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THE NORMAL DEVELOPING ECONOMY

by

Hollis B. Chenery

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(This paper will constitute Chapter II in a forthcoming book entitled: The Developing Economy. A chapter outline is included for reference)

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(outline)
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Background Studies:

For Chapter 2: "Uniform Analysis of Development Patterns", with H. Elkington and C. Sims, Harvard U. Ec. Dev. Rep. No.148 (1970)

For Chapter 3: "Development Patterns: Among Countries and Over Time," with Lance Taylor, Harvard U. Ec. Dev. Rep. No. 15 (1968).
"Land: The Effects of REsources on Economic Growth," in K. Berrill, ed. Economic Development with Special Reference to East Asia, (1964).

For Chapter 5: "Patterns of Industrial Growth," AER (1960).

For Chapter 6: "Resource Allocation for Economic Development," with Kretschmer, Econometrica, 1956.

For Chapter 8: "Foreign Assistance and Economic Development," with Strout AER (1966).
"Foreign Aid and Economic Development: The Case of Greece," with Adelman, Rev. Econ. Stat. (1966).
"Optimal Patterns of Growth & Aid: The Case of Pakistan," with MacEwan, in Adelman and Thorbecke, eds. The Theory & Practice of Economic Development (1966).

"Development Alternatives for Latin America," with Eckstein, (1966) JPE (forthcoming).

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THE DEVELOPING ECONOMY

CHAPTER II

THE NORMALLY DEVELOPING ECONOMY*

The empirical background for development theory is derived from two principal sources: historical studies of advanced countries and comparisons among countries at different income levels in recent years. Since these materials bear only indirectly on the actual growth processes of developing countries, they have so far provided only an intuitive basis for theoretical models. Only quite recently have econometricians begun to tackle the problem of estimating structural relations in less developed countries directly, but their results are severely limited by the short time series available.

Of these three types of material, cross-section data furnish the richest potential source of information on development processes for a wide spectrum of countries. This is partly because of the lack of time series for less developed countries before about 1950, but also because the political and economic environment has changed very markedly since the Second World War. While time series analysis should become increasingly

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*I am indebted to Lance Taylor and Christopher Sims for their collaboration and advice. This chapter incorporates results from a series of studies including H. Chenery, "Patterns of Industrial Growth" (1960); H. Chenery, "Land: The Effects of Resources on Economic Growth" (1964); H. Chenery and L. Taylor, "Development Patterns: Among Countries and Over Time (1968); and H. Chenery, H. Elkington, and C. Sims, "A Uniform Study of Development Patterns" (1970)

The starting point for the present study is the series of ten articles by Simon Kuznets on Quantitative Aspects of the Economic Growth of Nations (1956-1964).[1] The most valuable aspect of Kuznets' work is his systematic comparison of historical changes in some fifteen advanced countries to similar intercountry patterns in the postwar period. In almost all cases Kuznets finds strong similarities between the two, but he identifies enough differences to make him skeptical as to the validity of inferring past or future patterns of change from cross-country relations alone.[2] Kuznets' work is rich in speculations and questions for further study. What explains the rather remarkable uniformity in the economic structures of the industrialized nations? How do the development patterns of the leading "follower" countries differ from the historical evolution of the advanced countries? What is the relative importance of the factors leading to diversity -- changes in technology, tastes, social

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1. Kuznets' approach derives in turn from Colin Clark's pioneering pre-war study of The Conditions of Economic Process (1940, 1951), which was the first to exploit comparative statistics on economic structure as a basis for theorizing about development.

2. See Kuznets' discussion in Modern Economic Growth (1966), pp. 431-437 and p. 506.

organization -- in relation to the factors that have produced the marked uniformities of the past?

To answer such questions, we need theoretical models that take into account the interrelations among different aspects of structural change. While some development phenomena can be satisfactorily explained by an intuitive assessment of causal factors, others require a more formal analysis of the complex set of interactions between changes in demand and supply in different economic sectors. The problem is thus similar to the study of cyclical phenomena, in which there has been such a fruitful interaction between quantitative description and theoretical analysis.

The present chapter constitutes the first step in an econometric approach to the formulation of development theories. I will start by estimating a set of uniform regression equations describing individual aspects of structural change. This formalization of Kuznets' approach permits statistical tests to be made of several of the questions that have been raised as to the stability of development patterns over time and the effects of natural resources and other variables. It also provides comparable estimates of related phenomena that have been studied by different investigators using a variety of sources. My main objective is to provide a systematic description of the normal processes of development in a form

that will be useful for theoretical analysis. These results provide a basis for measuring the sources of growth in the final section and for identifying alternative development patterns in Chapter 3.

A. The Nature of Structural Transformation

Economic development has been defined in Chapter 1 as the set of structural changes required to sustain the growth of output and to respond to the preferences of the society. In general terms, the uniformity of the historical changes observed by Kuznets in countries that have reached a high level of income can be traced to the universal role of capital accumulation, the international exchange of goods and ideas, access to a common body of technology and organizational methods, and consequent similarities in tastes and social objectives. These common features of the human and natural environment have led each advanced country to industrialize in a pattern determined partly by its resource endowment and historical origins but still showing a marked degree of uniformity. Furthermore, as these 15 countries have attained higher income levels, the effects of their initial resource endowments have tended to diminish.[1] While Canada, Sweden and Denmark specialized in primary production during most of their development, their productive structures are now much less distinguishable from those of the

1. Table 7 below lists the 15 countries that were fully developed in 1950.

United Kingdom and Germany, which specialized in industry throughout. We can observe a similar tendency to convergence in education, urbanization, consumption patterns and other characteristics of mature societies.

These observations lead to the hypothesis that while the timing of particular features of development may vary considerably, the nature of the basic changes is quite similar from country to country. On this hypothesis, the observed differences in structure of countries at the same income level result mainly from differences in the timing of the separate processes.[1] In the examples cited, the variation in productive structure stems primarily from differences in comparative advantage, which affects the timing of the introduction of industry. As income increases, an initial comparative advantage in primary production has diminishing importance and the continued industrialization of the laggards makes the structure of production become more uniform.

Development Processes. Similar changes in economic structure may result from a relatively simple set of functional relations, such as common sectoral differences in the income elasticity of demand, or from a complex interaction involving a number of such

1. This formulation is similar to Gerschenkron's observations that the timing of development processes varies with the relative backwardness of a country and that there is no rigid set of "prerequisites" for industrialization (1962, pp. 46-51).

functions. Since we usually cannot identify or estimate the underlying relations directly, we need an alternative procedure for analyzing changes in resource allocation in such a way as to bring out some of their systematic aspects. For this purpose I will try to identify and describe basic development processes that can form a basis for empirical theories.

A development process will be defined initially as merely a convenient unit for analyzing structural change. It will be considered basic if it is thought to apply to all countries, as in the example of Engel's law. In well studied fields, such as consumption and saving, existing theory and econometric results provide a substantial guide to the choice of units, relevant variables, and structural relations. In such cases, it is usually possible to infer some of the properties of the underlying relations from the available intercountry evidence.[1]

Although we cannot limit the analysis to fields in which the data match existing theoretical concepts, we can draw on the available econometric work in areas such as production and trade to specify some of the properties of the underlying relations. For example, I will assume similar economies of scale in comparable productive sectors among countries and use this assumption to interpret the intercountry relations that are

1. This procedure is illustrated by Houthakker's studies of consumer demand (1957) and savings (1961).

estimated. The concept of comparative advantage is similarly useful, even though we can only test its operation quite indirectly.

There is a third category of processes for which the evidence suggests considerable uniformity -- such as the decline of the birth rate or the rise of public revenue -- but for which there is as yet no well defined body of theory. In this case, we need to infer the nature of the underlying relationships in large part from the intercountry data itself.

This discussion suggests that a development process should be defined initially so as to facilitate the definition and measurement of an observed structural relationship. Redefinition on the basis of theoretical analysis is to be expected at a later stage.[1] To make use of intercountry data, the variables measured and units of analysis will be determined very largely by the uniform accounting systems of the United Nations.

Since the approach of this chapter is essentially empirical, it is important to choose a statistical formulation that takes account of available theory as to the general nature of the transformation that is taking place in developing

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1. One of the most useful pieces of empirical theorizing of recent years has been the discovery and analysis of the "Phillips Curve," which has followed essentially this sequence.

economies. For example, processes do not typically proceed uniformly as the level of income rises but are accelerated at some stages and decelerated at others. The linear (or log-linear) relationship of structural change to the level of income that is usually assumed in statistical analysis is likely to be quite inappropriate since it conceals this type of phenomenon.[1] In the statistical procedures used, I will test several alternative nonlinear formulations in order to describe development processes in a uniform manner.

Since it is not possible to specify a complete model of the economic transformation, I will make only minimal assumptions about the nature of causation. This problem led Adelman and Morris (1967) to utilize factor analysis to explore the systematic relations among economic and social factors, since their technique requires no prior specification of causality. While this procedure is a valuable complement to the regression methods that are used here, it is difficult to use the results directly in the formulation of economic models.

There are several ways to conceptualize the transformation of primitive into advanced economies, each of which has implications for the statistical techniques to be employed:

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1. Kuznets' procedure of computing averages for groups of countries by income class is often preferable to linear regression for this reason, and my advocacy of nonlinear regression equations draws on his results.

(1) We can view the transformation as a set of individual structural changes or processes and seek to describe the common features of each, as Kuznets has done.

(2) We can assume that countries having notable historical or resource differences will follow different laws of development and classify countries into types, such as the Lewis "surplus labor" economy.

(3) We can accept elements of both these approaches but identify different development patterns only on the basis of tests of the similarities of individual processes.

The statistical methodology of this and the following chapter is based on the third approach, which also provides some evaluation of the empirical validity of the other two. I will start by measuring the variation in individual structural features (processes) with the level of income and also introduce variables into the regression equations that will test for the existence of different patterns. In chapter 3 countries are grouped on the basis of pattern variables that are found to have a significant effect (size, resources) and the nature and interaction of development processes are re-examined for each group.

1. Measurement of Processes and Patterns. In the first stage of the analysis, the most important property of the statistical procedure is that it should apply to a wide variety of countries and processes. The scope for refined econometric specification is very limited because it reduces the size of

the available sample of countries too greatly. Once a uniform mapping of the major development phenomena has been completed, it is usually possible to find better explanations of a given process because we have greater insight into the nature of related changes.

In addition to using widely available variables, a general-purpose statistical description should allow for non-linear variation of structural features with the level of income and should test for shifts in cross-country relations over time. The following two specifications have been found to have a wide range of application.[1] Equation (1) will be considered the basic regression and used to measure all processes. The capital inflow will be added as in equation (2) whenever it shows a significant effect.

(1) $X = \alpha + \beta \ln y + \beta'(\ln y)^2 + \gamma \ln N + \delta T$

(2) $X = \alpha + \beta \ln y + \beta'(\ln y)^2 + \gamma \ln N + \delta T + \varepsilon(\frac{F}{Y+F})$

where: X = dependent variable

y = Y/N = GNP per capita (in 1964 dollars)

N = population

T = time

F = net capital inflow (imports minus exports of goods and services) as a share of total resources.

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1. Equation (1) was proposed in Chenery and Taylor (1968) to avoid the linear assumption of previous studies. As in that study it will be referred to as the B(basic) regression when T is omitted or as BT in the form shown. Equation (2) is widely used in Chenery, Elkington and Sims (1970), which also discusses several alternative forms.

(1) The dependent variable is taken as a ratio to GNP if that is appropriate or is otherwise corrected for country size.[1]

(2) Per Capita GNP is used as an overall index of development. Even though there are difficulties in selecting an exchange rate to compare income levels among countries, GNP is the best single measure of the level of development that has yet been devised. In time series analysis it has the added advantage that the regression coefficients β and β' determine a "growth elasticity" that has economic significance in many processes.[2]

(3) The country's population (N) is introduced as an independent variable to allow for the effects of economies of scale and transport costs on trade and production patterns.[3] It also affects a surprising number of other development processes either directly or indirectly and is virtually uncorrelated with the level of income.

(4) The net capital inflow (F) affects directly or indirectly a number of development processes. The role of external capital is analyzed in theoretical terms in Chapter 7, which brings out the interaction between exports, imports,

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1. Both logged and unlogged forms of the dependent variable have been computed, but only the latter are given here.

2. Although a logistic curve would provide a more satisfactory representation of many growth processes, we rarely have sufficient observations to make it a significant improvement over this simpler form, particularly for the central income range ($100 to $1000) in which we are most interested.

3. In Chapter 3, the effect of scale is analyzed more accurately by dividing the sample into large and small countries.

savings and investment.[1]

(5) Time trends can be introduced into cross-section estimates in various ways. I assume here that there are shifts in the structural relationship over time in all countries that they are independent of income changes within each country. This simple formulation provides a satisfactory test of the stability of the cross-section relationships for most variables.[2]

Subsequent analysis will show that variations in countr size and capital inflow produce statistically significant differences in a number of developemnt processes. I will call such factors "pattern variables", since they indicate the existence of patterns of interrelated variations affecting several processes. Other

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1. Although it is important to investigate the effects of differences in capital inflows on development processes, the treatment of F as an exogenous variable creates statistical difficulties because in reaching equilibrium adjustment takes place in the capital inflow as well as in exports, imports, saving, and investment. The coefficients and standard errors attaching to F are therefore merely measures of partial correlations. To avoid difficulties of interpretation, I have in all cases computed regressions with and without F (and other interdependent variables) to test whether the non-exogenous variables substantially affect other coefficients. The only case in which this problem has proven serious is in the application of this type of equation to the study of growth rates in Section C.

2. Several more refined alternatives are tested in Chenery and Taylor (1968), and Chenery, Elkington, Sims (1970). While equation (1) provides an adequate test for the existence of a trend, a more satisfactory analysis can be secured by comparing separate time series estimates when sufficient data are available.

potential pattern variables are indices of resource endowments, the rate of growth, the extent of surplus labor, and the degree of urbanization.[1] They will be introduced in describing several processes where they have been shown to be significant.

The following section gives regressions derived from equations (1) or (2) for universal development processes, using inter-country data for 1950, 1955, 1960, and 1965.[2] Each process is described by one or more measures of structural change. The dependent variable is taken as a ratio to GNP whenever feasible, which produces estimates of changes in composition that are comparable if the sample is identical. This procedure yields a consistent description of the normal structure of a postwar economy of specified income level, size, capital inflow and date. The results will provide a basis for the study of alternative development patterns and individual countries in Chapter 3 and for a less aggregated analysis of industrialization in Chapter 5.

B. Basic Development Processes[3]

This methodology will now be applied to a selection of 27 variables describing ten sets of processes that are universal, measurable, and significantly related to development theory.

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1. Since I have not found a satisfactory measure of surplus labor, I cannot include it in the intercountry estimates.

2. The basic equation utilizes variables that are measurable for over 100 countries for at least part of this period. It therefor provides a useful check on more complex formulations, most of which require a considerable reduction in the number of less developed countries that can be included.

3. This section is based on Chenery, Elkington, and Sims (1970), which contains a detailed statement of the statistical procedure and sources of data. The statistical basis for the

Theories of development focus on a few of these processes and suggest some of the properties of development patterns that we should expect to observe. For example, Lewis' dual economy theory (1954) assumes that there will be a rise in the share of savings in GNP as the capitalistic sector of the economy grows. To the extent possible, the selection of processes and additional explanatory variables is designed to refine existing theoretical formulations and sometimes to test their validity directly. The ten sets of processes are grouped under three headings that indicate their relation to the economic transformation: (i) factor accumulation, (ii) resource allocation, (iii) labor force and population. A list of the indices used and the number of countries and observations in each sample is given in Table 1.

For each set of processes, I will determine the magnitude of economic transformation involved over the range of observations from the least developed level ($50 per capita) to the most developed level ($2000 per capita). The results also indicate whether the rate of change increases or decreases with the level of development, the significance of other pattern variables, and the stability of the estimated relationships over the postwar period. Processes are compared in figures 1-10 by plotting the

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measurement of development processes has been taken to a maximum extent from a single source -- the World Tables of the I.B.R.D. -- in order to minimize problems of comparability.

TABLE 1

STRUCTURAL CHARACTERISTICS ANALYZED[a)]

Dependent Variable	Basic Regression No. of Countries	Basic Regression No. of Obs.	Augmented Regression No. of Countries	Augmented Regression No. of Obs.
A. ACCUMULATION PROCESSES				
1. Investment (Figure 1)				
A 1 Gross National Savings as % of GNP	89	220	78	186
A 2 Gross Domestic Investment as % of GDP	89	220	78	186
A 3 Capital Inflow (Net Import of Goods & Services as % of GDP)	89	220		
2. Government Revenue and Expenditure (Fig. 2)				
A 4 Government Revenue as % of GDP	95	231	78	186
A 5 Tax Revenue as % of National Income	90	215	78	186
A 6 Education Expenditure by Government as % of GDP	101	236		
3. Education (Figure 3)				
A 7 Primary & Secondary School Enrollment Ratio	118	359		
A 8 Adult Literacy Rate	64	99		
B. RESOURCE ALLOCATION PROCESSES				
4. Domestic Demand (Figure 4)				
B 1 Personal Consumption as % of GDP	101	246		
B 2 Government Consumption as % of GDP	79	197		
B 3 Food Consumption as % of Total Consumpt'n	45	115		
5. Structure of Production (Figure 5)				
B 4 Primary Output as % of GDP	73	217	83	192
B 5 Industry Output as % of GDP	73	217	83	191
B 6 Services Output as % of GDP	73	217	52	170
B 7 Utilities Output as % of GDP	73	217	47	166
6. Exports (Figure 6)				
B 8 Exports as % of GDP	99	228		
B 9 Primary Exports as % of GDP	99	228		
B10 Industry Exports as % of GDP	99	228		
7. Imports (Figure 7)				
B11 Imports as % of GDP	99	228		
B12 Primary Imports as % of GDP	99	228		
B13 Industry Imports as % of GDP	99	228		

TABLE 1 (Continued)

	Basic Regression		Augmented Regression	
	No. of Countries	No. of Obs.	No. of Countries	No. of Obs.
C. POPULATION AND LABOR FORCE				
8. Labor Allocation (Figure 8)				
C4 Share of Primary Labor	69	102		
C5 Share of Industry Labor	69	102		
C6 Share of Service Labor	69	102		
9. Urbanization (Figure 9)				
C3 Urban Population	96	157		
10. Population Growth (Figure 10)				
C1 Birth Rate	84	221	73	124
C2 Death Rate	80	205		

a) Figures 1-10 correspond to the ten sets of processes listed.

Calculations are made from regression (1) with values of N=10, T=1960

dependent variable against the level of development (measured by the logarithm of the per capita GNP)[1]. Table 2 gives the same information for selected levels of per capita GNP.

Accumulation Processes

Accumulation is defined as the use of resources to increase productive capacity. It includes increases in the stocks of physical as well as current expenditures that add to the future productive capacity. Since many public goods -- education, health, police protection, extension service, etc. -- perform this function, I will take government revenue as an indicator of the potential for productive allocation of public resources.

The eight aspects of accumulation listed in Table 1 include three measures of savings and investment, three measures of investment in human capital, and two measures of government revenue. The basic regressions for these processes are given in Table 3a. The four variables in the basic regression explain 50% or more of the variance in most cases.

Figures 1-3 show that the economic transformation involves a substantial increase in all aspects of accumulation (except the inflow of capital), ranging from doubling the rate of investment to tripling gross savings and government revenue and more than quadrupling school enrollment and adult literacy.

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1. In all cases the cross-country relations are sufficiently stable over the postwar period to be adequately represented by the pooled regression. Figures 1-10 represent the variation in each set of processes with the level of development for a country of 10 million people (N=10) and T=1960.

