

## Changes in Consumption Patterns and Employment under Alternative Income Distributions in Pakistan

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The demand and employment effects of alternative distributions of the existing as well as the additional income generated through growth of the economy have been analysed in this paper. The results show that income redistribution in favour of the low-income households would increase the demand for basic necessities like wheat, pulses, edible oils, etc., while the demand for certain other commodities would decrease. The results also show that the consumption levels of the poor households can be significantly increased with income redistribution without much adverse effects on the rich. The employment effects are found to be positive and substantial.

### INTRODUCTION

Not satisfied with the working of the 'trickle down' theory, economists in recent years have started stressing the need for 'direct attack' on poverty [7, pp. 42-44] and for specific policies with growth implications for different groups in the society [3, p. xiii]. Redistribution of income is therefore emerging as an important policy objective in many developing countries, including Pakistan. There are a number of ways by which the objective of a more equitable distribution of income could be attained. One such policy could be a direct transfer of money income from the rich to the poor. In Pakistan, income redistribution of this kind is already taking place through the policy of *zakat* and *ushr*.<sup>1</sup> Whatever policy tools are used by the government, if the final outcome is an increased disposable income of the poor and a lowered disposable income of the rich, then changes in such relative

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<sup>1</sup>*Zakat* is a kind of wealth tax paid annually by the 'rich' to the 'poor' at a rate of 2.5 percent. *Ushr* is a kind of *zakat* which is levied on land produce. For details, see *Zakat and Ushr Ordinance, 1980*, [17].

income shares are bound to affect a number of economic variables. The objective of this study is to see the effects of changes in relative income shares of different income groups on the composition and level of consumption demand and also on the level of employment in Pakistan.

Expenditure patterns of the poor and rich households are usually not the same. While the former spend a major portion of their incomes on food, the latter spend relatively more on non-food items. Income transfers from the rich to the poor, therefore, tend to increase the demand for those commodities which are consumed mainly by the poor. Again, if different commodities are produced with different labour intensities, changes in demand also affect the level of employment.

Some of the studies done in this area are by Cline [4], Nigris *et al.* [14], Paukert *et al.* [20], Ho [7], Soligo [22], and Cheema [2]. Results of most of these studies show that the effects of income redistribution would be positive on employment and that the composition of demand would change in favour of food items. Only Soligo's and Cheema's studies are on Pakistan. Soligo used income distribution data for the year 1963-64 and measured capital and labour intensities of consumption expenditures of different income groups. His results show that the upper-income groups consume more capital-intensive goods and services than are consumed by the lower-income groups, whose consumption basket is more labour-intensive. He also looked at the effects on employment of alternative distributions of additional income generated in a growing economy. Cheema's work is on the lines being pursued in the present study but is based on more aggregated data for 1971-72, and on somewhat different analytical techniques. The present study is based on data for 1979. It examines the redistributive effects of the existing as well as additional income not only on the aggregate consumption demand but also on the demand for different commodities. It also examines the changes in the consumption levels of households in different income groups, as well as those in employment level in the economy after income redistribution.

### METHODOLOGY AND DATA

In order to see the consumption effects of inter-group income transfers, we divided total consumption expenditure into seven groups, viz. food and drinks, clothing and footwear, personal effects, house rent and housing, furniture and fixtures, fuel and lighting, and miscellaneous commodities. Expenditure on food and drinks was subdivided into twelve groups. We thus had a total of eighteen categories of commodities. For each of those eighteen categories, five different functional forms of consumption functions were specified: linear, semi-log, log-log, log-log

inverse and ratio semi-log inverse.<sup>2</sup> These functions are given, in order, in equations 1-5 below.

$$C_{ij} = b_{0i} + b_{1i}y_j + b_{2i}S_j + u_{ij} \quad \dots \quad (1)$$

$$C_{ij} = \gamma_{0i} + \gamma_{1i} \text{Ln } y_j + \gamma_{2i} S_j + v_{ij} \quad \dots \quad (2)$$

$$\text{Ln } C_{ij} = \delta_{0i} + \delta_{1i} \text{Ln } y_j + \delta_{2i} \text{Ln } S_j + n_{ij} \quad \dots \quad (3)$$

$$\text{Ln } C_{ij} = \lambda_{0i} + \lambda_{1i} \text{Ln } y_j + \lambda_{2i} \left(\frac{1}{y_j}\right) + \lambda_{3i} S_j + \epsilon_{ij} \quad \dots \quad (4)$$

$$C_{ij} = \beta_{0i} + \beta_{1i}y + \beta_{2i}y_j \text{Ln } y_j + \beta_{3i}S_j + e_{ij} \quad \dots \quad (5)$$

where

$C_{ij}$  = Average expenditure on commodity  $i$  by the households in the  $j$ th income group;

$y_j$  = Average income of the households in the  $j$ th income group;

$S_j$  = Average size of the household in the  $j$ th income group; and

$u, v, n, \epsilon$ , and  $e$  are the random disturbance terms.

