PROGRAM OF DEVELOPMENT STUDIES
121 Sewall Hall
WILLIAM MARSH RICE UNIVERSITY
Houston, Texas 77001

Paper No. 44

FACTOR INTENSITY OF CONSUMPTION PATTERNS, INCOME DISTRIBUTION AND EMPLOYMENT GROWTH IN PAKISTAN

By

Ronald Soligo

Fall, 1973

The author is Professor of Economics at Rice University. Portions of this research were financed by funds provided by the Agency for International Development under contracts csd-2492 and csd-3302. Program Discussion Papers are preliminary materials circulated to stimulate discussion and critical comment. References in publications to Discussion Papers should be cleared with the authors to protect the tentative character of these papers.

Factor Intensity of Consumption Patterns, Income Distribution and Employment Growth in Pakistan[1]

Elsewhere[2] I have examined the relationship between the distribution of income and the levels of output and employment in labor-surplus economies. Given the quantity of capital available the levels of output and employment are determined by the capital and labor intensities of aggregate demand which, in turn, are determined by the composition of demand. The distribution of income is an important determinant of the composition of aggregate consumption demand. The higher the share of income concentrated in the hands of consumers who tend to purchase relatively capital-intensive commodities, the higher will be the capital intensity of aggregate demand and, ceteris paribus, the lower will be the levels of output and employment.

The factor intensity of expenditures by government and of private and public investment may also be related to the distribution of income in the same way as consumption expenditures. If so, the above conclusions would be strengthened.

The conclusion that an important source of unemployment is the incompatibility of the pattern of demand with the resource endowment of the economy needs to be qualified if the model is opened up to allow for foreign trade. To some extent, the effects of an overly capital-intensive aggregate demand can be reduced by exporting labor-intensive and importing capital-intensive goods. Some difficulties with this approach are: first, some capital-intensive services such as

---

[1]The author would like to thank James W. Land and John G. Ballentine for helpful comments on earlier drafts of this paper.

[2]James W. Land and R. Soligo, "Income Distribution and Employment in Labor Redundant Economies," Program of Development Studies, Discussion Paper No. 9, Winter 1971.

housing, public utilities and transport cannot be imported. Second, the share of exports in GNP which would be required to offset the inconsistency between the factor intensity of domestic demand and domestic factor endowment may not be acceptable to the less developed country. Third, the level of exports from the developing countries of labor-intensive products to the developed countries may be unacceptable to the latter. While a few relatively small economies might find the policy of increasing specialization in labor-intensive products for export a viable alternative, it is unlikely that large countries such as India and Indonesia or that all developing countries simultaneously, could solve their employment problems in this wa

In addition to the real possibility of increasing trade barriers created by the developed countries against the labor-intensive exports from the developing countries the developing countries are also facing a reduction in the amount of foreign aid given by the rich countries, which, ceteris paribus, will reduce the rate of capital formation and the growth rate in output and employment. Increasingly, the developing countries will have to face the imbalance in the domestic composition of demand and consider alternative development strategies which will produce a more labor-intensive and less capital-intensive domestic demand pattern. The impact of developmental policies on the distribution of income and the effects of the distribution of income on the factor intensity of aggregate demand are issues which need to be given more attention.

The purpose of this paper is to examine the capital and labor intensities of expenditure patterns of various income classes in rural and urban Pakistan, and to examine the implications for the rate of growth of income and employment of alternative assumptions regarding how increments to total income are distributed among these income classes. Specifically, we wish to test the hypothesis that

expenditures by higher income classes are more capital- and less labor-intensive than expenditures by the lower income classes and that, for comparable levels of income, rural households consume a more labor- and less capital-intensive bundle of commodities than urban households. In addition, we wish to test the hypothesis that there is no trade-off between equity and growth, either of income or employment; that more equity is consistent with higher rates of growth of output and employment.

We do not, in this paper, deal with the question of how changes in the distribution of income can be effected but rather, we ask the question: how is the demand for capital and labor affected by different distributions of incremental income? The mechanism by which distribution influences factor demand is via changes in the composition of aggregate demand for goods and services and the fact that each commodity is produced with different factor proportions.

Since income distribution determines relative factor demand, it also feeds back upon itself: relative factor demands determine income distribution. We have not explored this second link between distribution and factor demand because the data to do so are not available. However, the fact that distribution is partially determined by factor demand does raise interesting policy questions. For example, can one affect income distribution by influencing factor demand via changes in the composition of aggregate demand? Can distributional equity be improved by encouraging the export of relatively labor-intensive goods? The results of this paper are relevant to the solution of these issues. If, for example, low income people tend to consume a very capital-intensive basket of goods relative to high income people, then a policy of increasing incomes of the poor through the export of labor-intensive goods will be offset (perhaps partially,

perhaps totally) by the second round effects in which the quantity of employment and income accruing to the lower income groups due to domestic demand is lower than would have been the case if, say, the initial increment to income had been distributed to the rich. On the other hand, if the lower income classes tend to consume a relatively labor-intensive bundle of commodities, then any policy (such as the export of labor-intensive goods) which increases their incomes will be reinforced by the impact of their demand patterns. The total effects on distribution of any increase in exogenous demand can be determined only in a more general equilibrium framework which takes into account both the differential factor intensities of consumption patterns of different income classes and the effects on income distribution of different factor demand patterns.

1. Method and Sources of Data

In what follows we have computed for each of ten income groups in both the rural and urban sectors the average factor intensity of total consumption expenditure as well as the cross-sectional marginal consumption expenditure. Since we are primarily interested in the effects of changes in income distribution on either the levels or rates of growth of output and employment, we should calculate these factor intensities as a weighted average of the marginal capital-output and labor-output ratios where the weights are equal to the share of each expenditure item in total expenditures and in total incremental expenditures respectively. Unfortunately the available data measure, for the most part, only the average capital-output and labor-output ratios. Since marginal and average ratios may differ substantially, our results must be interpreted carefully. Of course, even if we had marginal ratios based on past experience and reflecting past intra-

industry changes in output composition, we could not be confident that these would accurately reflect the marginal coefficients appropriate for future increments in output, reflecting future intra-industry changes in output composition. Our data are aggregated to the two digit industry level and hence we have the usual difficulties associated with such aggregation.

We have calculated factor intensities of consumption patterns using three different sets of capital-output and labor-output ratios. The first set shows only the direct inputs of capital and labor required to produce one unit of final output. The second set includes the indirect requirements as well as direct. The third set is an attempt to include the capital and labor inputs required to produce the capital goods used in the production of final and intermediate goods. Most of the capital required is in the form of buildings or, in the case of agriculture, other construction including barrages, canals and tubewells. Machinery is significantly less important and, in any case, is not generally produced domestically. For both of these reasons we have included only the capital and labor inputs required in the production of that portion of the capital stock involving construction activity.