TABLE 2

NORMAL VARIATION IN ECONOMIC STRUCTURE WITH LEVEL OF DEVELOPMENT

	Per Capita GNP						Proporti Completed a	
	$50	$100	$200	$400	$800	$2000	$200	$4(
INVESTMENT								
A 1 Gross National Savings as % of GNP	7.8	11.0	14.1	17.1	19.9	23.4	40	
A 2 Gross Domestic Investment as % of GDP	12.7	14.8	17.1	19.4	21.8	25.2	35	
A 3 Capital Inflow (Net Import of Goods & Services as % of GDP)	4.9	3.8	3.0	2.4	2.0	1.8		
GOVERNMENT REVENUE								
A 4 Government Revenue as % of GDP	12.2	14.2	17.0	20.6	25.1	32.4	24	
A 5 Tax Revenue as % of National Income	9.8	12.7	16.7	21.8	28.0	38.0	25	
A 6 Education Expenditure by Govt. as % of GDP	1.9	2.2	2.4	2.7	2.9	3.2	40	
EDUCATION								
A 7 Primary & Secondary School Enrollment Ratio	17.5	36.2	52.6	66.9	78.9	91.4	48	
A 8 Adult Literacy Rate	15.3	36.5	55.2	71.5	85.4	96.0	47	
FINAL DEMAND								
B 1 Personal Consumption as % of GDP	77.1	74.9	72.2	69.2	65.9	60.9	30	
B 2 Government Consumption as % of GDP	13.9	12.6	12.0	11.9	12.6	14.5		
B 3 Food Consumption as % of Total Consumpt'n	61.9	56.1	49.9	43.0	35.9	25.6	33	
STRUCTURE OF PRODUCTION								
B 4 Primary Output as % of GDP	56.3	45.2	35.2	26.3	18.5	9.8	45	
B 5 Industry Output as % of GDP	7.3	13.8	20.0	26.0	31.8	39.2	40	
B 6 Services Output as % of GDP	31.8	35.3	37.9	39.5	40.0	39.4	80	1(
B 7 Utilities Output as % of GDP	4.6	5.7	7.0	8.3	9.7	11.7	34	
EXPORTS								
B 8 Exports as % of GDP	19.5	19.3	19.7	20.5	21.9	24.5		
B 9 Primary Exports as % of GDP	19.5	18.4	15.8	13.4	11.1	8.1	32	
B10 Industry Exports as % of GDP	0.0*	0.9	3.8	7.1	10.8	16.3	23	

TABLE 2 (Continued)

	Per Capita GNP						Proportio** Completed a	
	$50	$100	$200	$400	$800	$2000	$200	$400
IMPORTS								
B11 Imports as % of GDP	21.3	21.1	21.4	22.3	23.8	26.5		
B12 Primary Imports as % of GDP	2.6	4.1	5.4	6.4	7.1	7.7	55	75
B13 Industry Imports as % of GDP	18.7	17.0	16.1	16.0	16.7	18.8	--	--
LABOR ALLOCATION								
C 4 Share of Primary Labor	84.2*	74.0*	57.4	43.9	29.0	7.1	35	52
C 5 Share of Industry Labor	6.5*	9.9*	15.3	23.4	31.1	40.5	26	50
C 6 Share of Service Labor	19.5*	21.8*	27.3	32.7	40.0	52.4	24	40
URBANIZATION								
C 3 Urban Population	6.9	20.0	33.8	45.5	55.3	65.1	49	61
POPULATION GROWTH								
C 1 Birth Rate	46.6	41.8	36.6	31.1	25.3	17.1	34	5
C 2 Death Rate	20.5	15.2	11.4	9.3	8.9	10.7	93	11

* Estimates based on regressions in Tables 2-4 (with N=10 million) except those indicated by an asterisk, where the logged form provides a better fit.

** The last two columns measure the proportion of the change from $50 to $2000 that is completed at the levels of $200 and $400 per capita income.

However, it is in the nature of accumulation processes that they approach an upper limit, since no society will devote all its resources to increasing its productive capacity for the future. In accumulating human capital, the upper limit is likely to be attained at the highest levels of income, but models of optimum growth suggest that the maximum rate of physical investment may be reached at intermediate levels of income. In fact, gross investment has been relatively constant at rates of 20-25% of GNP in developed countries over the past decade.[1] This level has also been attained by a number of developing countries as shown in figure 1.

The processes of accumulation vary considerably in their timing. The indices of education show a more rapid rise at low incomes and then a decreasing rate of increase. Primary and secondary education may be classed as "early" processes. since the regional increase in enrollment is half completed at a level of $200.[2] Next come savings and investment, which increase steadily and reach the half-way mark of the transformation at the normal level of $300.[2] By contrast, the shares of taxes and government revenue tend to rise slowly at first and then acc elerate, so that their rise is greater in the later stages.[4]

The processes of savings, investment, and taxation have been quite stable over the postwar period, with insignificant time

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1. Rates of capital formation of 30% or more of GNP have been observed in Japan, Yugoslavia, the U.S.S.R., Switzerland, Norway, Hungary, and Finland.

2. Higher education is a relatively late process, and "total years of schooling" would probably show a fairly steady increase.

(continued)

trends. Education expenditure and school enrollment, on the other hand, show very significant upward trends, which suggest an increase in the future growth potential of the developing countries.

The estimated effect of resource inflows on domestic saving and investment is of considerable interest, since this has been a subject of some controversy.[1] Although in national accounting the import surplus is treated as an inflow of capital, it is more logical to think of additional resources as being divided among investment, government consumption and private consumption. The regression coefficients in Table 3 show that the effect on each is highly significant, and the average rise in consumption estimated is greater than the average rise in investment.[2]

The size of the country has a positive relation to all seven measures of domestic accumulation (three of which statistically significant) and a negative relation to the capital inflow. Since there is no direct link between economic

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3. The proportion of the transformation shown in each process at income levels of $200 and $400 are given in table 2.

4. In the models of constrained growth discussed in Chapters 7 and 8, education, savings, and government revenue are treated as separate limits to development.

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1. See Rahman (1968), Gupta (1970), and Weisskopf (1970). The analysis is complicated by the existence of structural disequilibrium (see Chapter 8).

2. To be consistent, the results should satisfy the two identities: $\Delta F = \Delta I - \Delta S = (\Delta C + \Delta G) + \Delta I = 1.0$. Using the coefficients in Table 3, we have .14 + .35 = .49 for the first, and from Table 4 .70 + .08 + .14 = .92 for the second. (The varieties in net factor payments abroad is not allowed for in this formulation.)

3. This is also the conclusion of Weisskopf (1970) who has computed time series regressions of investment on capital inflow.

scale and tax revenue, savings or school enrollment, the more likely connection is via the structure of production and trade.

Resource Allocation

Resource allocation is defined by the source of supply of each commodity and by its use in production, consumption, capital accumulation or exports. For a few countries these resource flows can be measured in detail in an input-output accounting system, which permits us to trace the links between final demands, intermediate uses, production levels, and value added in each sector of the economy. The value of this framework for the study of long-term changes in resource allocation will be demonstrated in the study of Japanese development in Chapter 4.

Since comparable elements of the input-output accounts are not yet widely available,[1] we must utilize the national income and product and international trade accounts of the United Nations for the study of allocation processes. Although these elements have been comprehensively studied by Kuznets,[2] econometric analysis provides more precise estimates of the underlying relationships.

It is not possible to subdivide the observed patterns of resource allocation into separate processes because

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and other variables for 38 countries. He finds a negative effect of F on S in about half the cases studied. His results are discussed in Chapter 8.

1. Some cross-country estimates derived from input-output accounts are given in Chapter 6.

2. Most of his results are summarized in Modern Economic Growth (1966), chapter 8.

of their high degree of interdependence. This problem is illustrated in the well-established phenomenon described by Engel's Law, which specifies that the share of food in consumption declines at higher income levels. Since this change implies that the total share of other commodities rises, the set of income and price relations that determines the change in composition of demand should logically be considered as a single unit for analysis. In this case we can define a development process as the normal change in composition of demand with rising income. A more complex problem arises in specifying the systematic effect of changes in comparative advantage (resulting from the accumulation of capital and skills) on the composition of imports or exports. I will therefore follow Kuznets in basing my initial description of the processes of resource allocation on the composition of the principal aggregates: total demand, consumption, imports, exports, and production. A less aggregated treatment is given in Chapters 5 and 6.

To provide an overall picture of the transformation of resource allocation with rising income, it is necessary to define sectors on the basis of the characteristics of trade and demand as well as production. The choice of aggregates for intercountry

analysis is effectively determined by the ten main subdivisions of the International Standard Industrial Classification (ISIC). These will be consolidated into the following four sectors for intercountry analysis:

Production Sector	ISIC Nos.	Trade Equivalent [2]
P: Agriculture and mining	(0,1)	Primary products
M: Manufacturing and construction	(2-4)	Manufactured goods
U: Electricity, gas, water, transport, communications	(5,6)	(non-traded)
S: Trade, finance, public administration, other services	(7-9)	Services

Because my analysis concentrates on the role of international trade, I have modified Kuznets' three-sector breakdown by including mining in the primary sector,[1] since trade in both mineral and agricultural products is determined to a large extent by natural resource endowments.

By using uniform regression equations to measure all processes we are able to decompose the total changes in production or trade into separate components. The partial effects of each independent variable can be added to give the total effect, which must be zero for the components of a given aggregate. Thus the upward time trend estimated for government consumption is

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1. My other modification is to divide his "industry" sector into two parts, of which the first includes manufactured goods gplus construction and the second comprises social overhead facilities ("utilities"). P plus M is thus total commodity output and U plus S total series.

2 (see over)

exactly offset by downward trends estimated for other components of total demand, and the same is true of the other coefficients in equation (2).[1]

The systematic description of changes in the composition of demand, trade, and production is a first step toward identifying the underlying processes that cause the uniformities observed. Among these elements, the variation in consumer demand comes closest to reflecting a separate set of processes, which are described by conventional demand functions. Primary exports are also separable to a considerable degree, since they are mainly determined by external demand and natural resource endowments. Production and import levels, on the other hand, cannot be specified even approximately without reference to the full solution to a general equilibrium system. The observed uniformities in their composition can only be described as aspects of an overall development pattern.

Domestic Demand. The gross national product is divided by use into domestic capital formation (savings), government consumption, and private consumption. The standard regressions for these components are shown in Tables 3a and 4a and their variation with the level of income is charted in Figure 4. The main

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1. This equality only holds exactly when the sample is identical. I have therefore computed regressions for identical samples (as well as maximum samples). The former are shown in table 4 for production, exports and imports. The maximum samples are given in Chenery, Elkington and Sims (1970).

(2 from p. 20) The definitions based on the Standard Trade Classifications (SITC) are given in the statistical appendix.

source of change in the aggregate composition of demand is the rise in savings and investment, which has already been discussed. There is a small rise in government consumption, and a substantial fall in the share of personal consumption.

All the components of demand and production are significantly affected by the inflow of resources. The average effect of increasing the capital inflow is measured by the coefficients of F in Table 4. They indicate that the savings and investment out of external resources may not be much higher than the savings out of domestic GNP.[1] There is also a significant downward trend in the share of consumption in GNP in the postwar period, which is offset by a corresponding rise in government consumption.

The major change in the composition of consumption is the steady decline in the share of food (shown in Figure 4b) from 60% at the underdevebped level to less than 30% at high income levels. The effect on agricultural demand at the farm level is even more pronounced, since there is also a steady increase in the amount of processing at higher income levels.[3] As shown

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1. Time series estimates of a similar relationship for 16 Latin American countreis are given in Chenery and Eckstein (1970) and in Weisskopf (1970) for 34 countries. Most countries show a negative relationship between F/Y and S/Y, but the marginal savings rates are generally higher than that indicated here.

2. Kuznets estimates the decline in farm values from 38% to 17% over a comparable income range (1966, p. 428). A similar result is produced by the simulation model given in Chapter 6.

below, the principal offset to the decline in food consumption is the rise in the share of manufactured goods, with a much smaller rise in the share of services.[1]

Production. Among all the structural changes that go to make up the general economic transformation, the change in the pattern of production is perhaps the most central. Unfortunately, it cannot readily be broken down into separate processes because of the high degree of interdependence among productive sectors. At a later stage, I will decompose the observed changes in output levels into several components (effects of demand processes, trade processes, and technological change) by means of inter-industry analysis. As a first step, the present section investigates the uniformity of the pattern of industrialization, using the descriptive procedure already established.

The four-sector breakdown has been chosen as the best available statistical approximation to the elements needed in an aggregated model of balanced growth. The assumptions of this model are approached most closely by developing countries having little international trade. The volume and composition of trade are in turn significantly affected by both country size and capital inflow. The following analysis brings out the nature of these effects.

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1. Since the number of countries for which a more detailed breakdown of consumption is available is limited, analysis of this process is deferred to Chapter 6.

Figure 5 and regressions (B4-B7) of Table 4 provide an econometric description of the net effect of variations in income level on the composition of output.[1] The rise of industry and utilities and decline of primary production are shown to take place steadily throughout the transformation. Industry exceeds primary production above the level of $400, which provides a convenient benchmark for subdividing the transformation of the productive structure into earlier and later phases.

This four-sector description can also be loosely related to the dual-economy decision between traditional and modern sectors. At low income levels, primary production and services are largely traditional and the "modern sector" defined by Lewis (1954) and his followers consists mainly of a portion of industry (less than half in most cases) plus utilities. Industry and utilities grow about 40% faster than the national product, but factory production and other "modern" elements probably expand twice as fast as the GNP.[2] Such calculations suggest that modern, capitalistic components of production begin to predominate in the economy

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1. The regressions are computed for an identical sample of 217 observations on 73 countries in order to give results that are additive. They are only slightly different from the results for larger samples shown in Chenery, Elkington, and Sims (1970). Earlier measurements of these relationships were made by Kuznets (1957) and Chenery (1960) with similar results.

2. Although studies of this phenomenon exist for a few countries, I have been unable to discover a basis for making this breakdown for a sufficiently large number to apply the comparative methodology used here.

as a whole in the neighborhood of $600 per capita GNP.

The uniformity shown by inter-country production patterns is rather surprising, since there are many reasons to expect diversity. The rise in the share of industry with the level of income is as regular as any other aspect of structural change as evidenced by a comparison of the coefficient of determination (R^2) and the standard errors of estimate in Tables 3-5. Since industrialization results from the interaction among a number of development processes and is the main focus of development policy, it will be analyzed in considerable detail in subsequent chapters.

Both pattern variables have a significant impact on the structure of production.[1] Taking advantage of the additive properties of the regressions for the shares of total GDP, we can summarize the effects of scale, capital inflow, and the time trend from Table 4A as follows.[2]

Coefficients of Time, Scale and Capital Inflow

	Time (T)	Scale(N)	Capital Inflow (F)
B4 Primary Production	-.004	-.015	-.58
B5 Industry	-.004	+.021	+.11
B6 Services	+.005	-.003	+.39
B7 Utilities	+.002	-.003	+.09

1. The effects of natural resources (as indicated by the export pattern) are analysed in the augmented regressions of table 4.B and discussed in the next section.

2. The time trends are not statistically significant over this period of fifteen years.

The discovery of the pronounced effect of country size on industrial structure is one of the most significant results of this econometric approach to intercountry analysis. This effect is best measured for all countries by the logged form of equation B5, which shows a scale elasticity of .1, corresponding to a 10% increase in industry for a doubling of country size.[1] This generalized scale effect is produced by a shift from external to internal trade and by changes in comparative advantage as the size of the domestic market increases. The scale effect is most pronounced at low income levels, where it explains the relatively high share of industrial output in large underdeveloped countries such as India, Pakistan, and Brazil. This effect diminishes at higher income levels and is reversed in developed countries because of their lower exports of manufactured goods. It is analyzed further in Chapter 3 by subdividing the sample into large and small countries.

Although an inflow of resources can replace either primary or industry output, the regression results show that the former is the usual case. There is a corresponding increase in services industries and utilities at a given level of GNP. Subsequent analysis in Chapter 3 will show that this combined effect is particularly important in countries receiving substantial amounts of foreign assistance such as Israel, Jordan, Cuba Taiwan, Tunisia, and Puerto Rico.

1. Chenery, Elkington and Sims (1970), Table 4 B.

Trade Patterns. Variation in international trade is the principal source of the differences in development patterns among countries. Trade patterns are affected by differences in country size, resource endowments, skill levels, and development policy. Despite these sources of diversity, there are substantial uniformities in trading patterns that contribute considerably to the homogeneity of the production patterns noted above.

The level of trade is much more dependent on a country's size than on its per capita income. Between the income levels of $100 and $1000 there is an increase in the normal share of imports in GDP from 21% to 25% for a country of 10 million population, and a similar rise in the share of exports. An increase in trade of the same magnitude would be associated with a reduction in size from 10 million to 5 million population.[1]

Table 4A shows the average effects of size variation on the composition of imports and exports. The reduction in exports

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1. Since the effect of the income level is almost linear in the log form of the regression, the relative effects of income and size on the share of imports in GDP can be approximated by:

$$\frac{\left(\frac{M_1}{Y_1}\right)}{\left(\frac{M_0}{Y_0}\right)} = \left(\frac{y_1}{y_0}\right)^{.10} \left(\frac{N_0}{N_1}\right)^{.30}$$

associated with increasing size takes place entirely in primary commodities, while the reduction in imports is concentrated in industrial commodities. This result reflects the pattern of specialization of the poorer countries which comprise the bulk of the sample, but it changes at high levels of income.

Figures 6 and 7 show the normal variation in the size and composition of imports and exports with the level of income for a country of 10 million population. The share of manufactured goods in exports rises from close to zero at $100 per capita income to 50% at $1000, reflecting the normal change in a country's comparative advantage as it industrializes. As Linder (1967) suggests, a country acquires a comparative advantage in part through producing commodities for the domestic market, and the change in the composition of exports is thus related to the change in domestic demand. Subsequent analysis shows that this change in the composition of exports is as important to the explanation of the pattern of industrialization as are the effects of changing domestic demand.

On the import side, most countries purchase more manufactured goods than primary products even at high income levels because of the increasing share of manufactures in total demand. The regression results thus show that the normal effect of import substitution is not to reduce the share of imported manufactured goods in GDP but to prevent it from rising.

Because of differences among countries in natural resources and trade policies, the variation in trade with the growth of income is one of the most variable aspects of development. Underlying this variation are differences in development strategy which affect production, taxation, investment and other processes as well as the pattern of trade. For example, a strategy of promoting primary exports will have quite different effects on the rest of the economy from a strategy of import substitution or the export of manufactures.

In order to measure these interrelated effects, I will treat the levels of primary and manufactured exports as exogenously determined pattern variables, analagous to the capital inflow and country size. Since income level is allowed for in the standard regressions, addition of the export variables provides a proxy for the effects of natural resources and trade policy. Their effects on the accumulation and production processes are shown in the augmented regressions of Tables 3B and 4B.

Increased exports are shown to be associated with significantly higher levels of taxation, government revenue, savings and investment. This result reflects the greater ease of taxing international trade and the profits of exporters. Less expected is the estimate that the coefficients for manufactured exports are more significant and twice as great as the coefficients for primary exports. These results demonstrate a substantial relationship between allocation and accumulation processes which supports the attempt in Chapter 3 to analyse

development patterns as a whole instead of in separate pieces.

Table 4B shows the expected relationships between the export patterns and the levels of commodity production. The relations among scale, capital inflow, the export pattern and production will be analysed in greater detail in chapter 3 by subdividing the sample into more homogeneous country groups.

Population and Labor Force

The shift in the labor force from agriculture to industry and services and from rural to urban areas is one of the best established of developmental phenomena. The changing composition and productivity of the labor force was extensively explored by Colin Clark (1940) and more recently by Kuznets (1957, 1966). Since my analysis of labor allocation adds little to the findings of Kuznets, its principal features will be noted very briefly. I will also extend the uniform statistical analysis to describe patterns of urbanization and population growth in a form that suggests the linkages between these demographic phenomena and patterns of resource allocation.

Labor Allocation. The distribution of the labor force between the three major sectors is analyzed in the regression equations of Table 5 and shown graphically in Figure 8. While the shift in labor allocation is roughly similar to the shift in production described in Figure 5, some interesting conclusions can be drawn from a detailed comparison of the two patterns.

At a level of GNP per capita of about $1000, the sectoral distribution of the labor force is quite similar to that of the national product. This implies that average labor productivity is similar among the three main sectors at this level of income. At the underdeveloped level of $100, however, 74% of the labor force is engaged in primary production but it produces only

45% of GNP. Labor productivity is therefore only a third as high in agriculture[1] at this income level as it is in other sectors.

This finding has been analyzed in great detail by Kuznets, who shows that it must be attributed to a lower productivity of all factors in agriculture rather than to the use of smaller amounts of capital or other inputs. At income levels above $1000, the patterns of production and labor use diverge in the opposite direction, with services requiring a larger share of the labor force than their contribution to GNP. This phenomenon reflects the greater difficulty of substituting capital for labor and lower rates of technological improvements in the service sector as compared to commodity production.[2] The relatively low productivity of labor in agriculture in poor countries is thus shown to be the result of the time needed to acquire technical knowledge and the immobility of factors rather than of any inherent properties of agricultural production. It is not found in the earlier history of newly settled areas such as New Zealand or Canada or in the fully developed economies.

The tendency to equalize labor productivity among sectors

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1. Mining typically employs only 1% of the labor force and can be neglected here.

2. This is the conclusion reached by Fuchs (1969) as a result of extensive studies of the service sectors in advanced countries.

marks the end of the transition to a developed economy. It has occurred only in the past decade in Italy and Japan, but is not yet observable in some other countries that have reached fairly high levels of income.[1]

Urbanization. In a steadily growing economy urbanization might appear as the end result of a chain of causation leading from changes in demand and trade to industrialization and a steady movement of the labor force from rural to urban occupations. However, the growth of national output in the past two decades has rarely been sufficiently rapid to keep up with accelerating population growth and prevent a rise in underemployment. As a consequence, migration from rural to urban locations has been determined increasingly by factors other than the urban demand for labor. It is therefore necessary to study urbanization as a separate developmental process that may be affected by the expectation of future employment, the distribution of government expenditure and other factors as well as the changing structure of production.

The process of urbanization is measured by the standard regression equations of this chapter in Table 4 and Figure 9.

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1. Figure 8 suggests that Turkey, Algeria, Romania, Mexico, Yugoslavia, and Greece lag considerably in the movement of labor out of agriculture. They do not show comparable lags in the increase of industry and decline of agricultural production.

Its relationship to the level of development is shown to be as uniform and stable as that of most other processes. Contrary to the popular impression that migration into cities has been accelerated recently, the regressions show that this phenomenon is explained by the general rise in per capita income and increase in country size. There is no significant time trend.

