. There are other differences between these two groupings of regions. Sub-Saharan Africa and South Asia, the two regions whose economies are more agriculture-based, post the lowest gross national product (GNP) per capita. They also fare worse on the social indicators of development than Latin America, Dry Islam, and East Asia, the three regions whose economies are based less on agriculture than industry. Furthermore, with few exceptions, the vital rates of sub-Saharan Africa and South Asia lag behind those of the non-

agricultural regions. These are some of the most obvious and general differences. It would be helpful to construct regional portraits through a further examination of their mean scores.

Latin America

Latin America has the largest percentage of its population residing in urban areas, and this portion of the population has grown the least during the 1980s. Latin America has the lowest crude birth rate and the second lowest crude death, fertility, and infant mortality rates. Accordingly, it has one of the smallest population growth rates. The life expectancy at birth of the average Latin American, sixty-seven years, is tied with that of the average East Asian as the highest in the Third World. Latin America's mean scores for most of the seven social variables are either the best or second best. The two exceptions are Latin American's daily calorie supply and secondary school enrollment, which are both middling.

Latin America's GNP per capita is three times greater than sub-Saharan Africa's and twice that of South Asia, but it is only half as much as Dry Islam and East Asia each. Its energy consumption per capita is also middling. However, Latin America's economy is one of the most stagnant. Its scores for the four economic growth variables is either the lowest or second lowest. The region's mean annual inflation rate is an astonishing ninety-seven percent. This is five times that of sub-Saharan Africa, the region with the second highest inflation rate. Latin America's economy is the most service-based of any region. Its agricultural labor force is virtually tied with Dry Islam as the smallest. Yet, the percentage of its GDP that comes from the agricultural sector is greater than in Dry Islam and East Asia. Conversely, the percentage from industry is less than in these two regions. The manufacturing segment of Latin America's industry, however, constitutes a larger percent of the GDP than for any other

region, except East Asia.

East Asia

The demographic and social characteristics of East Asia are nearly identical to Latin America's. It has its population under considerable control, with some of the lowest demographic rates. The region boasts the best or second best marks for all the social indicators of development. And, as previously stated, the life expectancy of East Asians is one of the highest. However, of the three regions with the most industrial economies, East Asia population is the least urban.

Nothing is more documented in recent Third World development literature than East Asia's economic boom in the last ten years. Its means for the economic variables support this. The region has the highest GNP per capita as well as the highest scores for all four growth rates. It also has the second highest energy consumption per capita. Though the region has the largest agricultural labor force of the three regional economies that are less agriculture-based, the percentage of its GDP that comes from this sector is the smallest of all regions. The industry sector's contribution to East Asia's GDP is the second largest, while the percentage from its manufacturing industry is the largest of any region. In addition to its large secondary sector, the percentage of East Asia's GDP from the service sector is the second largest.

Dry Islam

Dry Islam has the largest GNP per capita and the highest energy consumption per capita of the Third World regions. It also has the largest population growth due to the combination of one of the highest birth rates and the second lowest death rate. Dry Islam has the second largest percentage of its people residing in urban locales, and its urban population is the second fastest growing. The average life expectancy of an individual in Dry Islam falls in-between that of the

other four regions. With the exceptions of having the highest daily calorie supply per capita and secondary school enrollment, Dry Islam's scores for the social variables were middling.

Dry Islam's growth scores for gross GDP, GNP per capita, and value of exports are all middling. It had the second smallest growth in the value of its imports. Dry Islam has the smallest agricultural labor force of all the regions. In accordance with this figure, the agricultural sector's contribution to GDP is the second smallest. Conversely, the percentage of its GDP from industry is the largest of any region. Because of Dry Islam's oil industry, however, manufacturing does not account for industry's large contribution to the GDP.

Sub-Saharan Africa

Sub-Saharan Africa social indicators of development are the poorest. Demographically, it is the most unstable. Its crude birth and death rates are the highest of any region. Sub-Saharan Africa's general population is one of the fastest growing. And, although sub-Saharan Africa is the most rural region, its urban population is the fastest growing of any Third World region. Additionally, the average sub-Saharan African has the shortest life expectancy at birth.

Sub-Saharan Africa's economic situation is equally as grim as its demographic and social conditions. Not only is its GNP per capita and energy consumption per capita the lowest, but its economy grew the least of all the regions during the 1980s. Sub-Saharan Africa's economy is based more on agriculture than any other region. It has the largest agricultural labor force which contributes more to its GDP than any other region's primary sector. Conversely, the contributions made to the GDP by the service sector, the industrial sector, and the manufacturing portion of industry are small, if not the smallest of all five regions.

South Asia

Many of South Asia's figures are comparable to those of sub-Saharan Africa. Like the latter, only a small percentage of South Asia's population lives in urban areas. Also, the agricultural labor forces of the two regions are the largest. Accordingly, the portion of the GDP from both regions' agriculture sector is larger than the portion from the industrial sector. The contribution made to South Asia's GDP by manufacturing, however, is larger than that in sub-Saharan Africa and Dry Islam. Yet, the region has the lowest energy consumption of the five regions, with sub-Saharan Africa close at its heels. South Asia's scores for the social indicators of development are nearly as poor as sub-Saharan Africa's. The one exception is South Asia's sex ratio in primary education, which is the lowest. And, while South Asia's crude death rate and infant mortality rate are the closest to sub-Saharan Africa's than any other region, its crude birth and fertility rates are middling.

There are two major differences between these regions, however. One, the urban population and general population growth rates for South Asia are some of the smallest, while Sub-Saharan Africa's are some of the largest. Two, South Asia's economic growth is second only to East Asia's.

Summary

Despite the fact that the five regions can be grouped according to the portion of the GDP from agriculture in relation to industry's contribution, no two regions are exactly alike. Though many of the figures for sub-Saharan Africa and South Asia are similar, the two regions are undergoing vastly different rates of economic growth and population growth. Likewise, while East Asia and Latin America have some of the best demographic rates and social indicators, their economic situations are polar opposites. This leaves Dry Islam. Gary Gereffi

and Stephanie Fonda (1992) exclude the Middle East from their analysis because "it differs from Third World countries in significant ways," (Gereffi and Fonda 1992:428). They do not identify the specific areas in which Dry Islam differs from the rest of the Third World, but their decision is probably due to the region's dependence upon oil. Exporting oil is different from exporting other natural resources in that it is extremely lucrative and can be done fairly easily in an enclave type of economy. Though Gereffi and Fonda are correct in noting that Dry Islam is unique, it is not so different from the other Third World regions to warrant leaving it out of the analysis. In fact, so many of its mean scores are in between those of the other four regions, Dry Islam could be called "the middling region."

Analysis of Variance

Of course, the means for these five regions are not expected to be identical. The real issue is whether these differences would be expected by chance alone. One-way analyses of variance was conducted to determine if these regional differences are statistically significant¹ (see Table 7). The size of the F-ratios for all the demographic and social welfare variables are larger than would be expected by chance. To be exact, the probability that the F-ratios could have been obtained from sampling error is less than one in ten thousand for each of these variables. The one exception is ratio of females to males in primary education. Still, the F-score of the primary education sex ratio (5.7066) could have occurred by chance only twice out of ten thousand times. The F-ratios for most of the economic variables are not as large as they are for the demographic and social variables. Also, the significance levels of the F-ratios for the twelve economic variables

¹Because the regional samples are population samples, conventional interpretations of the test of statistical significance do not apply for this analysis or the other analyses in this study. Nonetheless, it provides a uniform criterion for determining degree of difference.

are not as uniform as those for the previous variables. Nonetheless, every F-score is well beyond the standard probability levels of 0.01, leaving one highly confident that the differences between the regional means for these selected variables are "true" differences not due to random sampling error.