Consumption expenditures by income class are taken from a cross-section sample of rural and urban households undertaken by C.S.O.[1] The data were collected on the basis of the twenty-nine commodity groups shown in Table 1. Bussink[2] has converted the data from a household to a per capita basis. In addition he has fit cross-section consumption relationships from which he has

---

[1] Pakistan, Central Statistical Office, Report on the Quarterly Survey of Current Economic Conditions: Household Income and Expenditure, July 1963 to June 1964 (Karachi: Central Statistical Office, 1967).

[2] W. C. F. Bussink, "A Complete Set of Consumption Coefficients for West Pakistan," Pakistan Development Review, Summer 1970, pp. 193-231.

TABLE 1: Classification of Expenditures in Household Budget Study

I. Food, Drinks, Tobacco
1. Wheat
2. Rice
3. All other foodgrains
4. Bakery products
5. Pulses
6. Milk
7. Ghee, butter and other milk products
8. Edible fats and oils
9. Meat, fish, poultry
10. Fruits, vegetables
11. Sugar (crystal)
12. Raw sugar and other sugarcane products (gur)
13. All other food and drinks, n.e.s.
14. Condiments, spices
15. Tea
16. Tobacco and chewing products

II. Clothing, Footwear
17. Clothing, bedding
18. Footwear

II. Housing
19. Fuel and lighting
20. House rent
21. Furniture and accessories

IV. Services
22. Personal care
23. Medical expenditure
24. Transport and travel
25. Education
26. Recreation, reading
27. Domestic help

V. Gifts and Miscellaneous
28. Gifts, charity
29. All other expenditure, n

calculated the marginal consumption propensity for each commodity for each income class.

A serious shortcoming of these data is that the specific meaning and composition of the last two expenditure groups, i) gifts, charity, and ii) all other expenditures not elsewhere classified, are not given, and apparently not available except in the original questionnaires. Thus, it is not clear whether gifts are primarily goods, in which case we would wish to know the factor intensity of these goods, or whether they represent gifts of money or other financial assets which are converted into goods and services by others. In this latter case, this portion of total expenditure would contribute nothing towards the labor and capital intensity of total expenditure by the giver.

The larger, and thus more important, component of expenditure is the last group of "not elsewhere classified." This category accounts for a very small proportion of total expenditure by the lowest income group but increases for each group and accounts for 9 and 23 per cent of total expenditure for the highest income group in the urban and rural sectors respectively. Bussink speculates that this category consists primarily of "services and social obligations" although he is not more specific than this. Social obligations probably refer to large dinner parties given for special occasions (weddings, births, religious feasts, etc.) and hence would consist primarily of food expenditure and domestic labor services. On the other hand, they could also represent transfers in the form of financial assets or expenditure for other goods and services not included in the classification list of household expenditures. In any case, it is not possible to use any specific factor-output ratios for this group of expenditures with any degree of confidence. As a result, we have calculated our results on the basis of two alternative assump-

tions. First we have assumed that the factor-output ratios of the last two commodity classifications are zero. Second, we assume that the factor intensity of these two groups is equal to the average factor intensities of the remainder of the expenditures for each income class. The first assumption clearly understates the factor intensity of total expenditures. The second assumption overstates the capital intensity of total expenditures since the capital intensity of the weighted average of expenditures excluding the last two categories will be unduly increased by the presence of expenditures on housing services which has a capital-output ratio of four to twelve times that for other goods. The bias in the labor intensity calculation is less clear but most likely lies in the direction of understating the labor intensity of consumption expenditures. Both biases will be greatest for the highest income groups and decreasing as one moves to lower and lower income classes. The pattern of bias exists for the average and marginal expenditure patterns.

Data on capital-output ratios have been obtained from Khan and MacEwan.[1] The labor-output ratios for the manufacturing sector were derived by dividing the capital-output ratios by capital-labor ratios calculated by Khan.[2] The average labor coefficient for the agricultural sector as a whole was estimated by dividing total agricultural employment as estimated by Stern[3] by gross value of agricultural output. Labor coefficients for specific subsectors in agriculture (rice, wheat,

---

[1] A. R. Khan and A. MacEwan, "A Multisectoral Analysis of Capital Requirements for Development Planning in Pakistan," Pakistan Development Review, Winter 1967, pp. 445-484.

[2] A. R. Khan, "Capital-Intensity and the Efficiency of Factor Use--A Comparative Study of the Observed Capital-Labour Ratios of Pakistani Industries," Pakistan Development Review, Summer 1970, pp. 232-63.

[3] J. J. Stern, "Employment by Regions and Sectors 1960-1975," mimeographed, Pakistan Planning Commission, 1969.

cotton, and "other agricultural sectors") were calculated by using the estimate of the labor-output ratio for all agriculture plus information on the capital-output ratio and ratio of value added to gross output for each of the subsectors. This information was available from work by Khan and MacEwan.[1] Unfortunately, the industry breakdown used in the work by Khan and MacEwan does not separate out such agricultural activities such as milk and dairy products, meat, poultry, sugar cane, fruits and vegetables and the production of foodgrains other than rice and wheat. The Household Budget study does break down consumption patterns into these categories but the advantages of this detail cannot be exploited with current data availability regarding the production structure of these activities.

Labor coefficients for the remainder of the non-manufacturing sectors were obtained from Khan.[2]

2. Factor Intensity of Consumption Patterns

Since we are ultimately interested in how the demand for capital and labor are affected by different distributions of increments to total income, we would like to measure the factor intensity of changes in consumption expenditures as income increases. To the extent that the population is growing and the growth in total income is used to maintain the same average income levels for the expanding population, the consumption patterns which are most relevant for the determination of capital and labor requirements are the average expenditure patterns

---

[1] A. R. Khan and A. MacEwan, op. cit.; A. R. Khan and A. MacEwan, Regional Current Input Output Tables for the East and West Pakistan Economies 1962-63, Pakistan Institute of Development Economics Research Report No. 63, December 1967.

[2] A. R. Khan, Capital-Labour Ratios and Labour Requirements in the Pakistan Economy, mimeographed Special Report, Pakistan Institute of Development Economics, 1970.

of the existing population. On the other hand, if income growth is translated into increases in per capita income for the existing population, we would be interested in the incremental expenditure patterns of each income group.[1] In practice there will always be some population growth and most likely some increase in per capita income so that both sets of expenditure patterns are needed.

Tables 2 and 3 show the capital and labor content per rupee expenditure and Tables 4 and 5, the capital and labor content per incremental rupee of expenditure for urban and rural persons respectively. Tables 2 and 4 are based on all twenty-nine expenditure categories. As mentioned in the preceding section, expenditure on gifts, charitable contributions and miscellaneous expenditure not elsewhere classified were included by assuming that the labor and capital inputs into these activities were zero. Hence, the calculations in these tables will understate factor inputs and, because these expenditures account for a larger proportion of both total and incremental expenditures for the high income groups, the calculations understate inputs more for the high income groups than the low income groups. This approach was chosen since it biases the results in the direction of disproving the hypotheses stated earlier. Tables 3 and 4 exclude gifts, charity and miscellaneous expenditures entirely. This is equivalent to assuming that the factor intensities of these items are equal to the average for the remainder of expenditures. These results tend to be biased in favor of supporting our hypothesis. Separate coefficients are shown for direct inputs only, direct and indirect inputs, and finally direct and indirect plus the inputs required to produce that portion of increases in the capital stock involving construction

[1] This assumes, of course, that incremental expenditure patterns from cross-section data are useful in predicting the behavior of each income group over time.