Since the share of urban population is closely related to the sectoral composition of employment, there is a strong resemblance between Figures 8 and 9.[1] The population typically becomes predominantly urban above $600 per capita income and the labor force employed in industry typically exceeds that in primary production above $700. It is only after the level of income passes $1000, however, that these transitional processes are completed and the differential in resource productivity between rural and urban occupations is substantially reduced.[2]

Population Growth. Given the crucial impact that population growth has on the level of per capita income, it is important to show the extent to which the two are related and to indicate possible linkages between the two. Since these relations have been studied by a number of demographers and economists,[3] I will

1. If a breakdown of the service sector between rural and urban occupations were available, the relations between these two patterns could be specified quite precisely.

3. Useful selections of statistical studies are listed in Friedlander and Silver (1967).

2. Kindleberger (1967) traces a substantial portion of the difference in growth rates among European countries to the existence of surplus labor.

extend the present analytical framework to encompass some of the variables they have shown to be significant. My analysis is limited to crude birth and death rates, which are available for a much larger sample of countries than more refined measures of fertility and mortality.

My standard regression equation is used to show the variation of birth rates and death rates with the level of income in Table 4 and Figure 1.0. Because of the postwar advances in public health techniques such as malaria control, the death rate shows a substantial downward time trend that is most pronounced for the low-income countries. The fall in the birth rate does not exceed the fall in the death rate until the income level of $300 is reached, producing the maximum rates of population increase between $100 and $300.[1]

Adelman (1963), Heer (1966), Friedlander and Silver (1967) and Phillips, Votey and Maxwell (1969) have used multiple regression methods to study the relation between a number of economic variables and rates of fertility and mortality. They show that income level, education, child mortality, and the extent of the agricultural population all have a significant effect on the birth rate. I will test several of their results in the present statistical framework in order to indicate some of the links between demographic

1. Although the income level explains a higher proportion of the (larger) variance in the birth rate, death rates are much more uniform, as shown by the lower standard error of estimate.

changes and other development processes.

Since many demographic influences seem to vary according to the level of development, I have subdivided the country sample by income levelsin the augmented regressions of Table 5B. The explanatory variables tested include several measures of education (literacy, school enrollment) and occupation (agricultural employment, urbanization) plus the rate of infant mortality. All but the last were measured by the structural indicators analyzed pr viously. A representative set of regression results is given in Table . Since the death rate was little affected by factors other than theonly the influences on the birth rate are discussed.[1] level of development,

My principal finding is that the explanatory variables have quite different influences on birth rates as between underdeveloped and developed countries.[2] In the former group, higher education and a reduction in the primary labor force are associated with lower birth rates, while in advanced countries these factors are not significant. On the other hand, the rate of infant mortality is much more important in the developed countries, supporting Weintraub's hypothesis (1962) that in modern societies people seek a desired family size.

This analysis shows that both the birth rate and death rate are related to the level of development through a variety

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1. An increase in the level of education showed a negative effect on the death rate comparable to its effect on the birth rate for underdeveloped countries. None of the other variables except the level of devebpment was significant.

2. The regression equations for the two subgroups are significantly different from the pooled regressions at a 1% confidence level.

of causal links. Deviations from predicted values of the birth and death rates are given in Table 8 below. Large positive deviations in birth rates are shown by countries such as Mexico, Venezuela, South Africa, Peru, and Malaysia, which have had a rapid growth of GNP that is not fully reflected in their social and economic structure. Negative deviations are most notable in Eastern Europe and the Mediterranean.[1]

The regression results are generally consistent with the conclusions of Friedlander and Silver, who suggest the nature of the causal relations that underly them. I would support their conclusions that economic policy should take into account the direct effects of education and other development processes on population growth rather than continuing to treat it as an exogenous variable in development plans.

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1. The largest positive deviations in birth rates among less developed countries (from regression 202) are: South Africa (.19), Mexico (.18), Venezuela (.12), Dominican Republic (.11), El Salvador (.09), Malaysia (.08), and Peru (.08). The largest negative deviations are: Algeria (-.18), Romania (-.15), Tunisia (-.13), Portugal (-.11), Hungary (-.10), Uruguay (-.09), Bulgaria (-.09), and the Philippines (-.09).

C. STRUCTURAL CHANGE AND GROWTH

The preceding analysis has established a number of relationships between the level of development and the factors that affect the growth of output. Of the elements considered in neoclassical growth models, capital and skill accumulation increase throughout the transition while growth of the labor force reaches a peak at about $400 and then slowly declines. If residual sources of growth associated with technological progress are fairly constant, the variation in total inputs would lead us to expect growth rates to rise in the course of the transition and then decline as population growth drops off. To the extent that surplus labor and productivity differentials among sectors develop in the course of the transition, the slow-down of growth may be deferred until the surplus labor has been absorbed.[1]

Structuralist theories stress the difficulties of transforming the structure of production and trade and therefore imply that growth will be accelerated by factors that facilitate this transformation. These factors include large scale markets and increased supplies of foreign exchange from exports or an inflow of capital. Resources are also

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1. Kindleberger (1967) has suggested this extension of Lewis' surplus labor model to explain differences in growth rates among advanced countries.

thought to be less mobile in countries with a large agricultural sector than in more industrialized economies. Of these structural elements, only the degree of industrialization is highly correlated with the level of income. Exports and capital inflow vary widely and may help to explain differences in growth among countries at the same level of income.

In the present section I will analyze several of these links between the level of devleopment and the rate of growth and try to measure the effects of the separate factors. As in the case of population growth, I will use the previous measures of accumulation and transformation processes as explanatory variables, since they are largely independent of the growth rate. This procedure will enable me to break down the overall relationship between income level and growth into two parts: a portion explainable by individual development processes (investment, capital inflow, export growth, etc.) and a residual effect of the level of development. I will further analyse the effect of the level of development by splitting the sample into several subgroups.

Data on growth rates and the principal explanatory variables are available for 68 countries for the period 1960-1965 and for 49 countries for the preceding decade.[1] The two periods will be analyzed separately, since averaging over a period longer than a decade is

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1. The country sample and basic data are given in Table 7.

likely to blur the sources of variation. The regressions try to explain intercountry variations in growth over periods of 5-10 years using the average values of the explanatory variables for the same period.

The following exogenous variables are used in various combinations in the course of the analysis:

(1) ln y, per capita GNP (log)

(2) $(\ln y)^2$

(3) ln N, Population (log)

(4) I/Y, gross domestic investment as a percentage of GDP (process A2)

(5) J/Y, the ratio of capital inflow to GDP (process A3)[1]

(6) $\Delta N/N$, the rate of growth of population, (as a proxy for growth of the labor force)

(7) $\Delta E/Y$, the export share of GDP (process B8) times the growth of exports (E/E)

In addition to these variables, educational indices have been tested in several studies but are omitted here because the level of education has not proved to be significant in intercountry analysis.[2]

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1. J is defined as the difference between investment and savings (I-S). It is equal to the import surplus (F) plus the net factor payments abroad.

2. See Hagen and Hawrylshyn (1969).

The results of regressions based on this set of variables are given in table 6 for developed and less developed countries and for a breakdown of the latter group between underdeveloped and transitional countries. The structural factors are considerably more important in the latter two groups, and it is therefore preferable to treat the less developed countries separately.[1]

The major finding of this study is the importance of the structural elements -- scale, capital inflow, and export growth. Together with the level of development, they contribute as much to the explanation of differences in growth rates as do the accumulation of labor and capital.[2]

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1. The F tests show a significant difference between developed and less developed countries at a 6% confidence level for 1950-59 but not for 1960-65.

2. In the period 1950-59, the values of R^2 for the equations based on structural factors alone were .66 for LDCs and .46 for DCs, compared to .26 and .51 for factor accumulation alone.

For the less developed countries, the most important explanatory variables are the rate of investment (I) and the capital inflow (J). The BIJ regressions for the underdeveloped and transitional countries show quite good statistical results with values of the investment coefficient from .25 to .44. Since the growth of the labor force adds relatively little to the explanation of GNP growth, this finding is consistent with a simple Harrod-Domar model with an incremental capital-output ratio (ICOR) in the vicinity of 3.0. For the developed countries, the corresponding value of the ICOR is greater than 4.0.

The finding of a significant effect of the resource inflow over and above the effect of investment suggests the prevalence of a trade limitation to growth.[1] This effect is most pronounced in the transitional countries. The developed countries show no such constraint, however, and higher rates of growth are typically associated with an increase in the capital outflow. This structural difference is also reflected in the export coefficients, which are quite significant for less developed countries but not for

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1. The trade limit is discussed in Chapter VII.

advanced ones.[1]

The variation in rates of population growth adds little to the explanation of the rate of growth in each group of countries, as shown by a comparison of the two sets of regressions in table 6 (BIJEL vs. BIJ). This result is probably due to the limited variation in population growth within each income group, so that we cannot separate its effect from other factors related to the level of income.

When the other variables have been allowed for, country size is shown to have a highly significant effect on the rate of growth in both transitional and developed countries.[2] The typical scale coefficient (.005) implies that a country of 35 million people will have a growth rate 1% higher than a country of 5 million if other factors are equal. The likely causes of this phenomenon are analyzed in Chapter 3.

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1. For any component of GNP, such as exports, we expect a significant correlation with the growth of the total. The coefficients for exports therefore do not demonstrate that export growth contributes more than any other component of GNP, since they are generally not significantly larger than 1.0.

2. In the standard regression, this relation was obscured by the omission of the other variables.

These results also substantiate the initial hypothesis that growth rates are somewhat lower at both high and low levels of development than in the middle income levels. The complete regressions for all countries show that the net effect of a higher level of development on the rate of growth is negative throughout the relevant range. The rise in the investment rate offsets this effect up to an income level of about $300, as shown in figure 11. Among the plausible explanations for lower growth at high income levels are the lower growth of the labor force and the rise of the service sector, in which there is less scope for capital-labor substitution and technological change.

Table 7 gives the residuals from the complete regressions (BIJEL) for each group of countries. There are not many countries in which the actual growth varies from that predicted by more than 1% for a decade, and very few in which the deviation persists for both periods.

Among the countries having rates of growth of 7% or more (about a dozen in each period), the average deviation is only about 20% above the predicted value. The high growth

countries are those that are predicted by the regressions; increased efficiency and other factors not considered here only add 1% or 1.5% at most to the prediction based on the intercountry estimates.

These conclusions run counter to the inferences often drawn from the study of advanced countries that "residual factors" are responsible for most of the observed growth of GNP. The alternative interpretation of these comparative studies based on a wider range of experience is that residual factors typically account for 1-2 percentage points of growth, perhaps somewhat more in developed and somewhat less in underdeveloped countries. This amount is a high share of the total in slow growing countries like the United States and Britain and a low share in fast growing countries such as Japan, Israel, Yugoslavia, or Taiwan. These conclusions are borne out in the time series estimates that have been made for half a dozen transitional countries.[1]

On balance, these findings tend to support the earlier views of economists such as Rodan (1943) and Lewis (1955) as to the central role of capital formation and external resources in the

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1. See the studies of Bruno for Israel (1966), Williamson for the Philippines (1967) and Bruton for Brazil, Mexico, Colombia, Chile, and Japan (1967). They make some allowance for the overvaluation of labor by its market wage and show that capital accumulation accounts for 30-50% of the observed growth in most cases. Such estimates have not yet been published for countries below $200 in per capita income.

development process. Countries having favorable resources and relatively high efficiency may extract an additional 1%-1.5% of growth from a given resource input, but this is not the main source of variation in growth rates.

D. The Transitional Economies

This chapter has described the transition from a primitive to a developed economy in terms of ten basic sets of processes. In 1950 there were fifteen countries that had completed this transformation in virtually all respects: the United States, Canada, Switzerland, Sweden, New Zealand, Australia, the United Kingdom, Denmark, Norway, Belgium, France, West Germany, Finland, the Netherlands, and Austria.[1] In almost every aspect, they each had the structural characteristics of countries of over $800 as measured by the normal regression equations, and all but Austria had per capita incomes of $1000 or more (1964 prices).

Of the ten sets of processes that have been analysed, the following seem to me the most important tests of the completion of the transition to a mature economy: (1) an educated population (85% literacy, index of primary and secondary school enrollment over 80%); (2) accumulation adequate to sustain growth at 2% per capita or more (typically gross savings rates of over 19% and tax rates over 25% of GNP); (3) completion of the transformation of production and labor allocation needed to balance internal and external demand (industrial output normally over 30% of GNP, primary labor less than 25% of the total labor force);

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1. In order of their per capita GNP in 1950. As elsewhere in this book, I omit countries of less than 1 million population -- in this case Iceland and Luxembourg.

and (4) considerable reduction of birth rates and population growth from the underdeveloped levels (birth rates typically less than 2.5%, population growth less than 1.5% apart from migration).[1] These standards are roughly those of the normal $800 country, but an examination of Table 8 will show that there are remarkably few exceptions to any of them among the developed group. The income level of $800 therefore serves as a convenient bench mark of the minimum level of development at which the characteristics of developed countries are typically acquired.

In the past twenty years (1950-1970), eight more countries have reached this income level and virtually completed the transformation specified by these criteria: Japan, Israel, Puerto Rico, Italy, Czechoslovakia, Eastern Germany, the U.S.S.R., and Ireland. Four or five others approach economic maturity in most respects, but lack one or more significant features. For example, Argentina falls far short in tax collection and the ability to sustain growth, Venezuela has not started its demographic transformation, and Yugoslavia, Hungary, and Poland still have relatively large proportions of the work force in agriculture.

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1. Several other aspects of structural change -- such as urbanization or the growth of heavy industry -- seem less essential to development although they are observed with almost as great regularity in the existing group of mature economies.

It is likely that by the year 2000 another 20 countries or more will have acquired the economic characteristics of mature societies -- although the examples set by the most advanced countries may have changed significantly by then. This next wave will come from among the 50 countries that are now in the income range from $200 to $800 per capita. The remainder of this book is concerned with the economics of these transitional economies and the identification of the alternative strategies by which their transition can be accomplished.

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TABLE 3a

ACCUMULATION PROCESSES

BASIC REGRESSIONS[a)]

INVESTMENT	Constant	ℓn Y	(ℓn Y)^2	ℓn N	T	F	R^2	SEE
A1 Gross National Saving as % of GNP	-0.060 (0.619)	0.030 (0.919)	0.001 (0.343)	0.005 (2.125)	0.003 (0.859)	-0.492 (1.559)	.635	.044
A2 Gross Domestic Investment as % of GDP	-0.006 (0.056)	0.029 (0.831)	0.001 (0.164)	-0.003 (1.252)	0.006 (1.493)	0.088 (1.935)	.387	.047
A3 Capital Inflow (Net Imports of Goods & Services as % of GDP)	0.164 (1.518)	-0.036 (0.992)	0.002 (0.780)	-0.015 (5.236)	0.008 (1.849)		.151	.049
GOVERNMENT REVENUE AND EXPENDITURE								
A4 Government Revenue as % of GDP	0.156 (1.314)	-0.044 (1.096)	0.009 (2.483)	0.001 (0.163)	0.002 (0.377)		.514	.059
A5 Tax Revenues as % of National Income	0.306 (2.137)	-0.125 (2.533)	0.018 (4.194)	0.008 (2.117)	-0.002 (0.317)		.624	.068
A6 Education Expenditure by Gov't as % of GDP	-0.015 (0.626)	0.005 (0.581)	-0.000 (0.178)	0.001 (1.340)	0.005 (5.347)		.178	.012
EDUCATION								
A7 Primary and Secondary School Enrollment Ratio	-1.420 (5.778)	0.466 (5.445)	-0.023 (3.093)	0.019 (2.958)	0.027 (3.623)		.665	.154
A8 Adult Literacy Rate	-1.528 (1.869)	0.520 (1.811)	-0.025 (0.990)	0.023 (1.401)	-0.007 (0.335)		.468	.202

a) From Equation 1. The ratio of the coefficient to its standard error (t ratio) is given in parentheses.

TABLE 3B

ACCUMULATION PROCESSES

AUGMENTED REGRESSIONS[a)]

INVESTMENT	Constant	ℓn Y	(ℓn Y)^2	ℓn N	F	E_p	E_m	R^2	SEE
A1 Gross National Saving as % of GNP	-0.175 (1.612)	0.057 (1.599)	-0.002 (0.579)	0.013 (3.984)	-0.351 (5.446)	0.167 (3.913)	0.246 (4.762)	.668	.041
A2 Gross Domestic Investment as % of GDP	-0.048 (0.411)	0.042 (1.169)	-0.001 (0.349)	0.003 (0.862)	0.138 (2.023)	0.067 (1.485)	0.162 (2.956)	.432	.044
GOVERNMENT REVENUE									
A4 Government Revenue as % of GDP	0.202 (1.425)	-0.060 (1.292)	0.009 (2.257)	0.003 (0.593)	-0.093 (1.113)	0.128 (2.312)	0.317 (4.715)	.603	.054
A5 Tax Revenues as % of National Income	0.163 (0.939)	-0.052 (1.021)	0.010 (2.071)	0.003 (0.639)	-0.174 (1.693)	0.100 (1.480)	0.402 (4.888)	.644	.066

a) Where E_p = share of primary exports in GDP, E_m = share of other exports in GDP

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TABLE 4A

RESOURCE ALLOCATION PROCESSES. BASIC REGRESSIONS[a)]

	Constant	ln Y	(ln Y)^2	ln N	T	F	R^2	SEE
FINAL DEMAND								
B1) Personal Consumption as % of GDP	0.870 (6.874)	-0.000 (0.008)	-0.004 (1.037)	-0.003 (0.866)	-0.011 (2.180)	0.705 (11.88)	.555	.062
B2) Government Consumption as % of GDP	0.311 (3.547)	-0.077 (2.592)	0.007 (2.693)	-0.001 (0.594)	0.009 (2.720)	0.076 (2.088)	.114	.036
B3) Food Consumption as % of Total Consumption	0.820 (3.144)	-0.041 (0.482)	-0.005 (0.735)	0.011 (2.277)	-0.002 (0.303)	0.227 (2.414)	.743	.058
STRUCTURE OF PRODUCTION								
B4) Primary Output as % of GDP	1.446 (9.064)	-0.256 (4.741)	0.011 (0.167)	-0.015 (3.818)	-0.004 (0.783)	-0.577 (7.937)	.787	.072
B5) Industry Output as % of GDP	-0.375 (3.383)	0.114 (3.037)	-0.002 (0.744)	0.021 (7.678)	-0.004 (1.273)	0.110 (2.177)	.789	.050
B6) Service Output as % of GDP	-0.077 (0.488)	0.137 (2.571)	-0.010 (2.224)	-0.003 (0.765)	0.005 (1.175)	0.393 (5.493)	.207	.071
B7) Utilities Output as % of GDP	-0.004 (0.069)	0.009 (0.455)	0.001 (0.053)	-0.003 (2.104)	0.002 (1.291)	0.089 (3.332)	.398	.026
EXPORTS								
B8) Exports as % of GDP	0.373 (1.739)	-0.048 (0.663)	0.005 (0.871)	-0.051 (9.935)	0.019 (2.360)	-0.734 (6.625)	.390	.093
B9) Primary Exports as % of GDP	0.473 (2.878)	-0.047 (0.848)	0.001 (0.222)	-0.050 (12.579)	0.011 (1.749)	-0.872 (10.261)	.558	.072
B10) Industry Exports as % of GDP	-0.100 (0.575)	-0.001 (0.016)	0.004 (0.862)	-0.002 (0.358)	0.008 (1.253)	0.138 (1.527)	.310	.076
IMPORTS								
B11) Imports as % of GDP	0.396 (1.905)	-0.050 (0.726)	0.006 (0.945)	-0.053 (10.510)	0.016 (2.035)	0.225 (2.223)	.405	.091
B12) Primary Imports as % of GDP	-0.100 (0.988)	0.045 (1.320)	-0.003 (0.941)	-0.006 (2.566)	0.002 (0.427)	0.148 (2.750)	.152	.044
B13) Industry Imports as % of GDP	0.496 (3.411)	-0.095 (1.958)	0.008 (2.007)	-0.047 (13.228)	0.014 (2.609)	0.097 (1.258)	.487	.064

[a)] From Equation 1. The ratio of the coefficient to its standard error (t ratio) is given in parentheses.

TABLE 4B

RESOURCE ALLOCATION PROCESSES. AUGMENTED REGRESSIONS[a)]

STRUCTURE OF PRODUCTION	Constant	ℓn Y	(ℓn Y)^2	ℓn N	F	E_p	E_m	R^2	SEE
B4) Primary Output as % of GDP	1.316 (6.981)	-0.239 (3.819)	0.011 (2.069)	-0.007 (1.205)	-0.537 (5.562)	0.184 (2.288)	-0.226 (3.603)	.774	.072
B5) Industry Output as % of GDP	-0.360 (2.979)	0.118 (2.928)	-0.004 (1.116)	0.020 (5.188)	0.144 (2.363)	-0.104 (2.046)	0.237 (5.846)	.810	.047
B6) Service Output as % of GDP	0.020 (0.097)	0.128 (1.823)	-0.010 (1.602)	-0.013 (1.874)	0.321 (2.893)	-0.106 (1.163)	-0.050 (0.734)	.145	.078
B7) Utilities Output as % of GDP	-0.031 (0.413)	0.020 (0.803)	-0.000 (0.125)	-0.002 (0.982)	0.133 (3.212)	0.033 (1.001)	0.076 (2.452)	.397	.027

[a)] Where E_p = share of primary exports in GDP, E_m = share of other exports in GDP.

