



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Manchester Discussion Papers in Development Studies

GOVERNMENT SUBSIDIES, INCOME DISTRIBUTION,
GROWTH AND EMPLOYMENT IN BANGLADESH

M.A. JABBAR AND DAVID COLMAN

8802

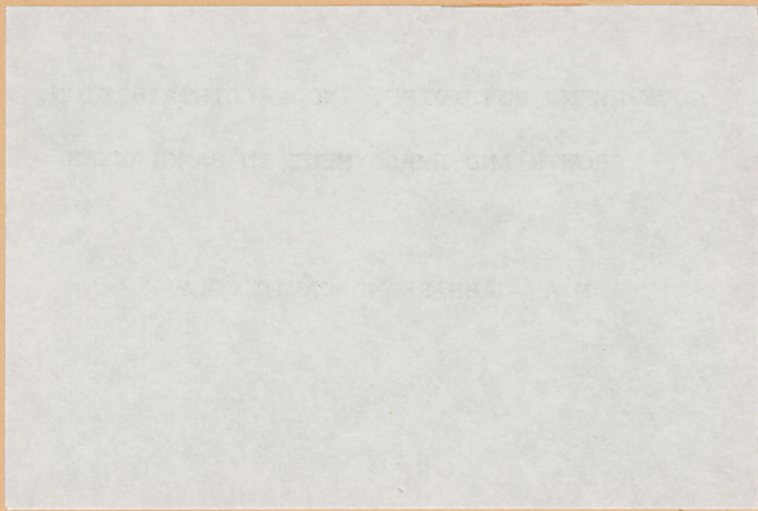


GIANNINI FOUNDATION OF
AGRICULTURAL ECONOMICS
LIBRARY

JUN 09 1989

International Development Centre

Faculty of Economic and Social Studies
University of Manchester,
Manchester U.K.



GOVERNMENT SUBSIDIES, INCOME DISTRIBUTION,
GROWTH AND EMPLOYMENT IN BANGLADESH

M.A. JABBAR AND DAVID COLMAN

8802

GOVERNMENT SUBSIDIES, INCOME DISTRIBUTION,
GROWTH AND EMPLOYMENT IN BANGLADESH

M.A. JABBAR AND DAVID COLMAN

Department of Agricultural Economics
University of Manchester

October 1988

CONTENTS

| | | | |
|-------------|---|---|----|
| CHAPTER I | : | INTRODUCTION | 1 |
| CHAPTER II | : | SPECIFICATION OF THE MODEL | 7 |
| CHAPTER III | : | SOURCES AND CHARACTERISTICS OF THE DATA | 10 |
| | | INPUT-OUTPUT TABLE | 10 |
| | | HOUSEHOLD CLASSES AND INCOME | 12 |
| | | PRIVATE CONSUMPTION AND SAVING | 17 |
| | | STIPULATED EXPENDITURE OPTIONS AND RESULTING INCOME DISTRIBUTIONS | 21 |
| CHAPTER IV | : | RESULTS AND DISCUSSION | 24 |
| | | CONSEQUENCES OF WITHDRAWAL OF SUBSIDIES | 25 |
| | | CONSEQUENCES OF REALLOCATION OF SUBSIDIES | 28 |
| CHAPTER V | : | SUMMARY AND CONCLUSIONS | 35 |
| REFERENCES | | | 38 |
| APPENDIX A | : | CONSEQUENCES OF WITHDRAWAL/REALLOCATION OF SUBSIDIES - AN ALTERNATIVE MEASURE | 40 |
| APPENDIX B | : | CHANGES IN SECTORAL OUTPUT AS A RESULT OF WITHDRAWAL/REALLOCATION OF SUBSIDIES | 46 |

GOVERNMENT SUBSIDIES, INCOME DISTRIBUTION, GROWTH
AND EMPLOYMENT IN BANGLADESH

M.A. Jabbar and David Colman*

INTRODUCTION

Bangladesh is one of the poorest countries and has difficult foreign trade and balance of payments problems. Since 1973, the balance of payments on current account has been negative each year and the trend has generally been toward an increasing deficit which rose from \$361 million in 1973 to \$1543 million in 1986. Consequently, 75-85% of the country's annual development expenditure has been financed through foreign aid. During 1980/81 - 1984/85, \$1253 million of aid has been received annually, 20% of this was food aid and the remainder project and non-project aid (GOB, 1986b).

Such a high degree of dependence on aid has made the country vulnerable to the structural adjustment programmes of the World Bank and the IMF under which medium-term programme finance is supplied with stringent exchange rate, tariff and fiscal policy conditions attached (see, Corbo et al, 1987). Although these programmes were launched on a wide scale in the early 1980s, the government of Bangladesh has been following some adjustment policies since 1975, and more vigorously after 1978, mainly under WB-IMF and bilateral donor pressures (because they also insist on

* The research described in this report was carried out while the first author was a Hallsworth Research Fellow at the University of Manchester. Thanks are due to Judy Darnton for typing the report.

adherence to WB-IMF policy). For example, Bangladesh's currency has been devalued 19 times between 1974 and 1988 (a case of 'creeping devaluation') and its value now stands at 28% of what it was in 1974; major industries and financial institutions nationalized in 1972 have been gradually denationalized; subsidies on fertilizer, irrigation and foodgrain rations have been substantially reduced. Yet the performance of the economy has been poor. At constant 1972/73 prices, the growth rate of GDP which was 6.1 per cent during 1973-78 dropped to 3.6 per cent during 1978-85; per capita GDP growth rate was over 2 per cent before 1978 but hardly grew at all after 1978. Food production has failed to keep pace with population growth. Income distribution has become more unequal¹ and poverty more widespread. Balance of payments deficits have continued to increase, so that dependence on aid has further increased.

In order to get out of the deepening crisis, additional funds have been sought from the IMF under the extended fund facility which requires from the recipient promises to continue and expand the adjustment programmes (see, Corbo, et al. 1987).

A variety of factors, including frequent natural disasters and political instability, might have contributed to the poor performance of the economy but the ineffectiveness of the adjustment policies within the specific conditions of Bangladesh

¹ Gini ratios of personal income distribution have been estimated to be 0.36 and 0.39 for 1973/74 and 1981/82 respectively (GOB, 1986a).

should also be partly blamed.² Among others, there are two main reasons for the ineffectiveness of the adjustment policies:

First, in the WB-IMF approach to structural adjustment, a deficit in the current account is regarded as an excess of domestic demand over national income. Devaluation is expected to correct this imbalance by reducing imports and boosting exports. But the demand for Bangladesh's traditional exports (jute, jute goods, tea, hides and skin) are price inelastic in the world market and her essential imports (foodgrains, industrial raw materials including energy) are also nearly price inelastic. Moreover, for a variety of reasons, there has been little real rise in domestic producer prices or agricultural output following devaluation.³ So, 'creeping devaluation' has been of little help to the economy from either demand or supply sides (see Matin, 1986).

Second, in the WB-IMF approach, subsidies are seen as a source of inefficiency in public sector enterprises, of price distortions, government budget deficits and of excess demand (overconsumption). So, denationalization and subsidy reduction are recommended for improving efficiency, 'getting prices right' and balancing budget. The issues surrounding denationalization are more pervasive than can be handled in this introduction.

² It may be reasonably argued that the donor pressures to follow adjustment policies have contributed to political instability and to poor performance of the economy.

³ Smith (1988) has described reasons for poor response of African agriculture to adjustment policies, particularly devaluation. Most of those reasons are valid for Bangladesh. Also see, Mosley (1988).

Suffice it to say that in Bangladesh, denationalization has neither improved efficiency in all cases nor could the industries concerned survive without government subsidies.

Moreover, subsidies alone should not be blamed for budget deficits, and subsidy reduction as such may not solve the problem. Secular government deficits in a fully monetized economy may indicate the existence of excess demand, but alternatively secular deficits and widespread underconsumption (a Keynesian low-level equilibrium) may coexist in a country like Bangladesh where

- (a) income is very low and highly unequally distributed
- (b) a large part of the economy is not yet monetized⁴
- (c) there is hoarding, speculative investment, flight of money abroad
- (d) substantial public expenditure is directed toward unproductive activities such as expanding the civil and military bureaucracy.

Another aspect of subsidies is that they are an element of government expenditure as well as a source of household income.⁵

⁴ In 1984/85, gross marketable surpluses for rice, wheat, pulses, potato and oilseeds were estimated respectively as 38.7, 62.9, 54.1, 38.5 and 72.5 per cent (GOB, 1986c).

⁵ A large part of the subsidy is government expenditure only in the accounting sense. Commodities received as grant aid, for example food under US PL480, is sold in the local market at lower than market price, so a subsidy is given but it is also a source of government revenue. A reduction of such subsidy increases government revenue but decreases household income. So a government disinterested in taxing the rich may find (accounting) subsidy reduction as an easy means of raising revenue.

In 1984/85, subsidies represented 13.9 per cent of recurrent government expenditure, 7.29 per cent of total government expenditure and 1.65 per cent of household income (SOW,1985).

So, in a situation of widespread poverty and underconsumption, reduction of subsidies, particularly those enjoyed by the poorest classes, may further aggravate the problem and retard economic progress from both supply and demand sides. The progress retarding effect of poverty may operate from the supply side through reduced ability and incentive to expand production, and from the demand side through reduced market demand for consumption and production goods and investment opportunities (Myrdal, 1968; Schickele, 1968). Any positive effect of subsidy reduction on growth and employment through 'price correction' may be more than offset by the negative effects of reduced income and consumption.

On the other hand, the existing pattern of expenditure on subsidies may not be conducive to the general objectives of achieving higher growth and employment. In that case reallocation of subsidies particularly those enjoyed by the higher income classes to those enjoyed by the lower income classes may result in a more favourable distribution of income which may stimulate long-run growth through increased consumption and investment.⁶

⁶ For various hypotheses about the effects of progressive income redistribution on consumption, saving, growth and employment, see among others, Furtado (1965), Cline (1972), Sinha et al. (1979), Paukert et al. (1981). For a critical review of the studies on the consequences of income redistribution, see Colman and Nixon (1985).