TABLE 2A: Factor Intensity of Urban Consumption Patterns in West Pakistan by Income Class

Income Class	Income in Rs/month/ Capita	Capital per Rs. Expenditure			Labor (in man-yrs.) per Thousand Rs. Expenditure		
		Direct	Direct & Indirect	Direct, Indirect and Construction	Direct	Direct & Indirect	Direct, Indirect and Construction
1.	20.30	2.68	3.63	7.76	.39	.61	1.68
2.	24.40	2.65	3.55	7.57	.38	.60	1.66
3.	29.30	2.61	3.48	7.40	.38	.59	1.63
4.	35.20	2.57	3.40	7.21	.37	.57	1.60
5.	42.20	2.54	3.34	7.05	.37	.56	1.58
6.	50.60	2.52	3.29	6.94	.36	.55	1.57
7.	60.80	2.53	3.28	6.91	.35	.54	1.56
8.	72.90	2.58	3.31	6.94	.34	.53	1.57
9.	87.50	2.66	3.37	7.04	.33	.52	1.59
10.	126.00	2.85	3.55	7.34	.31	.50	1.65

TABLE 2B: Factor Intensity of Rural Consumption Patterns in West Pakistan by Income Class

Income Class	Capital per Rs. Expenditure			Labor (in man-yrs.) per Rs. Expenditure		
	Direct	Direct & Indirect	Direct, Indirect and Construction	Direct	Direct & Indirect	Direct, Indirect and Construction
1.	2.20	3.14	6.75	.40	.62	1.48
2.	2.10	3.00	6.46	.40	.61	1.44
3.	2.02	2.87	6.19	.39	.60	1.41
4.	1.95	2.76	5.97	.39	.59	1.37
5.	1.90	2.68	5.80	.38	.57	1.34
6.	1.89	2.63	5.70	.36	.55	1.30
7.	1.90	2.61	5.63	.35	.53	1.29
8.	1.95	2.63	5.68	.34	.52	1.28
9.	2.02	2.67	5.79	.32	.50	1.28
10.	2.20	2.81	6.13	.29	.47	1.32

TABLE 3A: Factor Intensity of Urban Consumption Patterns in West Pakistan by Income Class (Alternative Estimates[1])

Income Class	Capital per Rs. Expenditure			Labor (in man-yrs.) per Thousand Rs. Expenditure		
	Direct	Direct & Indirect	Direct, Indirect and Construction	Direct	Direct & Indirect	Direct, Indirect and Construction
1.	2.68	3.63	7.77	.39	.61	1.68
2.	2.68	3.59	7.65	.39	.61	1.68
3.	2.67	3.56	7.57	.39	.60	1.67
4.	2.67	3.52	7.47	.39	.59	1.66
5.	2.67	3.50	7.40	.39	.59	1.66
6.	2.68	3.50	7.38	.38	.59	1.67
7.	2.73	3.53	7.43	.38	.58	1.68
8.	2.81	3.60	7.54	.37	.58	1.71
9.	2.91	3.69	7.70	.36	.57	1.74
10.	3.14	3.91	8.09	.34	.55	1.82

TABLE 3B: Factor Intensity of Rural Consumption Patterns in West Pakistan by Income Class (Alternative Estimates[1])

Income Class	Capital per Rs. Expenditure			Labor (in man-yrs.) per Rs. Expenditure		
	Direct	Direct & Indirect	Direct, Indirect and Construction	Direct	Direct & Indirect	Direct, Indirect and Construction
1.	2.29	3.26	7.01	0.41	0.64	1.54
2.	2.25	3.21	6.91	0.43	0.65	1.54
3.	2.22	3.16	6.82	0.43	0.66	1.55
4.	2.21	3.13	6.76	0.44	0.67	1.55
5.	2.22	3.12	6.75	0.44	0.67	1.56
6.	2.26	3.15	6.81	0.44	0.66	1.56
7.	2.33	3.20	6.90	0.43	0.66	1.56
8.	2.43	3.28	7.10	0.42	0.64	1.60
9.	2.56	3.39	7.36	0.41	0.63	1.63
10.	2.86	3.64	7.96	0.38	.61	1.71

[1]Expenditure on gifts, charity and miscellaneous expenditure not elsewhere classified has been excluded. This is equivalent to assuming that the factor intensity of these items is equal to the average for the remainder of the expenditure categories.

TABLE 4A: Factor Intensity of Incremental Urban Consumption by Income Class

Income Class	Capital Requirements per additional Rs. expenditure			Labor Requirements (in man-yrs.) per additional thousand Rs. expenditure		
	Direct	Direct & Indirect	Direct, Indirect and Construction	Direct	Direct & Indirect	Direct, Indirect and Construction
1.	2.43	3.07	6.41	.36	.52	1.49
2.	2.40	3.04	6.35	.35	.51	1.47
3.	2.40	3.04	6.35	.35	.51	1.47
4.	2.37	3.01	6.29	.35	.52	1.47
5.	2.37	2.99	6.23	.32	.50	1.46
6.	2.45	3.08	6.38	.31	.49	1.49
7.	2.64	3.25	6.66	.28	.46	1.53
8.	2.84	3.28	6.78	.27	.41	1.57
9.	3.18	3.81	7.79	.26	.45	1.75
10.	3.30	3.73	7.65	.24	.39	1.72

TABLE 4B: Factor Intensity of Incremental Rural Consumption by Income Class

Income Class	Capital Requirements per additional Rs. expenditure			Labor Requirements (in man-yrs.) per additional thousand Rs. expenditure		
	Direct	Direct & Indirect	Direct, Indirect and Construction	Direct	Direct & Indirect	Direct, Indirect and Construction
1.	1.50	2.15	4.75	0.42	0.59	1.21
2.	1.52	2.15	4.70	0.40	0.56	1.18
3.	1.53	2.13	4.59	0.36	0.52	1.15
4.	1.57	2.13	4.54	0.33	0.49	1.14
5.	1.68	2.21	4.66	0.30	0.46	1.16
6.	1.94	2.43	5.08	0.26	0.42	1.23
7.	2.11	2.60	5.42	0.25	0.41	1.28
8.	2.31	2.78	5.77	0.23	0.39	1.34
9.	2.48	2.95	6.13	0.23	0.39	1.42
10.	2.78	3.26	6.75	0.21	0.38	1.53