Household size variable, in addition to income variable, has been introduced in the equations because it is an important determinant of the consumption expenditure of a household. Furthermore, it allows flexibility with respect to economies of scale. Relative prices have not been included in the equations because we are using cross-sectional data for only one year.

The following other relationships were used to compute the consumption effects. For illustrative purposes, we give here the linear consumption function only.

$$\sum_j N_j C_{ij} = \sum_j N_j (b_{0i} + b_{1i}y_j + b_{2i}S_j) \quad \dots \quad (6)$$

$$\sum_i N_j C_{ij} = \sum_i N_j (b_{0i} + b_{1i}y_j + b_{2i}S_j) \quad \dots \quad (7)$$

$$\sum_i \sum_j N_j C_{ij} = \sum_i \sum_j N_j (b_{0i} + b_{1i}y_j + b_{2i}S_j) \quad \dots \quad (8)$$

where  $N_j$  and  $S_j$  are the number and the size of households in the  $j$ th income group. Equation (6) expresses aggregate expenditure on commodity  $i$  by all groups, while

<sup>2</sup>See Leser [11], and King and Byerlee [9] for a detailed discussion of the properties of these functional forms.

equation (7) denotes aggregate expenditure on all goods by the  $j$ th group. Total expenditure on all commodities by all groups is given by equation (8).

To find consumption expenditure corresponding to a new income distribution we changed  $y_j$  to  $y_j^*$ , where  $y_j^*$  denotes the new income level. The  $y_j^*$ s were calculated corresponding to the following alternatives:<sup>3</sup>

1. Transfer of income from the richest 10 percent to the poorest 10 percent households;
2. Transfer of income from the richest 20 percent to the poorest 20 percent households;
3. Transfer of income from the richest 30 percent to the poorest 20 percent households; and
4. Income growing at a rate of 6.5 percent, with government taxing away all the additional income and then redistributing it in any of the following ways:
  - A. Equal rate of increase in income for all groups;
  - B. Additional income going relatively more towards the poor;
  - C. Additional income going relatively more towards the rich; and
  - D. All households getting equal absolute amounts of the additional income.

For the first three cases, the incomes of the households in upper-income brackets were taxed at the rates of 1 percent, 2.5 percent, 5 percent, and 10 percent, and the money thus collected was then equally distributed among the households in the lower-income brackets. For (B) and (C) in case (4), the distribution of additional income was based on weights given in Appendix Table 6. Using the estimated parameters, we computed the values of equations (6) to (8), corresponding to the initial and the new income levels. Changes in consumption expenditures were then obtained from the differences between the initial and new expenditure levels,  $C_{ij}$  and  $C_{ij}^*$ , corresponding to the initial and the new income levels,  $y_j$  and  $y_j^*$ . Constant labour/value-added ratios were used to find the number of persons required for output corresponding to the new level of consumption.

<sup>3</sup> A large number of income redistribution alternatives were possible in this kind of analysis but we intentionally confined ourselves to somewhat extreme cases where transfers take place from the rich to the poor households. In Pakistan, income transfers of this kind are already taking place through the policy of *zakat* and *ushr*. What is not known is the actual amount being transferred, and the percentages of the households involved in those transfers. We therefore decided to use not only different percentages of households but also different rates of income transfers. This was also expected to give us some idea about the sensitivity of our results. We may add here that the objective of this exercise is not to identify a policy which gives best results in terms of raising the levels of consumption and employment, but to see the implications of some policies concerning income transfers from the rich to the poor.

The implicit assumptions of this analysis are that the relative prices of different commodities do not change significantly, that people do not reduce their work efforts as a result of income transfers, and that there exists enough under-utilized capital stock, with no other supply constraints.

The data used in this study were taken from the *Household Income and Expenditure Survey, 1979* [15]. The total number of households covered in that Survey was 19,847, of which 12,210 households were from rural areas and the remaining 7,637 households were from urban areas. Income and expenditure values for the entire country, as given in the Survey report, were not used as they were unweighted averages of the urban and rural values. We recalculated those values after assigning appropriate weights to the urban and rural values, the weights being the proportions of households in the two areas.

Besides the problem of unweighted average of urban and rural values, another limitation of the Survey data was its coverage. The Survey did not cover Federally Administered Tribal Areas, Military Restricted Areas, and Tribal Areas of Peshawar, D. I. Khan and Malakand Divisions. The population of these areas, according to the 1972 Population Census, constituted about 6.7 percent of the total population of Pakistan [15, p. xxi]. These areas are relatively economically backward and their exclusion causes some under-representation of the poor in the Survey. Despite this limitation, these are the only data available for recent years and they have been used in a number of other studies.<sup>4</sup>

The basic sampling unit in the Survey was a "household" which was defined as "a single person living alone or a group of persons who normally live and eat together". Common cooking arrangement was taken as the basic feature of a household. Thus, if two or more families lived together but did not eat together, they were treated as separate households.