Explained Variance

Another way to interpret the one-way analyses of variance is to divide the between-group sum of squares by the total sum of squares and multiply this quotient by one-hundred. This demonstrates how much of the variance for each of these twenty-seven variables is explained by region (see Table 8). That regional variations account for more than half the total variance of approximately one-third of the variables illustrates the potential of region as a manner in which to classify the Third World countries. Region tends to have greater explanatory power when dealing with demographic and social welfare variables than the economic variables, however. Variations between the regions explain over half of the variance for eight of the fifteen demographic and social variables. The social welfare variables for which regional variation accounts for the least amount of variance are percentage of age cohort enrolled in primary education and sex ratio of students in primary education. This means that the variance within each geographical region is greater than the differences between the regions. A possible reason for region's lack of explanatory power with these two variables is that a primary education is tending to become universal for both males and females throughout the Third World. Regional differences shed considerable light on the variance of only one economic variable, percentage of labor force employed in agriculture. The amount of variance explained by region for the other economic variables ranges from 17.3 percent (mean annual growth in value of exports) to 42.8 percent (percentage of GDP from agriculture).

Tukey's HSD

Tukey's HSD was conducted for each variable to identify which regional pairings account for the significant F-ratios² (see Table 9). Examining the grand total of statistically different regional means for each region, it is clear that Lenski and Nolan's (1984) findings are supported once again. With a total of sixty-three differences, Sub-Saharan Africa is the most unique region. These results, however, go beyond those of Lenski and Nolan. Not only is sub-Saharan Africa different from the rest of the Third World as a whole, it is different from each individual geographic region that constitutes "the rest of the Third World." Sub-Saharan Africa is a "partner" in the three most dissimilar regional pairings. It is important to note not only the amount of differences between sub-Saharan Africa and Latin America, Dry Islam, and East Asia, but the composition of their differences. They are equal parts demographic, social, and economic. As the regional portraits demonstrated, South Asia is the region most similar to sub-Saharan Africa. There are only six variables, all of them demographic, for which the two regions differ significantly. Hence, it can be concluded that South Asia and sub-Saharan Africa are demographically very different, yet socially and economically similar.

Surprisingly, South Asia has the least amount of total differences with thirty-three. The number of differences for the other three regions range from forty-one to forty-five. The totals for Latin America, Dry Islam, and South Asia and East Asia, are distorted, however, because they include the number of times these regions are significantly different from sub-Saharan Africa. Subtracting from each region's total number of differences the occasions it is significantly different from sub-Saharan Africa provides a clearer view of the degree of difference between these four regions. When this is done, South Asia

²This procedure tests the difference of means at the 0.05 probability level. Thus, differences noted in this section are significant beyond the 0.05 level of probability.

becomes the region with the second largest number of differences. The number of differences exhibited by the other three regions ranges from twenty-one to twenty-five.

The smallest number of significant differences occurs when the means of the two regions with agricultural economies are compared with one another and when any two of the three regions with non-agricultural-based economies are compared to each other. For example, the two regions with the least amount of significantly different means between them are Latin America and East Asia. It is only concerning the four economic growth variables and mean annual inflation that the two regions significantly differ. The differences between their means for all the demographic and social variables are not statistically significant. The largest number of differences occur when the means for one of the non-agricultural regions are compared with the means for either of the two agricultural regions. However, the number of total differences is consistently less when one of the non-agricultural regions is paired with South Asia rather than sub-Saharan Africa. In fact, two of South Asia's pairings, those with Dry Islam and East Asia, demonstrate less significant differences than when Latin America and Dry Islam, two non-agricultural regions, are compared.

This pairing of Latin America and Dry Islam is of special interest. Their means for seven demographic and social variables are distant enough to be significantly different, while energy consumption per capita and mean annual inflation rate are the only such economic variables. The degree of difference between Latin America and Dry Islam may not have been noticed by dependency/world-system theorists because of their frequent focus on only economic variables.

In summation, these statistical comparisons of regional means confirm the observations made from the regional portraits. There are considerable difference between the two regions with the more agriculture-based economies and the three regions whose economies are

less agriculture-based. It is also quite clear that each region is unique unto itself. The degree of difference between the five regions does vary, however. Additionally, ecological-evolutionary theory's contention that industrializing-horticultural societies are developmentally different from industrializing-agrarian societies is supported by the great number of differences between sub-Saharan Africa and the other four regions. However, ecological-evolutionary theory can not explain the differences between the other four geographic regions which it identifies as industrializing-agrarian.

Discriminant Analysis

Significantly different regional means are not sufficient proof that distinct regional paths of development exist. Though the F-scores for all the variables were statistically significant, it is possible that the mean scores for these regions do not accurately represent their constituent countries. For example, the variance within "Region A" may be great enough so that several of its countries are more like the countries in "Region B" than those in Region A. In other words, the homogeneity of the countries in these five geographic regions must be tested. This issue was addressed somewhat by the percentage of variance explained by the regional differences in Table 8. When region accounts for more than half of the variance, this means that the combined differences between the five regions is greater than the combined differences within the regions. But, this issue of validity is better answered by discriminant analysis because it is a multivariate analysis that determines which group (regional) mean each case (country) is most like.

Crude birth rate, life expectancy, daily calorie supply, secondary education enrollment, size of agricultural labor force, and energy consumption per capita comprise the battery of independent variables, or "predictors." These variables perform well in predicting the actual

geographic region of the countries (see Table 10). Of the seventy-three cases eligible for analysis, sixty were classified correctly; approximately an eighty-two percent success rate. To gauge the success of these six variables the percentage of cases correctly classified must be compared to the probability that a case would be classified correctly by chance, or what discriminant analysis terms "prior probability." Theoretically, with five groups to choose from, twenty percent of the cases will be classified correctly by chance. Thus, these six variables performed four times better than if each country's geographical region were decided by drawing one of five pieces of paper out of a hat.

Care must be practiced when interpreting these results, however, because the prior probability stated above assumes that each group is of equal size. But, in this instance, the number of countries in each region is not the same. Thus, the prior probability for each region corresponds to the percentage of the total number of countries that are in the region. Consequently, Latin America's prior probability is twenty-six percent, sub-Saharan Africa's is thirty-seven percent, Dry Islam's is fifteen percent, South Asia's is ten percent, and East Asia's is twelve percent.

The region with the highest correct classification rate was sub-Saharan Africa. But, when the percentage of cases correctly grouped for each region is compared to their respective prior probabilities, sub-Saharan Africa's correct classification rate is not as impressive as some of the others. The percentage of countries correctly classified in sub-Saharan Africa is slightly more than two and one-half times greater than chance. Latin America fared just over three better than its prior probability. And the percentage of Dry Islamic countries classified correctly is six times greater than chance. While the classification rates for South Asia and East Asia were not as high as those for the other three regions, the set of predictors performed exceptionally well when compared to how many countries should have been correctly

classified by chance. They did almost six times better than chance in correctly placing the South Asian countries. This is the closest to their performance in Dry Islam than for any of the other regions. Additionally, the correct classification rate for East Asia is over three and one-half times greater than would be expected by chance. It is important to note that the most populated country in each of the Asian regions, India and China respectively, are correctly classified. The success of discriminant analysis in identifying distinct South Asian and East Asian models of development would mean little if these countries were not included.

These large regional and overall correct classification rates demonstrate that the five regions have rather distinct discriminant scores for the six independent variables considered. Though this analysis demonstrates the validity of geographic region as a way in which to differentiate among the numerous Third World countries, geographic region must be compared to the other classification scheme, world-system position.

Discriminant analysis was conducted for both Snyder and Kick's and Nemeth and Smith's world-system classifications using the same six independent variables previously employed (see Tables 11 and 12 respectively). The world-system positions do not prove to be as distinct as the geographic regions. Only seventy-two percent of the countries classified by Snyder and Kick were placed in their correct world-system position, ten percentage points less than when geographic region was the grouping variable. Even a smaller percentage of the countries classified by Nemeth and Smith were correctly classified, sixty-two percent.

Before it can be concluded that geographic region is more valid than world-system position, however, additional discriminant analyses need to be conducted. It can be argued that the six predictors were biased in favor of geographic region since regional differences explain

over half of the variance of crude birth rate, life expectancy at birth, and percentage of labor force in agriculture. In an attempt to even the playing field, six new independent variables for which regional differences account for less than half of the variance were chosen. They are urban population, urban population growth, enrollment in primary education, sex ratio in primary education, GNP per capita, and percentage of GDP from the service sector.