The objectives of the current study are twofold: First, to assess the likely effects of reduction of different kinds of subsidies on output, saving, import and employment. It is hypothesized that, other things remaining the same, reduction of any subsidy will have negative effect on the above mentioned categories because of reduction in income and consumption. It is further hypothesized that reduction of subsidies enjoyed by the poorer classes will have more serious effects.

The second objective is to assess the likely effects of reallocation of existing subsidies to selected alternatives. The net effect of any reallocation will depend on the types of gainers and losers, and upon changes in consumption and investment.

Any reduction/reallocation of subsidies will effectively change the pattern of income distribution. So the consequences of subsidy reduction/reallocation, i.e., change in the pattern of public expenditure, may be assumed to be the same as the consequences of change in income distribution. Under this assumption, a semi-closed input-output model developed by Paukert et al. (1981) for analysing the likely effects of income redistribution will be employed in this study. The model is specified in Section II. The sources and characteristics of the data are described in Section III. The results are presented in Section IV with conclusions at the end.

II. SPECIFICATION OF THE MODEL

The likely effects of any income redistribution resulting from reduction/reallocation of government subsidies can be calculated with the help of a semi-closed input-output model of the form:

$$B.Z = D$$

where

B is a partitioned square matrix of model parameters, Z is a column vector of the endogenous variables, and D is a column vector of the exogenous variables.

The structure of the B matrix is as follows:

$$B = \begin{bmatrix} I-A & O & -C & O \\ -A'_m & & -C'_m & O \\ O & I & -C'_s & O \\ -A_v & & O & O \\ O & O & R & I \\ -A'_L & O & O & I \end{bmatrix}$$

where

I = an identity matrix or vector

A = a square matrix of input coefficients for domestically produced inputs

A'_m = a row vector of input coefficients for intermediate imports

A_v = a rectangular matrix of value added coefficients; the last row of this matrix usually contains information on household income which are then linked with the column vector R (income distribution) through the unit scaler in the main diagonal.

A'_l = a row vector of employment coefficients

C = a matrix of the private consumption pattern of domestically produced goods by income/socio-economic classes

C'_m = a row vector of the private consumption pattern of imported goods by income/socio-economic classes

C'_s = a row vector private savings pattern by income/socio-economic classes

R = a column vector of current income distribution by income/socio-economic classes.

Since intermediate deliveries and private consumption have been endogenized in the model, column vector D includes other final uses including public consumption, exports, fixed capital formation and changes in stock.

The actual size of the B matrix depends on the number of industries in the input-output table, the number of value added components identified, and the number of income/socio-economic classes used in the analysis.

Now, suppose R is replaced by R^* representing a stipulated income distribution which has been exogenously determined. The stipulated distribution may be purely hypothetical or may result from specific government policy and R^* may be more or less equal than R . Such a redistribution of income is likely to affect the consumption pattern and saving and through them will affect

sectoral and overall production, import and employment. The nature and magnitude of these effects may be estimated in the following ways.

The model solution, i.e. the values of vector Z, may be obtained by simple inversion ($Z = B^{-1}D$) if (i) both production and consumption functions are linear, (ii) the derived demand for capital is automatically adjusted, (iii) there is no balance of payments limitations and (iv) the values of vector D are constant. If the consumption function is non-linear but its parameters are assumed to remain unchanged after income redistribution, then also the model solution may be obtained by simple inversion. Unchanged parameters of a non-linear consumption function implies that "each household will consume an amount equal to its previous consumption plus its pre-distribution (ex ante) marginal propensity to consume multiplied by its change in income" (Cline, 1972, p.16). However, the effects are not accurately estimated by this procedure. If the impact of changes in average household income of the income classes due to redistribution is taken into account, i.e. the ex post average saving rate is used, then the model should be solved by iteration.⁷

In the present study, the general model described above has been applied to quantify the effects of 7 stipulated income distributions resulting from withdrawal of government subsidies and 22 distributions resulting from reallocation of subsidies. The sources and characteristics of the data used in the model are described in Section III.

⁷ Cline (1972, p.16-17) has shown that with non-linear consumption functions, aggregate savings decline after progressive redistribution but the extent of decline is greater when the ex ante MPC approach is used than when ex post average saving rate is used.

III. SOURCES AND CHARACTERISTICS OF DATA

The coefficients of the partitioned square matrix B and the values of column vector D have been derived from a social accounting matrix (SAM) prepared for 1984/85 by the Centre for World Food Studies (SOW, 1985). The main advantage of using information from a SAM is that it provides an internally consistent set of data, i.e. the receipts and expenses (row and corresponding column totals of the matrix) are always equal. Moreover, the SAM has been constructed by reconciling and rationalizing data from various sources including the Bangladesh Bureau of Statistics, the Bangladesh Planning Commission, the Bangladesh Bank, the World Bank and the FAO, so as a data source this is likely to be more reliable than any single source.⁹ However, one minor deficiency of the SAM should be mentioned at the outset. The original SAM was constructed in 1982 for 1976/77 and the 1984/85 SAM was constructed by calibrating the original SAM and by making price and quantity adjustments on the basis of available data. A completely new SAM was not constructed because the results of the latest census and household expenditure survey were not available at that time. This is unlikely to affect the general pattern of the findings of this study because the calibrated SAM is internally consistent.

Input-Output Table

Thirty eight commodities or production sectors have been identified in the I-O table instead of 39 identified in the SAM.

⁹ In the process of constructing a SAM "conflicts between and within statistical sources will be revealed and it is too easy to call the raw information 'garbage'. It is the purpose of the SAM with its balance equations to sift through the pile of statistics and select, order and systematize it" (SOW, 1985, volume III, p.C2).

TABLE 1. CONTRIBUTION OF PRODUCTION SECTORS TO OUTPUT, EMPLOYMENT AND TRADE, 1984/85

| Production sectors | PERCENT Output | PERCENT GDP | EMPLOYMENT percent | SELF-SUFFICIENCY Man-yrs ^a | RATIO |
|--|----------------|-------------|--------------------|---------------------------------------|-------|
| 01 Wheat | 1.40 | 1.33 | 1.80 | 52.5 | 0.39 |
| 02 Rice | 23.19 | 26.67 | 32.87 | 57.9 | 0.59 |
| 03 Coarse grains | 0.05 | 0.06 | 0.10 | 82.9 | 0.60 |
| 04 Fats and oils | 0.66 | 0.56 | 0.51 | 31.9 | 0.38 |
| 05 Protein feeds | 0.10 | 0.14 | 0.10 | 31.9 | 0.94 |
| 06 Sugarcane | 0.73 | 0.64 | 0.82 | 46.4 | 0.65 |
| 07 Beef and sheep | 0.81 | 0.72 | 1.13 | 57.2 | 1.00 |
| 08 Poultry and eggs | 0.71 | 0.93 | 1.91 | 110.0 | 1.00 |
| 09 Dairy products | 1.15 | 1.54 | 3.97 | 141.3 | 0.76 |
| 10 Vegetables | 6.38 | 6.22 | 3.04 | 19.4 | 1.00 |
| 11 Fruits | 0.86 | 1.06 | 0.21 | 9.8 | 0.95 |
| 12 Fish | 4.85 | 3.94 | 7.01 | 59.0 | 1.04 |
| 13 Tea | 0.30 | 0.15 | 0.10 | 14.0 | 2.97 |
| 14 Cotton and wool | 0.10 | 0.01 | 0.26 | 110.3 | 0.16 |
| 15 Hides | 0.62 | 0.33 | 1.03 | 68.2 | 1.01 |
| 16 Jute | 1.17 | 1.43 | 2.94 | 102.3 | 1.47 |
| 17 Tobacco & betelleaf | 1.05 | 0.54 | 0.88 | 33.9 | 0.80 |
| 18 Forestry | 1.80 | 2.41 | 1.39 | 31.5 | 0.98 |
| 19 Cotton yarn | 0.93 | 0.31 | 0.26 | 11.3 | 0.72 |
| 20 Cloth | 4.15 | 1.61 | 4.69 | 46.1 | 0.91 |
| 21 Jute textiles | 2.36 | 1.55 | 0.88 | 15.1 | 13.94 |
| 22 Paper and pulp | 0.56 | 0.16 | 0.05 | 3.7 | 0.91 |
| 23 Leather & l.prds. | 1.45 | 0.83 | 0.15 | 4.3 | 1.36 |
| 24 Fertilizer | 0.95 | 0.86 | 0.05 | 2.2 | 0.58 |
| 25 Pharmaceutics., chems. | 2.39 | 0.92 | 0.15 | 2.6 | 0.47 |
| 26 Cement, limestone | 0.12 | 0.03 | 0.01 | 1.8 | 0.28 |
| 27 Steel, basic metals | 0.68 | 0.64 | 0.05 | 5.1 | 0.46 |
| 28 Metal prds, machines | 2.22 | 1.01 | 0.15 | 2.8 | 0.20 |
| 29 Wood, other industs. | 2.65 | 0.65 | 3.30 | 50.9 | 0.63 |
| 30 Urban housebuilding | 0.53 | 0.29 | 0.36 | 27.3 | 1.00 |
| 31 Rural housebuilding | 1.36 | 0.39 | 0.31 | 9.2 | 1.00 |
| 32 Other construction | 3.36 | 1.86 | 2.27 | 27.5 | 1.00 |
| 33 Electricity and gas | 1.34 | 0.79 | 0.21 | 6.2 | 1.00 |
| 34 Trnspt, trade, banking ^b | 21.08 | 29.30 | 16.64 | 32.2 | 1.00 |
| 35 Housing service | 2.26 | 3.17 | 0.26 | 2.8 | 1.00 |
| 36 Health service | 0.76 | 0.86 | 0.26 | 13.8 | 1.00 |
| 37 Education service | 1.46 | 2.07 | 5.46 | 153.2 | 1.00 |
| 38 Public admm., defence | 3.47 | 3.96 | 4.79 | 55.8 | 1.00 |
| ALL SECTORS | 100.00 | 100.00 | 100.00 | 40.8 ^c | 0.88 |

a. MAN-YEARS PER MILLION TAKA GROSS OUTPUT

b. IN THE SAM, TRANSPORT AND TRADE IS A SEPARATE SECTOR

c. THIS IS EQUIVALENT TO 1.22 MAN-DAYS PER 100 TAKA OUTPUT ASSUMING ONE MAN-YEAR AS EQUIVALENT TO 300 MAN-DAYS

SOURCE: SOW (1985).