The concept of income used in this study is that of "disposable income", i.e. the income left after the payment of all personal taxes. The income data were converted into deciles which made it easier to analyse the effects of income transfers from the richest  $x$  percent to the poorest  $y$  percent households. The first and the last deciles were again subdivided into two parts to find the average incomes of the poorest 5 percent and the richest 5 percent households. The transformations were done with linear interpolation.

## CONSUMPTION EFFECTS

We estimated consumption functions for different commodities, using the specifications given in equations (1) to (5). Since these estimations were based on grouped data, we used the Weighted Least Squares method to solve the problem

<sup>4</sup> See, for example, Irfan and Amjad [8] and Mahmood [12].

of heteroscedasticity.<sup>5</sup> All the functional forms performed well in terms of  $\bar{R}^2$  and the statistical significance of the coefficients. However, the ratio semi-log inverse specification (equation 5) was chosen on the basis of Box-Cox test.<sup>6</sup> On theoretical side, this specification is more flexible and has certain desirable properties. It allows both MPC and the income elasticity to vary, in all directions, with the level of income.<sup>7</sup>

The estimates of parameters in equation 5 for different commodities are given in Table 1. The explanatory powers of all the equations, as shown by  $\bar{R}^2$ 's, is very high, even though in a few cases some of the coefficients are not statistically significant. One of the reasons for these very high  $\bar{R}^2$ 's is that the equations have been estimated with cross-sectional grouped data with 12 observations. The MPCs based on these results were found to decline consistently with an increase in the level of income for all commodities except personal effects, fuel and lighting, and miscellaneous items. The MPCs for these three categories are higher for the rich households and lower for the poor households. Income elasticities of demand for different commodities also vary considerably for the rich and the poor households. There are a number of commodities which, in strict economic sense, are found to be "luxuries" (income elasticity > 1) for the poor, but "necessities" (income elasticity < 1) for the rich. These commodities include milk and milk products, edible oils, cereals other than wheat and rice, 'meat, fish, and poultry', fruits and vegetables, 'gur, sugar, honey, and sugar preparations', tobacco and chewing products, and other food items.<sup>8</sup>

<sup>5</sup> See Koutsoyiannis [10, pp. 285-292].

<sup>6</sup> In this test, the Sums of Squared Residuals (SSRs) are compared and the functional form which gives the minimum value is chosen. The Sums of Squared Residuals are not directly comparable when the measurement units of the dependent variable are not the same. To remove this problem of measurement unit, some transformation of the SSR is required. For a detailed description of the test, see Box and Cox [1]. The test is also discussed in Rao and Miller [21, pp. 107-111].

<sup>7</sup> The significance of variable income elasticity has been recognized by other authors. Pasha [19], for example, argues that it is not appropriate to use a functional form which makes income elasticity constant for all income levels or constrains the change in income elasticity in one direction as income rises. He specifies a functional form which allows income elasticity to vary, in any direction, across income levels. The functional form used in our study also has this property.

<sup>8</sup> Pasha [19] chooses a particular functional form for a commodity on the basis of the criteria not explicitly stated in the paper. He uses three functional forms: (i) in which income elasticity is constant; (ii) in which elasticity varies linearly with income; and (iii) in which the relationship between the elasticity and income is quadratic. He estimates these functions by pooling cross-sectional and time-series grouped data for the years 1969-70, 1970-71, and 1971-72. Most of the commodities in his study are not directly comparable with the commodities in our classification. However, patterns of elasticities across income groups for some of the similar commodities, like rice and rice flour, milk and milk products, sugar, and furniture and fixtures, are the same in the two studies.

Table 1  
Parameter Estimates of Consumption Functions based on Ratio  
Semi-Log Inverse Functional Form