Discriminant analyses were conducted for geographic region and both world-system classification schemes with these new variables. Once again, a greater percentage of the cases are correctly classified when geographical region is used as the grouping variable. In fact, the correct classification percentage for all three schemes decreased by three percentage points. There was concern that there would be difficulty in correctly classifying the four strong semi-peripheral Third World countries identified by Nemeth and Smith. The reason being that the majority of the other strong semi-peripheral countries were not included in the construction of the group centroid because they are not Third World countries. However, this concern was laid to rest when all of the strong semi-peripheral countries were correctly classified. These four countries are set apart from the other Third World nations, more so than any of the other world-system zones. The weak semi-peripheral nations seem to have their own fairly distinct discriminant scores, also. But, the economic zone which seemed to cause the most trouble was the periphery. Although the external economic relations of the twelve countries were similar enough for Nemeth and Smith to group them together, they seem to differ substantially on the six independent variables.

Altering the discriminating variables does not seem to undermine geographic region's superiority over world-system position. But, before it can be concluded that geographical regions are positively more distinct than the world-system economic zones, the issue of sample size

must be addressed. The discriminant analyses for geographic region draws from eighty-eight cases, while the world-system position for sixty-three and thirty-one countries are identified by Snyder and Kick and Nemeth and Smith respectively. The fewer the number of cases in the analysis, the greater the weight of each cases' classification when examining both the overall and individual group classification success rates. For example, when there are only two countries to be classified, each case is responsible for half of the success rate. When there are five countries, however, each case counts for only twenty percent. Thus, the poor performance of the two world-system classification schemes may be due to the small size of their samples.

Since it is not possible to increase the number of cases with a designated world-system position, the two previous analyses for region were conducted again, this time using only the countries whose world-system position is known. Despite the smaller sample sizes, geographic regions continue to be more distinct than the economic zones. Surprisingly, the percent of countries classified in the correct geographic region is either about the same (81%) or even higher (86%) with the smaller samples than with the eighty-eight countries (82%). Replacing the independent variables does not weaken geographic region's strength as a classification tool. The second set of predictors, those less associated with regional variations, performed even better than the first in predicting the actual geographic region of a country. Eighty-six percent of Snyder and Kick's sample were classified correctly, while only two of the countries employed by Nemeth and Smith were placed in a wrong geographic region, resulting in a ninety-one percent classification success rate!

Several conclusions can be made from the discriminant analyses conducted. One, dividing the Third World into five geographic regions captures five different developmental trajectories. The regions are distinct from one another enough that only a few countries can be

mistaken as being from another region. This also demonstrates that the countries within each region are quite homogeneous, although some internal variations still exist. This is true even when variables that are not associated highly with regional differences are employed as the discriminating variables. Two, classifying Third World countries according to their external relations is a less discriminating procedure than dividing them along geographic lines. World-system theory recognizes only two types of Third World countries. Three, geographic region is a more valid classification strategy than the one offered by world-system theory. A larger percentage of the cases were placed in the actual geographic region than in the correct world-system zone. This is true regardless of sample size, discriminating variables, or whether world system position is determined by only economic relations (Nemeth and Smith) or economic and politico-military relations (Snyder and Kick).

Correlation Analysis

The findings heretofore have shown that each of the five geographic regions of the Third World are experiencing their own unique type of development. These findings, however, do not necessarily mean that the variables are involved in different relations for the regions. To determine if they are, a series of zero-order correlations were conducted for each of the five regions. Every possible correlation for the twenty-seven variables was processed, resulting in a total of 351 correlations per regional matrix. Regression analysis is not conducted since it is not the goal of this study to either prove or disprove any causal hypothesis.

The product moment correlations for the various regions differ in strength, statistical significance, and direction. Of these three characteristics, direction is the most important. But, before delving into the differences in direction, variables that are correlated in the

same manner for all five of the geographic regions will be discussed. There are 121 such correlations, or approximately one-third of the 351 correlations (see Table 13). None of these correlations are startling. Most point out the obvious or logical. However, since these associations now have been examined for each of the regions individually (as opposed to only at the highly aggregated level of the Third World), there is no doubt as to the stability of these correlations.

Many of these findings reaffirm the observation made earlier when examining the regional means. The welfare of people in the two regions whose economies are based more on agriculture than industry (sub-Saharan Africa and South Asia) is worse than those living in the three regions where the economy is based less on agriculture and more on industry (Latin America, Dry Islam, and East Asia). For all of the regions, the size of the agricultural labor force and the percentage of GDP from the agriculture sector are both positively correlated with illiteracy rate, crude birth rate, crude death rate, fertility rate, and infant mortality rate. Conversely, these two variables are negatively associated with secondary school enrollment, sex ratio in primary and secondary education, urban population, life expectancy at birth, GNP per capita (logged), and energy consumption per capita (logged) for all the regions.

Differences Between Regions

For the remaining 230 correlations, however, the coefficient for one region, at least, is in the opposite direction of the other regions. That a correlation meets this requirement does not mean, necessarily, there is a great degree of difference between the regions. For example, two variables may be associated in opposite directions according to region; yet, the coefficients for all five regions be weak and non-significant. In this case, the variables correlate in the opposite direction, but the distance between the regional coefficients are not

great. Even so, coefficients whose directions are opposite of one another is significant itself. More often than not, however, the differences between the regions are statistically significant. Two coefficients qualify as "significantly opposite" if they are in opposite directions and at least one is statistically significant. This is because a statistically significant correlation means that the coefficient is significantly different from zero. Thus, a statistically significant coefficient is significantly opposite from any coefficient that is in the opposite direction. The coefficients for two regions, if not more, differ significantly for 144 of the 351 correlations conducted.

The number of times each region is different from the others is listed, by regional pairing, in Table 14. When the numbers are totalled for each region, sub-Saharan Africa has the largest number of significantly opposite correlation coefficients (170), just as it is the region with the largest number of significantly different means. Sub-Saharan Africa is followed by South Asia (130), Dry Islam (124), East Asia (119), and Latin America (103). When the number of times these regions' coefficients are opposite of sub-Saharan Africa is subtracted from the above totals, this order does change. These changes are of little consequence, however, since the distance between the second most different region, Dry Islam (85), and the region with the least amount of differences, East Asia (71), is small.

Examining each regional pairing individually, variables correlate in the same direction for South Asia and East Asia most often. There are only sixteen pairs of variables that correlate in opposite directions for these two regions. That there are fifty-three significantly opposite correlations between South Asia and sub-Saharan Africa is unexpected. When their mean scores are examined, South Asia is the region most like sub-Saharan Africa. But, when the correlations for the two regions are compared, not only is South Asia the region with

the largest number of correlations significantly opposite of sub-Saharan Africa's, but these two regions have the largest number of significantly opposite correlations of all regional pairings. Several variables account for the majority of the differences. Tertiary school, or college, enrollment is correlated in the opposite direction with seventeen variables. Population growth and urban population growth each associate with thirteen variables in opposite directions for these two regions. Lastly, crude GDP growth is involved in five of the fifty-three correlations that change direction.

Correlations involving population growth and urban population growth also are abundant when the coefficients for sub-Saharan Africa are compared to Latin America and East Asia. Combined, these two variables are part of over half of the significantly opposite correlations between sub-Saharan Africa and Latin America, and slightly less than half of the correlations when sub-Saharan Africa and East Asia are compared. These differences between sub-Saharan Africa and South Asia, Latin America, and East Asia are due to the different degrees of urban and overall population growth taking place in these regions. Sub-Saharan Africa is experiencing a large population increase while the latter regions are undergoing a more mild growth. Examining the correlations for sub-Saharan Africa and Dry Islam supports this conclusion. Population growth is involved in only three of the thirty-nine instances that a correlation in sub-Saharan Africa is opposite of that in Dry Islam. Urban population growth does not appear once. This is because both regions are experiencing large growth in their urban and overall populations.