TABLE 5A

POPULATION AND LABOR FORCE PROCESSES

BASIC REGRESSIONS[a)]

	Constant	ℓn Y	(ℓn Y)^2	ℓn N	T	F	R^2	SEE
POPULATION GROWTH								
C1 Birth Rate	0.713 (3.765)	-0.042 (0.650)	-0.003 (0.613)	-0.015 (3.376)	0.001 (0.102)		.497	.08
C2 Death Rate	0.838 (9.106)	-0.221 (7.184)	0.017 (6.584)	-0.002 (0.953)	-0.008 (2.423)		.366	.03
URBANIZATION								
C3 Urban Population	-1.250 (3.929)	0.407 (3.701)	-0.021 (2.200)	0.012 (1.694)	-0.002 (0.271)		.678	.11
LABOR ALLOCATION								
C4 Share of Primary Labor	1.123 (2.010)	-0.027 (0.149)	-0.015 (0.977)	0.005 (0.479)	0.001 (0.039)	-0.191 (1.166)	.723	.11
C5 Share of Industry Labor	-0.612 (2.004)	0.169 (1.686)	-0.005 (0.562)	0.005 (0.989)	-0.005 (0.753)	0.184 (2.052)	.723	.06
C6 Share of Service Labor	0.488 (1.095)	-0.141 (0.967)	0.019 (1.610)	-0.010 (1.280)	0.005 (0.456)	-0.002 (0.150)	.471	.09

a) From Equation 1. The ratio of the coefficient to its standard error (t ratio) is given in parentheses.

TABLE 5B

BIRTH RATES: AUGMENTED REGRESSIONS[a)]

POPULATION GROWTH C 1 Birth Rate	Constant	ℓn Y	(ℓn Y)^2	ℓn N	T	ED	IMR	PLS	R^2	SEE
Regression No.										
All Countries										
BR 118	0.741 (3.912)	-0.050 (0.783)	-0.003 (0.480)	-0.016 (3.434)	-0.001 (0.071)				.503	.084
BR 64	0.541 (2.803)	0.017 (0.265)	-0.006 (1.134)	-0.014 (3.220)	0.005 (0.689)	-0.145 (3.559)			.531	.082
BR 177	1.149 (5.065)	-0.234 (3.213)	0.014 (2.407)	-0.026 (5.925)	0.009 (1.348)		0.109 (4.677)		.623	.080
BR 200	1.077 (3.275)	-0.170 (1.703)	0.008 (1.040)	-0.024 (4.381)	0.021 (2.014)	-0.106 (2.032)	0.091 (2.955)	-0.123 (1.726)	.611	.074
Less Developed Countries										
BR 143	-0.354 (1.026)	0.379 (2.926)	-0.044 (3.599)	-0.016 (3.056)	-0.000 (0.018)				.393	.086
BR 144	-0.340 (1.012)	0.359 (2.851)	-0.039 (3.247)	-0.015 (2.283)	0.007 (0.805)	-0.151 (3.142)			.430	.084
BR 189	0.493 (1.035)	0.025 (0.145)	-0.010 (0.625)	-0.028 (4.949)	0.012 (1.285)		0.091 (3.657)		.535	.077
BR 202	0.159 (0.240)	0.204 (0.866)	-0.027 (1.248)	-0.024 (3.499)	0.030 (2.519)	-0.192 (3.207)	0.052 (1.608)	-0.161 (2.109)	.599	.074
Developed Countries										
BR 145	7.153 (3.021)	-1.904 (2.858)	0.131 (2.788)	-0.018 (2.269)	0.006 (0.581)				.218	.066
BR 146	7.259 (3.045)	-1.941 (2.890)	0.133 (2.815)	-0.018 (2.252)	0.007 (0.607)	0.054 (0.693)			.225	.067
BR 183	0.624 (0.267)	-0.236 (0.368)	0.022 (0.498)	-0.025 (3.693)	0.014 (1.459)		0.578 (5.178)		.471	.055
BR 201	1.887 (0.523)	-0.585 (0.601)	0.044 (0.663)	-0.022 (2.923)	0.013 (0.823)	0.108 (1.455)	0.659 (4.550)	0.012 (0.093)	.638	.049

a) Exogenous variables:
Y = GNP per capita
N = Population
T = Time
ED = School Enrollment
IMR = Infant Mortality Rate
PLS = Primary Labor Share of Labor Force

TABLE 6

SOURCES OF GROWTH: SELECTED REGRESSIONS

Reg.#	Form	# Obs	Constant	ℓn Y	(ℓn Y)^2	ℓn N	I/Y	J/Y	ΔE/Y	ΔL/L	R^2	SEE
Underdeveloped Economies (Y<$200)												
1950-59												
800	BIJ	16	0.2075	-0.0910	0.0099	0.0046	0.2895	0.2112			.802	.008
			(0.855)	(0.877)	(0.894)	(2.110)	(4.389)	(4.191)				
801	BIJEL	16	0.3464	-0.1580	0.0162	0.0065	0.2329	0.1799	0.3017	1.3398	.850	.007
			(1.374)	(1.444)	(1.412)	(2.335)	(2.621)	(3.343)	(0.673)	(1.594)		
1960-65												
809	BIJ	16	-0.8768	0.3672	-0.0383	-0.0042	0.4416	0.0157			.590	.017
			(1.307)	(1.303)	(1.312)	(0.975)	(3.291)	(0.075)				
810	BIJEL	16	-0.4229	0.1848	-0.0193	0.0009	0.2395	-0.0922	1.1701	-0.3715	.688	.016
			(0.543)	(0.551)	(0.562)	(0.152)	(1.259)	(0.430)	(1.581)	(0.212)		
828	BIJEL	27	-0.1031	0.0225	-0.0009	0.0035	0.1715	-0.0114	1.6751	0.7958	.495	.027
			(0.142)	(0.072)	(0.027)	(0.502)	(0.975)	(0.087)	(2.699)	(0.566)		
Transitional Economies (Y=$200-850)												
1950-59												
797	BIJ	18	-1.282	0.4434	-0.0389	0.0015	0.3593	0.1801			.640	.020
			(0.787)	(0.812)	(0.854)	(0.278)	(3.194)	(1.547)				
798	BIJEL	18	-0.4383	0.1522	-0.0140	0.0094	0.1270	0.1889	0.8173	0.9563	.803	.016
			(0.318)	(0.330)	(0.363)	(1.853)	(1.015)	(1.838)	(1.754)	(2.822)		
1960-65												
806	BIJ	18	1.302	-0.4137	0.0323	0.0082	0.2507	0.1684			.833	.010
			(1.569)	(1.524)	(1.468)	(2.815)	(4.073)	(2.767)				
807	BIJEL	18	0.3594	-0.1136	0.0080	0.0101	0.2343	0.1529	0.3631	0.5054	.874	.010
			(0.356)	(0.348)	(0.303)	(3.391)	(3.863)	(2.283)	(0.938)	(1.784)		
825	BIJEL	24	-0.4775	0.1575	-0.0142	0.0070	0.2671	0.0398	1.0274	0.6867	.815	.011
			(0.790)	(0.793)	(0.867)	(2.424)	(4.151)	(0.649)	(3.788)	(2.455)		
All Less Developed Economies												
1950-59												
511	B	31	-0.4037	0.1824	-0.0183	0.0040					.364	.017
			(2.225)	(2.663)	(2.834)	(1.420)						
703	BIJEL	31	-0.2214	0.0935	-0.0100	0.0064	0.1400	0.2125	0.7499	0.5913	.772	.011
			(1.722)	(1.832)	(2.039)	(2.817)	(2.117)	(3.889)	(2.291)	(2.165)		

TABLE 6 (Continued)

Reg.#	Form	# Obs	Constant	ℓn Y	(ℓn Y)^2	ℓn N	I/Y	J/Y	ΔE/Y	ΔL/L	R^2	SEE
Developed Economies												
1950-59												
794	BIJ	15	0.4477	-0.1196	0.0073	0.0056	0.2586	-0.5129			.669	.00[illegible]
			(0.447)	(0.432)	(0.381)	(2.041)	(3.191)	(2.439)				
795	BIJEL	15	0.8566	-0.2216	0.0137	0.0053	0.1988	-0.5447	0.0113	0.6078	.711	.01[illegible]
			(0.754)	(0.713)	(0.640)	(1.824)	(1.728)	(2.096)	(0.040)	(0.966)		
1960-65												
803	BIJ	15	-1.114	0.3096	-0.0210	-0.0005	0.1259	-0.3664			.537	.00[illegible]
			(1.230)	(1.255)	(1.250)	(0.185)	(2.291)	(1.556)				
804	BIJEL	15	-1.042	0.2926	-0.0200	-0.0012	0.1222	-0.4244	-0.0563	0.1109	.546	.00[illegible]
			(0.990)	(1.025)	(1.032)	(0.309)	(1.783)	(1.296)	(0.218)	(0.256)		
All Countries												
1950-59												
786	BIJEL	49	-0.0252	0.0098	-0.0016	0.0074	0.1471	0.1432	0.6722	0.8593	.731	.01[illegible]
			(0.369)	(0.430)	(0.841)	(4.447)	(3.106)	(3.660)	(3.715)	(4.906)		
1960-65												
789	BIJEL	49	-0.0846	0.0265	-0.0028	0.0060	0.2242	0.0680	0.6178	0.6069	.629	.01[illegible]
			(1.120)	(1.068)	(1.372)	(3.307)	(4.976)	(1.370)	(2.951)	(2.737)		
Pooled 1950-65												
792	BIJEL	98	-0.0433	0.0139	-0.0019	0.0066	0.2020	0.1115	0.5850	0.7150	.657	.01[illegible]
			(0.848)	(0.823)	(1.327)	(5.294)	(6.312)	(3.596)	(4.293)	(5.260)		

TABLE 7.

ACTUAL AND PREDICTED RATES OF GROWTH

Country	EXPLANATORY VARIABLES a) Y 1955	Y 1960	N 1955	N 1960	T 1950-59	T 1960-65	J 1950-59	J 1960-65	ΔE/Y 1950-59	ΔE/Y 1960-65	ΔL/L 1950-59	ΔL/L 1960-65	GROWTH RATES 1950-59 Actual	1950-59 Sample Deviation b)	1960-65 Actual	1960-65 Sample Deviation b)	1950-65 Average Deviation
DEVELOPED																	
U.S.A.	2655	2716	165.9	180.7	18.6	17.6	-0.5	-0.9	.003	.004	1.7	1.5	3.4	-0.5	4.4	0.2	-0.15
Switzerland	1610	1820	5.0	5.4	20.4	29.6	-2.0	0.8	.029	.029	1.3	2.1	4.2	0.6	5.2	-0.7	-0.65
Sweden	1516	1734	7.3	7.5	21.0	24.0	-0.3	0.3	.022	.022	0.7	0.6	3.3	0.6	4.8	-0.5	0.05
Canada	1658	1724	15.7	17.9	24.5	23.0	2.1	1.5	.014	.014	2.7	1.9	4.1	0.6	5.0	0.3	0.45
Australia	1349	1566	9.2	10.3	26.1	26.4	1.3	1.9	-.003	.014	2.3	2.0	3.9	-0.3	5.0	-0.1	-0.20
N. Zealand	1423	1558	2.1	2.4	23.8	24.8	0.3	2.2	.013	.009	2.3	2.1	3.5	0.1	5.1	0.1	0.10
Denmark	1153	1399	4.4	4.6	18.2	22.4	0.1	1.4	.028	.027	0.7	0.8	2.9	0.5	5.3	0.8	0.55
U.K.	1218	1348	51.0	52.4	15.0	18.2	-0.7	-0.2	.015	.010	0.3	0.8	2.6	-0.4	3.6	-1.1	-0.75
Germany	1048	1343	52.4	55.4	23.2	26.8	-2.7	-1.4	.040	.020	1.0	1.2	7.8	1.1	6.7	0.5	0.80
France	1101	1322	43.4	45.7	19.5	21.5	0.5	-0.9	.014	.020	0.9	1.3	4.2	0.3	5.6	0.2	0.25
Norway	1133	1276	3.4	3.6	30.0	29.7	2.1	2.4	.038	.033	0.9	0.8	3.3	-0.4	4.9	-0.2	-0.30
Belgium	1115	1224	8.9	9.2	17.8	20.6	-0.9	-0.1	.021	.036	0.6	0.6	2.1	-1.1	5.2	0.3	-0.40
Finland	1036	1208	4.2	4.4	25.6	29.4	-1.0	1.4	.019	.022	1.0	0.8	4.4	-0.5	6.1	0.6	0.05
Netherlands	988	1126	10.8	11.5	24.2	26.6	-1.2	-0.6	.052	.046	1.3	1.3	4.2	-1.4	5.6	-0.1	-0.75
Austria	698	888	6.9	7.0	23.6	27.0	0.7	0.6	.030	.025	0.1	0.6	5.4	0.7	4.7	-0.3	0.20
TRANSITIONAL																	
Israel	672	849	1.7	2.1	29.7	29.2	20.3	15.3	.020	.031	5.6	3.7	11.5	0.6	9.5	0.7	0.65
Italy	602	763	48.2	49.6	20.8	23.5	1.0	-0.2	.014	.024	0.6	0.7	5.4	1.1	5.3	-1.3	-0.10
Venezuela	665	753	6.1	7.3	27.0	18.9	-1.0	-5.8	.027	.002	4.0	3.5	8.3	1.4	4.5	1.2	1.30
Puerto Rico	565	742	2.3	2.4	20.5	25.0	16.9	19.8	.048	.046	0.5	2.1	5.5	-1.8	8.3	-0.2	-1.00
Argentina	646	691	18.9	20.7	18.9	20.3	1.0	0.7	.000	.006	2.0	1.6	2.5	-0.7	4.2	-0.8	-0.75
Ireland	621	683	2.9	2.8	16.1	19.2	4.2	4.2	.018	.033	-0.5	0.2	0.8	-0.1	3.9	0.4	0.15
Uruguay	595	553	2.4	2.5	13.6	15.1	2.0	2.1	-.007	.012	1.4	1.4	-0.9	-0.8	1.4	-0.6	-0.80
Japan	392	599	89.0	93.2	27.6	36.4	0.0	0.2	.019	.015	1.2	1.0	8.1	0.4	10.6	0.0	0.20
South Africa	396	426	14.5	16.4	22.3	22.6	1.1	-1.6	.022	.013	2.5	2.3	3.8	-3.0	5.9	-0.2	-1.60
Chile	383	414	6.8	7.7	9.7	17.6	0.6	3.7	.005	.011	2.4	2.3	3.3	0.4	4.7	-0.3	0.05
Greece	335	412	8.0	8.3	17.9	25.4	7.9	9.7	.011	.010	1.0	0.6	6.2	1.4	7.2	0.3	0.85
Jamaica	292	382	1.5	1.6	18.2	20.1	8.7	3.8	.036	.025	1.6	1.9	8.3	2.2	4.9	0.4	1.30
Spain	356	378	29.1	30.3	18.4	22.8	1.2	1.3	.006	.023	0.8	0.8	5.1	0.9	8.7	1.7	1.25
Mexico	330	376	30.6	36.0	14.3	14.9	1.3	1.6	.008	.007	3.2	3.4	6.0	-0.3	6.4	0.2	-0.15
Panama		363		1.1		18.3		5.0		.044		3.2			8.4	0.5	
Costa Rica	332	339	1.0	1.3	18.4	21.9	3.7	6.6	.009	.016	4.5	3.7	5.0	-0.4	4.6	-1.3	-0.85
Portugal	228	277	8.6	8.8	15.0	18.4	4.9	6.2		.027	0.5	0.8	4.0	0.3	6.4	0.1	0.20
Guatemala	240	266	3.3	3.8	11.3	11.6	1.4	3.3	.005	.016	3.1	3.1	3.9	0.2	4.9	0.6	0.40
Peru	224	258	8.8	10.0	23.2	21.0	3.8	1.2	.011	.028	2.3	3.0	4.7	-1.8	6.3	-0.8	-1.30
* Dominican Rep.	232	252	2.5	3.0	16.3	11.7	0.2	0.9	.013	.000	3.6	3.6	5.8	-0.4	1.6	-0.8	-0.60
* Nicaragua	245	237	1.2	1.4	14.7	17.9	3.7	3.7	.023	.031	3.0	3.2	5.7	0.2	7.9	0.4	0.30
* Malaysia	215	226	7.0	8.1	11.1	18.1	-9.4	-2.3	.002	.013	2.9	3.0	2.6	0.1	6.8	0.4	0.25
* Turkey	192	224	23.9	27.5	13.6	15.5	1.8	2.7	-.001	-.002	2.9	2.6	6.8	1.2	4.3	0.5	0.85
* [illegible]	[illegible]	[illegible]															

Country			N		I		J		ΔE/Y		ΔL/L		1950-59		1960-65		1950-65
	1955	1960	1955	1960	1950-59	1960- 5	1950-59	1960-65	1950-59	1960-65	1950-59	1960-65	Actual	Sample Deviation	Actual	Sample Deviation	Average Deviation
UNDERDEVELOPED																	
# Ghana		222		6.8		18.2		6.0		.002		2.7			3.8	-1.6	
# El Salvador		209		2.5		14.3		2.1		.023		3.5			6.6	-1.9	
Iraq	172	204	5.9	6.9	21.2	18.4	-6.0	-0.4	[illegible]	.009	2.9	3.3	5.8	0.0	7.7	1.9	0.35
Honduras	174	189	1.7	1.9	14.5	14.3	1.1	1.7	[illegible]	.022	3.0	3.3	3.7	-0.5	4.6	-1.6	-1.35
# Ivory Coast		181		3.3		16.2		-2.3		.039		3.6			19.7	8.0	
Ecuador	166	179	3.8	4.4	13.9	14.3	0.3	2.1	.012	.008	3.0	3.3	4.8	0.2	4.6	-0.2	0.60
# Iran		178		21.5		14.5		-1.0		.015		2.6			7.0	-0.1	
# Tunisia		172		3.9		21.1		11.6		-.007		2.3			5.3	1.8	
# Morocco		165		11.6		11.1		0.8		.003		2.7			5.4	1.1	
# Jordan		159		1.7		16.5		19.1		.022		3.2			9.4	1.6	
China Rep.	129	149	8.9	10.6	16.9	19.5	7.6	4.1	.006	.030	3.3	3.3	8.2	0.9	9.5	0.8	0.85
Philippines	125	135	23.6	27.4	11.8	19.2	6.5	5.4	.003	.015	3.1	3.3	6.1	-0.1	5.0	1.9	0.90
Ceylon	130	134	8.7	9.9	12.3	13.3	-1.0	1.9	.010	.002	2.5	2.6	3.4	-0.3	3.7	-0.7	-0.5
# Bolivia		122		3.5		15.1		6.9		.021		1.4			4.8	-1.3	
# Cambodia		114		5.4		17.1		5.0		.010		2.5			3.6	-1.9	
# U.A.R.		111		25.8		18.7		6.7		.007		2.7			6.3	-0.3	
# Cameroon		109		4.7		12.1		1.2		.000		2.4			5.0	-2.3	
Korea	99	106	21.4	24.7	12.5	14.1	7.7	8.7	.016	.011	2.9	2.8	5.4	-1.0	5.8	0.8	-0.10
Thailand	89	97	22.8	26.4	15.3	20.1	1.9	1.4	.005	.020	3.0	3.1	6.9	0.5	7.4	-0.6	-0.05
# Vietnam Rep.		97		14.1		10.4		11.0		.012		2.6			5.1	0.4	
Indonesia	86	89	83.9	93.5	7.6	7.7	0.2	2.4	.000	-.003	2.1	2.3	4.0	0.2	2.7	0.0	0.10
# Uganda		87		6.7		9.5		-1.7		.018		2.5			3.6	-1.6	
Sudan	70	77	10.2	11.8	9.4	14.4	-0.2	2.4	.000	.005	2.9	2.8	4.3	0.1	7.2	2.6	1.85
# Pakistan		73		92.7		15.1		3.8		.005		2.1			6.0	1.6	
# Tanzania		67		10.0		12.2		-0.6		.022		2.9			3.3	-3.6	
Burma	49	59	20.4	22.4	18.2	17.8	-0.9	0.8	.011	.000	1.8	2.0	6.3	-0.1	3.3	-1.4	-0.75
# Ethiopia		49		20.7		12.1		2.1		.013		1.7			4.3	0.5	

N.B. The following countries were not included in the growth rate regressions. Estimated growth rates were calculated on the basis of the appropriate regression equations. For those observations where capital inflow (J) was not available, it was assigned a value of zero.

DEVELOPED COUNTRIES																	
East Germany	698	931	17.9	17.2		18.8				.009	-0.6	-0.3	9.0		3.5	-0.7	
TRANSITIONAL COUNTRIES																	
Czechoslovakia	617	826	13.1	13.7	18.2	14.5			.013	.002	1.0	0.7	7.5	4.5	2.0	-0.2	2.1
U.S.S.R.	448	628	196.0	214.2		26.7				.005	1.8	1.5	8.8		6.7	-1.8	
Poland	353	454	27.3	29.7	22.8	24.5			.007	.012	1.8	1.2	8.1	2.5	5.8	-0.7	0.9
Bulgaria	269	407	7.5	7.9	21.0	34.6			.017	.030	0.8	0.8	8.8	4.5	6.7	-1.5	1.5
Yugoslavia	233	335	17.5	18.4	34.0	41.1			.011	.019	1.2	1.2	8.9	2.3	7.4	-3.4	-0.6
UNDERDEVELOPED COUNTRIES																	
India	77	85	386.6	429.0		13.6		2.3		.018	1.8	2.5	3.3		3.7	-0.9	

a) Explanatory Variables: Y = GNP per capita
N = Population
I = Gross Domestic Investment % of GDP
J = Gross Domestic Investment-Gross National Saving % of GDP
ΔE/Y = (Growth Rate of Exports)(Exports as % of GDP)
ΔL/L = Growth Rate of Population

b) Deviations were taken from the BIJEL regressions shown on Table 6 for each period.