Commodity	Independent Variables				$\bar{R}^2$
	Intercept	Y	Y Ln Y	S	
Wheat and Wheat Flour	6.5481 (1.7130)	0.0613 (1.1738)	-0.0062 (-1.0946)	11.2881 (4.6386)	.9946
Rice and Rice Flour	-5.7438 (-2.4542)	0.0507 (1.5858)	-0.0049 (-1.4170)	1.7006 (1.1414)	.9879
Other Cereals	-2.9349 (-3.0761)	0.0359 (2.7544)	-0.0039 (-2.7778)	0.2060 (0.3392)	.9732
Pulses	1.5534 (1.3758)	0.0142 (0.9188)	-0.0013 (-0.7907)	1.8536 (2.5787)	.9896
Milk and Milk Products	-37.4783 (-6.3794)	0.4427 (5.5161)	-0.0451 (-5.2160)	4.9037 (1.3111)	.9975
Edible Oils	5.6365 (2.7894)	0.1960 (7.0987)	-0.0202 (-6.8118)	-3.6429 (-2.8318)	.9953
Meat, Fish, and Poultry	-3.4033 (-0.9479)	0.3700 (7.5431)	-0.0361 (-6.8285)	-10.4346 (-4.5609)	.9979
Fruits and Vegetables	5.5827 (1.6646)	0.2382 (5.1993)	-0.0233 (-4.7267)	-5.5248 (-2.5876)	.9959
Gur, Sugar, Honey and Sugar Preparations	0.4016 (0.2920)	0.2021 (10.7052)	-0.0202 (-9.9870)	-2.5366 (-2.8965)	.9990
Tea and Coffee	-2.2352 (-2.3820)	0.0113 (0.8815)	-0.0008 (-0.6101)	1.4655 (2.4530)	.9936
Tobacco and Chewing Products	-2.3415 (-1.8273)	0.1166 (6.6585)	-0.0114 (-6.0368)	-1.4659 (-1.7970)	.9981
Other Food Items	7.6629 (4.1192)	0.1467 (5.7737)	-0.0121 (-4.4402)	-5.3884 (-4.5498)	.9991
Clothing and Footwear	-0.6022 (-0.2102)	0.3114 (7.9580)	-0.0290 (-6.8894)	-1.8812 (-1.0215)	.9993
Personal Effects	-0.4438 (-0.9825)	0.0043 (0.6929)	0.0002 (0.2659)	-1.1699 (-0.5907)	.9982
House Rent and Housing	35.4229 (3.4432)	0.5511 (3.9210)	-0.0463 (-3.0611)	-26.6179 (-4.0641)	.9976
Furniture and Fixtures	6.1596 (4.7998)	0.0512 (2.9189)	-0.0042 (-2.2226)	3.5721 (4.3723)	.9989
Fuel and Lighting	0.8083 (0.3203)	-0.0817 (-2.3706)	0.0113 (3.0461)	2.2021 (1.3707)	.9956
Miscellaneous	-6.9387 (-0.3359)	-0.2910 (-1.0312)	0.0606 (1.9965)	10.7101 (0.8145)	.9981

Note: Values in parentheses are t-ratios of the coefficients under which they appear.

The results show that income transfers from the rich to the poor households would increase the demand for commodities like wheat and wheat flour, rice and rice flour, 'meat, fish and poultry', cereals, edible oils, housing, sugar and sugar preparations, tobacco and chewing products, etc., and decrease the demand for fuel and lighting, personal effects, and miscellaneous commodities. Similar results have been found in other studies. In a study of eleven Latin American countries by Nigris *et al.* [14], for example, it was found that income redistribution in favour of the poor would increase the demand for food items significantly. Similarly, the results of Iyengar's study on India, cited in [14, p. 3], also show that the redistribution of the existing income would increase the consumption of essential commodities. Percentage changes in consumption expenditures on different commodities after income redistribution are given in Appendix Tables 1-4. For the first three income policies, the results are very similar. The directions of changes in the demand for various commodities are the same. The only differences are in numerical magnitudes. These results can briefly be stated as follows.

1. For a given income-transfer policy, the expenditure on commodities in all except three categories, viz. fuel and lighting, personal effects and miscellaneous commodities, varies directly with the rate of income transfer. In Appendix Table 1, for example, expenditure on meat, fish and poultry increases by 0.58 percent with a 1-percent income transfer from the top 10 percent to the bottom 10 percent households while it increases by 4.81 percent when the rate of transfer is taken as 10 percent.
2. For a given rate of income transfer, increases in expenditures on various commodities are higher when transfers are made from the richest 30 percent to the poorest 20 percent households than when transfers are made from the richest 10 percent (or 20 percent) to the poorest 10 percent (or 20 percent) households. For example, the increase in expenditure on edible oils, with 10-percent income transfers as shown in Appendix Table 3, is 4.47 percent while the corresponding figures in Appendix Tables 1 and 2 are 3.38 percent and 4.05 percent respectively.
3. The increase in expenditure is greater in cases where income is allowed to grow. This is quite obvious. Out of the four cases discussed under this category, consumption expenditure on food and clothing, as compared to the corresponding expenditure on other items, increases most under policy 4-B where the distribution of additional income is

more in favour of the poor. These results are given in Appendix Table 4. The results also show that the demand for items other than food and clothing would increase relatively more under policy 4-A where incomes of all households are allowed to increase at the same rate.