For fourteen of these correlations the coefficients for both of the regions being compared are statistically significant. These fourteen cases are the strongest regional contrasts. Population growth is the variable whose association with others is significantly different from one region to the next most frequently, underscoring the extent of the

demographic differences within the Third World (see Table 15).

In addition to identifying the vast number of differences between two regions, it is worthwhile to note that when comparing all five regions simultaneously, there are pairs of regions which differ from the remaining three regions on several correlations. For example, there are seventeen pairs of variables that associate in one direction for South Asia and East Asia, but in the opposite direction for Latin America, sub-Saharan Africa, and Dry Islam. Growth in the value of imports is the most common variable, with five appearances. Once again, sub-Saharan Africa and Dry Islam stand apart from the other regions on twenty-one occasions. In accordance with the earlier findings, eleven of these correlations involve mean annual population growth and six involve urban population growth. The differences between each of these groups of regions are not necessary statistically significant, but that these sets of regions consistently differ is itself significant.

Differences Between Levels of Analysis

Based on the presumption that variables associate (and relate) with one another in a similar fashion throughout the Third World, nearly all quantitative studies gather all Third World countries together for statistical analysis. The regional correlations just presented however, demonstrate that this presumption is incorrect. Variables do not always associate in the same direction for all five geographic regions. To examine the frequency and degree in which pooling all Third World countries together accurately represents regional development, a correlation matrix is constructed that includes all eighty-nine countries.

As expected, the Third World level of analysis accurately represents all five regions for the 121 pairs of variables mentioned previously that correlate in the same direction throughout the regions. For the remaining 230 correlations, however, in which direction changes

according to region, it is impossible for a Third World level of analysis to faithfully represent all the regions. The Third World coefficient for 153 of these correlations is significantly opposite of at least one regional coefficient. Table 16 lists the number of times each region is significantly opposite of the correlation depicted by the Third World level of analysis. For nine of these correlations the coefficients for both the Third World and the region (or regions) are statistically significant. Again, population growth is consistently associated in different directions with other variables most often (see Table 17). Four of these population growth correlations (secondary education, import growth, infant mortality rate, and illiteracy rate) demonstrate that the unique demographic changes noted earlier for both Dry Islam and sub-Saharan Africa, and what is associated with these changes, do not appear in analyses conducted at the highly aggregated Third World level.

Such misleading findings are to be expected when five disparate groups of countries are brought together as one collective. There is the opportunity for a group of cases to overshadow another, such as with sub-Saharan Africa and Dry Islam. However, since approximately one-third of the countries in most Third World samples are located in sub-Saharan Africa, this region is not overlooked in every instance. The influence sub-Saharan Africa has on an analysis conducted at the Third World level is illustrated by the fact that on twenty-eight occasions, sub-Saharan Africa and the Third World are the only samples that are both in the same direction and statistically significant. This is more than any other region. The ability of sub-Saharan Africa to affect findings of analysis conducted at the Third World level helps to explain why Dry Islam and East Asia are misrepresented by the Third World more often than sub-Saharan Africa, even though it is the most unique region (see Table 16).

It is impossible to overemphasize the import of these findings.

Numerous variables are correlated in significantly opposite directions according to geographic region. Conducting tests at the Third World level does not allow these differences to appear. Thus, treating the five geographic regions as one homogeneous sample can result in conclusions about the Third World that not only are inapplicable for some of its regions, but false.

CHAPTER IV

CONCLUSIONS

Because present developmental theories have fallen short in their ability to accommodate for the Third World's diversity, this study sought a strategy that would allow for more of its differences to surface. With Lenski and Nolan's (1984) study as the point of departure, this paper divided the Third World into five geographic regions. As the findings show, this approach is successful in allowing certain important differences within the Third World to appear. Not only is sub-Saharan Africa significantly different from the rest of the Third World, as Lenski and Nolan demonstrated, but Latin America, Dry Islam, South Asia, and East Asia (the four regions which constitute "the rest of the Third World") are also unique. These regional variations appeared no matter if regional means were examined individually, numerous variables were considered simultaneously for discriminant analyses, or correlation analyses were conducted. From these findings, two conclusions can be drawn. One, the Third World is not a homogeneous group of countries, but consists of five distinct geographic regions. Though region does capture a substantial amount of the variation within the Third World, there are still varying degrees of homogeneity within each region. Two, because the Third World is made of five dissimilar subgroups, conducting analyses at the Third World level often does not

accurately represent what is occurring in each region.

It is truly a sad comment on the state of developmental studies in sociology that these differences among the geographic regions of the Third World, differences which are so pronounced, have been ignored for the most part. Why is it then that sociologists have failed to recognize these differences? A brief review of the scientific process would prove helpful in answering this question. In *The Logic of Science in Sociology* (1971), Walter Wallace explains that the scientific process consists of both deductive and inductive logic. Deductive analysis is the application of theory to observations. It is commonly referred to as "hypothesis-testing." Inductive, or "exploratory," analysis, on the other hand, constructs a theory from observations made. Though they are described as two separate subprocesses for the purpose of presentation, deduction and induction are not mutually exclusive for they share the elements of "theory" and "observations." Instead, they should be viewed as complementary processes, both of which must be employed if science is to exist. But virtually every Third World developmental study is of the hypothesis-testing variety. Inductive studies rarely are conducted. It is because of this obsession with theory-guided research and the consequential negligence of exploratory analyses that the regional differences have not been recognized by scholars.

That nearly all studies are deductive is not a satisfactory answer to the question posed, however, for sociologists are not bound by theory. They are obligated to employ both deductive and inductive logic. Thus, why is it that one entire half of the scientific process, the inductive half, has been ignored? It is because the practice of

conducting only deductive studies serves dependency/world-system theorists well. It enables them to dismiss problematic, or even contradictory, observations and findings. Though dependency/world-system theorists are not the only practitioners to permit themselves to be guided solely by theory, they must shoulder the bulk of the blame for they are the most predominant and prolific group of developmental sociologists in the past twenty years.

It is true that dependency/world-system theorists have not disregarded totally empirical findings altogether. They have made modifications and revisions to their theory. When it was found that trade-dependent countries were undergoing development, the focus shifted from trade to direct foreign investment and technology as the form of dependence. Additionally, it is no longer argued that dependence precludes development. Instead, it distorts or limits development. These were situations where dependency/world-system theorists could not afford to ignore the empirical observations if they wanted to continue to be taken seriously. Besides, these were problems that presented themselves within the realm of testing the dependency/world-system theory. Other findings, however, are swept under the rug of theoretical irrelevance more easily. The most blatant example of this practice is their continued disregard for the differences between industrializing-agrarian and industrializing-horticultural societies. They continue to treat the peripheral countries as one homogeneous group of countries despite the strong evidence to the contrary provided eleven years ago by Lenski and Nolan. Dependency/world-system theorists are able to do so because the variable used by Lenski and Nolan, techno-economic heritage,

is not relevant to the dependency/world-system perspective.

The likely consequence of never venturing beyond the boundaries of a specific theoretical world is that eventually one's viewpoint becomes far removed from the empirical. Stokes and Anderson (1990) and Rhyne's (1991) reevaluation of said study is an excellent example of what can happen when empirical findings that fall outside of the realm of a theory are disregarded. Drawing upon the works of Amin (1974, 1976), Stokes and Anderson hypothesize that disarticulation has a negative effect on the general social welfare of Third World countries net of economic development. The regressions conducted on a data set of sixty-two Third World nations supported their hypothesis. Disarticulation appeared to have had a significant deleterious effect on the three social welfare variables they examined (infant mortality, crude death rate, and secondary school enrollment). Drawing upon Lenski and Nolan (1984), Rhyne conducted regressions for sub-Saharan Africa and the rest of the Third World separately as well as introducing a sub-Saharan Africa dummy variable. In so doing, Rhyne found disarticulation not to be "a powerful tool" as Stokes and Anderson concluded, but an artifact of the contrast between sub-Saharan Africa and the rest of the Third World. The introduction of sub-Saharan Africa weakened the independent impact of disarticulation. Whether tested separately for each group or with a dummy variable, disarticulation's effect on infant mortality is the only one which retains any statistical significance. Furthermore, the regional dummy variable is consistently stronger and statistically more significant than disarticulation on most of the measures of social welfare.