The contribution of these sectors to output, trade, and employment are shown in Table 1. Sectors 1-29 produce internationally tradable goods, 17 of them are related to agricultural production. Rice, the main staple, is the dominant tradable commodity producing sector while transport, trade, banking and professional services is the dominant non-tradable commodity producing sector. Jute textiles is the dominant exporting sector and raw jute, tea, leather and leather products are other sectors playing minor roles in exporting. The overall self-sufficiency ratio (domestic output as a ratio of total domestic use - intermediate demand, private and public consumption) is 88 per cent but it is only 80% when only internationally tradable sectors are considered. Both consumption goods and intermediate inputs are imported on a significant scale.

In deriving the coefficients of row vector A_m , i.e. imported intermediate goods, a simplifying assumption was made. For example, in allocating any imported commodity, say, fertilizer, to various fertilizer using sectors, it has been assumed that a particular sector's share in total fertilizer use is the same as its share in imported fertilizer.

Household Classes and Income

Households have been divided into ten socio-economic classes on the basis of main economic activity (farm, non-farm) and location (urban, rural) and further according to land ownership/income in 1976/77. The classes are:

1. Landless agricultural workers
2. Small farmers (0.00 - 1.5 acres)

3. Medium farmers (owner-cum-tenant) (1.5 - 5.0 acres)
4. Medium farmers (owner-cultivators) (1.5 - 5.0 acres)
5. Large farmers (5 - 10 acres)
6. Largest farmers (over 10 acres)
7. Rural informal (poorest 60% in municipalities of less than 5000 inhabitants)
8. Rural formal (richest 40% in municipalities of less than 5000 inhabitants)
9. Urban informal (poorest 60% in municipalities of more than 5000 inhabitants)
10. Urban formal (richest 40% in municipalities of more than 5000 inhabitants).

Per capita income, share of population and household income enjoyed by these classes are shown in Table 2. The country is predominantly rural and the level of income is very low. The lowest earners (landless) get 67% of the national average income compared to 213% by the highest earners (urban formal); the highest earners get 3.18 times more income than the landless. However, the household classification adopted here shows less between-class differences in per capita income than it would if the households were classified according to income deciles. For example, in 1981/82, the lowest and the highest deciles earned respectively 2.76% and 29.53% of total income; the top 5% earned 18.95% of total income (GOB 1986a, p.20).

Household income includes value added from production, subsidies and government transfers, and remittances from abroad. Subsidies are given on fertilizers, wages earned abroad and

TABLE 2 : DISTRIBUTION OF POPULATION AND INCOME AMONG SOCIO-ECONOMIC CLASSES, 1984/85

| Class | Per caput income, TK ^a | % Population ^b | % Household Income |
|-----------------------------|-----------------------------------|---------------------------|--------------------|
| 1. Landless | 2245 | 20.05 | 13.38 |
| 2. Small Farmers | 2582 | 11.50 | 8.83 |
| 3. Medium Farmers (Tenants) | 2940 | 11.94 | 10.43 |
| 4. Medium Farmers (Owners) | 3367 | 12.99 | 13.00 |
| 5. Large Farmers | 4103 | 10.18 | 12.41 |
| 6. Largest Farmers | 5952 | 4.19 | 7.42 |
| 7. Rural Informal | 2413 | 10.51 | 7.54 |
| 8. Rural Formal | 5445 | 7.01 | 11.35 |
| 9. Urban Informal | 2783 | 6.99 | 5.78 |
| 10. Urban Formal | 7147 | 4.64 | 9.86 |
| All Classes | 3364 | 100.00 | 100.00 |

^a US\$1 = TK 26 ^b Total population 100.41 million

Source: SOW (1985).

foodgrains.⁹ An explanation of each item is in order. Fertilizers are sold at prices below the costs of production/import and wholesale distribution. Under the wage earner's scheme, workers' remittances from abroad can be converted into local currency at a rate which is more favourable than the official exchange rate. The main aim of the scheme is

⁹ In the SAM, subsidies given to the jute textile industry have been treated as negative indirect taxes and those given on irrigation equipment have been ignored.

to eliminate black marketing in foreign currency.

The public foodgrain distribution system consists of sales of mainly wheat and rice, and some amount of sugar and edible oil, at lower than the open market prices. There are several systems of sales and several categories of beneficiaries.¹⁰ However, these have all been amalgamated into only two main categories:

- (a) Committed ration - extended to people living in the cities of Dhaka, Narayangonj, Chittagong, Khulna, Rajshahi, and Rangamati; to priority groups, e.g. members of the armed forces, civil service, police and inmates of hospital and jail outside the above cities; to employees of large establishments outside the above cities. Recipients in this category are issued ration cards which allow them to buy periodically a specific volume of wheat, rice, edible oil and sugar at a ration price.
- (b) Flexible ration - include wages paid in kind (mainly wheat) to labourers under the Food for Works programme through which rural roads, canals, dikes, and culverts are constructed; relief and temporary rationing given to the poorest and vulnerable groups particularly during/after natural calamities, e.g. floods, cyclones; sales to flour mills for milling and distribution to bakeries; open market sales performed occasionally in order to stop market prices

¹⁰ For details see, Overbosch (1982).

TABLE 3: DISTRIBUTION OF SUBSIDIES AMONG SOCIO-ECONOMIC CLASSES, AND SHARE OF SUBSIDY IN CLASS-SPECIFIC INCOME, 1984/85

| CLASSES | TYPE OF SUBSIDY | | | | | |
|---|----------------------|-----------------------|-------------|-----------------------|---------------------|-----------|
| | FLEXIBLE FOOD RATION | COMMITTED FOOD RATION | FERTILIZERS | FOODGRAIN PROCUREMENT | WAGES EARNED ABROAD | ALL TYPES |
| PERCENT SUBSIDY SHARED BY EACH CLASS | | | | | | |
| LANDLESS | 63.52 | - | - | - | - | 20.1 |
| SMALL FARMERS | 4.15 | - | 7.68 | - | - | 2.5 |
| MED. FARMERS (TENANTS) | 2.07 | - | 20.93 | 6.82 | - | 3.9 |
| MED. FARMERS (OWNERS) | 2.33 | - | 21.97 | 4.31 | - | 4.2 |
| LARGE FARMERS | - | - | 28.48 | 40.22 | - | 4.5 |
| LARGEST FARMERS | - | - | 20.95 | 48.47 | - | 3.3 |
| RURAL INFORMAL | 26.11 | - | - | - | 10.07 | 11.4 |
| RURAL FORMAL | - | 37.80 | - | - | 58.23 | 26.4 |
| URBAN INFORMAL | 1.81 | 23.01 | - | - | 3.36 | 6.5 |
| URBAN FORMAL | - | 39.19 | - | - | 28.34 | 17.2 |
| ALL CLASSES | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.0 |
| PERCENT SHARE OF SUBSIDY IN CLASS-SPECIFIC INCOME | | | | | | |
| LANDLESS | 2.47 | - | - | - | - | 2.47 |
| SMALL FARMERS | 0.24 | - | 0.22 | - | - | 0.46 |
| MED. FARMERS (TENANTS) | 0.10 | - | 0.52 | 0.0010 | - | 0.62 |
| MED. FARMERS (OWNERS) | 0.09 | - | 0.44 | 0.0005 | - | 0.53 |
| LARGE FARMERS | - | - | 0.59 | 0.0053 | - | 0.60 |
| LARGEST FARMERS | - | - | 0.73 | 0.0108 | - | 0.74 |
| RURAL INFORMAL | 1.80 | - | - | - | 0.70 | 2.50 |
| RURAL FORMAL | - | 1.16 | - | - | 2.68 | 3.84 |
| URBAN INFORMAL | 0.16 | 1.38 | - | - | 0.30 | 1.84 |
| URBAN FORMAL | - | 1.38 | - | - | 1.50 | 2.88 |
| ALL CLASSES | 0.52 | 0.35 | 0.26 | 0.002 | 0.52 | 1.65 |

SOURCE: SOW (1985).

from rising too far.

The foodgrain distributed through the ration system are mainly supplied through international food aid and imports. A small amount is also purchased domestically under the foodgrain procurement scheme whereby wheat and rice are bought at harvest times at a support price. The procurement volumes have always been modest partly because of limited handling capacity and partly because of lack of government interest in the programme (for evidence, see Navin, 1987). Consequently, the volume of subsidy on this account has been small.

Distribution of different subsidies among socio-economic classes and the relative importance of subsidy in household income are shown in Table 3. It appears that all the socio-economic classes enjoy subsidy in one or more forms but overall, the largest shares are enjoyed by the rural formal, landless, and urban formal classes. So the share of household income of each class will be affected differently if any of these subsidies is withdrawn or reallocated to a different head.