The overall effect in the level of consumption under different policies is shown in Table 2. The pattern of results is almost the same as discussed above. For given income transfer policies, aggregate consumption expenditure increases directly with the rate of income transfer, and out of the first three policies the maximum increase in consumption takes place when income transfer is from the top 30 percent to the

Table 2  
Percentage Change in Aggregate Consumption Expenditure

Income Transfer	Rate of Income Transfer			
	1%	2.5%	5%	10%
From the Richest 10% to the Poorest 10% Households	0.14	0.35	0.66	1.21
From the Richest 20% to the Poorest 20% Households	0.17	0.41	0.79	1.45
From the Richest 30% to the Poorest 20% Households	0.20	0.47	0.89	1.59
	Policies for the Distribution of Additional Income			
	A	B	C	D
Percentage Change in Aggregate Consumption Expenditure with Income Growth	5.92	6.78	6.28	6.52

Note: For definitions of A, B, C, and D, see page 4.

bottom 20 percent households, in which case it is 1.59 percent corresponding to the 10-percent rate of income transfer. Also, in cases in which income is allowed to grow, aggregate consumption increases by 6.78 percent when the distribution of additional income is in favour of the poor, and by 5.92 percent when the distribution of additional income is the same as the existing distribution.

The effects of income redistribution on the consumption levels of households in different income groups are given in Tables 3 and 4. The results of this exercise show that a 1-percent income transfer from the top 10 percent to the bottom 10 percent households would decrease the consumption of the richest 5 percent households by only 0.81 percent, whereas the consumption of the poorest 5 percent households would increase by 11.52 percent. At the 10-percent rate of transfer, the

Table 3

*Percentage Changes in Total Consumption Expenditures of Different Income Groups after Income Transfer from the Rich to the Poor*

Income Transfer Policy	Households	Rate of Income Transfer			
		1%	2.5%	5%	10%
<b>Transfer of Income from the Richest 10% to the Poorest 10% households</b>	Poorest 5%	11.52	28.43	55.77	107.96
	6-10%	8.30	20.53	40.43	78.69
	91-95%	-0.88	-2.21	-4.44	-8.94
	Richest 5%	-0.81	-2.03	-4.07	-8.21
<b>Transfer of Income from the Richest 20% to the Poorest 20% households</b>	Poorest 5%	8.32	20.61	40.63	79.19
	6-10%	5.99	14.87	29.40	57.57
	11-20%	4.84	12.01	23.79	46.70
	81-90%	-0.91	-2.28	-4.58	-9.21
	91-95%	-0.88	-2.21	-4.44	-8.94
<b>Transfer of Income from the Richest 30% to the Poorest 20% households</b>	Richest 5%	-0.81	-2.03	-4.07	-8.21
	Poorest 5%	10.58	26.14	51.34	99.57
	6-10%	7.62	18.87	37.20	72.53
	11-20%	6.15	15.25	30.13	58.91
	71-80%	-0.92	-2.31	-4.62	-9.30
	81-90%	-0.91	-2.28	-4.58	-9.21
	91-95%	-0.88	-2.21	-4.44	-8.94
	Richest 5%	-0.81	-2.03	-4.07	-8.21

Table 4

*Percentage Changes in Total Consumption Expenditure of Households in Different Income Groups with Income Growth*

Households	Policies for the Distribution of Additional Income			
	A	B	C	D
Poorest 5 percent	6.54	38.36	9.80	24.03
6-10 percent	6.48	26.05	8.81	17.49
11-20 percent	6.40	19.79	9.23	14.13
21-30 percent	6.32	14.48	8.73	11.61
31-40 percent	6.25	11.19	8.30	9.75
41-50 percent	6.21	9.03	8.18	8.61
51-60 percent	6.17	7.40	8.18	7.79
61-70 percent	6.10	5.61	7.57	6.59
71-80 percent	5.94	3.70	6.15	4.93
81-90 percent	5.87	2.83	5.87	4.35
91-95 percent	5.69	1.51	4.53	3.02
Richest 5 percent	5.20	0.50	1.98	1.24

consumption level of the latter group increases by 107.96 percent with only an 8.2-percent decrease in the consumption of the former. Results for other policies are also very similar and show that the positive effects of income redistribution on the poor are stronger than the negative effects on the rich, thus resulting in a significant increase in the consumption levels of the former. This is so mainly because of the fact that the initial consumption level of the poor is very low. In the case of the distribution of additional income when income is also allowed to grow, figures in Table 4 show that the poor households would benefit most under policy B when the consumption of the poorest 5 percent households would increase by 38.36 percent and of the next 5 percent households by 26.05 percent. Increases in consumption levels of these groups corresponding to equal distribution of additional income (Case D) are 24.23 percent and 17.49 percent respectively.

Increasing the consumption levels of the poor may be desirable not only on social but also on economic grounds. There is no dearth of evidence that the poor in many developing countries are undernourished. An increase in the consumption levels may well improve the general health of the workers and hence raise their physical productivity [13, p. 269]. Galenson and Pyatt's study [5] provides empirical evidence in support of this argument. While studying the effects of various determinants of labour productivity they found that of all the variables included in their model, level of nutrition, as measured by the daily calories available per head,

had the greatest impact on the growth of output. We can therefore expect that increased consumption by the poor will have positive effects on labour productivity in Pakistan.