TABLE 5A: Factor Intensity of Incremental Urban Consumption by Income Class (Alternative Estimates[1])

Income Class	Capital Requirements per additional Rs. expenditure			Labor Requirements (in man-yrs.) per additional thousand Rs. expenditure		
	Direct	Direct & Indirect	Direct, Indirect and Construction	Direct	Direct & Indirect	Direct, Indirect and Construction
1.	2.60	3.27	6.86	.39	.56	1.60
2.	2.64	3.34	6.98	.38	.56	1.62
3.	2.64	3.34	6.98	.38	.56	1.62
4.	2.64	3.35	7.00	.39	.58	1.64
5.	2.71	3.41	7.11	.37	.57	1.67
6.	2.82	3.54	7.33	.36	.56	1.71
7.	3.06	3.76	7.71	.32	.53	1.77
8.	3.27	3.77	7.80	.31	.47	1.81
9.	3.63	4.34	8.88	.30	.51	2.00
10.	3.68	4.16	8.53	.27	.43	1.92

TABLE 5B: Factor Intensity of Incremental Rural Consumption by Income Class (Alternative Estimates[1])

Income Class	Capital Requirements per additional Rs. expenditure			Labor Requirements (in man-yrs.) per additional thousand Rs. expenditure		
	Direct	Direct & Indirect	Direct, Indirect and Construction	Direct	Direct & Indirect	Direct, Indirect and Construction
1.	1.92	2.76	6.09	.54	.76	1.55
2.	1.98	2.80	6.12	.52	.73	1.54
3.	2.06	2.86	6.17	.48	.70	1.55
4.	2.18	2.96	6.31	.46	.68	1.58
5.	2.39	3.14	6.62	.43	.65	1.65
6.	2.80	3.50	7.32	.37	.61	1.77
7.	3.02	3.72	7.77	.36	.59	1.83
8.	3.29	3.96	8.22	.33	.56	1.91
9.	3.50	4.16	8.65	.32	.55	2.00
10.	3.81	4.47	9.26	.29	.52	2.10

[1]Expenditure on gifts, charity and miscellaneous expenditure not elsewhere classified has been excluded. This is equivalent to assuming that the factor intensity of these items is equal to the average for the remainder of the expenditure categories.

activity. These figures assume that all manufactured goods, with the exception of gur (unrefined sugar) and grain milling, were purchased from large scale industry.

The results for capital inputs are not fully consistent with our hypothesis that the capital intensity of consumption patterns increases with income. Rather, we generally get first a decline, then an increase as we move from the lowest to the highest income class. The extent of the decline is small when only direct inputs are considered, but gets larger as we move to more comprehensive measures of capital intensity. The pattern is generally the same for both treatments of miscellaneous items, although when these items are excluded (Table 3), the capital intensity of consumption patterns of the rich is greater than for the poor, and (Table 5) the capital expenditure ratio for incremental expenditure increases consistently with income.

The explanation for the observed behavior lies in the fact that the most capital-intensive items are foodgrains, textiles and particularly housing services. The poor allocate a high proportion of their total expenditure to food and textiles but the proportion declines as one moves to higher income groups. For example, for urban households the proportion of total expenditures spent on food, drinks and tobacco falls from 65.3% for the lowest income group to 39.3% for the highest. For rural households, the corresponding percentages are 65.1% and 41.3%. On the other hand, the richest group allocates a high proportion of its total expenditure to housing services and this proportion declines as one moves down the income scale. For example, the proportion rises from 8.7% for the lowest income group to 14.5% for the highest, for urban households and from 4.6% to 10.3% for rural households. Although the decline in the proportion of income spent on food is much larger than the increase in the proportion spent on housing services, the capital-output ratio

of housing services is so much larger than that for food that relatively small changes in the proportion spent on housing services can have significant effects in the capital intensity of total expenditure.

For a given income group, the capital embodied in a rupee of expenditure or incremental expenditure is higher for urban than for rural consumers. This is consistent with our expectations. Finally, the capital intensity of the highest income class relative to that of the lowest is greater for incremental expenditure than for average.

The results showing the labor intensity of consumption patterns are also mixed. Using direct or direct and indirect labor coefficients we find that the labor intensity of consumption is highest for the low income groups and, for the same income group, is higher for rural households than for urban households. However, when the labor content of construction activity is added in, the results are reversed.[1] Urban and high income families have the more labor-intensive consumption patterns. This reverse occurs because i) the urban and higher income persons have a much more capital-intensive consumption propensity than rural and low income persons, ii) the higher capital intensity is almost entirely accounted for by increased expenditures on housing and other buildings or construction and iii) construction activity is a very labor-intensive process.

3. Qualifications of the Results

Before discussing the implications of these results it is useful to list some of the biases and omissions (some of which were mentioned earlier) which may affect the results. First the results were generated on the assumption that all purchases

[1] The results are not reversed in the case of total expenditures (Table 2) where all twenty-nine expenditure categories are included and where it was assumed that the labor intensity of miscellaneous expenditures was zero. Clearly, this latter assumption is extreme so that a plausible conclusion is that labor intensity increases with income when construction activity is included.

of manufactured goods with the exception of grain milling and gur were made from the large scale manufacturing sector. This assumption was made necessary because data on small scale and cottage industry in West Pakistan is very scarce. Some direct capital and labor coefficients were available for the small scale cotton textile, tobacco, footwear, and furniture industries; however, the list is incomplete. Furthermore, it is impossible to estimate indirect labor and capital coefficients for the small scale sector since it is not possible to know whether these firms purchase their inputs from other small scale firms or from large scale firms. The same problem exists for the large scale sectors, although these firms probably do not, at the present time, purchase a significant amount of their intermediate inputs from the small scale sector.

The available data on direct input coefficients show, as expected, that small scale firms are less capital and more labor-intensive than large scale firms. If low income and rural persons tend to make a higher proportion of their purchases from the small scale sector than the higher income and urban persons, our procedure will tend to reduce the observed differential in relative factor intensities between the various groups. It is difficult to assess the quantitative significance of omitting the small scale sector without having the necessary data to make specific calculations. However, it is important to note that expenditures on manufactured goods (excluding grain milling) typically account for less than 20% of total expenditures for the lower income classes. The differences in factor intensities between small and large scale firms would have to be very large before they would appreciably affect the factor intensity of the overall consumption bundle.

A variation of the small vs. large scale differential may also apply to

construction activity. The input structure into the residential construction activity as given by the input-output table is heavily biased in favor of urban and high income housing which uses a great deal of cement, reinforcing steel and other inputs which are themselves produced with relatively high capital-output ratios. Thus, even though the construction activity itself has a very low capital output ratio, the ratio reflecting both direct and indirect inputs is moderately high (about 1.09). Low income and rural housing is a very different product. Bricks which are made by the small scale sector, clay and dung cakes, substitute for cement and cement blocks. Steel reinforcement is not used. As a result, the capital intensity of this type of construction is likely to be lower than that given by the input-output table. In order to obtain some idea as to the importance of this factor, the capital intensity of rural incremental expenditures was re-estimated on the assumption that the capital-output ratio for residential construction activity in the rural sector was one-half that prevailing in the urban sector. The effect of this adjustment was to reduce the aggregate capital intensity for rural households by about 12%.