By replicating Stokes and Anderson's study, Rhyne demonstrated how misleading findings and the subsequent conclusion can be when the Third World countries are lumped together. But, Rhyne's study only considered sub-Saharan Africa. This study has provided evidence that there are four other distinct regions within the Third World, in addition to sub-Saharan Africa, that cannot be explained by dependency/world-system theory¹. Not only are there more categories, but they are more distinct than the frequent contrast between the periphery and semi-periphery. The fact that these divisions are not theoretically derived does not make them less valid. These regional variations exist no matter how hard dependency/world-system theorists try to ignore them.

The purpose of exploratory studies, such as this one, is to aid in the construction, or reconstruction, of a theory so that it agrees with empirical observations. It is beyond the ability of this study, however, to provide insight into the formulation of such a theory. By pointing out the numerous significant differences between the five geographic regions, it has demonstrated that no one theory could possibly explain all that is occurring in the Third World. Thus, until new theories are formulated that can explain more of the contradictory developments in the Third World, it is imperative that all future hypothesis-testing address regional differences. This can be done easily, as it has been in previous studies, by conducting correlation and regression analyses for each region separately, as well as

¹This study also has demonstrated that there are more divisions than predicted by ecological-evolutionary theory. However, these findings are built upon the distinction made by ecological-evolutionary theory. Thus, they are not in direct contradiction with this theory.

constructing regional dummy variables for regression analysis. Scholars who do not recognize the regional variations and continue to conduct analyses at the highly aggregated Third World level, do so at their own peril.

Geographic region is an ideal level of analysis because it lends itself well to cross-national analysis, unlike case studies. At the same time, it is more sensitive to differences within the Third World than those conducted either at the Third World level, or according to world-system position. Moreover, conducting examinations at the regional level is beneficial to developmental studies. If a theoretical hypothesis holds for all five regions, then its universality is more rigorously tested than if the same analysis was conducted for only one large sample of Third World countries. And, if a theory does not apply to all Third World countries, then its scope is more precisely measured.

Though the regional variations presented in this paper directly contradict dependency/world-system theory's view of the Third World, this paper has not attempted to challenge its contention that dependency negatively affects the social and economic well-being of the masses in Third World countries. This study's findings, however, indirectly point to the value of cultural and historical studies in helping to explain the regional differences. For example, if the dependency/world-system argument does apply to a specific geographic region of the Third World, the history, social structure, and culture of that region will help explain why the dependency argument holds true for that specific region and not for others.

It must be remembered, however, that hypothesis-testing is no

substitute for exploratory studies. Concentrating on only theoretically relevant variables makes it possible for other explanatory variables to be overlooked. More exploratory studies are needed. For example, a study, similar to the present one, should be conducted for an earlier point in time to help determine when these regional differences emerged. Lastly, it is recommended that future studies weight countries by population so that less populous countries are not given the same consideration as those that are more populous.

APPENDIX

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* Note: All tabular figures are from the 1989 and 1992 editions of The World Bank's *World Development Report*.

TABLE 1

LISTING OF THIRD WORLD COUNTRIES

- | | |
|------------------------------|--------------------------|
| 1. Algeria | 46. Malaysia |
| 2. Argentina | 47. Mali |
| 3. Bangladesh | 48. Mauritania |
| 4. Benin | 49. Mauritius |
| 5. Bhutan | 50. Mexico |
| 6. Bolivia | 51. Morocco |
| 7. Botswana | 52. Mozambique |
| 8. Brazil | 53. Myanmar |
| 9. Burkina Faso | 54. Nepal |
| 10. Burundi | 55. Nicaragua |
| 11. Cameroon | 56. Niger |
| 12. Central African Republic | 57. Nigeria |
| 13. Chad | 58. North Yemen |
| 14. Chile | 59. Oman |
| 15. China | 60. Pakistan |
| 16. Colombia | 61. Panama |
| 17. Congo | 62. Papua New Guinea |
| 18. Costa Rica | 63. Paraguay |
| 19. Cote D'ivoire | 64. Peru |
| 20. Dominican Republic | 65. Philippines |
| 21. Ecuador | 66. Rwanda |
| 22. Egypt | 67. Saudi Arabia |
| 23. El Salvador | 68. Senegal |
| 24. Ethiopia | 69. Sierra Leone |
| 25. Gabon | 70. Singapore |
| 26. Ghana | 71. Somalia |
| 27. Guatemala | 72. South Korea |
| 28. Guinea | 73. South Yemen |
| 29. Haiti | 74. Sri Lanka |
| 30. Honduras | 75. Sudan |
| 31. Hong Kong | 76. Syria |
| 32. India | 77. Tanzania |
| 33. Indonesia | 78. Thailand |
| 34. Iran | 79. Togo |
| 35. Iraq | 80. Trinidad |
| 36. Jamaica | 81. Tunisia |
| 37. Jordan | 82. Turkey |
| 38. Kenya | 83. Uganda |
| 39. Kuwait | 84. United Arab Emirates |
| 40. Laos | 85. Uruguay |
| 41. Lesotho | 86. Venezuela |
| 42. Liberia | 87. Zaire |
| 43. Libya | 88. Zambia |
| 44. Madagascar | 89. Zimbabwe |
| 45. Malawi | |

TABLE 2

LISTING OF THIRD WORLD COUNTRIES
BY GEOGRAPHIC REGION

| <u>Latin America</u> (21) | <u>Sub-Saharan Africa</u> (34) | <u>Dry Islam</u> (16) |
|---------------------------|--------------------------------|--------------------------------------|
| Argentina | Benin | Algeria |
| Bolivia | Botswana | Egypt |
| Brazil | Burkina Faso | Iran |
| Chile | Burundi | Iraq |
| Colombia | Central African Rep. | Jordan |
| Costa Rica | Cameroon | Kuwait |
| Dominican Republic | Chad | Libya |
| Ecuador | Congo | Morocco |
| El Salvador | Cote D'ivoire | North Yemen |
| Guatemala | Ethiopia | Oman |
| Haiti | Gabon | Saudi Arabia |
| Honduras | Ghana | South Yemen |
| Jamaica | Guinea | Syria |
| Mexico | Kenya | Tunisia |
| Nicaragua | Lesotho | Turkey |
| Panama | Liberia | United Arab Emirates |
| Paraguay | Madagascar | |
| Peru | Malawi | |
| Trinidad | Mali | |
| Uruguay | Mauritania | |
| Venezuela | Mozambique | <u>East & Southeast Asia</u> (9) |
| | Niger | China |
| | Nigeria | Hong Kong |
| | Rwanda | Indonesia |
| <u>South Asia</u> (8) | Senegal | Laos |
| Bangladesh | Sierra Leone | Malaysia |
| Bhutan | Somalia | Philippines |
| India | Sudan | Singapore |
| Mauritius | Tanzania | South Korea |
| Myanmar | Togo | Thailand |
| Nepal | Uganda | |
| Pakistan | Zaire | |
| Sri Lanka | Zambia | |
| | Zimbabwe | |

TABLE 3

LISTING OF VARIABLES

AGLAB - Percent of labor force employed in agriculture.
AGPC\$ - Percent of GDP from agriculture.
CALOR - Mean daily consumption of calories.
CBR - Birth rate (# births/population x 1000 per year).
CDR - Death rate (# death/population x 1000 per year).
EDPRIM - Percent of age cohort enrolled in primary education.
EDSECN - Percent of age cohort enrolled in secondary education.
EDTERT - Percent of age cohort enrolled in tertiary education.
ENERGC - Energy consumption per capita per year (in BTUs).
EXPQ - Mean annual growth (%) in value of all exports (1980 to 1987).
FERT - Fertility rate (Mean number of live births a woman has during her lifetime).
GDPQ - Mean annual growth (%) in GDP (1980 to 1987).
GNPPH - GNP per capita.
GNPPHQ - Mean annual growth (%) in GNP per capita (1980 to 1990).
ILLIT - Percent of adult population who are illiterate.
IMPQ - Mean annual growth (%) in value of all imports (1980 to 1987).
IMR - Deaths of infants (under one year) per 1000 live births per year.
INDPC\$ - Percent of GDP from industry.
INFLA - Mean annual inflation (%) (1980 to 1990).
LGNPPH - Logarithm of GNP per capita
LIFEX - Mean number of years of life expected at birth.
MFGPC\$ - Percent of GDP from manufacturing (a sub-heading under industry).
POPQ - Mean annual growth (%) of population (1980 to 1990).
SRVPC\$ - Percent of GDP from services.
SXPRED - Females per 100 males in primary education.
SXSCED - Females per 100 males in secondary education.
URBPOP - Percent of population living in urban places.
URBQ - Mean annual growth in urban population (1980 to 1987).