TABLE 8.

1960 VALUES

TARGET COUNTRIES	Explanatory Variables Y	H	F	A1 Gross Nat'l Saving ACT.	RES.	A2 Gross Domestic Investment ACT.	RES.	A3 Capital Inflow ACT.	RES.	A4 Government Revenue ACT.	RES.	A5 Tax Revenue ACT.	RES.	A6 Education Expenditure ACT.	RES.	A7 School Enrollment ACT.	RES.	A8 Adult Literacy ACT.	RES.	B1 Personal Consumption ACT.	RES.
Argentina	691	20.7	1.2	.196	-.000	.203	-.018	.007	-.001	.102	-.140	.067	-.205	.016	-.013	.720	-.060	[illegible]	.065	.699	.02[illegible]
Brazil	210	69.7	1.5	.156	.004	.164	-.017	.008	.009	.246	.073	.287	.110	.016	-.010	.510	-.065	[illegible]	-.001	.684	-.04
Burma	59	22.4	2.5	.170	.078	.178	.053	.008	-.032	.171	.045	.175	.062	.017	-.003	.430	.193			.692	-.08[illegible]
Canada	1724	17.9	1.5	.215	-.018	.230	-.016	.015	.006	.289	-.022	.346	-.039	.050	.019	.810	-.098			.629	.00[illegible]
Colombia	246	15.4	1.9#					.019	-.002	.117	-.063	.129	-.047	.012	-.013	.500	-.080				
Ethiopia	49	20.7	1.3	.100	.010	.121	.007	.021	-.024	.081	-.040	.077	-.032	.007	-.013	.040	-.143			.810	.03[illegible]
France	1322	45.7	-1.8	.224	-.019	.215	-.021	-.009	-.003	.368	.078	.477	.121	.033	.002	.950	.058			.643	.02[illegible]
German Rep.	1343	55.4	-2.4	.282	.034	.268	.032	-.014	-.005	.368	.077	.453	.094	.021	-.010	.830	-.068			.570	-.03[illegible]
India	85	429.0	3.1	.113	-.006	.136	-.008	.023	.038	.153	.015	.110	-.036	.015	-.009	.340	-.052			.758	-.00
Indonesia	89	93.5	-0.1	.053	-.075	.077	-.065	.024	.016	.058	-.081	.055	-.081			.410	.035			.869	.12
Iran	178	21.5	-4.8	.155	-.015	.145	-.022	-.010	-.030	.107	-.058	.083	-.074	.029	.005	.300	-.215			.680	-.01
Italy	204	49.6	0.3	.237	.028	.235	.012	-.002	.004	.316	.067	.360	.071	.036	.006	.590	-.223	.920	.036	.633	-.02
Japan	500	93.2	-0.5	.362	.163	.364	.154	.002	.016	.214	-.007	.238	-.012	.015	-.014	.910	.157	.980	.164	.546	-.12
Korea	106	24.7	8.5	.054	-.031	.141	-.018	.087	.061	.128	-.016	.111	-.022	.024	.001	.640	.246	.710	.307	.834	.03
Mexico	376	36.0	1.3	.133	-.040	.149	-.053	.016	.013	.074	-.130	.073	-.143	.015	-.012	.580	-.102	.650	-.083	.802	.10
Nigeria	67	52.0	4.6					.054	.030	.125	-.005	.112	-.011	.026	.004	.300	.012				
Pakistan	73	92.7	2.4	.113	.005	.151	.015	.038	.025	.104	-.028	.079	-.050	.010	-.012	.260	-.063	.190	-.134	.591	.03
Philippines	135	27.4	6.6	.138	.033	.192	.024	.054	.034	.112	-.041	.129	-.015	.028	.005	.700	.245	.720	.247	.783	-.01
Poland	454	29.7	0.1			.245	.038									.850	.136	.950	.181	.661	-.02
Romania	382	18.4														.710	.038				
South Africa	426	16.4	-4.3	.242	.041	.226	.026	-.016	-.031	.182	-.028	.190	-.031	.008	-.019	.690	-.001	.320	-.422	.623	-.03

	Y	H	F	A1 ACT.	A1 RES.	A2 ACT.	A2 RES.	A3 ACT.	A3 RES.	A4 ACT.	A4 RES.	A5 ACT.	A5 RES.	A6 ACT.	A6 RES.	A7 ACT.	A7 RES.	A8 ACT.	A8 RES.	B1 ACT.	B1 RES.
Spain	378	30.3	-3.0	.215	.021	.228	.031	.013	.007	.160	-.044	.152	-.064	.009	-.016	.790	.020	.870	.140	.701	.031
Thailand	97	26.4	1.1	.187	.069	.201	.054	.014	-.013	.135	-.006	.132	.003	.023	.001	.540	.167	.680	.301	.721	-.033
Turkey	224	27.5	2.6	.128	-.016	.155	-.029	.027	.014	.132	-.044	.146	-.028	.026	.001	.470	-.101	.380	-.225	.723	-.010
U.A.R.	111	25.8	-0.3	.120	-.011	.187	.035	.067	.042	.367	.221	.146	.012	.035	.012	.430	.024	.200	-.217	.667	-.073
U.K.	1349	9.4	1.6	.184	-.044	.182	-.058	-.002	.006	.313	.021	.353	-.006	.046	.015	.810	-.087			.659	.022
U.S.A.	2716	189.7	-0.3	.185	-.090	.176	-.078	-.009	.016	.276	-.077			.052	.018	1.02	.017			.634	.055
Yugoslavia	346	18.4	1.9			.411	.213			.360	.163			.045	.019	.750	.104	.760	.069	.490	-.222

1955

SMALL COUNTRIES

Algeria	299	10.8	18.0	.150	.074	.178	-.034	.028	.003	.251	.061	.219	.031	.036	.011	.260	-.354	.190#	-.415#	.864	.032
Angola	151	4.8	-2.1			.094	-.068					.070*	-.071*			.100	-.349			.765	.045
Australia	1566	10.3	1.0	.245	.017	.264	.022	.019	.001	.248	-.055	.273	-.094	.021	-.009	.930	.044			.643	.014
Austria	888	7.0	1.3	.264	.064	.270	.042	.006	-.019	.342	.083	.435	.144	.024	-.004	.680	-.119			.604	-.059
Belgium	1224	9.2	1.1	.207	-.010	.206	-.031	-.001	-.021	.283	.000	.346	.013	.048	.018	1.010	.159	.970$	.070$	.676	.032
Bolivia	122	3.5	7.2	.082	-.005	.151	-.012	.069	.013	.131	-.017	.135	.012	.023	.002	.390	-.001	.320$	-.114$	.821	.026
Ceylon	134	9.9	2.9	.133	-.032	.133	-.030	.019	-.019	.218	.066	.207	.071	.046	.023	.800	.366	.680#	.237#	.740	-.018
Chile	414	7.7	2.9	.139	-.022	.176	-.030	.037	.010	.258	.050	.255	.042	.029	.003	.740	.069	.840	.122	.738	.025
China Rep.	149	10.6	7.0	.154	.053	.195	.023	.041	.007	.188	.031	.178	.036	.023	.000	.740	.280	.540#	.099#	.666	-.115
Costa Rica	339	1.3	4.7	.153	.019	.219	.018	.066	.009	.156	-.040	.172	-.010	.034	.010	.760	.162	.840*	.196*	.709	-.039
Cuba	323*	6.8	6.9	.115*	-.033*	.229*	.025*	.114*	.078*	.165*	-.031*			.044*	.014*	.720*	.071*			.698*	-.02
Denmark	1399	4.6	1.0	.210	-.009	.224	-.016	.014	-.017	.290	-.003	.338	-.007	.029	.000	.890	.034			.647	.00
Ecuador	179	4.4	-0.4	.122	-.018	.143	-.028	.021	-.024	.228	.064	.184	.039	.018	-.005	.530	.044	.670	.165	.723	-.00
El Salvador	209	2.5	4.4	.122	.002	.143	-.040	.021	-.031	.111	-.060	.116	-.035	.023	.000	.520	.010	.490	-.042	.781	.02
Finland	1208	4.4	0.8	.280	.067	.294	.058	.014	-.017	.315	.033	.349	.024	.039	.010	.870	.035			.581	-.06

	Y	U	P	A1 ACT.	A1 RES.	A2 ACT.	A2 RES.	A3 ACT.	A3 RES.	A4 ACT.	A4 RES.	A5 ACT.	A5 RES.	A6 ACT.	A6 RES.	A7 ACT.	A7 RES.	A8 ACT.	A8 RES.	B1 ACT.	B1 RES.
Ghana	322	6.8	5.0	.122	-.063	.182	-.064	.060	.025	.182	.007	.139	-.024	.046	.022	.320	-.222			.757	.003
Greece	412	8.3	12.8	.157	.044	.254	.037	.097	.071	.214	.006	.228	.015	.014	-.012	.700	.029	.800	.081	.747	-.034
Guatemala	189	1.9	2.2	.126	.001	.143	-.033	.017	-.041	.105	-.061	.116	-.026	.022	.000	.440	-.042	.350$	-.143$	.770	.026
Hungary	580	10.0	2.4			.256	.039									.790	.054	.970	.176	.718	.027
Iran	204	21.5	-14.8	.188	-.030	.184	.023	-.004	-.040	.296	.125	.315	.158	.046	.022	.500	-.024	.140#	-.369#	.551	-.067
Ireland	684	2.8	5.0	.150	-.061	.192	-.032	.042	.000	.261	.021	.286	.032	.032	.005	.940	.200			.749	.044
Israel	649	2.1	10.6	.139	-.007	.292	.055	.153	.109	.288	.033	.353	.076	.029	.002	.920	.151	.840	.010	.661	-.073
Ivory Coast	181	1.3	-5.6	.185	.021	.162	-.004	-.023	-.073	.178	.013	.233	.089	.022	-.001	.260	-.223			.679	-.011
Jamaica	382	1.6	2.4	.163	.012	.201	-.002	.038	-.015	.152	-.051	.185	-.008	.018*	-.012*	.700	.075	.820	.156	.709	-.007
Jordan	159	1.7	25.9	.033	-.027	.166	-.038	.133	.071	.168	-.007	.100	-.031	.026	.004	.580	.139	.320	-.132	.862	-.057
Kenya	79	8.1	0.4*	.092	-.022	.117	-.028	.025	-.028	.166	.032	.132	.019	.031	.010	.410	.113				
Malaysia	226	8.1	-5.9	.204	.024	.181	.006	-.023	-.055	.225	.049	.243	.078	.045	.021	.570	.021	.480#	-.090#	.780*	.034
Netherlands	1126	11.5	-2.2	.272	.042	.266	.035	-.006	-.022	.354	.077	.394	.070	.054	.025	.930	.087			.585	-.039
New Zealand	1558	2.4	1.9	.226	.010	.248	.005	.022	-.019	.296	-.006	.307	-.048	.026	-.003	.920	.063			.628	-.012
Nicaragua	237	1.4	0.5	.142	.001	.179	-.004	.037	-.023	.155	-.022	.110	-.045	.016	-.007	.440	-.086	.500#	-.114#	.753	.029
Norway	1276	3.6	1.7	.273	.063	.297	.059	.024	-.011	.361	.075	.443	.112	.023	-.006	.920	.081			.567	-.082
Peru	258	10.0	2.4	.198	.053	.210	.021	.012	-.015	.161	-.021	.174	-.002	.032	.007	.560	-.022	.610	-.006	.690	-.038
Portugal	377	8.8	5.9	.122	-.009	.184	-.012	.062	.033	.194	.008	.206	.026	.015	-.010	.620	.026	.620	-.010	.756	.006
Puerto Rico	742	2.4	15.6	.052	-.065	.250	.012	.198	.156							.930	.180	.810	.001	.793	.017
Rhodesia	306	3.6	0.9	.167	.029	.168	-.010	.001	-.045	.200	.029	.156	.004	.020	-.003	.620	.106			.676	-.05
Spain	77	11.8	-1.6	.126	.002	.144	.012	.024	-.020	.139	-.002	.108	-.007	.015	-.006	.120	-.177			.798	.05
Sweden	1734	7.5	1.0	.237	.006	.240	-.005	.003	-.020	.391	.080	.398	.020	.030	.000	.800	-.092			.580	-.04
Switzerland	1829	5.4	-0.5	.288	.049	.296	.052	.008	-.022	.255	-.060	.242	-.141	.003	-.027	.680	-.212			.608	-.00
Syria	140	4.6	2.2*			.190*	.008*			.168	.014	.113	-.019	.024	.002	.450	.020	.300	-.141	.636*	-.09

	Y	H	F	A1 ACT.	A1 RES.	A2 ACT.	A2 RES.	A3 ACT.	A3 RES.	A4 ACT.	A4 RES.	A5 ACT.	A5 RES.	A6 ACT.	A6 RES.	A7 ACT.	A7 RES.	A8 ACT.	A8 RES.	B1 ACT.	B1 RES.
Tanzania	67	10.0	-2.3	.128	.012	.122	-.004	-.006	-.056	.141	.012	.105	-.005	.001	-.019	.170	-.087			.740	-.006
Tunisia	172	3.9	6.6	.095	-.009	.211	.034	.116	.068	.234	.072	.262	.120	.035	.012	.450	-.025	.160#	-.328#	.728	-.049
Venezuela	753	7.3	-14.3	.247	-.023	.189	-.017	-.058	-.082	.222	-.025			.023	-.005	.790	.016	.660	-.177	.559	-.002
Zambia	155	3.2	-21.4	.295	.060	.207	.065	-.088	-.140	.239	.081			.046	.018	.430	-.087	.410	-.093	.495	-.081

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LARGE COUNTRIES	B2 Government Consumption		B3 Food Consumption		B4 Primary Output		B5 Industry Output		B6 Services Output		B7 Utilities Output		B8 Total Exports		B9 Primary Exports		B10 Industrial Exports		B11 Total Imports	
	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.
Argentina	.101	-.021			.185	-.008	.364	.046	.362	-.039	.089	-.002	.098	-.053	.094	.018	.004	-.078	.101	-.082
Brazil	.153	.037			.288	-.040	.285	.043	.386	.020	.084	.019	.087	.000	.084	.011	.002	-.031	.088	-.011
Burma	.179	-.001			.328	-.214	.165	.061	.464	.158	.043	-.003	.166	.003	.161	-.003	.005	.005	.174	-.011
Canada	.113	.001	.229	-.036	.113	.010	.314	-.076	.449	.055	.124	.013	.198	.021	.100	.031	.008	-.010	.200	.006
Colombia	.083	-.050			.386	.061	.207	-.016	.334	-.050	.073	.017	.118*	-.065*	.108*	-.033*	.010*	-.032*	.102*	-.057*
Ethiopia	.086	-.058			.681	.106	.086	.001	.200	-.093	.033	-.011	.106	-.080	.099	-.093	.007	.020	.123	-.074
France	.134	.001	.316	.018	.118	.002	.443	.055	.369	-.023	.070	-.033	.143	-.012	.026	-.032	.117	.019	.135	-.005
Germany	.148	.015	.329	.032	.094	-.018	.480	.086	.342	-.048	.084	-.018	.195	.043	.008	-.046	.187	.089	.181	.049
India	.143*	.019*			.511	.067	.185	-.015	.249	-.058	.055	.011	.047	.046	.026	.030	.021	.016	.023	-.003
Indonesia	.069	-.057			.519	.064	.147	-.025	.301	-.021	.033	-.016	.075	-.030	.074	-.022	.001	-.008	.090	-.012
Iran													.236	.285	.230	.054	.005	-.026	.136	-.027
Italy	.133	.011	.399	.035	.161	-.010	.358	.013	.383	-.011	.098	.007	.157	.038	.028	-.013	.129	.051	.158	.036
Japan	.090	-.026	.389	-.024	.167	-.045	.345	.022	.394	.008	.094	.014	.103	.124	.010	-.019	.093	.031	.103	.017
Korea	.120	-.006	.515	-.053	.423	-.020	.155	-.005	.369	.026	.053	-.002	.056	-.025	.044	-.023	.012	-.003	.151	-.008
Mexico	.054	-.062			.243	-.015	.264	-.014	.432	.043	.061	-.016	.105	-.013	.078	.013	.027	-.027	.110	-.020
Nigeria					.624	.113	.095	-.044	.219	-.089			.149	.007	.145	.005	.004	.002	.179	.139
Pakistan	.064*	-.064*			.535	.047	.114	-.040	.289	-.020	.062	.016	.062	-.025	.041	-.043	.021	.018	.086	-.011
Philippines	.090	-.032			.333	-.072	.189	.006	.451	.096	.027	-.032	.150	.061	.143	.075	.007	-.015	.195	.145
Poland			.523	.111									.990	-.041	.014	-.066	.085	.025	.110	-.031
Romania																				
South Africa			.295	-.108	.258	.006	.216	-.056	.398	.001	.128	.046	.275	.064	.216	.064	.059	.001	.125	-.016

	B2		B3		B4		B5		B6		B7		B8		B9		B10		B11	
	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.
Spain			.375	-.049	.287	.027	.283	.008	.339	-.051	.091	.013	.113	-.055	.066	-.048	.047	-.007	.235	.062
Thailand			.475	-.084	.403	-.054	.141	-.012	.381	.044	.075	.021	.175	.022	.171	.031	.004	-.009	.189	.027
Turkey	.145	.028			.429	.098	.212	-.016	.282	-.094	.077	.009	.071	-.050	.066	-.017	.005	-.033	.085	-.059
U.A.R.	.202	.077			.342	-.093	.184	.020	.377	.032	.093	.041	.199	.035	.169	.021	.030	.014	.255	.094
U.K.	.169	.036	.286	-.019	.069	-.043	.418	.025	.401	.011	.112	.009	.193	.077	.012	-.006	.181	.083	.203	.071
U.S.A.			.213	-.019	.053	.016	.353	-.123	.508	.145	.086	-.030	.048	-.051	.015	.038	.033	-.090	.043	-.055
Yugoslavia			.448	.006									.116	-.029	.056	-.038	.060	.009	.149	-.014

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SMALL COUNTRIES

Algeria					.343*	.012*	.169	-.065	.494*	.111*	.049*	-.021*	.270	.157	.264	.263	.006	-.106	.312	.019
Angola	.108	-.016			.229*	-.154*	.047*	-.117*	.688*	.310*	.036*	-.031*	.172	-.081	.164	-.074	.008	-.007	.179	-.058
Australia	.099	-.041	.237	-.032	.153	.035	.367	-.004	.372	-.029	.108	-.021	.159	-.106	.131	.052	.027	-.158	.165	-.113
Austria	.131	.003	.353	.024	.135	-.043	.475	.159	.294	-.116	.096	-.003	.246	-.018	.050	-.076	.196	-.057	.251	-.029
Belgium	.126	-.007	.275	-.021	.099	-.044	.356	.008	.449	.044	.006	-.009	.344	.080	.040	-.058	.304	.138	.352	.074
Bolivia	.095	-.034			.376	-.069	.188	.058	.343	-.023	.093	.030	.180	-.011	.164	-.015	.016	.004	.247	-.021
Ceylon	.142	.018	.493	-.031	.465	.047	.129	-.032	.329	-.034	.077	.015	.273	.078	.269	.110	.004	-.032	.288	.060
Chile	.105	-.015			.225	-.040	.297	.043	.402	-.001	.076	-.007	.129	-.105	.119	-.020	.010	-.035	.148	-.117
China Rep.	.180	.058	.528	.003	.346	-.055	.210	.038	.390	-.023	.054	-.009	.152	-.017	.103	-.014	.049	-.032	.193	-.048
Costa Rica	.125	.003			.271	-.041	.214	.015	.458	.045	.057	-.027	.226	-.039	.215	-.009	.010	-.030	.279	-.038
Cuba													.279*	.033*	.261*	.109*	.018*	-.076*	.353*	.069*
Denmark	.143	.004	.234	-.039	.145	.007	.372	.028	.368	-.041	.115	.005	.306	.020	.190	.062	.115	-.042	.320	.021
Ecuador	.133	.011	.442	-.040	.392	.007	.195	.026	.457	.059	.055	-.014	.175	-.074	.172	-.051	.003	-.023	.174	-.076
El Salvador	.095	-.027	.423	-.049	.326	-.043	.174	.003	.358	-.024			.238	.002	.224	.016	.014	-.014	.257	-.028
Finland	.136	.001	.332	.043	.205	.052	.361	.030	.331	-.081	.103	-.004	.222	-.064	.112	-.027	.109	-.036	.233	-.064