A second source of bias lies in the fact that the capital stock data for all but the agricultural sector were based on book value data and a time series of investment estimates. These data underestimate the value of capital inputs because much of the equipment and machinery was imported directly by the final user with import licenses which allowed domestic investors to purchase foreign exchange at the greatly overvalued official rate. Thus investment in imported machinery is valued at the foreign price converted at the official (overvalued) exchange rate plus a very nominal tariff. Biases arise because the other component of investment, construction, is locally produced and is priced to reflect more closely the

private opportunity cost of the resources used. Since different industries have different shares of imported equipment and local construction in their capital stock, the relative magnitudes of the capital output ratios could change if the imported component of capital were re-valued to reflect the scarcity price of foreign exchange. Since small-scale industry has a lower ratio of equipment to construction and since these firms did not generally get import licenses for machinery, a revaluation of the capital stock figures would also tend to increase the differences in the capital-output ratios between large and small-scale industry. If poor people tend to buy most of the output of small-scale industry, such an adjustment would increase the differences in capital intensity of consumption patterns between the rich and the poor.

A third important point to note is that except for housing services and textiles the agricultural sector has the highest capital-output ratio of all commodity groups. This reflects the fact that irrigated agriculture predominates in Pakistan. Extensions and improvements of the canal system plus expenditures for the reclamation of waterlogged and high salinity areas account for the major part of capital expenditures. Another factor contributing to the high capital output ratio in agriculture is that per acre yields, before the advent of the Green Revolution, were among the lowest in the world.

In addition, Khan and MacEwan have pointed out that the capital coefficients for the agricultural activities are among their least reliable estimates. Yet because purchases of agricultural commodities form such a high proportion of expenditures, a proportion which decreases as one moves from the lower income to the higher income classes, our calculated factor intensities, both their absolute size as well as their variation over income classes, will be sensitive to the

value of the capital output ratios used in the calculations. The importance of the agriculture capital-output ratio in determining the overall capital intensity of consumption is shown in Table 6 which gives the proportion of the overall capital intensity (including direct and indirect inputs) which is accounted for by the capital intensity of agricultural commodities. For example, in the average expenditure pattern for urban persons, the capital embodied in agricultural commodities, consumed either directly as a final good or indirectly as an intermediate good, accounts for 33% of the overall capital intensity of the consumption pattern of the lowest income group and only 16% of that of the highest group.

TABLE 6: The Proportion of Direct and Indirect Capital Intensity of Consumption Expenditure Due to Capital Requirements in the Agricultural Sector[1]

	Average Per Capita Expenditure		Incremental Expenditure	
Income Class	Urban	Rural	Urban	Rural
1.	.33	.41	.19	.46
2.	.31	.41	.19	.43
3.	.30	.41	.19	.36
4.	.28	.40	.20	.31
5.	.27	.39	.18	.25
6.	.25	.37	.16	.19
7.	.24	.35	.12	.17
8.	.22	.32	.09	.15
9.	.20	.29	.09	.13
10.	.16	.24	.06	.11

[1]These results are based on the expenditure data including all twenty-nine expenditure groups and assumes that the last two groups, gifts, charity and miscellaneous, have capital-output ratios of zero.

However, although the level of capital expenditure ratios is sensitive in the capital-output ratio for agriculture, the differences among different income groups are of less importance. For example, a 10% change in the capital coefficients in agriculture would increase the disparity in capital intensities between the highest and lowest income groups by only 1.7%, a not very large amount. Thus biases and errors in the measurement of the capital intensity of agriculture are not important in terms of the effect of changes in the overall demand for capital which would result from changes in the distribution of income.

The real difficulty with the capital coefficients lies not so much with the extent to which they measure the average capital intensity of production in the past, but the extent to which they indicate the capital requirements needed to increase future production. With the Green Revolution, per acre yields in rice and wheat production in irrigated areas have increased. The amount of water required and hence the amount of capital in the form of irrigation facilities is also higher for these new varieties but only modestly so. The capital coefficient for rice and wheat could be as much as thirty or forty per cent lower than the figures used in our calculations. Again, it is the lowest income groups which will be most affected by such a capital saving productivity change both because they devote a higher proportion of their expenditure or incremental expenditure to foodgrains. The effect of the Green Revolution, then, is to increase the differences in the capital intensity of consumption patterns between the rich and poor.

At the same time, the Green Revolution will also reduce the labor-output ratio for wheat and rice. This will lower the labor content of consumption by the poor more than for the rich, thus reducing the disparity in labor intensities of consumption patterns.

Finally, data on the capital and labor-output ratios of the various components of the service sector are difficult to estimate. For this paper, the average capital and labor output ratios for the aggregate services sector were applied to most of the subsectors. The direction of the bias introduced by this procedure is not clear.

4. Income Distribution, Employment and Income Growth

Our results indicate that subject to some qualification, the capital intensity of the consumption patterns increases with income and is higher for urban consumers than for rural consumers. A similar pattern occurs with the labor intensity of consumption patterns when construction labor is included. The important question is whether these differences are sufficiently large to warrant special attention for the way in which increments to total income are distributed. Are some distributions better than others from the point of view of increasing the rate of growth of output and employment?

In order to get some feel for this question, we have carried out several exercises, in which we compare the effects on employment and output growth of various distributions of incremental income. To facilitate the discussion we have assumed in our simulations that per capita personal income in both rural and urban sectors is growing at the same rate, that there is no net population growth and that the distribution of persons among income classes and between the two sectors is held constant. We then consider several alternative ways in which the increment in personal income could be distributed over various income classes in the two sectors. These alternatives include: the existing income distribution, i.e. one where increments to personal income are distributed in exactly the same way that initial income

is distributed; distribution according to the distribution of population so that each person within a sector receives an equal share of the total increment in income for that sector; and finally three variants of a binomial distribution: one which distributes 95% of additional income to the bottom three income groups; one which distributes it to the top three groups; and a symmetric distribution in which the middle four income groups receive about 80% of incremental income. These three cases correspond to a binomial distribution where $n = 9$ and p is respectively set equal to .1, .9 and .5. As we see in Table 7, all of these distribution assumptions are very modest in the sense that even over a fairly long period of time, the aggregate distribution of income will not be radically changed. For example, if total per capita income were to grow at a rate of 2% per annum and we were to distribute all growth in income on an equal per capita basis, then over a ten-year period, the share of total urban income obtained by the lowest urban income group would rise from .9% to approximately 1.1% while the share of the highest income group would fall from 21.5% to roughly 19.2%. If we chose the binomial distribution where 95% of income growth is allocated to the bottom three groups we find that for the rural sector the share of the poorest group rises from 11% to 16% while the share of the richest class falls from 2.6% to 2.2%.