TABLE 4

LISTING OF NEMETH AND SMITH'S (1985)
WORLD-SYSTEM POSITION CLASSIFICATIONS

Core (9)

Belgium
Canada
France
Italy
Japan
Netherlands
United Kingdom
United States
West Germany

Strong Semi-periphery (18)

Argentina *
Australia
Austria
Brazil *
Denmark
Finland
Greece
India *
Ireland
Israel
Mexico *
Nigeria *
Norway
Philippines *
Spain
Sweden
Switzerland
Venezuela *

Weak Semi-periphery (9)

Chile *
Colombia *
Egypt *
Kenya *
New Zealand
Pakistan *
Portugal *
Thailand *
Zaire *

Periphery (17)

Bolivia *
Burma (Myanmar) *
Costa Rica *
Ecuador *
El Salvador *
Ethiopia *
Guatemala *
Honduras *
Morocco *
Nicaragua *
Panama *
Paraguay *
Peru *
Sri Lanka *
Turkey *
Uganda *
Uruguay *

* = Countries considered in analysis

TABLE 5

LISTING OF SNYDER AND KICK'S (1979)
WORLD-SYSTEM POSITION CLASSIFICATIONS

Core

| | | | |
|----------------|------------|--------------|-------------|
| Canada | Austria | West Germany | Portugal |
| United States | Italy | Spain | Australia |
| United Kingdom | Yugoslavia | Japan | Switzerland |
| Netherlands | Greece | South Africa | France |
| Belgium | Sweden | Denmark | Norway |
| Luxembourg | | | |

Semi-periphery

| | | | |
|--------------|---------------|----------|-------------------|
| Cuba | Venezuela * | Israel | Philippines * |
| Ireland | Peru * | Jordan * | Malaysia * |
| East Germany | Argentina * | Lebanon | Ceylon |
| Hungary | Uruguay * | USSR | Burma (Myanmar) * |
| Cyprus | South Korea * | Turkey * | Pakistan * |
| Bulgaria | Finland | Iran * | India * |
| Rumania | Kenya * | Taiwan | |

Periphery

| | | | |
|------------------|----------------|------------------|--------------------|
| Panama * | Poland | Chad * | Ghana * |
| Colombia * | Malta | Congo * | Upper Volta |
| Ecuador * | China | Uganda * | Senegal * |
| Brazil * | Mongolian Rep. | Burundi * | Dahomey |
| Bolivia * | Nepal * | Rwanda * | Niger * |
| Paraguay * | Thailand * | Somalia * | Ivory Coast |
| Chile * | Cambodia | Ethiopia * | Rep. of Guinea |
| North Vietnam | Laos * | Malagasy Rep. | Liberia * |
| Haiti * | New Zealand | Morocco * | Trinidad & Tobago* |
| Dominican Rep. * | Iceland | Algeria * | Sierra Leone * |
| Mexico * | Albania | Tunisia * | Togo * |
| Guatemala * | Syria * | Libya * | Cameroon * |
| Honduras * | Kuwait * | Sudan * | Nigeria * |
| El Salvador * | Afghanistan | United Arab Rep. | Gabon * |
| Nicaragua * | North Korea | Yemen | Cen. African Rep.* |
| Costa Rica * | South Vietnam | Mali * | Czechoslovakia |
| Jamaica * | Indonesia * | Mauritania * | Saudi Arabia * # |
| Iraq * # | | | |

* = Countries considered in analyses

= Modifications made per Bollen (1983)

TABLE 6. MEANS FOR THIRD WORLD AND ITS REGIONS, SELECTED DEMOGRAPHIC, SOCIAL, AND ECONOMIC VARIABLES 1990[^]

| Demographic Variables | Third World | | Geographic Regions | | | | East Asia |
|--|-------------|--|--------------------|--------------------|-----------|------------|-----------|
| | | | Latin America | sub-Saharan Africa | Dry Islam | South Asia | |
| Mean Annual Population Growth | 2.69 | | 2.15 | 3.05 | 3.44 | 2.09 | 1.93 |
| Percentage of Population Living in Urban Areas | 43.80 | | 61.00 | 29.29 | 59.50 | 22.13 | 53.33 |
| Mean Annual Growth in Urban Population 1980-1990 | 4.82 | | 3.23 | 6.15 | 4.93 | 3.91 | 4.11 |
| Crude Birth Rate | 36.72 | | 28.95 | 46.03 | 36.36 | 31.75 | 24.67 |
| Crude Death Rate | 10.95 | | 7.10 | 15.79 | 7.07 | 11.13 | 7.56 |
| Fertility Rate | 5.03 | | 3.67 | 6.46 | 5.33 | 4.12 | 3.06 |
| Infant Mortality Rate | 74.42 | | 45.00 | 108.85 | 54.29 | 85.75 | 34.22 |
| Mean Life Expectancy | 59.71 | | 67.48 | 50.76 | 65.57 | 58.75 | 67.11 |
| | | | | | | | |
| Social Welfare Variables | | | | | | | |
| Mean Daily Calorie Supply 1989 | 2,468.81 | | 2,522.14 | 2,173.29 | 3,075.85 | 2,307.14 | 2,709.67 |
| Illiteracy Rate | 38.72 | | 16.84 | 54.71 | 36.92 | 49.86 | 16.00 |
| Percentage Enrolled in Primary Education 1989 | 88.49 | | 101.33 | 70.54 | 99.00 | 78.88 | 108.89 |
| Percentage Enrolled in Secondary Education 1989 | 38.58 | | 53.16 | 16.96 | 56.25 | 33.25 | 56.22 |
| Percentage Enrolled in Tertiary Education 1989 | 9.47 | | 19.61 | 2.32 | 12.25 | 4.33 | 15.50 |
| Sex Ratio in Primary Education 1989 | 84.47 | | 97.22 | 78.00 | 84.85 | 73.13 | 90.00 |
| Sex Ratio in Secondary Education 1989 | 77.54 | | 111.23 | 61.39 | 77.08 | 67.71 | 88.63 |
| | | | | | | | |
| Economic Variables | | | | | | | |
| GNP Per Capita (U.S.\$) | 1,603.00 | | 1,619.00 | 521.00 | 3,832.00 | 574.00 | 3,740.00 |
| Mean Annual Growth GNP Per Capita 1965-1990 | 1.35 | | 0.75 | 0.54 | 1.75 | 1.95 | 4.98 |
| Mean Annual Growth in GDP 1980-1990 | 2.84 | | 0.90 | 2.58 | 2.96 | 5.43 | 6.49 |
| Mean Annual Growth in Value of Exports 1980-1987 | 2.48 | | 1.20 | 0.77 | 3.40 | 5.17 | 8.21 |
| Mean Annual Growth in Value of Imports 1980-1987 | -1.64 | | -3.72 | -2.05 | -3.17 | 2.57 | 4.14 |
| Percentage of GDP from Agriculture | 24.36 | | 13.83 | 35.09 | 12.58 | 33.71 | 13.14 |
| Percentage of GDP from Industry | 29.86 | | 32.22 | 24.28 | 39.92 | 24.14 | 37.71 |
| Percentage of GDP from Manufacturing | 15.25 | | 19.44 | 11.32 | 12.55 | 14.14 | 26.71 |
| Percentage of GDP from Services | 45.76 | | 53.89 | 40.66 | 47.67 | 41.86 | 48.86 |
| Mean Annual Inflation 1980-1990 | 35.68 | | 97.03 | 18.43 | 8.97 | 7.77 | 6.28 |
| Percentage of Labor Force in Agriculture 1980 | 55.41 | | 36.48 | 77.12 | 34.81 | 64.88 | 45.78 |
| Energy Consumption Per Capita (BTUs) | 873.18 | | 1,011.05 | 140.79 | 2,527.00 | 151.75 | 1,305.56 |

[^] Except where noted.