Private Consumption and Saving

In order to estimate the volumes of private consumption and saving by socio-economic classes, it was first assumed that consumption followed an expenditure system in which the volume of consumption of commodity i by class j was a function of total consumption expenditure and prices, and gross savings equalled income minus consumption expenditure. Then the consumer demand system was specified as follows (for further details, see,

Kennes, 1984):

$$W_i = A_i + F D_i \log (P_i / P) + B_i \log (Y / P) \quad (1)$$

$$w_i = \alpha_i + C_i \log T + \delta_i \log (P_i / P_i) + B_i \log (Z_i / P_i) \quad (2)$$

where $Z_i = W_i \cdot Y$

$$\log P = \sum D_i \log P_i$$

$$\log P_i = \sum \delta_i \log P_i$$

i = commodity

I = commodity group (foodgrains, livestock, other food
and non-agriculture)

P_i = Price of commodity i

P_I = Price of commodity group I

P = Aggregate Price

Y = Per caput expenditure on consumption

W_i = Budget share commodity i

W_I = Budget share commodity group I

T = Time

$$\begin{array}{llll} \text{Restrictions: } & \sum A_i = 1 & \sum D_i = 1 & \sum B_i = 0 & D_i > 0 \\ & \sum \alpha_i = 1 & \sum C_i = 0 & \sum \delta_i = 1 & \sum B_i = 0 \\ & & & & \delta_i > 0 \end{array}$$

The parameters of equations (1) and (2) were separately estimated by combining time-series data for 1966-80 with the Household Expenditure Survey data for 1976/77, and using Full-information Maximum Likelihood estimates. Then the estimates for

TABLE 4 : PATTERN OF CONSUMPTION AND SAVING BY SOCIO-ECONOMIC CLASSES, 1984/85

| CLASSES | % INCOME BY CLASS | | | |
|---------------------------|-------------------------|-------------------------|------------------|--------------|
| | SPENT ON DOMESTIC GOODS | SPENT ON IMPORTED GOODS | SAVED (GROSS) | (DIRECT TAX) |
| Landless | 86.30 | 9.39 | 4.31 | - |
| Small Farmers | 89.36 | 4.30 | 6.34 | - |
| Medium Farmers (Tenant's) | 89.14 | 2.62 | 8.24 | - |
| Medium Farmers (Owners) | 88.00 | 1.78 | 10.22 | - |
| Large Farmers | 84.28 | 2.29 | 13.43 | (0.49) |
| Largest Farmers | 76.84 | 4.36 | 18.80 | (0.45) |
| Rural Informal | 84.91 | 9.73 | 5.36 | - |
| Rural Formal | 67.88 | 13.94 | 18.18 | (1.41) |
| Urban Informal | 66.31 | 26.24 | 7.45 | - |
| Urban Formal | 46.75 | 26.51 | 26.74 | (8.55) |
| All Classes | 78.90 | 9.18 | 11.92 | (1.10) |

Source: SOW(1985).

foodgrains were slightly modified, in order to comply with the observed situation in the base year (1976/77), by applying a class-specific shifter to parameters A_1 and α_1 . These modified estimates were then used to estimate the volume of class-specific consumption of different commodities.

In deriving the coefficients of row vector C_m , i.e. imported consumption, some simplifying assumptions were made. For example, in allocating imported foodgrains among socio-economic classes, it has been assumed that the import content followed the same pattern as the distribution of the foodgrain ration; it has been assumed that imported sugar has been consumed by the urban formal and informal, and the rural formal classes in proportion to their total consumption of sugar.

Class-specific consumption and saving ratios are shown in Table 4. It appears that both the lowest and the highest income classes have higher import contents in their consumption than other classes. The main reason for this is their dependence on imported food distributed through the ration system. The lowest income classes also consume a higher proportion of imported second-hand clothing.

The overall gross saving rate was 11.92% of which 1.10% was paid as direct tax, 7.01% was invested by the income classes and the remaining 3.81% was lent to the government. It may be mentioned here that 6.4 times as much government revenue was derived from indirect as from direct taxes.

Stipulated Expenditure Options and Resulting Income Distributions

In this study, 7 expenditure options involving withdrawal of different subsidies and 22 expenditure options involving reallocation of different subsidies have been considered (Table 5). In the case of reallocation of any subsidy from one item to another, it has been assumed that the benefits of reallocation will be enjoyed by the relevant classes in the same ratio as they are enjoying the existing subsidy on the relevant item. For example, stipulated expenditure option 51 implies that five farming classes enjoying fertilizer subsidy will lose while four classes enjoying procurement subsidy will gain additional benefits in the same proportion as they enjoyed the procurement subsidy before reallocation.

Each expenditure option will result in an income distribution which is different from the existing one. But these stipulated income redistributions can not be arranged in any order (say, progressive redistribution) because they do not necessarily involve income transfer from the richest to the poorest classes. Reading Tables 3 and 5 together will reveal that some expenditure options result in income transfer from urban to rural, or rural to rural, or rich to poor, or more rich to less rich classes.

The stipulated expenditure/income distribution options are expected to significantly affect consumption and saving, and through their feedback effects, output, import and employment, for the following reasons; (a) a vast majority of the people are poor and malnourished. The 1981/82 Household Expenditure Survey showed that 73 per cent of the population consumed below the average requirement of 2200 kcals, 45 per cent consumed below

TABLE 5 : STIPULATED EXPENDITURE OPTIONS AND RESULTING INCOME DISTRIBUTIONS

| DISTRIBUTION CODE | EXPENDITURE OPTION |
|-------------------|---|
| 10 | Wage Earners Scheme Subsidy (WESS) Withdrawn |
| 20 | Committed Ration Subsidy (CRS) Withdrawn |
| 30 | Flexible Ration Subsidy (FRS) Withdrawn |
| 40 | CRS and FRS Withdrawn |
| 50 | Fertilizer Subsidy (FS) Withdrawn |
| 70 | CRS and FS Withdrawn |
| 80 | WESS and FS Withdrawn |
| 11 | WESS reallocated to fertilizer |
| 12 | WESS reallocated to foodgrain procurement |
| 13 | WESS reallocated to flexible ration of foodgrain |
| 21 | CRS reallocated to fertilizer |
| 22 | CRS reallocated to foodgrain procurement |
| 23 | CRS reallocated to flexible ration of foodgrain |
| 31 | FRS reallocated to fertilizer |
| 32 | FRS reallocated to foodgrain procurement |
| 33 | FRS reallocated to committed ration |
| 41 | Foodgrain ration (all) reallocated to fertilizer |
| 42 | Foodgrain ration (all) reallocated to foodgrain procurement |
| 51 | Fertilizer subsidy reallocated to foodgrain procurement |
| 52 | Fertilizer subsidy reallocated to foodgrain ration |
| 53 | Fertilizer subsidy reallocated to flexible ration |
| 61 | WESS and CRS reallocated to fertilizer |
| 62 | WESS and CRS reallocated to foodgrain procurement |
| 63 | WESS and CRS reallocated to flexible ration |
| 71 | CRS and FS reallocated to foodgrain procurement |
| 72 | CRS and FS reallocated to flexible ration |
| 81 | WESS and FS reallocated to procurement of foodgrain |
| 82 | WESS and FS reallocated to foodgrain ration |
| 83 | WESS and FS reallocated to flexible ration |

TABLE 6 : INCOME AND PRICE ELASTICITIES OF DEMAND FOR SELECTED
COMMODITIES

| COMMODITY | INCOME ELASTICITY | OWN-PRICE ELASTICITY | OWN-PRICE ELASTICITY (COMPENSATED) |
|-----------------------------------|----------------------|-------------------------|--|
| Wheat | 0.351 | -0.928 | -0.906 |
| Rice | 0.350 | -0.328 | -0.124 |
| Coarse Grains | 0.674 | -0.998 | -0.997 |
| Vegetable Oils | 0.913 | -0.447 | -0.441 |
| Sugar | 1.502 | -0.321 | -0.310 |
| Bovine & Ovine Meat | 2.705 | -0.475 | -0.448 |
| Poultry | 2.051 | -0.444 | -0.423 |
| Dairy | 2.326 | -0.619 | -0.571 |
| Vegetables | 0.883 | -0.420 | -0.391 |
| Fruits | 2.219 | -0.768 | -0.764 |
| Fish | 1.195 | -0.489 | -0.415 |
| Tea | 2.560 | -0.936 | -0.936 |
| 'Non-agricultural' Commodities | 1.565 | -0.216 | -0.529 |

Source: SOW(1985).

1800 kcals and 30 per cent consumed less than 1600 kcals (GOB, 1986a). (b) Price and income elasticities of demand for both food and non-food commodities are quite high (Table 6). So even a small change in the distribution of income is bound to generate significant changes.

IV. RESULTS AND DISCUSSION

The model outlined earlier has been solved for vector Z by simple inversion. Since the coefficients of the matrix of private consumption were based on figures derived from a non-linear function, the simple inversion procedure may not give fully accurate results, but the extent of bias in the estimates may be insignificant because all the income redistribution options involved only marginal changes (from 0.26 per cent to 1.65 per cent of income) and some options involved income transfer from the more rich to the less rich rather than to the poorest classes.¹¹

The solution vector contains values for all items corresponding to the rows in matrix B. However, in this report the discussion is focussed on five indicators of the macro-economy, viz, GDP, personal savings, indirect tax, import and employment. Three sets of results are presented for the selected

¹¹ Paukert et al. (1981) used both simple and iterative procedures for estimating impacts of progressive redistribution in four countries. They found that the simple version gave higher values but they were not significantly higher even when stipulated income distribution was much more equal than original distribution.

expenditure/income distribution options.¹² First, compared to the original levels, percentage change in the five selected indicators are presented. Second, changes in the absolute values of the indicators are presented. These percentages and absolute values are related to different bases, i.e. they have resulted from reduction/reallocation of different amounts of income (subsidies). So the outcomes of different options cannot be accurately compared. In order to make them directly comparable, all the outcomes have been expressed on a 100 taka basis, i.e.,

$$C_{ij} = \frac{E_{ij}}{S_j} \times 100$$

where i = indicator (GDP, savings etc.)

j = expenditure/income distribution options

C = change per 100 Taka

E = change from the original level

S = amount of income (subsidy) withdrawn/reallocated.

In reality, C may be interpreted as incremental growth/saving/tax/import/employment rate.

Consequences of Withdrawal of Subsidies

The consequences of complete withdrawal of one or more subsidies have been assessed (Table 7). As expected, all the stipulated withdrawal options have significant negative effects on all the five indicators. This is so because withdrawal of any subsidy means a given amount of money is taken out of the income-

¹² For an alternative form of the results, see Appendix A.