	B2		B3		B4		B5		B6		B7		B8		B9		B10		B11	
	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.
Ghana	.113	-.007	.473	-.005	.556	.207	.218	-.021					.207	.005	.186	.039	.021	-.038	.259	-.001
Greece	.113	-.007	.416	-.022	.258	-.007	.239	-.016	.420	.018	.083	.000	.095	-.069	.084	.035	.011	-.105	.209	-.084
Honduras	.095	-.028	.436	-.038	.453	.066	.156	.000	.331	-.060	.060	-.012	.210	-.046	.203	-.041	.007	-.005	.218	-.065
Hungary													.152	-.086	.062	-.054	.090	-.032	.169	-.095
Iraq	.138	.018	.481	.039	.544	.184	.137	-.052	.243	-.141	.076	.006	.336	-.003	.333	.012	.002	-.016	.323	.125
Ireland	.126	.000	.362	.006	.252	.034							.326	.067	.208	.055	.117	.013	.393	.081
Israel	.193	.063	.327	-.015	.118	-.080	.309	.022	.470	.050	.103	.002	.178	-.054	.061	-.050	.117	-.004	.324	-.017
Ivory Coast	.115	-.002			.546	.160	.098	-.065	.265	-.120	.091	.021	.316	.023	.312	.028	.004	-.005	.272	.029
Jamaica	.101	-.021	.365	-.039	.216	-.078	.255	.042	.441	.027	.088	.003	.361	.083	.330	.100	.031	-.018	.372	.065
Jordan	.241	.116	.546	.004	.164	-.250	.126	-.014	.578	.193	.132	.063	.154	.063	.145	.097	.009	-.034	.423	.071
Kenya	.099*	-.033*			.372	-.134	.164	.049	.377	.043	.087	.034	.417*	.194*	.371*	.165*	.045*	.028*	.405*	.176*
Malaysia	.184	.065	.456	.002	.423	.079	.117	-.085	.409	.023	.051	-.020	.409	.132	.316	.083	.093	.049	.404*	.158*
Netherlands	.150	.018	.310	.010	.124	-.024	.384	.038	.377	-.028	.115	.013	.472	.193	.154	.036	.318	.158	.473	.213
New Zealand	.131	-.012			.207	.071	.300	-.039	.376	-.037	.117	.003	.231	-.068	.223	.073	.008	-.141	.238	-.084
Nicaragua	.085	-.038			.371	.012	.159	-.010	.412*	.003*	.068*	-.013*	.276	-.006	.261	-.007	.015	.001	.293	-.000
Norway	.162*	.020*	.300	.018	.117	-.033	.337	.006	.339	-.074	.207	.099	.398	.112	.148	.008	.250	.104	.413	.106
Peru	.094	-.025			.318	-.005	.213	-.005	.420	.031	.049	-.024	.217	-.001	.141	-.004	.076	.002	.211	-.034
Portugal	.123	.004			.254	-.061	.343	.121	.325	-.067	.077	.002	.197	-.002	.067	-.052	.130	.050	.260	-.051
Puerto Rico	.135	.007			.126	-.085	.278	-.001	.497	.078	.099	-.001								
Rhodesia	.118	-.004			.253	-.114	.234	.057	.388	-.002	.125	.053	.660*	.322*	.464*	.159*	.195*	.162*	.468*	.132*
Sudan					.573	.069	.113	-.001					.221	.018	.221	.021	.000	-.003	.234	.142
Sweden	.185	.041	.275	.021	.103	-.010	.419	.047	.363	-.038	.115	.002	.244	-.032	.088	-.003	.156	-.028	.249	-.049
Switzerland	.112	-.030	.254	.013									.295	-.001	.019	-.100	.276	.099	.311	.016
Syria	.168*	.047*			.292	-.130	.202	.048	.392	.021			.283*	.030*	.252*	.049*	.031*	-.019*	.277*	.002*

	B2		B3		B4		B5		B6		B7		B8		B9		B10		B11	
	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.
Tanzania					.638	.109	.055	-.043	.254	-.067	.053	.003	.302*	.083*	.296*	.084*	.006*	-.002*	.292*	.081*
Tunisia	.167	.044			.271	-.121	.211	.048	.430	.048	.088	.020	.199	-.004	.142	-.028	.056	.023	.305	.032
Venezuela	.132	.006	.286	-.026	.359	.164	.188	-.114					.314	-.053	.310	.043	.005	-.096	.194	-.035
Zambia	.121	-.003	.264*	-.165*	.629	.220	.089	-.059	.305	-.080	.069	-.001	.645*	.227*	.614*	.194*	.031	.033*	.405*	.188*

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1960 VALUES

LARGE COUNTRIES	B12 Primary Imports		B13 Industrial Imports		C1 Birth Rates		C2 Death Rates		C3 Urban Population		C4 Primary Labor		C5 Industry Labor		C6 Services Labor	
	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.
Argentina	.016	-.038	.084	-.024	.229	-.024	.087	-.000	.680*	.126*	.200	-.117	.310	-.023	.490	.128
Brazil	.023	-.013	.065	.002	.415	.084	.120	.011	.450	.079	.540	-.035	.130	-.030	.330	.090
Burma	.029	.004	.144	-.015	.500	.045	.350#	.137#			.620*	-.228				
Canada	.048	-.019	.152	.025	.267	.093	.078	-.024	.670#	.028#	.140	.022	.300	-.093	.560	.065
Colombia	.017*	-.024*	.090*	-.042*	.394	.052	.119	.013	.480*	.089*	.490*	-.043*	.170*	-.018*	.340*	.058*
Ethiopia	.005	-.018	.118	-.056					.050*	-.018*	.880*	.006*				
France	.067	.009	.067	-.015	.179	-.005	.114	.021			.220	.045	.350	-.006	.430	-.009
Germany	.092	.035	.089	.014	.178	-.002	.114	.021	.710$	.149$	.160	-.012	.450	.093	.390	-.048
India	.008	-.012	.015	.008	.389	.020	.151	-.005	.180	-.031	.730	-.039	.110	.040	.160	-.024
Indonesia	.023	-.003	.067	-.012	.430	.039	.214	.058			.680	-.080	.070	-.012	.250	.043
Iran	.020	-.014	.115	-.013	.450	.088	.076	-.042			.550#	-.085#	.200#	.060#	.250#	.014#
Italy	.087	.035	.070	.006	.183	-.048	.097	.011	.480	-.087	.280	-.015	.390*	.074*	.330	-.031
Japan	.073	.029	.029	-.012	.172	-.085	.076	-.010	.640	.123	.330	-.056	.280	.035	.390	.086
Korea	.045	.010	.105	-.017					.280	.056	.630	-.093	.080	-.024	.290	.061
Mexico	.014	-.315	.096	.011	.446	.151	.112	.020	.510	.048	.550	.101	.180	-.041	.270	-.021
Nigeria	.022	.000	.156	.039	.490	.070	.118	-.060	.200*	.038*	.800*	.003*				
Pakistan	.024	.001	.072	-.012	.445	.040	.162	-.008	.130	-.028	.750	-.053	.090	.025	.160	-.046
Philippines	.039	.002	.156	.044	.296	-.083	.078	-.054	.300	.025	.600	-.071	.120	-.005	.280	.046
Poland	.040	-.008	.070	-.023	.223	-.060	.075	-.015	.480	-.009	.480	.072	.290	.049	.230	-.031
Romania					.191	-.113	.087	-.006			.680	.234	.180	-.046	.140	-.182
South Africa	.029	-.018	.206	.080	.467	.170	.106	.014	.470	-.002	.430	.008	.150	-.088	.420	.106

	B12		B13		C1		C2		C3		C4		C5		C6	
	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.
Spain	.064	.020	.061	-.037	.218	-.080	.088	-.005			.430	-.018	.290	.068	.280	-.014
Thailand	.020	-.010	.168	.036	.347	-.057	.084	-.068	.180	-.026	.820	.078			.150	-.077
Turkey	.010	-.031	.075	-.029					.260	-.111	.760	.199	.090	-.081	.150	-.107
U.A.R.	.093	.061	.162	.033	.431	.036	.169	.026	.380	.146	.570	-.143	.110	.002	.320	.091
U.K.	.130	.071	.072	-.000	.175	-.005	.115	.022	.810$	.198$	.070	-.101	.420	.062	.510	.070
U.S.A.	.021	-.041	.022	-.014	.237	.140	.095	-.020	.700	-.012	.070	.053	.320	-.116	.610	.067
Yugoslavia	.038	-.009	.111	-.005	.235	-.080	.099	.003	.280	-.155	.590	.116	.160	-.053	.250	-.041

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$ 1950

SMALL COUNTRIES

Algeria	.055	-.042	.257	.061	.215	-.117	.160	.060	.320	-.090	.600*	.035*	.060#	-.124#	.190#	-.078#
Angola	.009	-.040	.170	-.018					.110	-.166	.820*	.190*				
Australia	.036	-.041	.129	-.071	.224	.032	.086	-.014	.790	.175	.120	-.019	.360	-.024	.520	.033
Austria	.070	-.008	.180	-.021	.179	-.069	.127	.037	.500	-.062	.250	-.013	.390	.069	.360	-.050
Belgium	.126	.047	.225	.027	.169	-.047	.124	.030			.100	-.093	.420	.064	.480	.029
Bolivia	.040	-.019	.207	-.002	.445	.027	.087	-.054	.340$	.089$	.650*	-.012*	.120$	-.017$	.210$	-.038$
Ceylon	.114	.059	.173	.007	.366	-.029	.086	-.048	.150	-.111	.490*	-.181*	.120*	-.012*	.390*	.133*
Chile	.037	-.039	.111	-.078	.357	.046	.124	.031	.680	.222	.320	-.109	.240	.001	.440	.118
China Rep.	.062	-.003	.131	-.045	.395	.009	.069	-.059	.560#	.306#	.470*	-.115*	.130#	.003#	.350#	.110#
Costa Rica	.037	-.036	.242	-.002	.488	.134	.090	-.011	.350*	-.065*	.490*	.026*	.180*	-.054*	.330*	-.014*
Cuba	.047*	-.029*	.306*	.099*	.356	.024	.085	-.006			.390*	-.098*				
Denmark	.081	.004	.239	.017	.166	-.048	.095	-.003	.690#	.101#	.180	.016	.350	-.022	.470	-.011
Ecuador	.015	-.041	.159	-.035	.485	.099	.141	.020	.290$	.018$	.560	-.051	.180	.020	.260	-.012

	[illegible]		[illegible]		C1		C2		C3		C4		C5		C6	
	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.
El Salvador	.044	-.021	.212	-.006	.495	.112	.114	-.001	.390	.061	.600	.022	.170	-.008	.230	-.059
Finland	.051	-.026	.182	-.038	.185	-.043	.090	-.005	.560	-.032	.360	.164	.310	-.048	.330	-.130
Ghana	.045	-.025	.214	.201	.470	.107	.240	.129	.200	-.153	.600	.036	.120	-.058	.280	.003
Greece	.051	-.041	.158	-.042	.189	-.121	.073	-.020	.430	-.028	.550	.120	.180	-.058	.270	-.051
Honduras	.021	-.046	.191	-.032	.425	.031	.093	-.027	.230	-.078	.670	.070	.100	-.070	.230	-.057
Hungary	.082	.004	.087	-.099	.147	-.013	.102	.013	.400#	-.043#	.400	.045	.330	.057	.270	-.083
Iraq	.076	.041	.247	.084	.298	-.071			.390#	.084#	.500*	-.053*	.140#	-.016#	.380#	.123#
Ireland	.120	.039	.272	.042	.212	-.079	.126	.028	.440	-.068	.360	.039	.240	-.057	.400	.010
Israel	.107	.015	.217	-.033	.268	-.002	.057	-.035	.780	.238	.130	-.144	.300	-.023	.570	.149
Ivory Coast	.042	-.005	.230	.033							.860*	.274*	.200*	-.154*	.120*	-.171*
Jamaica	.088	.017	.283	.048	.420	.079	.088	-.010	.290	-.137	.370	-.077	.220	-.019	.410	.072
Jordan	.152	.057	.271	.013					.470	.197	.370	-.267	.180	.026	.430	.149
Kenya	.097*	.056*	.308*	.121*					.080	-.066	.880*	.100*				
Malaysia	.157*	.098*	.247*	.060*	.409	.050	.095	-.015	.270$	-.019$	.550*	.017*	.090#	-.085#	.300#	.034#
Netherlands	.170	.097	.303	.116	.208	-.012	.077	-.015	.750	.154	.130	-.081	.400	.055	.470	.035
New Zealand	.028	-.049	.210	-.036	.265	.051	.088	-.014	.640	.029	.150	.009	.350	-.041	.500	-.008
Nicaragua	.028	-.033	.265	.033	.520	.045					.610*	.115*	.150*	-.069*	.240*	-.090*
Norway	.095	.017	.318	.089	.173	-.053	.091	-.006	.570	-.026	.210	.026	.360	-.006	.430	-.041
Peru	.031	-.037	.179	.003	.440	.095	.114	.009	.470	.086	.520	-.011	.160	-.030	.320	.039
Portugal	.090	.014	.170	-.015	.242	-.099	.108	.005	.230	-.165	.430	-.086	.270	.072	.300	.012
Puerto Rico					.323	.043	.067	-.024	.440	-.087	.250	-.053	.260	-.047		
Rhodesia	.068*	-.039*	.400*	.142*	.358	-.020	.950	-.020			.120	-.461	.220	.046	.660	.378
Sudan	.091	.059	.143	-.017	.517#	.076#	.185#	.000#	.080#	-.044#	.780*	.020*	.060#	-.015#	.080#	-.149#
Sweden	.053	-.024	.196	-.016	.137	-.050	.100	-.003	.730	.095	.150	.033	.430	.032	.420	-.089

	B12		B13		C1		C2		C3		C4		C5		C6	
	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.	ACT.	RES.
Switzerland	.079	-.006	.232	.011	.176	-.012	.097	-.008	.510	-.126	.110	.003	.500	.094	.390	-.132
Syria	.096*	.032*	.181*	-.031*					.390	.130	.470	-.194	.160	.022	.370	.109
Tanzania	.033*	.002*	.258*	.079*					.020	-.091	.950*	.122*	.100	.029		
Tunisia	.070	.004	.234	.027	.438	.047	.101	-.022	.400*	.075*	.600*	.007*	.080#	-.075#	.230#	-.033#
Venezuela	.036	-.015	.157	-.020	.485	.223	.071	-.018	.680	.138	.340	.041	.170	-.133	.490	.102
Zambia	.041*	.016*	.364*	.172*	.309	-.093	.088	-.040	.200*	-.109*	.810*	.201*				

* 1965

1955

$ 1950

KEY TO THE GRAPHS

Code	Type of Country	Name	1960 GNPPC	Population
AL	o	Algeria	299	10.8
AN	Δ	Angola	151	4.8
AR	Δ	Argentina	691	20.7
AA	Δ	Australia	1566	10.3
AU	*	Austria	888	7.0
BE	*	Belgium	1224	9.2
BO	*	Bolivia	122	3.5
BR	o	Brazil	210	69.7
BU	Δ	Burma	59	22.4
CN	Δ	Canada	1724	17.9
CE	o	Ceylon	134	9.9
CH	Δ	Chile	414	7.7
CA	*	China	149	10.6
CO	Δ	Colombia	246	15.4
CR	Δ	Costa Rica	339	1.3
CU	o	Cuba	323†	6.8
DE	Δ	Denmark	1399	4.6
EC	Δ	Ecuador	179	4.4
ES	Δ	El Salvador	209	2.5
ET	*	Ethiopia	49	20.7
FI	Δ	Finland	1208	4.4
FR	Δ	France	1322	45.7
GE	*	Germany	1343	55.4
GH	o	Ghana	222	6.8
GR	Δ	Greece	412	8.3
HO	Δ	Honduras	189	1.9
HU	*	Hungary	580	10.0
IN	Δ	India	85	429.0
IA	Δ	Indonesia	89	93.5
IR	o	Iran	178	21.5
IQ	o	Iraq	204	6.9
ID	Δ	Ireland	683	2.8
IS	*	Israel	849	2.1
IT	*	Italy	763	49.6
IV	o	Ivory Coast	181	3.3
JM	o	Jamaica	382	1.6
JA	*	Japan	500	93.2
JO	*	Jordan	159	1.7
KE	o	Kenya	79	8.1
KO	*	Korea	138	24.7
MA	o	Malaysia	226	8.1
ME	Δ	Mexico	376	36.0
NE	*	Netherlands	1126	11.5
NZ	o	New Zealand	1558	2.4
NI	o	Nicaragua	237	1.4
NG	o	Nigeria	67	52.0
NO	*	Norway	1276	3.6
PA	Δ	Pakistan	73	92.7
PE	Δ	Peru	258	10.0
PP	o	Philippines	135	27.4
PL	*	Poland	454	29.7
PO	*	Portugal	277	8.8
PR	*	Puerto Rico	742	2.4
RH	*	Rhodesia	206	3.6
RO	*	Romania	382	18.4
SA	o	South Africa	426	16.4
SP	Δ	Spain	378	30.3
SU	o	Sudan	77	11.8
SW	Δ	Sweden	1734	7.5
SZ	*	Switzerland	1820	5.4
SY	o	Syria	140	4.6
TA	o	Tanzania	67	10.0
TH	o	Thailand	97	26.4
TU	*	Tunisia	172	3.9
TK	Δ	Turkey	224	27.5
UA	Δ	UAR	111	25.8
UK	*	UK	1348	52.4
US	*	USA	2716	180.7
VE	o	Venezuela	753	7.5
YU	*	Yugoslavia	335	18.4
ZA	o	Zambia	155	3.2

N.B. The following countries appear only in Figure 11:

DR	Δ	Dominican R.	252	3.0
GU	Δ	Guatemala	266	3.8
UR	Δ	Uruguay	553	2.5
BG	Δ	Bulgaria	407	7.9
CZ	*	Czechoslovakia	826	13.7
EG	*	East Germany	931	17.2
UN	o	U.S.S.R.	628	214.2

†1965

Trade Patterns

o = Primary-oriented countries
Δ = Balanced countries
* = Industry-oriented countries