TABLE 7

ONE-WAY ANALYSES OF VARIANCE FOR GEOGRAPHIC REGIONS,
 SELECTED DEMOGRAPHIC, SOCIAL WELFARE, AND ECONOMIC VARIABLES 1990*

| Variables | N | F-Ratio | F Prob. |
|--|----|---------|---------|
| Mean Annual Pop. Growth 1980-1990 | 85 | 17.4336 | .0000 |
| % Pop. in Urban Areas | 85 | 18.1913 | .0000 |
| Mean Annual Growth in Urban Pop. 1980-1990 | 84 | 12.2399 | .0000 |
| Crude Birth Rate | 85 | 31.2361 | .0000 |
| Crude Death Rate | 85 | 38.3880 | .0000 |
| Fertility Rate | 85 | 31.6707 | .0000 |
| Infant Mortality Rate | 85 | 27.4430 | .0000 |
| Mean Life Expectancy | 85 | 38.2390 | .0000 |
| Mean Daily Calorie Supply 1989 | 83 | 29.9501 | .0000 |
| Illiteracy Rate | 74 | 20.6763 | .0000 |
| % Enrolled in Primary Education 1989 | 77 | 10.2821 | .0000 |
| % Enrolled in Secondary Education 1989 | 75 | 19.8249 | .0000 |
| % Enrolled in Tertiary Education 1989 | 72 | 16.5833 | .0000 |
| Sex Ratio in Primary Education 1989 | 75 | 6.5290 | .0002 |
| Sex Ratio in Secondary Education 1989 | 68 | 11.0912 | .0000 |
| GNP Per Capita | 77 | 4.8092 | .0017 |
| Mean Annual Growth in GNP Per Capita 1965-1990 | 75 | 7.0278 | .0001 |
| Mean Annual Growth in GDP 1980-1990 | 77 | 8.9777 | .0000 |
| Mean Annual Growth in Value of Exports 1980-1987 | 77 | 3.8156 | .0072 |
| Mean Annual Growth in Value of Imports 1980-1987 | 77 | 4.2109 | .0040 |
| % GDP from Agriculture | 75 | 13.3045 | .0000 |
| % GDP from Industry | 75 | 4.7211 | .0020 |
| % GDP from Manufacturing | 68 | 9.2535 | .0000 |
| % GDP from Services | 75 | 5.0714 | .0012 |
| Mean Annual Inflation | 78 | 4.8701 | .0015 |
| % Labor Force in Agriculture | 87 | 28.7180 | .0000 |
| Energy Consumption Per Capita | 84 | 7.5572 | .0000 |

*except where noted

TABLE 8

PERCENTAGE OF VARIANCE EXPLAINED BY GEOGRAPHIC REGIONS,
SELECTED DEMOGRAPHIC, SOCIAL WELFARE, AND ECONOMIC VARIABLES 1990*

| Variables | Variance Explained (%) |
|--|------------------------|
| Mean Annual Pop. Growth 1980-1990 | 46.3 |
| % Pop. in Urban Areas | 47.3 |
| Mean Annual Growth in Urban Pop. 1980-1990 | 38.0 |
| Crude Birth Rate | 60.7 |
| Crude Death Rate | 65.5 |
| Fertility Rate | 61.0 |
| Infant Mortality Rate | 57.5 |
| Mean Life Expectancy | 65.4 |
| Mean Daily Calorie Supply 1989 | 60.2 |
| Illiteracy Rate | 54.2 |
| % Enrolled in Primary Education 1989 | 36.0 |
| % Enrolled in Secondary Education 1989 | 52.8 |
| % Enrolled in Tertiary Education 1989 | 49.4 |
| Sex Ratio in Primary Education 1989 | 26.9 |
| Sex Ratio in Secondary Education 1989 | 40.9 |
| GNP Per Capita | 20.9 |
| Mean Annual Growth in GNP Per Capita 1965-1990 | 28.4 |
| Mean Annual Growth in GDP 1980-1990 | 33.0 |
| Mean Annual Growth in Value of Exports 1980-1987 | 17.3 |
| Mean Annual Growth in Value of Imports 1980-1987 | 18.7 |
| % GDP from Agriculture | 42.8 |
| % GDP from Industry | 21.0 |
| % GDP from Manufacturing | 36.6 |
| % GDP from Services | 22.2 |
| Mean Annual Inflation | 20.8 |
| % Labor Force in Agriculture | 58.1 |
| Energy Consumption Per Capita | 27.4 |

*except where noted

TABLE 9. SIGNIFICANTLY DIFFERENT REGIONAL MEANS, SELECTED DEMOGRAPHIC, SOCIAL, AND ECONOMIC VARIABLES 1990~

| | Lat. Am./ Africa | | Lat. Am./ S. Asia | | Lat. Am./ E. Asia | | Regional Pairings | | Africa/ S. Asia | | Africa/ E. Asia | | Dy/ Islam/ S. Asia | | Dy/ Islam/ E. Asia | | S. Asia/ E. Asia | |
|--|------------------|---|-------------------|----|-------------------|---|-------------------|-----------------|-----------------|-----------------|-----------------|--------------------|--------------------|------------------|--------------------|---|------------------|---|
| | * | * | * | * | * | * | Africa/ Dy/ Islam | Africa/ S. Asia | Africa/ E. Asia | Africa/ S. Asia | Africa/ E. Asia | Dy/ Islam/ S. Asia | Dy/ Islam/ E. Asia | S. Asia/ E. Asia | | | | |
| Demographic Variables | | | | | | | | | | | | | | | | | | |
| Mean Annual Pop. Growth | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| % Pop. Living in Urban Areas | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Mean Annual Growth of Urban Pop. 1980-1990 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Crude Birth Rate | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Crude Death Rate | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Fertility Rate | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Infant Mortality Rate | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Mean Life Expectancy | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| TOTAL | 8 | 4 | 4 | 4 | 0 | 0 | 6 | 6 | 6 | 6 | 8 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Social Welfare Variables | | | | | | | | | | | | | | | | | | |
| Mean Daily Caloric Intake 1989 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Illiteracy Rate | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| % Enrolled in Primary Education 1989 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| % Enrolled in Secondary Education 1989 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| % Enrolled in Tertiary Education 1989 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Sex Ratio in Primary Education 1989 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Sex Ratio in Secondary Education 1989 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| TOTAL | 7 | 3 | 3 | 4 | 0 | 0 | 5 | 0 | 0 | 6 | 6 | 2 | 1 | 3 | 1 | 8 | 3 | |
| Economic Variables | | | | | | | | | | | | | | | | | | |
| GNP Per Capita | | | | | | | | | | | | | | | | | | |
| Mean Annual Growth in GNP Per Capita 1965-1990 | | | | | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Mean Annual Growth in GDP 1980-1990 | | | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Mean Annual Growth in Value of Exports 1980-1987 | | | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Mean Annual Growth in Value of Imports 1980-1987 | | | | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Percentage of GDP from Agriculture | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Percentage of GDP from Industry | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Percentage of GDP from Manufacturing | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Percentage of GDP from Services | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Mean Annual Inflation 1980-1990 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| % Labor Force in Agriculture 1980 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| Energy Consumption Per Capita | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| TOTAL | 5 | 2 | 2 | 3 | 5 | 5 | 5 | 0 | 0 | 7 | 3 | 4 | 2 | 2 | 4 | 8 | 2 | |
| GRAND TOTAL | 20 | 9 | 9 | 11 | 5 | 5 | 16 | 6 | 6 | 21 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |

* Except where noted. * Denotes a statistically significant difference between the regions.