TABLE 7: EFFECTS OF WITHDRAWAL OF DIFFERENT SUBSIDIES ON SELECTED MACRO-ECONOMIC INDICATORS

| Expenditure options | Selected Indicators | | | | |
|---|---------------------|------------------|--------------|---------|------------|
| | GDP | Personal savings | Indirect tax | Import | Employment |
| Percentage change compared to base levels | | | | | |
| 10 | -1.12 | -2.12 | -0.80 | -1.34 | -1.05 |
| 20 | -0.90 | -1.65 | -0.65 | -1.13 | -0.84 |
| 30 | -1.98 | -2.31 | -1.48 | -1.89 | -1.94 |
| 40 | -2.84 | -3.89 | -2.09 | -2.97 | -2.80 |
| 50 | -0.89 | -1.12 | -0.67 | -0.77 | -0.84 |
| 70 | -1.78 | -2.74 | -1.31 | -1.88 | -1.72 |
| 80 | -1.99 | -3.20 | -1.46 | -2.09 | -1.93 |
| a | | | | | |
| Changes in absolute values | | | | | |
| 10 | -3032.6 | -563.2 | -71.9 | -765.6 | -53.0 |
| 20 | -2457.8 | -438.4 | -58.0 | -645.8 | -42.2 |
| 30 | -5380.9 | -613.8 | -131.9 | -1079.6 | -97.6 |
| 40 | -7724.8 | -1034.8 | -187.1 | -1700.0 | -140.9 |
| 50 | -2423.4 | -297.4 | -59.9 | -438.9 | -42.2 |
| 70 | -4836.6 | -728.4 | -116.8 | -1076.1 | -86.9 |
| 80 | -5406.9 | -851.0 | -130.7 | -1193.7 | -97.5 |
| b | | | | | |
| Changes in values per 100 Taka | | | | | |
| 10 | -172.13 | -31.97 | -4.08 | -43.45 | -3.01 |
| 20 | -209.04 | -37.29 | -4.93 | -54.93 | -3.59 |
| 30 | -305.98 | -34.90 | -7.50 | -61.39 | -5.55 |
| 40 | -263.25 | -35.27 | -6.38 | -57.93 | -4.80 |
| 50 | -278.65 | -34.20 | -6.89 | -50.47 | -4.85 |
| 70 | -236.46 | -35.61 | -5.71 | -52.61 | -4.25 |
| 80 | -205.47 | -32.34 | -4.97 | -45.36 | -3.71 |

a. Employment in million man-days, all other indicators in million Takas.

b. Employment in man-days, all others in Takas.

expenditure flow, so a new equilibrium is established at a lower level. In percentage terms, all the expenditure options show marginally smaller effect on employment than on GDP and the negative effects on savings and import are in general higher than those on GDP and employment. Employment elasticity of output (% change in employment/% change in GDP) varies from 0.93 to 0.98. In real terms, each 100 Taka withdrawal results in 3.0 - 5.5 man days less work. This seems reasonable because in 1984/85, average agricultural wage was TK 24.21 and average wage of unskilled construction workers was TK 26.36. These were 10-15 percent lower than the minimum wage (3.27 Kg rice or equivalent) prescribed by the government (GOB, 1986c).

When the outcomes of all the expenditure options have been converted to a common base (change per 100 Taka), it appears that withdrawal of flexible ration subsidy (option 30) enjoyed by the poorest classes has the most serious effect on output and employment while withdrawal of wage earners' scheme subsidy (option 10) enjoyed by the rural and urban rich classes has the least effect. Withdrawal of fertilizer subsidy (option 50) enjoyed by medium and rich farmers has more serious effects on output and employment than withdrawal of committed ration subsidy (option 20) enjoyed by all the urban and rural formal classes. However, the effect on saving and import is marginally lower for withdrawal of fertilizer subsidy as compared to withdrawal of committed ration subsidy.

The effects of withdrawal of subsidies on sectoral output are shown in Appendix B1. It appears that output of food and

other necessities are generally affected and that they are more seriously affected when subsidies enjoyed by the poor are withdrawn.

The outcome of various subsidy withdrawal options in absolute value terms are quite substantial because each option assumes that the concerned subsidy is completely withdrawn. In reality, government reduces any subsidy step by step. However, the results of this exercise indicate that withdrawal of any subsidy will hold down growth and employment through reduced income, consumption and investment, and that withdrawal of any subsidy enjoyed by the poorer classes will have more serious effects.

Consequences of Reallocation of Subsidies

Subsidies are given in different forms and each income class enjoy subsidies in one or more forms. The ultimate objective of any government expenditure option is to maximize output, income and employment. In order to test whether the existing pattern of subsidies is conducive to such objective, the potential benefits of reallocation of different subsidies have been assessed. If no additional benefits can be derived from reallocation, then the existing pattern may be said to be effective or efficient. The indicator of additional benefits are increases in GDP, savings and employment, and decrease in imports. Increased indirect taxes bring government revenue but such increase may be undesirable in so far as the burden of indirect taxes are borne more by the poorer classes than by the rich. So a neutral effect on indirect

taxes, i.e. either no change or increase in proportion to any decrease in personal savings, may be a more desirable phenomena.

The results of reallocation options are presented in Tables 8 - 10. Two or three alternatives have been considered for reallocation of each existing subsidy. Three general features of the results emerge:

(a) Reallocation of flexible ration subsidy (options 31-33) and fertilizer subsidy (options 51-53) generally produce negative results though in some cases (options 31, 32, 51) effects on net savings, import and employment are marginally positive. All the reallocation options under these two categories create progressively more unequal distribution of income because income is transferred from poorer to richer classes. Thus it appears that income redistribution in favour of the rich may increase savings (a generally held contention in the literature on the relationship between income distribution and saving) but such saving may not automatically increase output and/or employment.

(b) Reallocation of wage earners' scheme subsidy (options 11-13), committed ration subsidy (options 21-23) and all ration subsidy (options 41-42) bring substantial additional benefits in terms of increased output and employment, some options also reduce import and increase net savings (private savings + indirect taxes). All these reallocation options create slightly more equal distribution of income

TABLE 8 : PERCENTAGE CHANGES IN SELECTED MACROECONOMIC INDICATORS AS A RESULT OF REALLOCATION OF DIFFERENT SUBSIDIES

| EXPENDITURE OPTIONS | GDP | PERSONAL SAVINGS | INDIRECT TAX | IMPORT | EMPLOYMENT |
|---------------------|-------|------------------|--------------|--------|------------|
| 11 | 0.43 | -0.18 | 0.36 | -0.02 | 0.52 |
| 12 | 0.36 | 0.13 | 0.31 | -0.07 | 0.44 |
| 13 | 0.44 | -0.37 | 0.35 | 0.15 | 0.52 |
| 21 | 0.37 | -0.06 | 0.31 | -0.04 | 0.45 |
| 22 | 2.81 | 4.46 | 2.08 | 2.59 | 2.90 |
| 23 | 0.37 | -0.20 | 0.30 | 0.08 | 0.45 |
| 31 | 0.00 | 0.18 | 0.01 | -0.17 | 0.07 |
| 32 | -0.08 | 0.50 | -0.04 | -0.22 | -0.01 |
| 33 | -1.05 | -0.62 | -0.81 | -0.67 | -1.01 |
| 41 | 0.37 | 0.12 | 0.32 | -0.21 | 0.45 |
| 42 | 0.24 | 0.66 | 0.23 | -0.30 | 0.32 |
| 51 | -0.04 | 0.16 | -0.02 | -0.02 | 0.03 |
| 52 | -0.10 | -0.05 | -0.09 | 0.07 | -0.04 |
| 53 | 0.00 | -0.09 | -0.01 | 0.08 | 0.06 |
| 61 | 0.82 | -0.26 | 0.68 | -0.06 | 0.92 |
| 62 | 0.69 | 0.27 | 0.59 | -0.15 | 0.78 |
| 63 | 0.82 | -0.56 | 0.67 | 0.22 | 0.92 |
| 71 | 0.28 | 0.30 | 0.25 | -0.10 | 0.36 |
| 72 | 0.38 | -0.30 | 0.30 | 0.16 | 0.46 |
| 81 | 0.34 | 0.28 | 0.30 | -0.10 | 0.41 |
| 82 | 0.14 | -0.29 | 0.10 | 0.17 | 0.20 |
| 83 | 0.46 | -0.46 | 0.37 | 0.24 | 0.54 |

TABLE 9 : CHANGES IN THE VALUES OF SELECTED MACROECONOMIC INDICATORS AS A RESULT OF REALLOCATION OF DIFFERENT SUBSIDIES

| EXPENDITURE OPTIONS | GDP | PERSONAL SAVINGS | INDIRECT TAX | IMPORT | EMPLOYMENT |
|---------------------|--------------------------|------------------|--------------|--------|---------------|
| | ----- MILLION TAKA ----- | | | | MILL MAN-DAYS |
| 11 | 1181.2 | -46.7 | 32.4 | -10.9 | 26.0 |
| 12 | 982.4 | 35.5 | 27.9 | -40.0 | 22.2 |
| 13 | 1189.1 | -98.2 | 31.6 | 86.0 | 26.1 |
| 21 | 1010.2 | -14.7 | 27.8 | -22.2 | 22.8 |
| 22 | 7640.6 | 1185.6 | 185.7 | 1481.9 | 146.2 |
| 23 | 1008.3 | -53.7 | 27.1 | 43.2 | 22.7 |
| 31 | -1.4 | 48.5 | 1.0 | -94.4 | 3.3 |
| 32 | -203.9 | 132.3 | -3.6 | -124.4 | -0.6 |
| 33 | -2863.8 | -166.1 | -72.6 | -380.9 | -51.1 |
| 41 | 992.4 | 32.0 | 28.4 | -120.3 | 22.6 |
| 42 | 649.5 | 176.6 | 20.7 | -170.4 | 16.0 |
| 51 | -97.9 | 43.6 | -2.2 | -14.2 | 1.4 |
| 52 | -265.6 | -13.6 | -7.7 | 37.8 | -1.9 |
| 53 | 2.8 | -25.2 | -0.5 | 48.2 | 3.2 |
| 61 | 2226.9 | -68.4 | 61.1 | -32.6 | 46.3 |
| 62 | 1871.2 | 72.3 | 53.1 | -84.2 | 39.5 |
| 63 | 2241.4 | -148.2 | 59.9 | 125.4 | 46.4 |
| 71 | 760.8 | 80.5 | 22.2 | -58.4 | 18.0 |
| 72 | 1027.1 | -79.2 | 27.1 | 91.3 | 23.0 |
| 81 | 915.4 | 74.8 | 26.6 | -55.5 | 20.9 |
| 82 | 369.0 | -78.4 | 9.0 | 99.1 | 10.2 |
| 83 | 1257.7 | -123.5 | 32.9 | 134.5 | 27.4 |