It may be noted that the above results are based on the assumption of constant relative prices. While there is no reason to believe that the relative prices will not change after income redistribution, for small amounts of income transfers changes in the composition of demand may be so small that their effect on the relative prices may be negligible. It is only in those cases where substantial amounts are involved in inter-group income transfers that there may be some significant change in the relative prices. In the above analysis it is only when 5 percent or 10 percent of the incomes of the rich are transferred to the poor that there may be a noticeable change in the relative prices. The implications of such changes for the present analysis may be that the numerical magnitudes of the increase in the demand for certain food items, and the decrease in the demand for certain non-food items, may be somewhat smaller than the ones reported in this study. Except for those small differences in the numerical values, the general results of this study would still be quite valid.

#### EMPLOYMENT EFFECTS

Since different commodities are produced with different factor intensities, changes in the composition and level of demand also affect the level of employment. The employment effects under different income policies are given in Table 5. These

Table 5

##### *Additional Employment Created under Different Income Policies*

Income Transfer	Rate of Income Transfer			
	1%	2.5%	5%	10%
From the Richest 10% to the Poorest 10% Households	23,140	55,951	106,259	193,028
From the Richest 20% to the Poorest 20% Households	27,009	63,900	125,600	231,157
From the Richest 30% to the Poorest 20% Households	31,923	77,015	145,287	259,501
	Policies for the Distribution of Additional Income			
	A	B	C	D
Additional Employment with Income Growth	792,817	943,163	859,465	89,881

results were computed on the basis of constant labour/value added ratios which are reported in Appendix Table 5. We used labour/value added ratios rather than labour/output ratios as we wanted to capture the effect of changes in demand on the direct as well as indirect labour requirements. The implicit assumption in using labour/value added ratio to capture indirect labour requirements as well is that labour is being employed in the same fixed proportion at different stages of production of a commodity.

The ratios for wheat and wheat flour, rice and rice flour, other cereals, pulses, milk and milk products, 'meat, fish, and poultry', and fruits, and vegetables are based on figures for employment and the value added in the agriculture sector for the year 1978-79, taken from the *Pakistan Economic Survey* [16]. The major portion of miscellaneous items comprises different kinds of services. Therefore, the labour/value added ratio for the service sector was used for miscellaneous items. The ratio pertaining to the service sector was also used for house rent and housing. These ratios are also for the year 1978-79 and are based on the data contained in the *Pakistan Economic Survey* [16]. For the remaining commodities, we computed the ratios by taking the relevant categories from the *Census of Manufacturing Industries 1977-78* [18].

The results in Table 5 show that the level of employment would increase considerably in all cases of income redistribution. The level of new employment varies directly with the rate of income transfer. In the case of redistribution of the existing income, maximum increase in employment would take place if income is transferred from the richest 30 percent to the poorest 20 percent households, the increase amounting to 31,923 jobs and 259,501 jobs corresponding to 1-percent and 10-percent rates of transfers, respectively. These results are similar to the results of other studies for developing countries. Paukert *et al.* [20] and Ho [7] in their studies for the Philippines and Taiwan respectively found that the redistribution of the existing income would have positive and significant effects on the level of employment.

Labour requirement increases even more when income is allowed to grow with or without any redistribution taking place. Under policy 4-A, for example, the demand for almost 793,000 new workers is created when incomes of all households grow at a rate of 6.5 percent, with absolutely no change in the relative income shares of different groups. If the distribution of the additional income is in favour of the poor (policy 4-D), under the assumptions of this model approximately 943,000 new jobs could be expected to arise. These results are in line with Soligo's findings that the 'direct and indirect' employment effects of an income distribution policy are stronger in the case where the redistribution of the additional income is in favour of the poor.

In short, in a country like Pakistan where unemployment, both open and disguised, is alarmingly high, redistribution of income in favour of the poor may be expected to have a positive and significant effect on the level of employment.

### SUMMARY AND CONCLUSIONS

In this paper, an attempt has been made to analyse the effects of changes in the relative shares of disposable income of households in different income groups on the level and composition of consumption expenditure, and also on labour utilization in Pakistan. The results of this study show that the redistribution of the existing income in favour of the poor will increase the demand for food, clothing and footwear, and housing, while the demand for personal effects, fuel and lighting, and miscellaneous goods and services would decrease. Commodities for which demand would increase most include 'meat, fish, and poultry', cereals, and edible oils. The positive effects on consumption are also stronger than the negative effects in all cases, thus resulting in an increase in aggregate consumption expenditure. The maximum increase in consumption takes place when income is transferred from the richest 30 percent to the poorest 20 percent households at a rate of 10 percent, in the case of redistribution of the existing income; and when the distribution of the additional income is in favour of the poor (policy 4-B), in case where income is allowed to grow.