TABLE 10

DISCRIMINANT ANALYSIS OF GEOGRAPHIC REGIONS

| Actual Group | No. of Cases | Predicted Group Membership | | | | |
|------------------------|--------------|----------------------------|---------------|---------------|--------------|--------------|
| | | 1 | 2 | 3 | 4 | 5 |
| (1) Latin America | 19 | 16 (84.2%) | 0 | 1 | 1 | 1 |
| (2) Sub-Saharan Africa | 27 | 0 | 26 (96.3%) | 0 | 0 | 1 |
| (3) Dry Islam | 11 | 0 | 0 | 10 (90.9%) | 0 | 1 |
| (4) South Asia | 7 | 0 | 2 | 0 | 4 (57.1%) | 1 |
| (5) East Asia | 9 | 2 | 1 | 1 | 1 | 4 (44.4%) |

Percent of cases classified correctly overall: 82.19%

Notes.

Figures in parentheses are percentages of countries classified correctly for each region.

Discriminating Variables:

- 1) Crude Birth Rate 1990
- 2) Mean Life Expectancy 1990
- 3) Daily Calorie Supply 1989
- 4) % Age Cohort Enrolled in Secondary Education 1989
- 5) % Labor Force in Agriculture 1980
- 6) Energy Consumption Per Capita 1990

TABLE 11

DISCRIMINANT ANALYSIS OF SNYDER AND KICK'S
WORLD-SYSTEM POSITION CLASSIFICATIONS

| Actual Group | No. of Cases | Predicted Group Membership | |
|--------------------|-----------------|-------------------------------|---------------|
| | | 1 | 2 |
| (1) Semi-periphery | 13 | 8 (61.5%) | 5 |
| (2) Periphery | 41 | 10 | 31 (75.6%) |

Percent of cases classified correctly overall: 72.22%

Notes.

Figures in parentheses are percentages of countries classified correctly for each region.

Discriminating Variables:

- 1) Crude Birth Rate 1990
- 2) Mean Life Expectancy 1990
- 3) Daily Calorie Supply 1989
- 4) % Age Cohort Enrolled in Secondary Education 1989
- 5) % Labor Force in Agriculture 1980
- 6) Energy Consumption Per Capita 1990

TABLE 12

DISCRIMINANT ANALYSIS OF NEMETH AND SMITH'S
WORLD-SYSTEM POSITION CLASSIFICATIONS

| Actual Group | No. of Cases | Predicted Group Membership | | |
|---------------------------|--------------|----------------------------|--------------|---------------|
| | | 1 | 2 | 3 |
| (1) Strong Semi-Periphery | 5 | 3 (60.0%) | 1 | 1 |
| (2) Weak Semi-Periphery | 8 | 0 | 5 (62.5%) | 3 |
| (3) Periphery | 16 | 2 | 4 | 10 (62.5%) |

Percent of cases correctly classified overall: 62.07%

Notes.

Figures in parentheses are percentages of countries classified correctly for each region.

Discriminating Variables:

- 1) Crude Birth Rate 1990
- 2) Mean Life Expectancy 1990,
- 3) Daily Calorie Supply 1989,
- 4) % Age Cohort Enrolled in Secondary Education,
- 5) % Labor Force in Agriculture 1980,
- 6) Energy Consumption Per Capita 1990

TABLE 13

NUMBER OF ZERO-ORDER CORRELATIONS IN WHICH DIRECTION IS THE SAME
FOR ALL FIVE GEOGRAPHIC REGIONS

| Type of Variables Involved in Correlation | Same | Total Number of Such Correlations |
|--|------------|---|
| Two Demographic | 17 | 28 |
| Demographic & Social | 27 | 56 |
| Two Social | 11 | 21 |
| Demographic & Economic | 27 | 96 |
| Social & Economic | 25 | 84 |
| Two Economic | 14 | 66 |
| TOTAL | 121 | 351 |

TABLE 14

NUMBER OF ZERO-ORDER CORRELATIONS IN WHICH DIRECTION FOR TWO REGIONS
ARE THE OPPOSITE, BY REGIONAL PAIRING

| Regional Pairings | Number of Correlations |
|------------------------------------|------------------------|
| Latin America / Sub-Saharan Africa | 30 |
| Latin America / Dry Islam | 21 |
| Latin America / South Asia | 25 |
| Latin America / East Asia | 27 |
| Sub-Saharan Africa / Dry Islam | 39 |
| Sub-Saharan Africa / South Asia | 53 |
| Sub-Saharan Africa / East Asia | 48 |
| Dry Islam / South Asia | 36 |
| Dry Islam / East Asia | 28 |
| South Asia / East Asia | 16 |

TABLE 15

ZERO-ORDER CORRELATIONS COEFFICIENTS OF MEAN ANNUAL POPULATION GROWTH
IN WHICH TWO REGIONS (AT LEAST)
ARE STATISTICALLY SIGNIFICANT AND DIRECTIONS ARE OPPOSITE

| Variables | LA | s-SA | DI | SA | EA |
|-----------|---------|---------|---------|---------|---------|
| LIFEX | -.3580 | .5555** | .3806 | -.7540* | -.5555 |
| EDSECN | -.5342* | .4118* | .2279 | -.6705 | -.3294 |
| SXPRED | .1471 | .4695* | .5270 | -.8272* | -.2634 |
| LGNPPH | -.4570* | .3590* | .7355* | -.7021 | -.3440 |
| IMPQ | .5417* | -.1113 | -.7273* | -.1034 | -.7923* |
| AGLAB | .5849** | -.3099 | -.5540* | .5469 | .1805 |

Notes.

LA = Latin America
s-SA = sub-Saharan Africa
DI = Dry Islam
SA = South Asia
EA = East Asia

Probabilities are two-tailed tests.

* p < .05
** p < .01
*** p < .001

TABLE 16

NUMBER OF ZERO-ORDER CORRELATIONS IN WHICH THE THIRD WORLD LEVEL OF ANALYSIS MISREPRESENTS THE DIRECTION AT THE REGIONAL LEVEL, BY REGION

| Region Misrepresented | No. of Correlations |
|-----------------------|---------------------|
| Latin America | 30 |
| Sub-Saharan Africa | 39 |
| Dry Islam | 73 |
| South Asia | 22 |
| East Asia | 45 |
| TOTAL | 209 |

TABLE 17

ZERO-ORDER CORRELATIONS COEFFICIENTS OF MEAN ANNUAL POPULATION GROWTH
 IN WHICH THE THIRD WORLD AND ONE REGION (AT LEAST)
 ARE STATISTICALLY SIGNIFICANT AND DIRECTIONS ARE OPPOSITE

| Variables | 3rd World | LA | s-SA | DI | SA | EA |
|-----------|-----------|---------|-----------|---------|---------|---------|
| EDSECN | -.3061** | -.5342* | .4118* | .2279 | -.6705 | -.3294 |
| IMPQ | -.2410* | .5417* | -.1113 | -.7273* | -.1034 | -.7923* |
| IMR | .2886** | .3909 | -.5186** | -.2872 | .6994 | .4619 |
| LIFEX | -.3042*** | -.3580 | .5555** | .3806 | -.7540* | -.5555 |
| ILLIT | .3193** | .3588 | -.5984*** | -.2264 | .7413 | .1206 |
| EDTERT | -.3948** | -.4222 | .3743* | -.0106 | .8046 | -.4412 |

Notes.

LA = Latin America
 s-SA = sub-Saharan Africa
 DI = Dry Islam
 SA = South Asia
 EA = East Asia

Probabilities are two-tailed tests

* p < .05
 ** p < .01
 *** p < .001

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VITA

Robert Dempsey Wynn

Born in Norfolk, Virginia, July 6, 1970. Graduated from Norfolk Catholic High School in that city, June 1988. Went on to receive B.A. from George Mason University, August 1992. M.A. Candidate, College of William and Mary 1993-96, with a concentration in Third World development. The course requirements have been completed, but not the thesis: *Regional Variations in Third World Development*.