TABLE 10 : CHANGES IN SELECTED MACROECONOMIC INDICATORS PER 100 TAKA REALLOCATION OF DIFFERENT SUBSIDIES

| EXPENDITURE OPTIONS | GDP | PERSONAL SAVINGS | INDIRECT TAX | IMPORT | EMPLOYMENT MAN-DAYS> |
|---------------------|---------|------------------|--------------|--------|-------------------------|
| 11 | 67.04 | -2.65 | 1.84 | -0.62 | 1.48 |
| 12 | 55.76 | 2.01 | 1.58 | -2.27 | 1.26 |
| 13 | 67.49 | -5.57 | 1.79 | 4.88 | 1.48 |
| 21 | 85.92 | -1.25 | 2.36 | -1.89 | 1.94 |
| 22 | 649.84 | 100.84 | 15.79 | 126.04 | 12.43 |
| 23 | 85.76 | -4.57 | 2.30 | 3.67 | 1.93 |
| 31 | -0.07 | 2.76 | 0.06 | 5.37 | 0.19 |
| 32 | -11.59 | 7.52 | -0.20 | -7.05 | -0.03 |
| 33 | -162.85 | -9.45 | -4.13 | -21.66 | -2.91 |
| 41 | 33.82 | 1.09 | 0.97 | -4.10 | 0.77 |
| 42 | 22.13 | 6.02 | 0.71 | -5.81 | 0.55 |
| 51 | -11.26 | 5.01 | -0.25 | -1.63 | 0.16 |
| 52 | -30.54 | -1.56 | -0.89 | 4.35 | -0.22 |
| 53 | 0.32 | -2.90 | -0.06 | 5.54 | 0.37 |
| 61 | 75.81 | -2.33 | 2.08 | -1.11 | 1.58 |
| 62 | 63.70 | 2.46 | 1.81 | -2.87 | 1.34 |
| 63 | 76.30 | -5.05 | 2.04 | 4.27 | 1.58 |
| 71 | 37.19 | 3.93 | 1.09 | -2.86 | 0.88 |
| 72 | 50.21 | -3.87 | 1.32 | 4.46 | 1.12 |
| 81 | 34.79 | 2.84 | 1.01 | -2.11 | 0.79 |
| 82 | 14.02 | -2.98 | 0.34 | 3.77 | 0.39 |
| 83 | 47.79 | -4.69 | 1.25 | 5.11 | 1.04 |

than the existing one. Reallocation of all these three subsidies to foodgrain procurement (options 12, 22, 42) produce more favourable results when the effect on all the five indicators are considered together. Reallocation of these subsidies to fertilizer or flexible ration produce similar effects on output and employment but the effect on net saving is slightly unfavourable in the case of reallocation to flexible ration. Thus, it appears that reallocation of income in favour of the less rich and poor classes produce significant additional benefits and that reallocation to production activities (fertilizer and foodgrain procurement) is likely to produce more overall benefits than reallocation to consumption subsidy enjoyed by the poorest classes.

(This conclusion is further evidenced by the effects of reallocation on sectoral output (Appendix Table B2). It appears that production of food, clothing and other necessities decline significantly when subsidies enjoyed by the poorer classes are reallocated to the richer classes (options 31-33, for example) and the opposite happens when subsidies enjoyed by the richer classes are reallocated to poorer classes, particularly to production activities.

- (c) Reallocation from richest to the less rich and poorer classes (options 13, 21, 23, 61, 63, 72, 83) reduce personal savings but increase GDP and employment. This reflects a phenomenon which was implicit in a hypothesis

postulated by Furtado (1965) who argued that in economies suffering from stagnation and lack of consumer demand, income redistribution would stimulate long-run growth because consumption would increase and buoy up investment. Cline (1972) rejected Furtado's hypothesis of 'underconsumption' in the Latin American context mainly on the grounds that (a) acceptance of the hypothesis would mean that "the negative savings effect of income redistribution becomes a stimulus rather than a hindrance to growth", and (b) Latin American countries were characterized by government deficits, rapid expansion of the money supply and inflation, and these characteristics would make a 'lack of demand' highly improbable, (c) hoarding and leakage through speculative investment was unrealistic in the face of rapid inflation.

In Section I, we explained why secular government deficits and widespread underconsumption might coexist in the Bangladesh context. Moreover, the apparent contradiction between positive growth and negative saving may be explained by two other characteristics: (i) the expenditure options which give increased GDP and decreased personal savings also give increased imports and indirect taxes, so the net negative effect on saving is smaller than that indicated by personal savings alone; (ii) in this model, no restrictions were imposed on imports, balance of payments and capital, rather derived demand for capital was assumed to be automatically adjusted. If these restrictions were imposed, the results might be different, but the general trend

would remain unchanged. The results described above indicate that the prevailing 'underconsumption' in the country may be transformed into a stimulant for growth and employment through redistribution of income in general, and subsidies in particular.

V. SUMMARY AND CONCLUSIONS

The government of Bangladesh has been following a number of structural adjustment policies initiated by the World Bank and the IMF for a long period with poor results. An important policy has been to reduce production and consumption subsidies in order to 'get prices right', reduce budget deficit and remove 'excess demand'. The contention of this paper is that subsidies alone should not be blamed for the government deficit, a deficit as such does not indicate the existence of excess demand rather a budget deficit and underconsumption can coexist in the specific conditions of Bangladesh. Moreover, subsidies are a government expenditure as well as a source of household income. Thus in a situation of widespread poverty and underconsumption, any positive effect of subsidy reduction through 'price correction' may be more than offset by negative effects on income and consumption.

These contentions were tested by measuring the likely consequences of withdrawal of different types of subsidies (7 options) and the consequences of reallocation of the existing subsidies to different alternatives (22 options). Withdrawal or reallocation of subsidies effectively changes the patterns of income distribution, so a semi-closed input-output model capable

of measuring the consequences of income redistribution has been used. Data has been derived from a social accounting matrix prepared for 1984/85.

The results indicate that the withdrawal of any of the existing subsidies adversely affect consumption, saving, growth and employment and that the adverse effects are more serious when subsidies enjoyed by the poorest classes are withdrawn. The results also indicate substantial scope for deriving additional gains by reallocating the existing subsidies on wages earned abroad and committed ration (enjoyed by the richer classes) to fertilizer, foodgrain procurement or flexible ration (enjoyed by less rich and poorest classes). Reallocation of fertilizer or flexible ration has no benefits. The gains appear to be higher when reallocation is done in favour of production rather than consumption activities. Income distribution in favour of the poorest classes generate smaller increases in output, partly because of the higher food import content in their consumption and partly because of the net negative effect on saving.

The outcome of each expenditure/income distribution option depends on two sets of factors: the types of gainers and losers, and changes in private consumption and inter-industry purchases. Further, the outcomes are subject to the assumption that exports, public consumption and stocks remain unchanged at the base levels. If any of these is allowed to vary or if imports are restricted and domestic production is encouraged to match changed demand after income redistribution, then the magnitude of the results may be somewhat different.

Redistribution of income means making someone poorer in order to make someone else richer. Such reallocative measures may be practically difficult to implement, whether done through redistribution of an income generating asset, such as land, or through direct transfer of income, such as reallocation of subsidies. However, such difficulties have to be overcome if the problems of poverty and unemployment are to be solved. At the very least, measures may be taken to increase production and consumption subsidies that benefit the poor or "channel additional investments into products that benefit the poor, making them more efficient as producers and better customers as consumers. This requires that additional income is being channelled to low-income groups at a relatively higher rate than to high income groups" (Schickele, 1968, p.48).

The solution to the problem of budget deficit should be sought elsewhere in taxes and other revenue raising measures and not only in reducing government subsidies.

REFERENCES

- Cline, William R. (1972). Potential effects of income redistribution on economic growth in Latin American cases. Praeger Publishers, New York.
- Colman, David, and Nixson, Frederick (1985). Economics of change in less developed countries. (Second Edition). Phillip Allan Publishers, Oxford.
- Corbo, V., Goldstein, M., and Khan, M. (ed.) (1987). Growth-oriented adjustment programs. The IMF and the World Bank, Washington D.C.
- Furtado, Celso (1965). "Development and Stagnation in Latin America: a structuralist approach", Studies in Comparative International Development I, 159-75.
- GOB (1986a). Report of the Bangladesh Household Expenditure Survey 1981/82. Bangladesh Bureau of Statistics, Dhaka.
- GOB (1986b). Bangladesh Economic Survey 1985/86. Ministry of Finance, Dhaka.
- GOB (1986c). Socio-economic Indicators of Bangladesh (second edition). Bangladesh Bureau of Statistics, Dhaka.
- Kennes, Walter (1984). Food Demand Systems for Bangladesh. Staff working paper SOW-84-15. Centre for World Food Studies, Amsterdam.
- Matin, K.M. (1986). Bangladesh and the IMF: an exploratory study. Research Monograph No.5. Bangladesh Institute of Development Studies, Dhaka.
- Mosley, Paul (1988). "The effects of macro-economic policies on African agriculture". Paper presented at the Annual Conference of the Agricultural Economics Society, Manchester University, Manchester.
- Myrdal, Gunnar (1968). Asian Drama. Penguin Books, London.
- Navin, R. (1987). Foodgrain Situation Summary. USAID Memorandum, Dhaka (unpublished).
- Overbosch, Geert (1982). Government policy on the market of foodgrains in Bangladesh. Staff working paper SOW-82-6. Centre for World Food Studies, Amsterdam.
- Paukert, Felix, Skolka, Jiri, and Maton, Jef (1981). Income distribution, structure of the economy and employment. Croom Helm, London.