An important feature of the study is the estimation of the impact of various income redistribution policies on the consumption levels of households in different income groups. In the case of a 10-percent income transfer from the top 10 percent to the bottom 10 percent households, the results of this study show that the consumption expenditure of the former group would decrease by less than 9 percent, while of the latter group it would increase by more than 90 percent. The cost of increasing the consumption level of the poorest groups in the society would therefore not be very high compared to the benefits in terms of welfare improvements and increased productivity.

The results also show that income redistribution, by increasing the demand for relatively more labour-intensive commodities, would increase the demand for labour substantially. A 5-percent income transfer from the top 10 percent to the bottom 10 percent households is expected to increase the labour demand by 106,259 jobs and if the income transfer is from the top 30 percent to the bottom 20 percent households the demand may go up by as many as 145,287 workers. In a developing country like Pakistan, where unemployment is a serious problem, income redistribution policies would have the added advantage of easing this problem by absorbing some of the surplus labour.

In this study we have looked only at the bright side of the picture. Income redistribution also has a negative aspect. An increase in total consumption expenditure with constant level of total income also implies a corresponding decrease in the level of savings. Our results show that income redistribution may not have a very significant effect on total consumption expenditure. This means that the corresponding reduction in personal savings would therefore also be very small. If there are no changes in business and government savings, we can say, on the basis of the results of this study, that the economic costs of increased consumption and employment levels in terms of reduced savings will not be very high.

The tentative nature of the results of this study would call for a rather cautious interpretation. There is a need for more work in this field and the results can be further improved if the analysis is done in a dynamic framework which takes into account the growth in income over time and also the consumption and employment effects in the second, third, and all subsequent rounds. Through the working of the multiplier, the final increase in both consumption and employment levels would be much larger than the values reported in this study. The results may also be improved if we allow the relative prices to vary with changes in the demand for different commodities after redistribution of income.



Appendix Table 1

Percentage Change in Consumption Expenditure on Different Commodities after Income Transfer from the Richest 10 percent to the Poorest 10 percent Households

Commodity	Rate of Income Transfer			
	1%	2.5%	5%	10%
Wheat and Wheat Flour	0.05	0.11	0.21	0.39
Rice and Rice Flour	0.17	0.41	0.77	1.41
Other Cereals	0.43	1.04	1.98	3.60
Pulses	0.05	0.12	0.23	0.42
Milk and Milk Products	0.28	0.68	1.29	2.34
Edible Oils	0.41	0.98	1.86	3.38
Meat, Fish, and Poultry	0.58	1.40	2.65	4.81
Fruits and Vegetables	0.38	0.92	1.74	3.16
Gur, Sugar, Honey, and Sugar Preparations	0.34	0.82	1.56	2.84
Tea and Coffee	0.05	0.11	0.21	0.38
Tobacco and Chewing Products	0.34	0.82	1.55	2.82
Other Food Items	0.25	0.59	1.13	2.05
Clothing and Footwear	0.22	0.54	1.02	1.85
Personal Effects	-0.03	-0.08	-0.15	-0.28
House Rent and Housing	0.36	0.86	1.64	2.98
Furniture and Fixtures	0.06	0.14	0.27	0.49
Fuel and Lighting	-0.59	-1.44	-2.73	-4.96
Miscellaneous	-0.21	-0.52	-0.98	-1.78

Appendix Table 2

Percentage Change in Consumption Expenditure after Income Transfer from the Richest 20 percent to the Poorest 20 percent Households

Commodity	Rate of Income Transfer			
	1%	2.5%	5%	10%
Wheat and Wheat Flour	0.05	0.13	0.25	0.46
Rice and Rice Flour	0.20	0.48	0.91	1.68
Other Cereals	0.50	1.22	2.34	4.31
Pulses	0.06	0.14	0.28	0.51
Milk and Milk Products	0.33	0.80	1.52	2.80
Edible Oils	0.47	1.15	2.21	4.05
Meat, Fish, and Poultry	0.67	1.64	3.14	5.76
Fruits and Vegetables	0.44	1.08	2.06	3.78
Gur, Sugar, Honey, and Sugar Preparations	0.40	0.97	1.85	3.40
Tea and Coffee	0.05	0.13	0.25	0.45
Tobacco and Chewing Products	0.39	0.96	1.84	3.37
Other Food Items	0.29	0.70	1.34	2.46
Clothing and Footwear	0.26	0.63	1.20	2.21
Personal Effects	-0.04	-0.10	-0.18	-0.33
House Rent and Housing	0.42	1.02	1.95	3.57
Furniture and Fixtures	0.07	0.17	0.32	0.59
Fuel and Lighting	-0.69	-1.69	-3.24	-5.94
Miscellaneous	-0.25	-0.61	-1.16	-2.13