The changes in income distribution are modest since we are considering alternative distributions of increments to total income and not of existing income. Aside from the fact that changes in the distribution of existing income is probably not feasible for political reasons, conservative assumptions were followed here because the overall distribution of income in Pakistan is not at present very unequal in comparison with other countries, both developed and underdeveloped.[1] The

[1]See David Turnham, The Employment Problem in Less Developed Countries (Paris: Development Centre Studies, OECD, 1971), Table IV.1, p. 74. Of fifteen

TABLE 7: Effects of Alternative Distributions of Incremental Income Over a 10-Year Period
(% of Total sectoral Income accruing to each income class)

Income Class	Existing	Equal per Capita	.1	.5	.9	% of Persons
RURAL						
1	11.0	12.3	16.0	9.1	9.0	18.1
2	15.3	16.3	19.5	12.9	12.6	21.0
3	16.5	16.9	16.6	14.8	13.5	18.8
4	18.6	18.4	16.1	18.2	15.3	17.7
5	14.5	14.0	12.0	16.3	11.9	11.5
6	9.4	8.8	7.7	12.1	7.8	6.2
7	6.1	5.6	5.0	8.0	5.8	3.4
8	4.4	4.0	3.6	4.9	6.7	2.0
9	1.6	1.4	1.3	1.6	8.3	.6
10	2.6	2.3	2.1	2.2	9.1	.7
URBAN						
1	.9	1.1	7.7	.8	.7	1.9
2	13.5	15.4	18.0	11.4	11.1	24.0
3	15.6	16.9	15.9	14.1	12.8	23.1
4	12.5	13.0	11.1	13.2	10.3	15.4
5	9.3	9.4	7.8	12.1	7.6	9.6
6	8.7	8.5	7.2	11.6	7.3	7.5
7	7.3	6.9	6.0	8.9	6.8	5.2
8	5.5	5.1	4.5	5.8	7.6	3.3
9	5.2	4.7	4.3	4.6	11.2	2.6
10	21.5	19.0	17.6	17.7	24.6	7.4

relevant choices for Pakistan concern the distribution of increases in income. Since the general pattern for most developing economies is for the distribution to become more unequal over time, simply maintaining the existing distribution

countries in Latin America, Asia and Africa examined by Turnham, only two (Taiwan and Argentina) had a more equal distribution in terms of the share of income received by the top 20% of income earners.

would be a policy of promoting a greater degree of equity than would otherwise have occurred.[1]

In order to examine the implications for the growth of output and employment of each of the alternative distribution schemes we have made the following calculations. First, using the Harrod-Domar growth equation we have computed the warranted rate of growth of output assuming some value for the savings rate (10%) and, alternatively, assuming some rate of growth of output (2% per annum), we have calculated the savings rate necessary to sustain that growth rate. Second, we have computed the increase in employment generated by an assumed increase in the growth of consumption (equal to 2%). Finally, we computed the growth in employment generated by each of the different distribution assumptions for a given savings rate of 10%, taking into account the different rates of growth of output implied by each of the distribution variants for a given savings rate.[2] To be as conservative as possible we have used the factor intensity calculations which exclude gifts, charities and miscellaneous in these calculations.

For illustrative purposes we have assumed in our calculations that the savings rate of 10% is unaffected by changes in income distribution.[3] However, the aggre-

---

[1]For a discussion of why distribution might become more unequal over time, see Simon Kuznets, "Economic Growth and Income Inequality," American Economic Review, March 1955; Simon Kuznets, "Quantitative Aspects of the Economic Growth of Nations: Distribution of Income by Size," Economic Development and Cultural Change, Part II, January 1963; and H. T. Oshima, "The International Comparison of Size Distribution of Family Incomes with Special Reference to Asia," Review of Economics and Statistics, November 1962, pp. 439-45.

[2]Needless to say, all of these calculations are based on a very simple model of an economy with no government or foreign sector, no corporate saving and no autonomous investment.

[3]Cross-section budget studies generally show an increasing average propensity to save as income increases. In addition, in Pakistan, the data show a higher propensity to save by rural persons than by urban persons for the same level of income. There is a vast, and by now a very familiar, literature dealing with the issue of the extent to which cross-section data measure savings propensities

gate incremental capital-output ratio will be different for each of the distribution assumptions. For the ith distribution variant the incremental capital-output ratio v_i is given by:

$$v_i = \sum_{j=1}^{10} d_{ij} k_j m_j$$

where k_j is the marginal capital-expenditure ratio for increments to total expenditure by the jth income class;[1] m_j is the marginal propensity to consume by the jth income class; and d_{ij} is the share of incremental income allocated to the jth class under the ith distribution variant. In the employment calculations we have computed the direct and indirect employment which is generated from additional consumption as well as the employment which is generated in the construction sector as a result of the growth in the stock of buildings and other structures. It is important to compute these separately because the direct and indirect employment generated to produce additional consumption goods and services is a permanent increase in employment in the sense that it will be sustained so long as the level

---

of income classes over time. The results are still inconclusive and we can add little to that discussion here. It is worth noting, however, that in his study of Brazil and other Latin American countries, William R. Cline, in The Potential Effects of Income Redistribution on Economic Growth in Six Latin American Countries (Princeton: Princeton University Working Paper), does take the savings propensities as estimated from cross-section data and uses them to demonstrate a trade-off between growth and equity. He did not, however, adjust the marginal capital-output ratio for his different income distributions.

[1] Since we are assuming no population growth so that all growth in income is allocated to existing persons we have used, in our calculations, capital-output and labor-output coefficients based on incremental expenditure patterns. Although these incremental expenditure patterns are calculated from cross-section data and hence do not necessarily measure the over time incremental expenditure patterns of individuals in each income class, they are better than using the capital and labor coefficients based on the average per capita expenditure patterns. The use of average expenditure patterns as a basis for predicting expenditures out of a growth in income implies a unitary income elasticity of demand for all goods and services for all income classes. Use of marginal consumption patterns based on cross-section data generates differential income elasticities of demand both over goods and over income class.