Schickele, Rainer (1968). Agrarian revolution and economic progress. Praeger Publishers, New York.

Sinha, R., Pearson, P., Kadekodi, G., and Gregory, M. (1979). Income distribution, growth and basic needs in India. Croom Helm, London.

Smith, Lawrence D. (1988). "Structural adjustment, price reform and agricultural performance in sub-Saharan Africa". Paper presented at the Annual Conference of the Agricultural Economics Society, Manchester University, Manchester.

SOW (1985). The macro-model for the third-five-year plan (of Bangladesh). Vol.I-III. Centre for World Food Studies, Amsterdam.

APPENDIX A

CONSEQUENCES OF WITHDRAWAL/REALLOCATION OF SUBSIDIES:

AN ALTERNATIVE MEASURE

In order to assess the consequences of progressive redistribution of income on employment, Paukert et.al. (1981) used the concept 'employment-income redistribution elasticity' defined as percent change in employment divided by percent of income redistributed. The term was more appropriately called 'elasticity of employment with respect to income redistribution'.

In this study, subsidies were treated as an element of household income as well as of government expenditure. Again subsidies could be considered as an element of recurrent government expenditure or of total government expenditure. So, the consequences of any expenditure/income redistribution option on any macroeconomic indicator may be measured by the concept of elasticity in three different ways:

$$e_{ij} = \frac{\% \text{ change in indicator } i}{\% \text{ of } j \text{ withdrawn/reallocated}}$$

where

- e = elasticity
- i = indicators (GDP, saving, indirect tax, import, employment)
- j = income or recurrent expenditure or total government expenditure

The three sets of elasticities for expenditure/income redistribution options involving withdrawal of subsidies are shown in Table A1. The elasticities for options involving

reallocation of subsidies are shown in Tables A2, A3 and A4. By definition, the elasticities are self-explanatory.

For each expenditure/income redistribution option three elasticities vary because the amount of subsidy is the same but subsidy as a proportion of income, recurrent expenditure or total expenditure are different. Therefore, caution should be taken in interpreting any elasticity on its own. However, a particular measure of elasticity may be used for comparing the outcomes of different expenditure/income distribution options and the conclusions are expected to be the same for all three measures of elasticity. The conclusions are also expected to be similar to those drawn in Section IV.

TABLE A1. ELASTICITIES OF SELECTED MACROECONOMIC INDICATORS IN RESPONSE TO WITHDRAWAL OF DIFFERENT SUBSIDIES

| EXPENDITURE OPTIONS | GDP | PERSONAL SAVINGS | INDIRECT TAX | IMPORT | EMPLOYMENT |
|--|--------|---------------------|-----------------|--------|------------|
| ELASTICITIES WITH RESPECT TO INCOME REDISTRIBUTION | | | | | |
| 10 | -2.146 | -4.075 | -1.548 | -2.573 | -2.022 |
| 20 | -2.584 | -4.712 | -1.855 | -3.225 | -2.392 |
| 30 | -3.808 | -4.441 | -2.839 | -3.629 | -3.724 |
| 40 | -3.268 | -4.475 | -2.407 | -3.415 | -3.213 |
| 50 | -3.430 | -4.303 | -2.578 | -2.951 | -3.220 |
| 70 | -2.918 | -4.492 | -2.143 | -3.083 | -2.827 |
| 80 | -2.551 | -4.105 | -1.875 | -2.675 | -2.480 |
| ELASTICITIES WITH RESPECT TO RECURRENT EXPENDITURE | | | | | |
| 10 | -0.254 | -0.482 | -0.183 | -0.304 | -0.239 |
| 20 | -0.308 | -0.561 | -0.221 | -0.384 | -0.285 |
| 30 | -0.450 | -0.525 | -0.336 | -0.429 | -0.440 |
| 40 | -0.387 | -0.530 | -0.285 | -0.405 | -0.381 |
| 50 | -0.411 | -0.516 | -0.309 | -0.354 | -0.386 |
| 70 | -0.348 | -0.536 | -0.256 | -0.368 | -0.337 |
| 80 | -0.303 | -0.487 | -0.223 | -0.318 | -0.294 |
| ELASTICITIES WITH RESPECT TO TOTAL EXPENDITURE | | | | | |
| 10 | -0.483 | -0.917 | -0.348 | -0.579 | -0.455 |
| 20 | -0.587 | -1.071 | -0.422 | -0.733 | -0.544 |
| 30 | -0.857 | -0.100 | -0.639 | -0.817 | -0.838 |
| 40 | -0.738 | -1.011 | -0.544 | -0.772 | -0.726 |
| 50 | -0.782 | -0.981 | -0.588 | -0.673 | -0.734 |
| 70 | -0.664 | -1.023 | -0.488 | -0.702 | -0.643 |
| 80 | -0.577 | -0.928 | -0.424 | -0.605 | -0.561 |

TABLE A2. ELASTICITIES OF SELECTED MACROECONOMIC INDICATORS WITH RESPECT TO INCOME DISTRIBUTION AFTER REALLOCATION OF GOVERNMENT SUBSIDIES

| Expenditure options | GDP | Personal savings | Indirect tax | Import | Employment |
|---------------------|--------|------------------|--------------|--------|------------|
| 11 | 0.836 | -0.338 | 0.697 | -0.037 | 0.992 |
| 12 | 0.695 | 0.257 | 0.600 | -0.135 | 0.847 |
| 13 | 0.842 | -0.711 | 0.680 | 0.289 | 0.996 |
| 21 | 1.062 | -0.158 | 0.889 | -0.111 | 1.292 |
| 22 | 8.034 | 12.744 | 5.938 | 7.400 | 8.288 |
| 23 | 1.060 | -0.577 | 0.867 | 0.216 | 1.287 |
| 31 | -0.001 | 0.351 | 0.022 | -0.317 | 0.126 |
| 32 | -0.144 | 0.956 | -0.077 | -0.417 | -0.023 |
| 33 | -2.027 | -1.202 | -1.563 | -0.280 | -1.950 |
| 41 | 0.420 | 0.138 | 0.365 | -0.242 | 0.515 |
| 42 | 0.275 | 0.764 | 0.266 | -0.342 | 0.365 |
| 51 | -0.139 | 0.631 | -0.095 | -0.096 | 0.107 |
| 52 | -0.376 | -0.197 | -0.331 | 0.254 | -0.145 |
| 53 | 0.004 | -0.365 | -0.022 | 0.324 | 0.244 |
| 61 | 0.942 | -0.296 | 0.786 | -0.066 | 1.056 |
| 62 | 0.792 | 0.313 | 0.683 | -0.169 | 0.901 |
| 63 | 0.948 | -0.641 | 0.770 | 0.252 | 1.058 |
| 71 | 0.459 | 0.496 | 0.407 | -0.167 | 0.585 |
| 72 | 0.620 | -0.489 | 0.497 | 0.262 | 0.748 |
| 81 | 0.440 | 0.360 | 0.380 | -0.130 | 0.486 |
| 82 | 0.174 | -0.378 | 0.129 | 0.222 | 0.259 |
| 83 | 0.593 | -0.596 | 0.472 | 0.301 | 0.697 |

TABLE A3. ELASTICITIES OF SELECTED MACROECONOMIC INDICATORS WITH CHANGES IN RECURRENT EXPENDITURE AFTER WITHDRAWAL OF SUBSIDIES RESPECT TO RECURRENT GOVERNMENT EXPENDITURE AFTER REALLOCATION OF DIFFERENT SUBSIDIES

| Expenditure options | GDP | Personal savings | Indirect tax | Import | Employment |
|---------------------|--------|------------------|--------------|--------|------------|
| 11 | 0.099 | -0.040 | 0.082 | -0.004 | 0.117 |
| 12 | 0.082 | 0.030 | 0.071 | -0.016 | 0.100 |
| 13 | 0.099 | -0.084 | 0.080 | 0.034 | 0.118 |
| 21 | 0.126 | -0.019 | 0.106 | -0.013 | 0.154 |
| 22 | 0.956 | 1.517 | 0.707 | 0.881 | 0.987 |
| 23 | 0.126 | -0.069 | 0.103 | 0.026 | 0.153 |
| 31 | 0.000 | 0.041 | 0.003 | -0.038 | 0.015 |
| 32 | -0.017 | 0.113 | -0.009 | -0.049 | -0.003 |
| 33 | -0.240 | -0.142 | -0.185 | -0.151 | -0.230 |
| 41 | 0.050 | 0.016 | 0.043 | -0.029 | 0.061 |
| 42 | 0.033 | 0.091 | 0.032 | -0.041 | 0.043 |
| 51 | -0.017 | 0.076 | -0.011 | -0.011 | 0.013 |
| 52 | -0.045 | -0.024 | -0.040 | 0.030 | -0.017 |
| 53 | 0.000 | -0.044 | -0.003 | 0.039 | 0.029 |
| 61 | 0.112 | -0.035 | 0.093 | -0.008 | 0.125 |
| 62 | 0.094 | 0.037 | 0.081 | -0.020 | 0.107 |
| 63 | 0.112 | -0.076 | 0.091 | 0.030 | 0.125 |
| 71 | 0.055 | 0.059 | 0.049 | -0.020 | 0.070 |
| 72 | 0.074 | -0.058 | 0.059 | 0.031 | 0.089 |
| 81 | 0.051 | 0.043 | 0.045 | -0.015 | 0.063 |
| 82 | 0.021 | -0.045 | 0.015 | 0.026 | 0.031 |
| 83 | 0.070 | -0.071 | 0.056 | 0.036 | 0.083 |