FIGURE 1: SAVINGS AND INVESTMENT

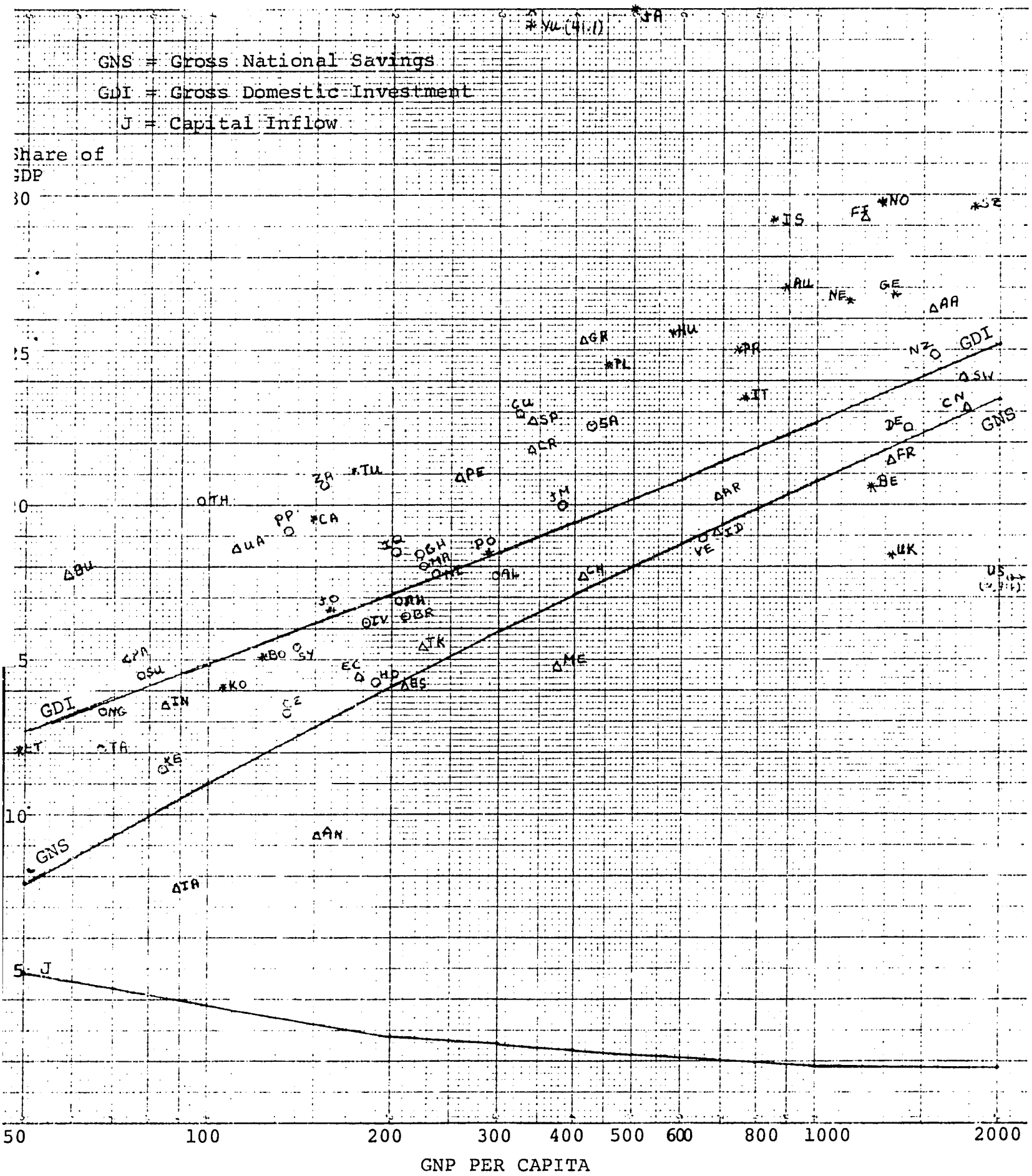

FIGURE 2: GOVERNMENT REVENUE AND EXPENDITURE

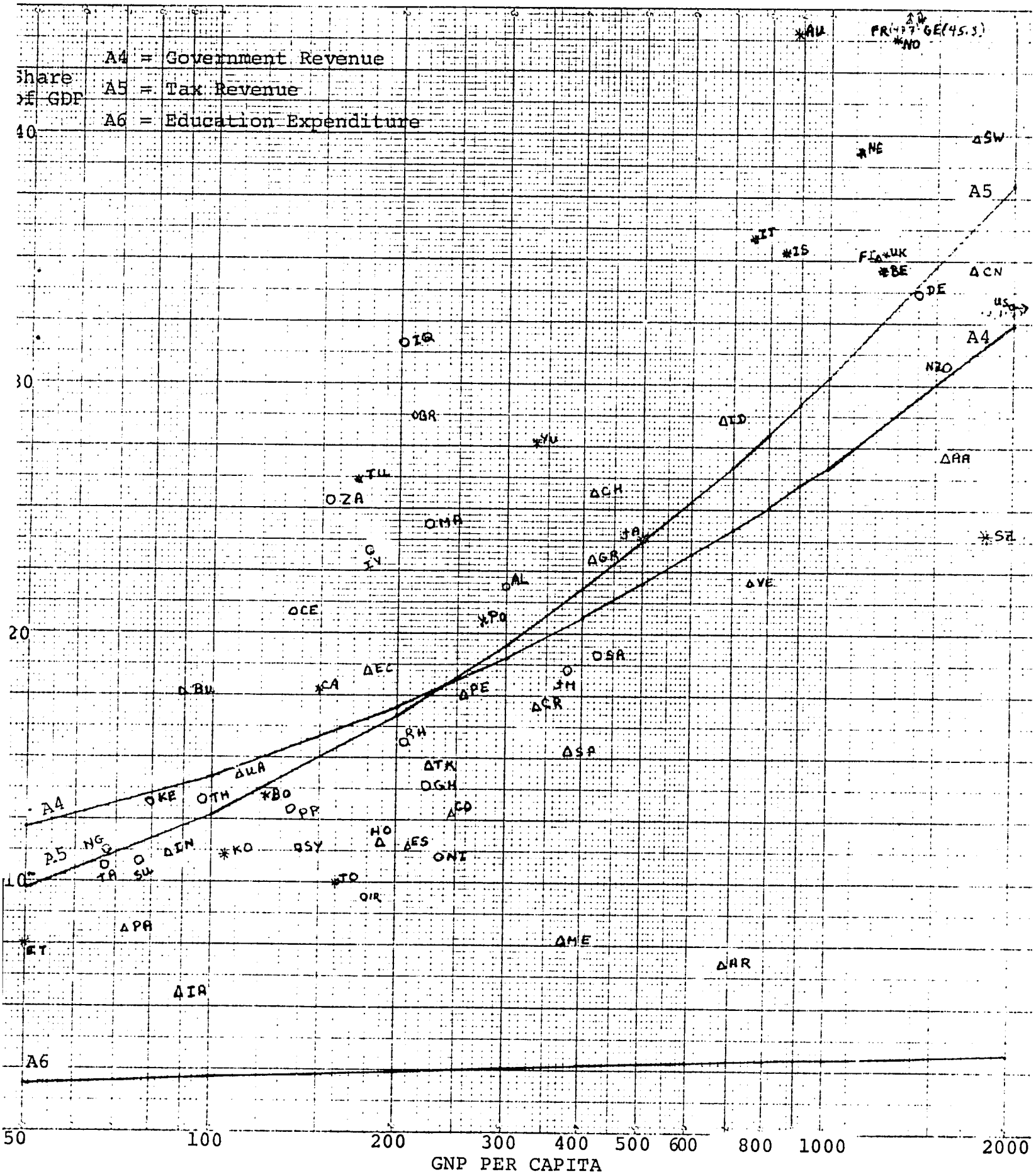

FIGURE 3: EDUCATION AND LITERACY

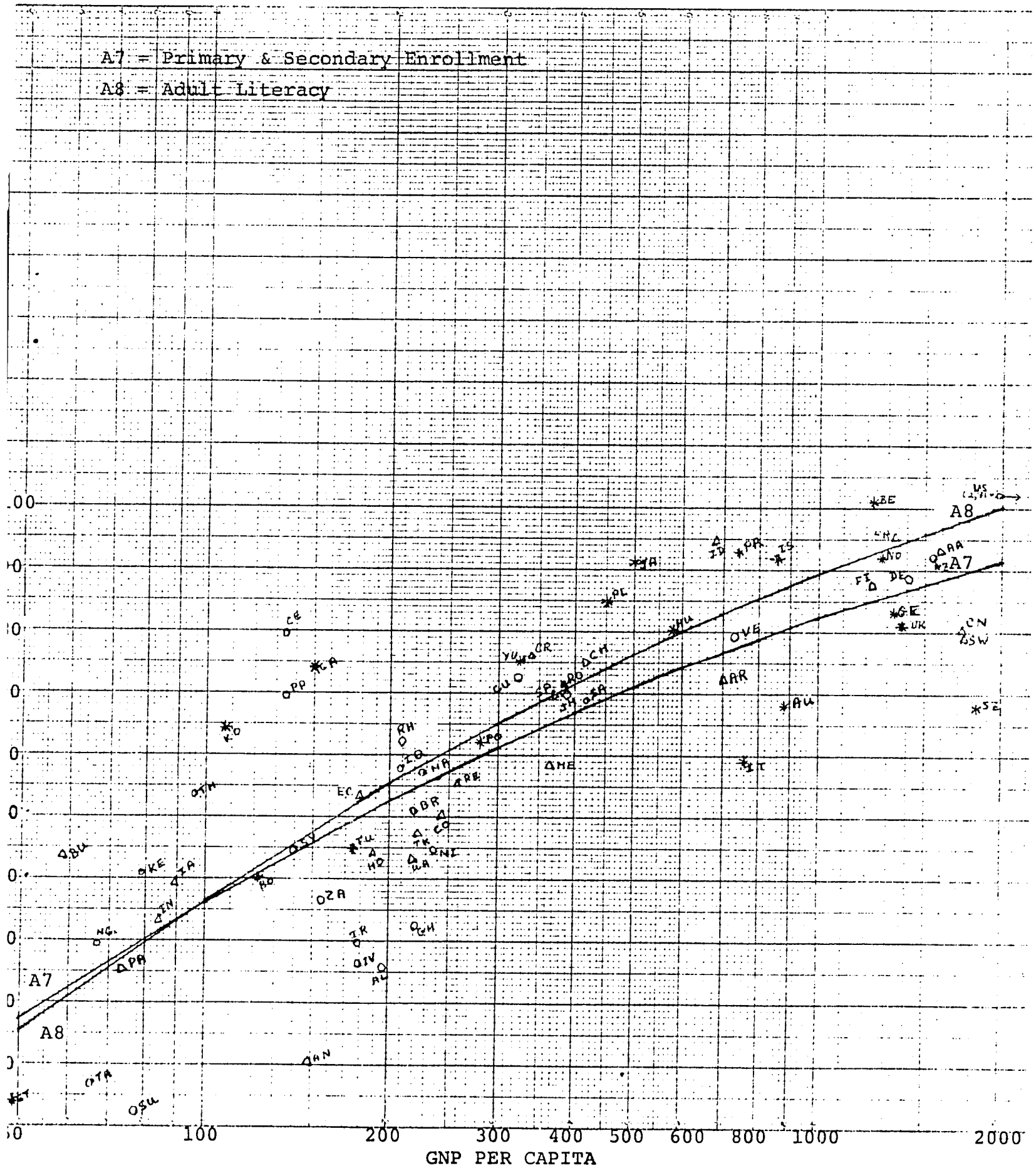

FIGURE 4A: COMPOSITION OF DOMESTIC DEMAND

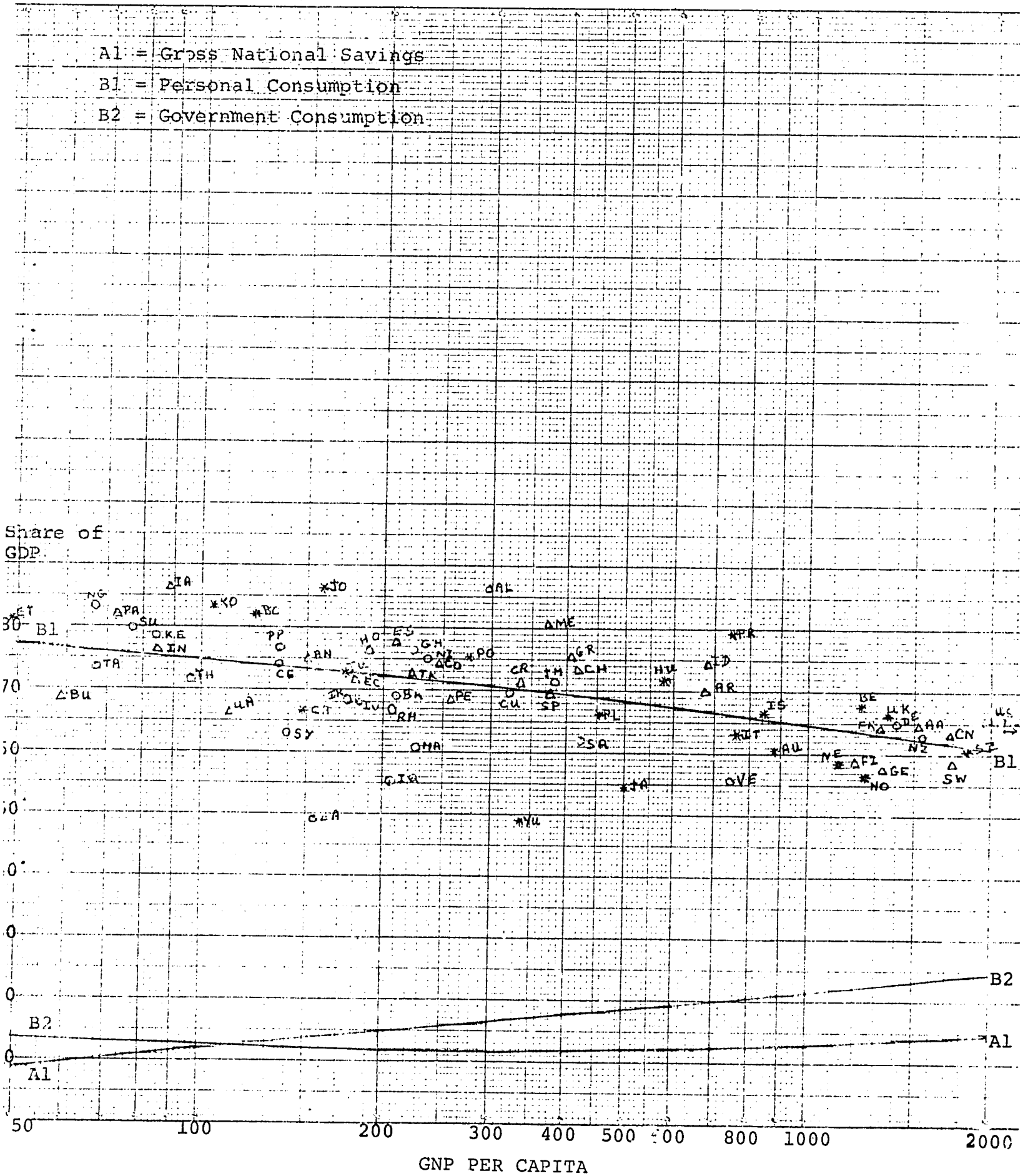

FIGURE 4B: COMPOSITION OF CONSUMPTION

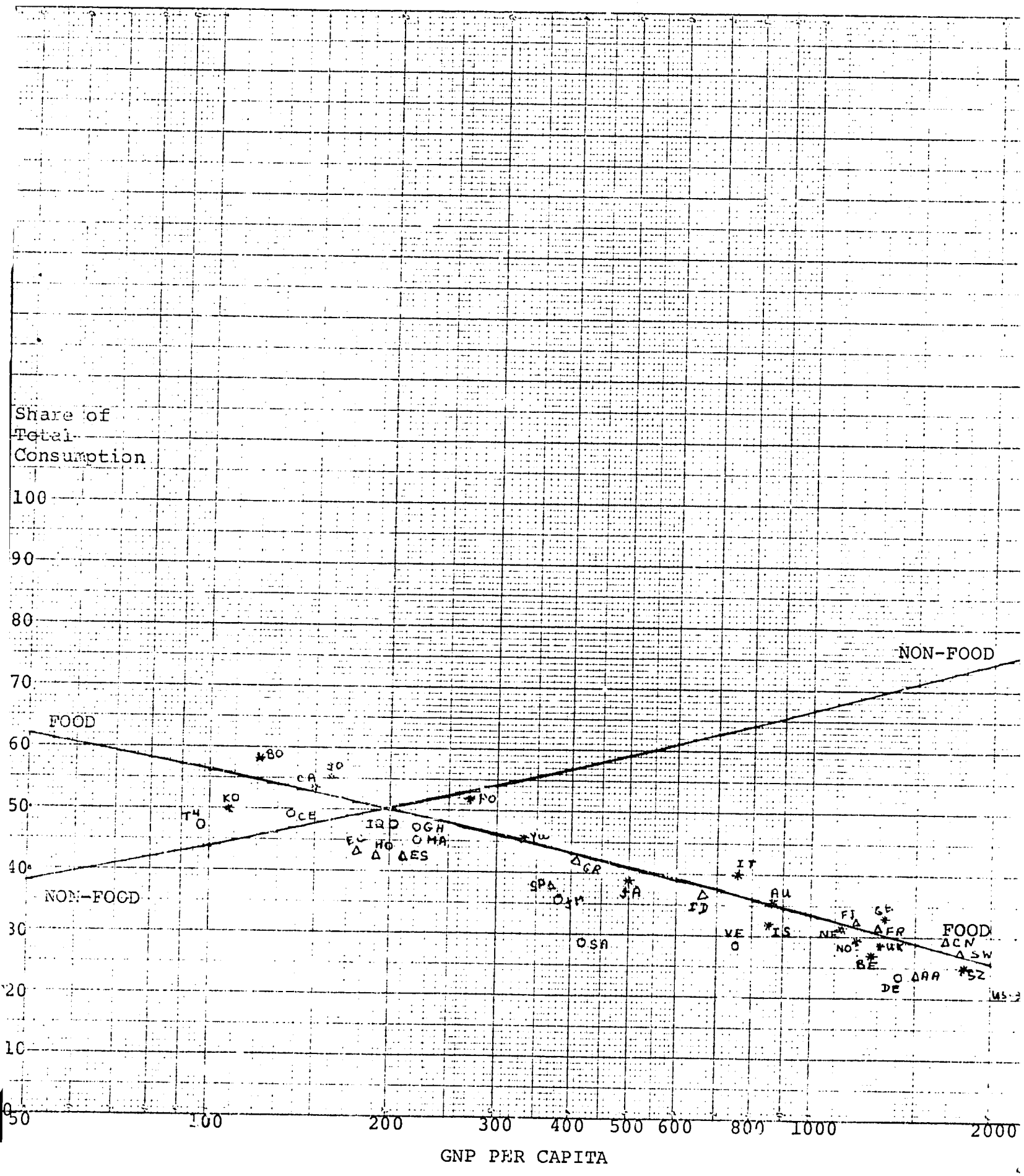

FIGURE 5: STRUCTURE OF PRODUCTION

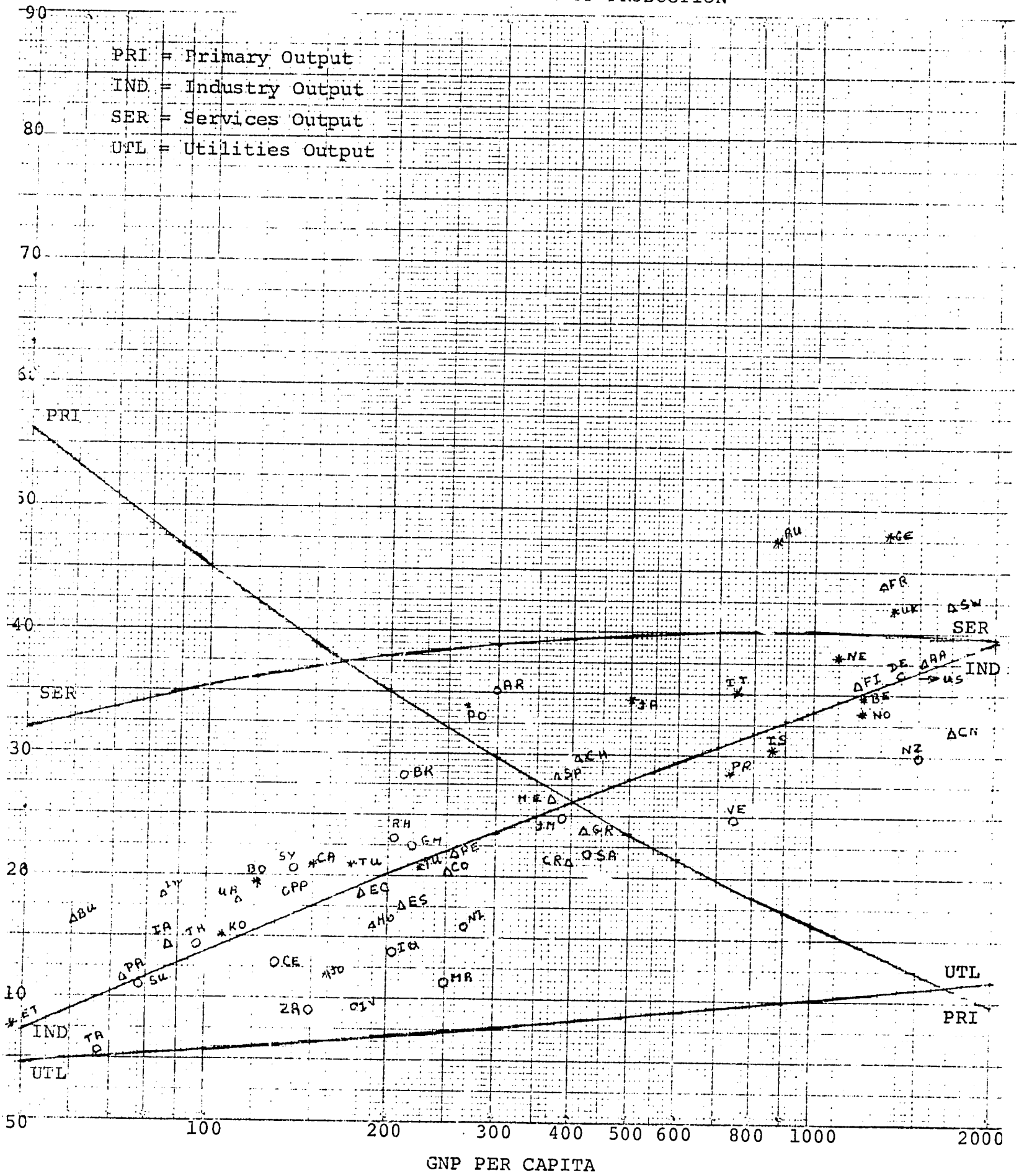