Appendix Table 3

Percentage Change in Consumption Expenditure After Income Transfer from the Richest 30 percent to the Poorest 20 percent Households

Commodity	Rate of Income Transfer			
	1%	2.5%	5%	10%
Wheat and Wheat Flour	0.06	0.15	0.29	0.51
Rice and Rice Flour	0.23	0.55	1.04	1.86
Other Cereals	0.58	1.41	2.66	4.75
Pulses	0.07	0.17	0.31	0.56
Milk and Milk Products	0.38	0.92	1.73	3.09
Edible Oils	0.55	1.33	2.50	4.47
Meat, Fish, and Poultry	0.78	1.89	3.56	6.35
Fruits and Vegetables	0.51	1.24	2.33	4.17
Gur, Sugar, Honey, and Sugar Preparations	0.46	1.11	2.10	3.75
Tea and Coffee	0.06	0.15	0.28	0.50
Tobacco and Chewing Products	0.46	1.10	2.08	3.72
Other Food Items	0.33	0.80	1.52	2.71
Clothing and Footwear	0.30	0.72	1.36	2.44
Personal Effects	-0.05	-0.11	-0.21	-0.37
House Rent and Housing	0.48	1.17	2.21	3.94
Furniture and Fixtures	0.08	0.19	0.37	0.65
Fuel and Lighting	-0.81	-1.94	-3.67	-6.55
Miscellaneous	-0.29	-0.70	-1.31	-2.35

Appendix Table 4

Percentage Change in Consumption Expenditure with Income Growth

Commodity	Policies for the Distribution of Additional Income			
	A	B	C	D
Wheat and Wheat Flour	0.74	1.01	0.85	0.93
Rice and Rice Flour	3.40	4.39	3.82	4.09
Other Cereals	4.17	6.66	5.23	5.94
Pulses	1.29	1.59	1.41	1.50
Milk and Milk Products	4.29	5.92	4.98	5.44
Edible Oils	5.78	8.13	6.78	7.45
Meat, Fish, and Poultry	11.13	14.49	12.55	13.50
Fruits and Vegetables	7.21	9.42	8.14	8.77
Gur, Sugar, Honey, and Sugar Preparations	5.66	7.64	6.50	7.06
Tea and Coffee	2.49	2.76	2.60	2.68
Tobacco and Chewing Products	6.45	8.42	7.28	7.84
Other Food Items	9.00	10.45	9.60	10.01
Clothing and Footwear	5.27	6.56	5.81	6.18
Personal Effects	9.17	9.03	9.09	9.03
House Rent and Housing	12.35	14.47	13.23	13.82
Furniture and Fixtures	2.20	2.56	2.35	2.45
Fuel and Lighting	5.07	1.70	3.61	2.63
Miscellaneous	6.59	5.41	6.06	5.71

Appendix Table 5

Labour/Value Added Ratios for Different Commodities

Commodity	Average Daily Employment/ Value Added per Year in Thousand Rupees
Wheat and Wheat Flour	0.2075
Rice and Rice Flour	0.2075
Other Cereals	0.2075
Pulses	0.2075
Milk and Milk Products	0.2075
Edible Oils	0.0089
Meat, Fish, and Poultry	0.2075
Fruits and Vegetables	0.2075
Gur, Sugar, Honey, and Sugar Preparations	0.0154
Tea and Coffee	0.0149
Tobacco and Chewing Products	0.0040
Other Food Items	0.0246
Clothing and Footwear	0.0227
Personal Effects	0.0196
House Rent and Housing	0.0391
Furniture and Fixtures	0.0642
Fuel and Lighting	0.0693
Miscellaneous	0.0391

*Note:* The ratios for wheat and wheat flour, rice and rice flour, other cereals, pulses, milk and milk products, 'meat, fish and poultry', and fruits and vegetables are based on figures for employment and value added in the agriculture sector for the year 1978-79, taken from the *Pakistan Economic Survey* [16]. Ratios for the service sector are used for house rent and housing, and miscellaneous items. These ratios are also for the year 1978-79 and are based on the data contained in the *Pakistan Economic Survey* [16]. For remaining commodities, the ratios are computed by taking relevant categories from the *Census of Manufacturing Industries 1977-78* [18].

Appendix Table 6

Weights used for the Distribution of Additional Income

Households	Distribution in Favour of the Poor (Policy 4-B)	Distribution in Favour of the Rich (Policy 4-C)
Poorest 5 Percent	0.080	0.020
6-10 Percent	0.075	0.025
11-20 Percent	0.135	0.065
21-30 Percent	0.125	0.075
31-40 Percent	0.115	0.085
41-50 Percent	0.105	0.095
51-60 Percent	0.095	0.105
61-70 Percent	0.085	0.115
71-80 Percent	0.075	0.125
81-90 Percent	0.065	0.135
91-95 Percent	0.025	0.075
Richest 5 Percent	0.020	0.080

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