The capital-expenditure ratios used include the additions to the stock of capital required to increase the stock of buildings and other structures.

of income and consumption is sustained at the higher level. On the other hand, employment generated in the production of capital goods occurs only in the year in which the addition to the capital stock takes place. If the growth in income were to level off to zero, employment in the capital goods sector would fall to the level needed only to produce sufficient capital goods to offset depreciation.[1]

The results of our calculations are shown in Tables 8, 9 and 10. Table 8 shows the effects of different distribution schemes on the marginal capital-output ratio, the rate of growth of output, and the savings rate required to sustain a growth rate of 2%. Figures based on the consumption patterns of urban and rural households are shown separately.[2] The large difference in the capital-output ratio for urban and rural households reflects primarily the fact that for comparable income levels, rural families spend a lower proportion of their incremental income on housing and that a higher proportion of the rural population are in the bottom three income classes than is the case for the urban population.[3] Within each sector, the capital-output ratios and growth rates are relatively insensitive to different income distribution assumptions. The largest difference occurs with two variants of the binomial distribution: one (P = .1) which distributes 95% of

---

[1]As we have pointed out earlier, we have included employment generated in the production of housing, plant and other types of construction but not in the production of other capital goods. We have not included employment generated in the replacement of old structures primarily because this would have required information such as the stock and age of structure which is not available. This omission is not a serious one for Pakistan since most structures are of relatively new vintage. In any case these assumptions do serve to emphasize that our calculations should be viewed primarily as illustrative examples.

[2]An aggregate capital-output ratio could be calculated as a weighted average of the two separate ratios. If personal income of both urban and rural households grew at the same rate then the relevant weights (equal to the share of income in the total) would be .280 and .720 respectively.

[3]The cross-sectional income elasticity of demand for the lowest income groups (defined to include the lowest three income classes) is 1.08 for urban persons and .77 for rural groups. See Bussink, op. cit., Table IV, p. 207.

TABLE 8: Effects on Output Growth and Savings Requirements of Different Distributions of Increments to Total Income

	Distribution Assumption				
	(1) Same as Existing Distribution	(2) Equal Per Capita	(3) Binomial Distribution with N = 9 and P = .1	(4) .5	(5) .9
Marginal Capital-Output Ratio (Net) for:					
a) urban consumption patterns	6.06	5.85	5.63	5.67	6.62
b) rural consumption patterns	4.37	4.18	4.14	4.41	5.54
Growth Rate of Output Assuming Savings Ratio of .10 Using:					
a) urban patterns	1.65%	1.71%	1.78%	1.76%	1.51%
b) rural patterns	2.29%	2.39%	2.42%	2.27%	1.81%
Net Savings Rate Required to Sustain Growth Rate of 2% Using:					
a) urban patterns	12.1%	11.7%	11.3%	11.3%	13.2%
b) rural patterns	8.7%	8.6%	8.3%	8.8%	11.1%

incremental income to the lowest three income classes, and the other (P = .9) which distributes an equivalent amount to the highest three income groups. In the case of urban households, the income growth rate of 1.7% associated with the p = .1 distribution is roughly 18% higher than that (1.51%) associated with the P = .9 distribution. In the case of rural households, the growth rate of the former is about 30% higher than for the latter distribution. Growth rates under the "equal per capita" or "existing" distributions lie between these two extremes, although they are closer to the case of P = .1 than to the case of P = .9. This is an important point to note since the distribution of marginal changes in aggregate income may currently be distributed more in line with the bonimial distribution with P = .9. At least this would be consistent with the impressions of many economists that income distribution in many developing countries is getting more and more unequal over time.

Table 9 shows the change in total employment, separated into changes in direct and indirect employment needed to produce consumer goods and services and changes in construction employment needed to build the ever increasing additions to the stock of housing and plant necessary to produce the increases in consumer goods and services. In order to compute the changes in employment engaged in construction it is necessary to know what the level of employment was in this sector in the initial year. This datum was calculated on the assumption that consumption expenditure had grown at the 2% rate in the initial period and that the distribution of that consumption (income) growth was distributed according to the existing distribution. In other words, we have assumed that incremental income had been distributed according to the existing distribution and we are comparing the effects of changing the distribution of future increments. This assumption affects the

TABLE 9: Employment Effects of Alternative Distributions of Increments to Total Income Assuming Consumption Growth at 2% Per Annum
(Employment changes are measured in thousands of man-years)

	Distribution Assumption				
	Same as Existing Distribution	Equal per Capita	Binomial Distribution with N = 9 and P = .1	.5	.9
RURAL					
Employment-Expenditure Coefficient: Construction	.71	.67	.62	.76	1.05
Direct and Indirect	.49	.51	.56	.44	.39
First Year					
Employment Change in:					
Construction[1]	4.1	-7.6	-22.1	18.6	103.1
Direct and Indirect	142.6	148.5	163.0	128.1	113.5
TOTAL	146.7	140.9	140.9	146.7	216.6
Tenth Year					
Employment Change in:					
Construction[1]	49.4	35.1	17.4	67.0	170.0
Direct and Indirect	1561.5	1626.1	1784.9	1469.7	1412.8
TOTAL	1610.9	1661.2	1802.3	1469.7	1412.8
URBAN					
Employment-Expenditure Coefficient: Construction	1.08	1.01	.96	1.00	1.27
Direct and Indirect	.47	.49	.51	.49	.42
First Year					
Employment Change in:					
Construction[1]	2.4	-5.6	-11.2	-6.7	23.9
Direct and Indirect	53.3	55.6	57.9	55.6	47.7
TOTAL	55.7	50.0	46.7	48.9	71.6
Tenth Year					
Employment Change in:					
Construction[1]	29.2	19.5	12.7	18.2	55.5
Direct and Indirect	583.6	608.8	634.0	608.8	522.3
TOTAL	612.8	628.3	646.7	627.0	577.8

[1]Changes in construction employment are based on the assumption that incremental income in the base period was distributed according to the existing income distribution.

employment totals shown but it does not change the relative employment generating effects of the various distribution assumptions. Thus, for example, the employment changes in construction shown for the first year are negative for the "equal per capita" and binomial P = .1 distributions but relatively large and positive for the binomial P = .9 distribution. This result reflects the fact that if the distribution of income is shifted from the existing distribution to a more "egalitarian" one, the high income groups will get a smaller share of incremental income than they had initially and hence the absolute increase in the demand for housing services (and houses) will be smaller than in the preceding period. Hence, employment in the construction sector will actually decrease in the transition years. On the other hand, if the distribution is changed to favor the highest income groups (P = .9) then the demand for housing services, houses and construction workers will increase sharply. If we had assumed that the distribution of income in the initial period had been in favor of the rich (P = .9) then a change to any of the alternative distributions would have caused a much larger decrease in construction employment.

An interesting aspect of the figures shown in Table 9 is the trade-off between short-term and long-term employment generating effects of different income distributions. In the short run employment growth can be maximized by diverting increments to income to the rich. They have a high marginal propensity to consume housing services, and, as we have indicated earlier, construction is a very labor intensive activity. However, employment generated in construction activities is short lived; once the house is constructed, the production of housing services requires little labor.

The direct and indirect employment generated by the consumption patterns of the rich is less than that generated by the consumption patterns of

the poor. But it is this employment which continues each year so long as consumption levels are maintained. In the long run, if income and consumption are growing at a constant rate, the quantity of direct and indirect employment generated will dominate that generated in construction. Figures for the tenth year are shown in Table 9. Here we see, for example (using rural consumption patterns), that although the distribution with P = .9 generates 50% more employment growth in the first year than the distribution with P = .1, the latter distribution generates some 28% more employment than the former in the tenth year. Choosing the distribution which favors the rich (P = .9) will generate more employment growth than that which favors the poor (P = .1) for only the first three years. Thereafter, employment growth is maximized by choosing a distribution in which the poor receive the largest share of increments to total income.