FIGURE 6: COMPOSITION OF EXPORTS

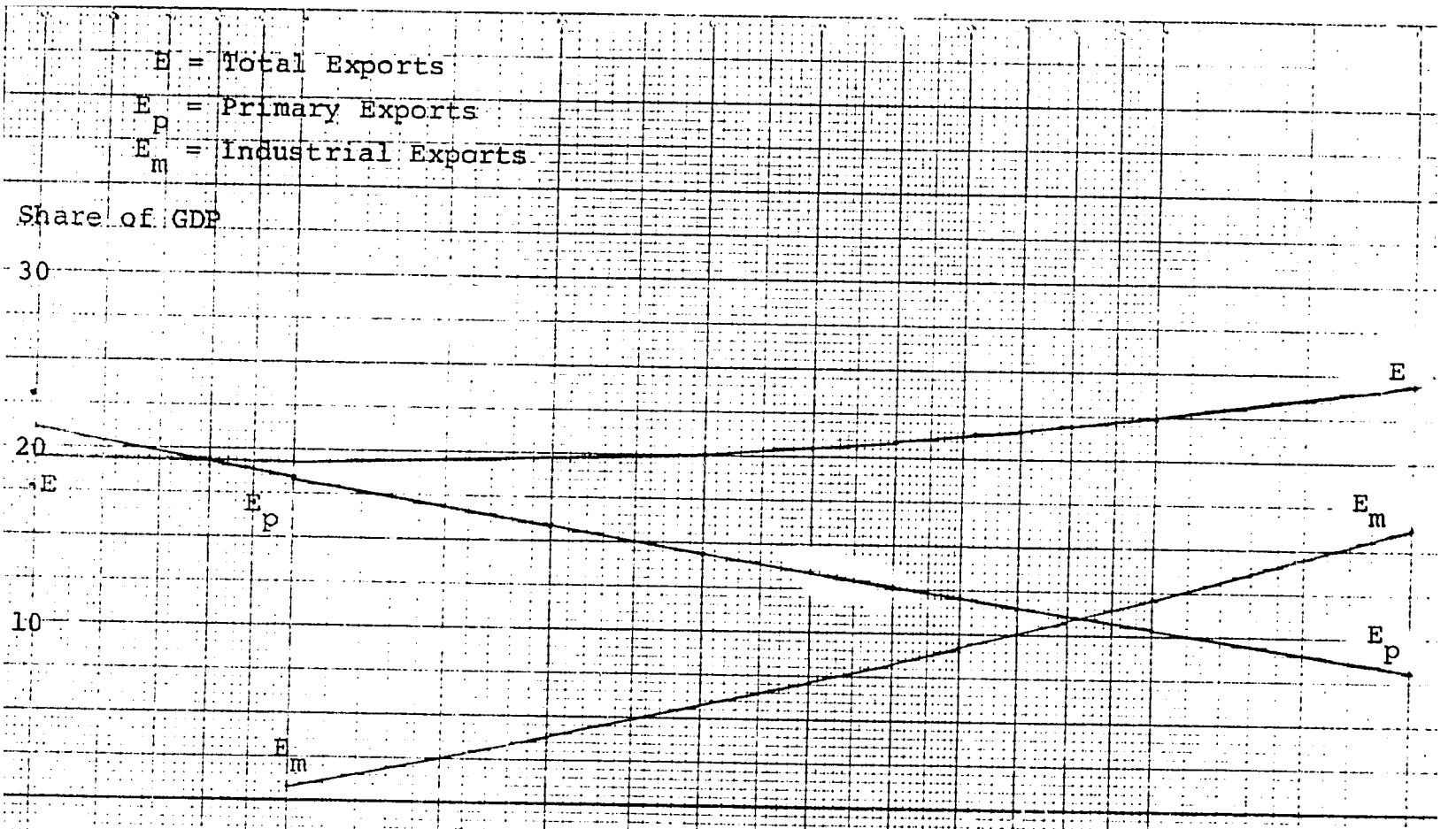

FIGURE 7: COMPOSITION OF IMPORTS

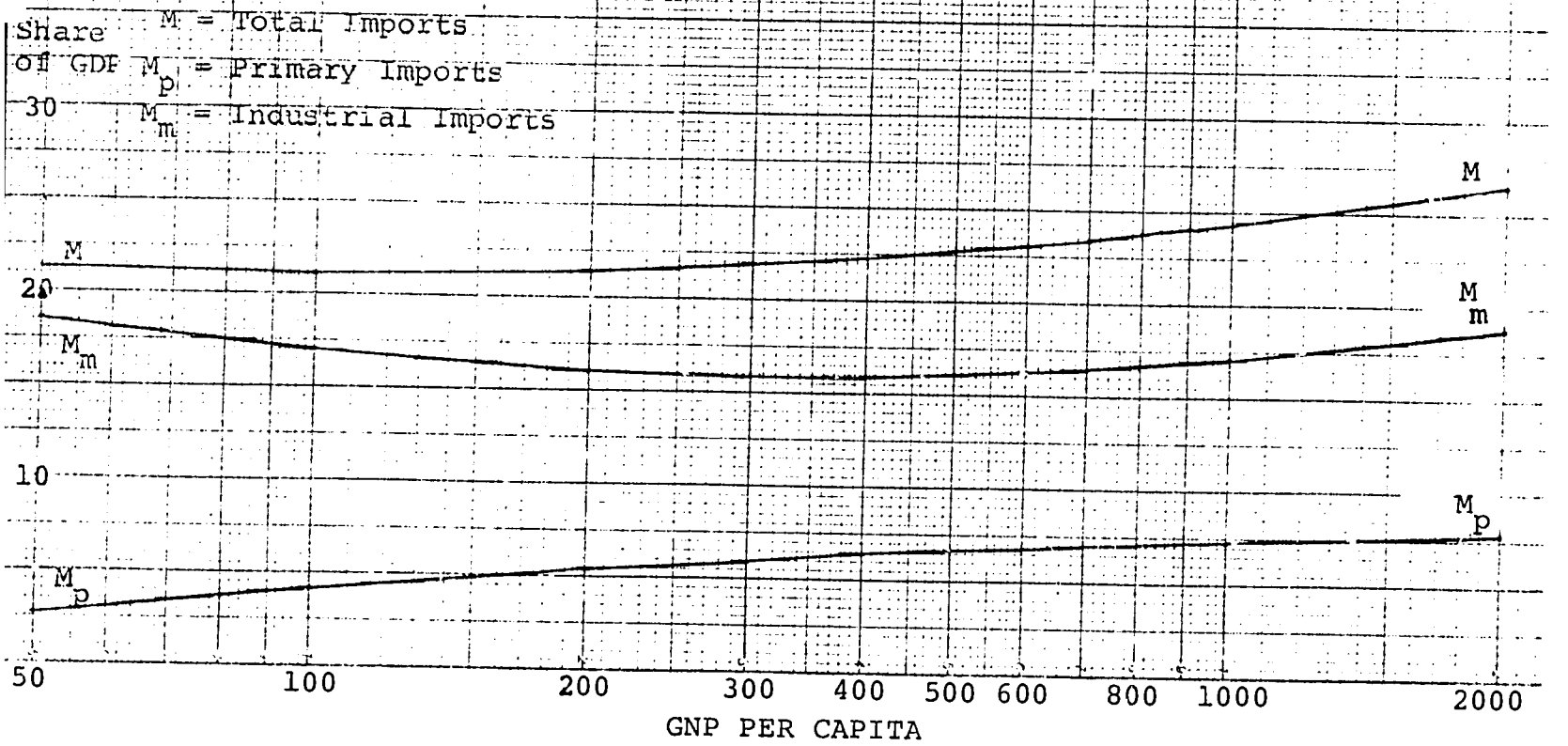

FIGURE 8: ALLOCATION OF LABOR

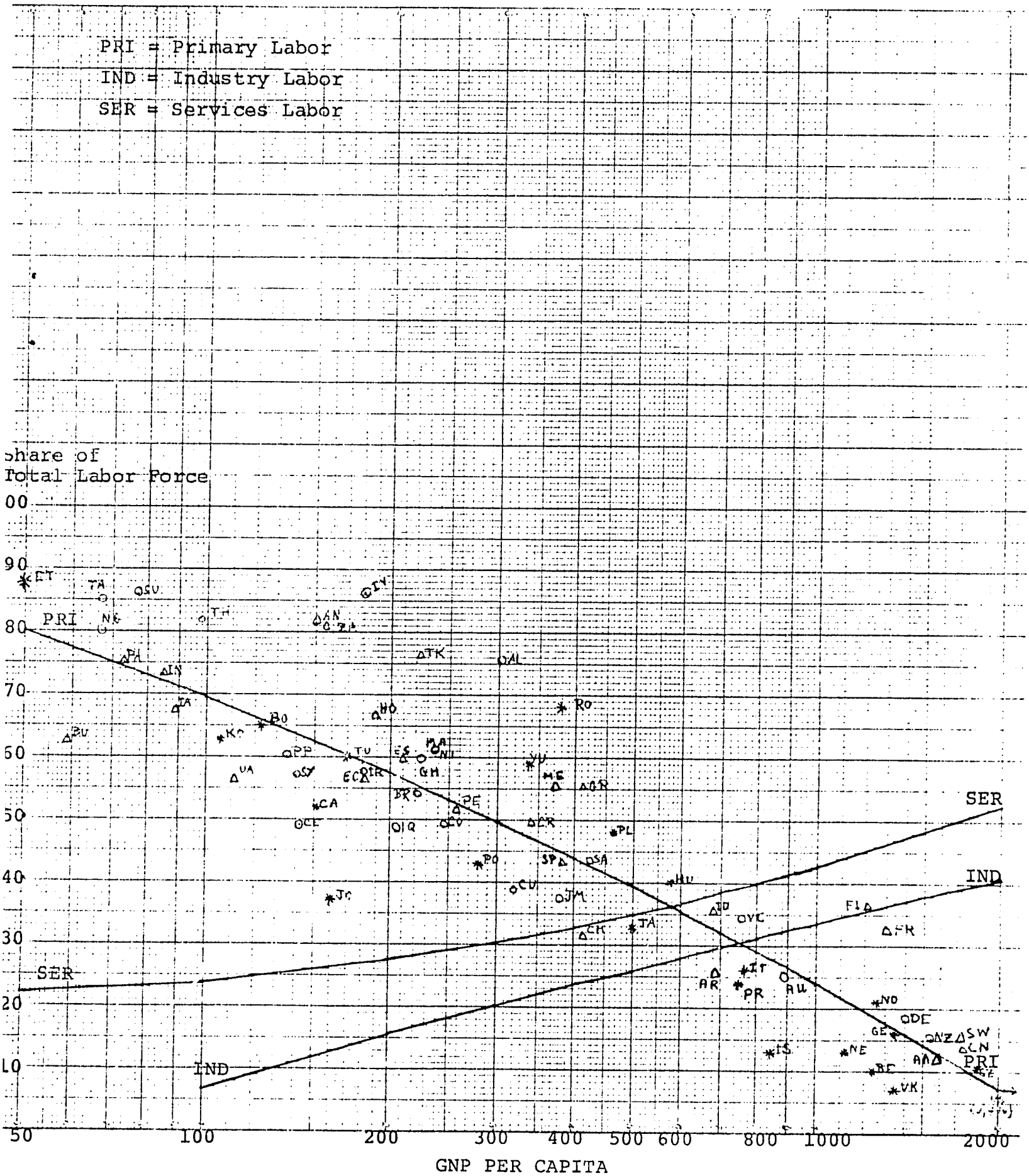

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FIGURE 9: URBANIZATION

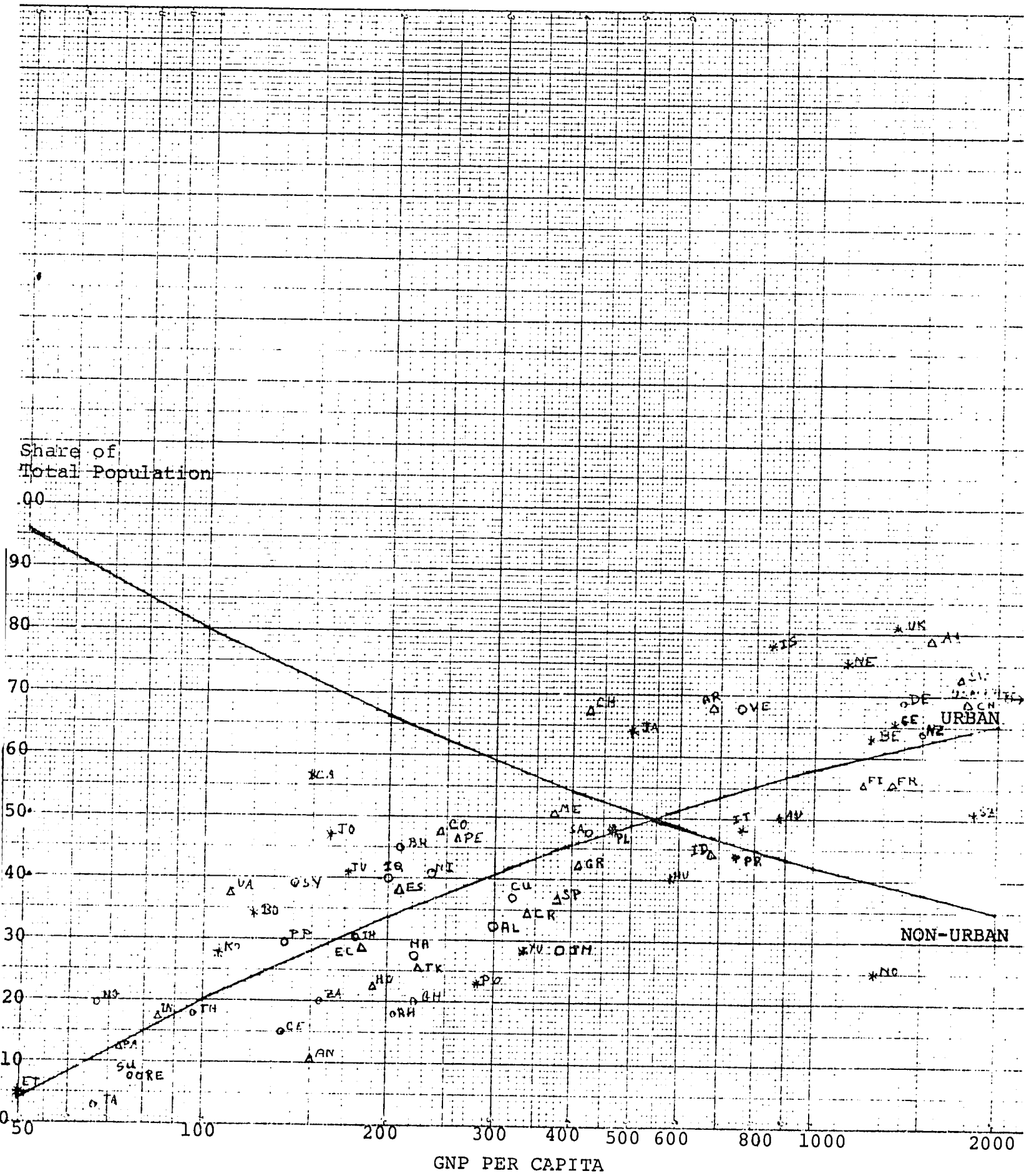

FIGURE 10: BIRTH AND DEATH RATES

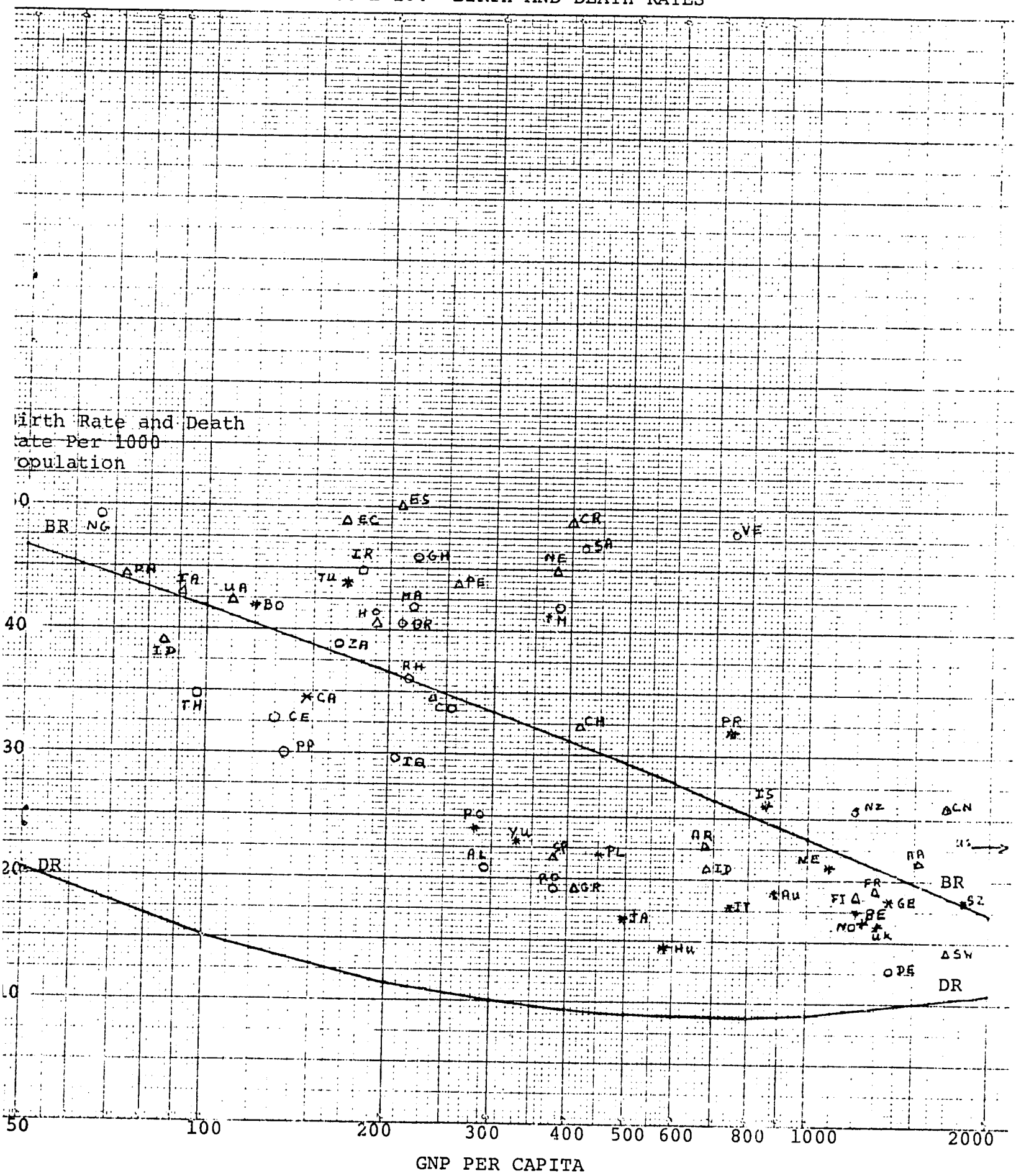
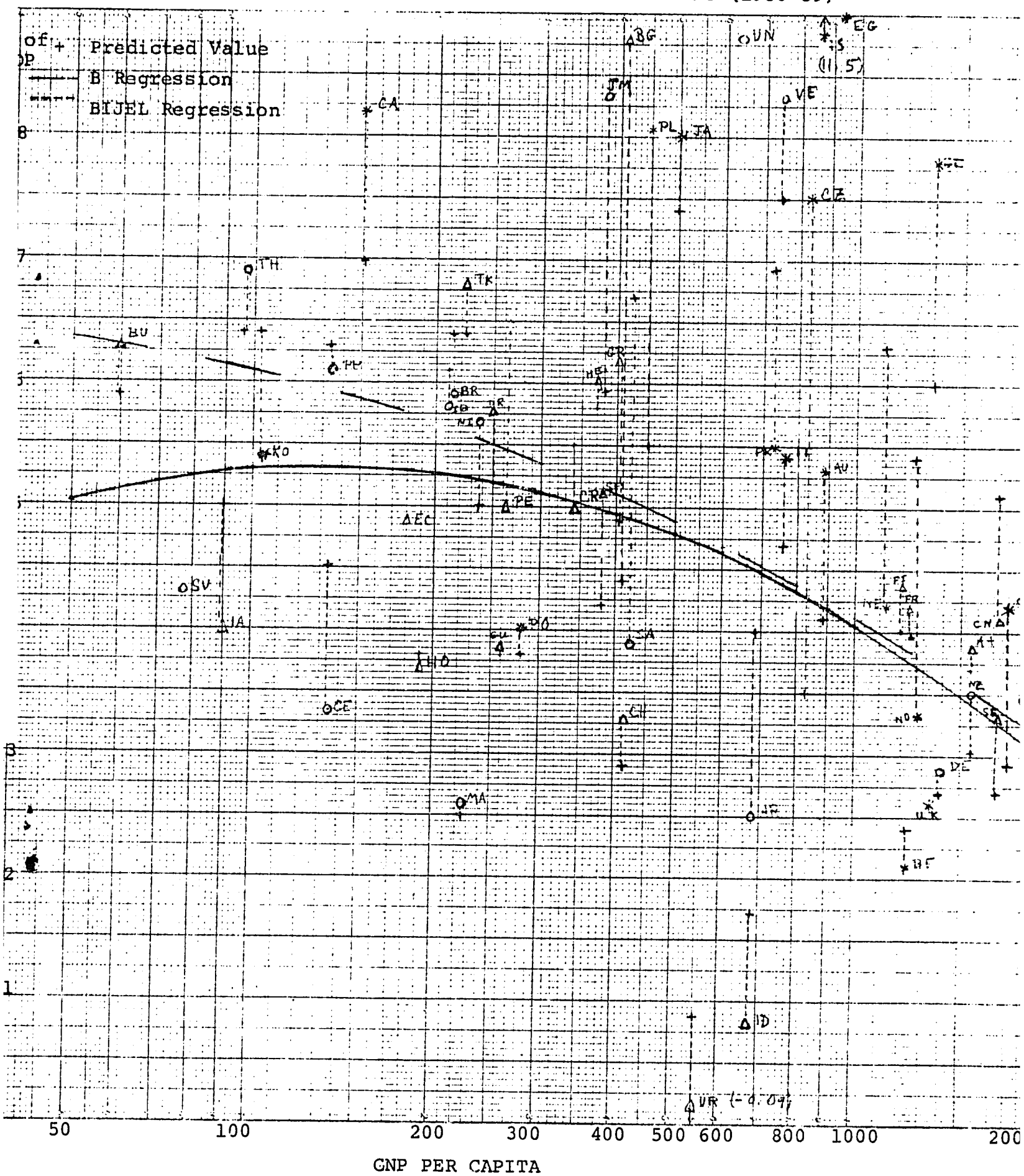
FIGURE 11: ACTUAL AND PREDICTED GROWTH RATES (1950-59)