As Table 9 shows, a similar pattern exists for growth of personal income for urban households. Here, however, the differences in employment generated in the first year are even greater than in the case discussed above with agricultural households. Hence, it takes a longer time for the policy of favoring the poor to catch up in terms of employment generation with the policy of favoring the rich. In the tenth year, the former generates only 12% more employment than the latter while in the first year the latter generates about 53% more than the former.

The short run superiority of the binomial distribution with P = .9 in creating employment disappears when we take account of the fact that this distribution variant has the highest marginal capital-output ratio and hence, given the savings rate, the lowest growth rate of all the alternatives considered. Hence, when the savings rate is the effective constraint, the binomial distribution with P = .1 generates the most employment in the first as well as all succeeding years for

rural households. For urban households the binomial with P = .5 generates the most employment in the first year but this is soon overtaken by the binomial with P = .1. The distribution with P = .9 is the worst for both rural and urban households, even in the first year. The results of our calculations are shown in Table 10. We have assumed in those calculations that the savings rate is 10%. However, we have rounded off the implied growth rates to facilitate computations.

If the effective constraint on growth is the balance of payments and not domestic savings, then the figures given in Table 9 are more appropriate for comparing different distributions. The higher capital intensity of consumption patterns of the rich are primarily due to a higher consumption of housing services. Although housing, especially luxury housing, has some import content, it is probably the most domestic resource intensive of all capital goods. The higher capital-output ratio associated with the P = .9 distribution could be offset with a higher domestic savings rate. In this case there is a trade-off between distributions which will generate relatively more employment today but less in the future and those which generate relatively less today but more in the future.

If in fact the domestic savings rate is a constraint then the picture given by Table 10 is a relevant one. Here we see that distributions favoring the poor generate the most employment both today and in the future. In addition, these distributions produce a higher rate of growth in personal income. A more equitable distribution is consistent with more income growth and more employment.

TABLE 10: Employment Effects of Alternative Distributions of Increments to Total Income Given a Savings Rate of 10%
(Employment changes are measured in thousands of man-years)

	Distribution Assumption				
	Same as Existing Distribution	Equal per Capita	Binomial with N = 9 and P = .1	.5	.9
RURAL					
Growth Rate of Income	2.3	2.3	2.4	2.3	1.8
First Year					
Employment Change in:					
Construction[1]	5.3	-8.1	-15.8	22.0	42.7
Direct and Indirect	164.1	170.7	195.6	147.3	102.2
TOTAL	169.4	162.6	179.8	169.3	144.9
Tenth Year					
Employment Change in:					
Construction[1]	65.9	49.1	42.2	86.9	96.3
Direct and Indirect	1819.9	1893.1	2184.9	1633.6	1106.8
TOTAL	1885.8	1942.2	2227.1	1720.5	1203.1
URBAN					
Growth Rate of Income	1.7	1.7	1.8	1.8	1.5
First Year					
Employment Change in:					
Construction[1]	1.7	-5.0	-4.4	-.3	5.6
Direct and Indirect	45.4	47.3	52.1	50.1	35.7
TOTAL	47.1	42.3	47.7	49.8	41.3
Tenth Year					
Employment Change in:					
Construction	20.9	12.9	14.7	19.6	23.0
Direct and Indirect	491.2	511.8	564.2	542.6	383.1
TOTAL	512.1	524.7	578.9	562.2	406.1

[1]Changes in construction employment are based on the assumption that incremental income in the base period was distributed according to the existing income distribution.

PROGRAM OF DEVELOPMENT STUDIES
Discussion Papers

No. 24 "A Proposal for Research on 'Distribution of Gains, Wealth and Income from Economic and Political Development'" (1972).....James W. Land

No. 25 "Optimal Wage and Education Policies with International Migration" (1972).....R. Albert Berry and Ronald Soligo

No. 26 "Marketing and Economic Development: A Brazilian Case Study, 1930-70" (1972)..... Gordon W. Smith

No. 27 "Indigenisation of Industry and Progress of the Second Nigerian National Development Plan" (1972).....Gaston V. Rimlinger

No. 28 "The Distribution of Incomes and the Short-Run Burden of Taxes in Turkey, 1968" (1972).....Marian Krzyzaniak and Süleyman Ozmucur

No. 29 "The Proper Use of Indirect Taxation in Latin America: The Practice of Economic Marksmanship" (1972).....Charles E. McLure, Jr.

No. 30 "Distributional Equity, Inflation, and Efficiency in the Brazilian Fluctuating Exchange Rate System" (1972).....Donald L. Huddle

No. 31 "A Diagrammatic Exposition of General Equilibrium Tax and Expenditure Incidence Analysis with One Immobile Factor" (1972)Charles E. McLure, Jr.

No. 32 "Social and Economic Conditions and Political Violence" (1972)..... ..... Fred R. von der Mehden with Kim Q. Hill

No. 33 "Income Distribution, Efficiency and the Experience of Colombian Farm Mechanization" (1972)..... Wayne R. Thirsk

No. 34 "Ease of Factor Substitution in Agriculture" (1972)..... Wayne R. Thirsk

No. 35 "The Contribution of Traditional and Small Scale Culture Goods in International Trade and in Employment" (1972) Yhi-Min Ho and Donald L. Huddle

No. 36 "The Distribution of Income and Tax Incidence in Panama, 1969" (1972) .....Charles E. McLure, Jr.

No. 37 "General Equilibrium Incidence Analysis: The Harberger Model After Ten Years" (1972).....Charles E. McLure, Jr.

No. 38 "On the General Equilibrium Analysis of Tax Incidence" (1973)..... .....J. Gregory Ballentine and Ibrahim Eris

No. 39 "The Impact of Demand on Labor Absorption and the Distribution of Earnings: The Case of Brazil"(1973)Samuel A. Morley & Jeffrey G. Williamson

No. 40 "A Note on Z Goods, Marketed Surplus and the Labor Intensity of Small Farm Agriculture" (1973).....Wayne R. Thirsk

No. 41 "The Incidence of Colombian Taxes, 1970" (1973)...Charles E. McLure, Jr.

No. 42 "What to Do About Foreign Direct Investment: A Host Country Perspective" (1973)..... Samuel A. Morley

No. 43 "Income Distribution Consequences of Agricultural Price Supports in Colombia" (1973) ..... Wayne R. Thirsk

No. 44 "Factor Intensity of Consumption Patterns, Income Distribution and Employment Growth in Pakistan" (1973).....Ronald Soligo

Note: Discussion Papers are available upon request to individual scholars and researchers and libraries of educational institutions.