TABLE A4. ELASTICITIES OF SELECTED MACROECONOMIC INDICATORS WITH RESPECT TO TOTAL GOVERNMENT EXPENDITURE AFTER REALLOCATION OF DIFFERENT SUBSIDIES

| Expenditure options | GDP | Personal savings | Indirect tax | Import | Employment |
|---------------------|--------|------------------|--------------|--------|------------|
| 11 | 0.188 | -0.076 | 0.157 | -0.008 | 0.223 |
| 12 | 0.157 | 0.058 | 0.135 | -0.030 | 0.191 |
| 13 | 0.189 | -0.160 | 0.153 | 0.065 | 0.224 |
| 21 | 0.241 | -0.036 | 0.202 | -0.025 | 0.294 |
| 22 | 1.826 | 2.896 | 1.350 | 1.682 | 1.884 |
| 23 | 0.241 | -0.131 | 0.197 | 0.049 | 0.292 |
| 31 | 0.000 | 0.079 | 0.005 | -0.071 | 0.028 |
| 32 | -0.032 | 0.215 | -0.017 | -0.094 | -0.005 |
| 33 | -0.456 | -0.271 | -0.352 | -0.288 | -0.439 |
| 41 | 0.095 | 0.031 | 0.083 | -0.055 | 0.116 |
| 42 | 0.062 | 0.173 | 0.060 | -0.077 | 0.082 |
| 51 | -0.032 | 0.144 | -0.022 | -0.022 | 0.024 |
| 52 | -0.086 | -0.045 | -0.076 | 0.058 | -0.033 |
| 53 | 0.001 | -0.005 | 0.074 | 0.056 | |
| 61 | 0.213 | -0.067 | 0.178 | -0.015 | 0.239 |
| 62 | 0.179 | 0.071 | 0.154 | -0.038 | 0.204 |
| 63 | 0.214 | -0.145 | 0.174 | 0.057 | 0.239 |
| 71 | 0.104 | 0.113 | 0.093 | -0.038 | 0.133 |
| 72 | 0.141 | -0.111 | 0.113 | 0.059 | 0.170 |
| 81 | 0.098 | 0.082 | 0.086 | -0.028 | 0.120 |
| 82 | 0.039 | -0.086 | 0.029 | 0.050 | 0.059 |
| 83 | 0.134 | -0.135 | 0.107 | 0.068 | 0.158 |

APPENDIX B

Table B1. Percentage changes in sectoral outputs as a result of withdrawal of different government subsidies

| Production sectors | Expenditure options | | | | | | |
|---------------------------|---------------------|------|------|------|------|------|------|
| | 01 | 02 | 03 | 04 | 05 | 07 | 08 |
| 01 Wheat | -1.1 | -0.9 | -2.2 | -3.1 | -1.2 | -2.1 | -2.3 |
| 02 Rice | -1.4 | -1.1 | -2.7 | -3.8 | -1.2 | -2.3 | -2.5 |
| 03 Coarse grains | -1.6 | -1.3 | -2.3 | -3.6 | -1.2 | -2.5 | -2.8 |
| 04 Fats and oils | -1.1 | -1.0 | -2.7 | -3.6 | -1.2 | -2.2 | -2.4 |
| 05 Protein feeds | -1.8 | -1.4 | -2.3 | -3.7 | -1.2 | -2.6 | -2.9 |
| 06 Sugarcane | -1.1 | -1.0 | -2.6 | -3.5 | -1.3 | -2.2 | -2.4 |
| 07 Beef and sheep | -1.8 | -1.4 | -2.3 | -3.7 | -1.2 | -2.6 | -2.9 |
| 08 Poultry and eggs | -1.7 | -1.4 | -2.4 | -3.7 | -1.2 | -2.5 | -2.9 |
| 09 Dairy products | -1.6 | -1.2 | -2.4 | -3.5 | -1.2 | -2.4 | -2.8 |
| 10 Vegetables | -1.5 | -1.2 | -2.6 | -3.8 | -1.2 | -2.4 | -2.7 |
| 11 Fruits | -1.7 | -1.4 | -2.4 | -3.7 | -1.2 | -2.5 | -2.9 |
| 12 Fish | -1.5 | -1.2 | -2.5 | -3.6 | -1.1 | -2.3 | -2.6 |
| 13 Tea | -0.5 | -0.4 | -0.8 | -1.1 | -0.4 | -0.7 | -0.8 |
| 14 Cotton and wool | -1.3 | -1.1 | -2.6 | -3.6 | -1.1 | -2.2 | -2.4 |
| 15 Hides | -1.1 | -0.8 | -2.0 | -2.7 | -0.8 | -1.6 | -1.8 |
| 16 Jute | -0.1 | -0.1 | -0.1 | -0.2 | -0.1 | -0.1 | -0.1 |
| 17 Tobacco & betelleaf | -1.3 | -1.0 | -2.7 | -3.7 | -1.2 | -2.2 | -2.5 |
| 18 Forestry | -1.3 | -1.1 | -1.8 | -2.8 | -0.8 | -1.8 | -2.1 |
| 19 Cotton yarn | -1.3 | -1.1 | -2.6 | -3.6 | -1.1 | -2.2 | -2.4 |
| 20 Cloth | -1.3 | -1.1 | -2.6 | -3.7 | -1.1 | -2.2 | -2.4 |
| 21 Jute textiles | -0.1 | -0.1 | -0.2 | -0.2 | -0.1 | -0.1 | -0.2 |
| 22 Paper and pulp | -0.8 | -0.7 | -1.2 | -1.8 | -0.6 | -1.2 | -1.4 |
| 23 Leather & l.prdts. | -1.1 | -0.8 | -2.0 | -2.8 | -0.8 | -1.6 | -1.8 |
| 24 Fertilizer | -1.2 | -1.0 | -2.4 | -3.4 | -1.1 | -2.1 | -2.3 |
| 25 Pharmaceutics., chems. | -1.3 | -1.0 | -2.2 | -3.2 | -1.1 | -2.1 | -2.3 |
| 26 Cement, limestone | -0.3 | -0.2 | -0.4 | -0.6 | -0.2 | -0.4 | -0.5 |
| 27 Steel, basic metals | -0.2 | -0.1 | -0.2 | -0.4 | -0.1 | -0.2 | -0.3 |
| 28 Metal prdts, machines | -0.2 | -0.2 | -0.4 | -0.5 | -0.2 | -0.4 | -0.4 |
| 29 Wood, other industs. | -1.0 | -0.8 | -1.4 | -2.1 | -0.6 | -1.4 | -1.6 |
| 30 Urban housebuilding | -1.4 | -1.1 | -2.2 | -3.3 | -1.0 | -2.1 | -2.4 |
| 31 Rural housebuilding | -1.4 | -1.1 | -2.3 | -3.4 | -1.0 | -2.1 | -2.4 |
| 32 Other construction | -0.0 | -0.0 | -0.1 | -0.1 | -0.0 | -0.1 | -0.1 |
| 33 Electricity and gas | -0.3 | -0.3 | -0.5 | -0.8 | -0.2 | -0.5 | -0.6 |
| 34 Trnspt, trade, banking | -1.2 | -1.0 | -2.0 | -2.9 | -0.9 | -1.8 | -2.1 |
| 35 Housing service | -1.4 | -1.2 | -2.3 | -3.4 | -1.0 | -2.1 | -2.4 |
| 36 Health service | -1.2 | -1.0 | -1.2 | -2.2 | -0.7 | -1.6 | -1.9 |
| 37 Education service | -0.4 | -0.3 | -0.6 | -0.9 | -0.3 | -0.6 | -0.7 |
| 38 Public admm., defence | -0.1 | -0.0 | -0.1 | -0.1 | -0.0 | -0.1 | -0.1 |

Table B2. Percentage changes in sectoral outputs as a result of reallocation of different government subsidies

| Production sectors | Expenditure options | | | | | | | | | | |
|--------------------|---------------------|------|------|------|-----|------|------|------|------|-----|------|
| | 11 | 12 | 13 | 21 | 22 | 23 | 31 | 32 | 33 | 41 | 42 |
| 01 | 1.0 | 0.8 | 0.5 | 0.8 | 3.2 | 0.4 | 0.5 | 0.3 | -1.2 | 1.2 | 1.0 |
| 02 | 0.7 | 0.5 | 0.8 | 0.6 | 3.6 | 0.6 | -0.1 | -0.3 | -1.6 | 0.4 | 0.2 |
| 03 | 0.5 | 0.5 | 0.2 | 0.5 | 4.1 | 0.2 | 0.4 | 0.3 | -1.1 | 0.8 | 0.8 |
| 04 | 1.0 | 0.8 | 1.0 | 0.8 | 3.3 | 0.8 | 0.1 | -0.1 | -1.6 | 0.9 | 0.5 |
| 05 | 0.3 | 0.3 | 0.0 | 0.3 | 4.2 | 0.1 | 0.3 | 0.3 | -1.0 | 0.6 | 0.7 |
| 06 | 1.1 | 1.1 | 0.9 | 0.9 | 3.5 | 0.7 | 0.2 | 0.2 | -1.5 | 1.1 | 1.0 |
| 07 | 0.3 | 0.3 | 0.0 | 0.3 | 4.2 | 0.1 | 0.3 | 0.3 | -0.9 | 0.6 | 0.7 |
| 08 | 0.3 | 0.4 | 0.2 | 0.3 | 4.0 | 0.2 | 0.2 | 0.2 | -1.1 | 0.5 | 0.5 |
| 09 | 0.6 | 0.7 | 0.3 | 0.6 | 4.4 | 0.4 | 0.3 | 0.4 | -1.3 | 1.0 | 1.1 |
| 10 | 0.5 | 0.4 | 0.5 | 0.4 | 3.7 | 0.4 | -0.1 | -0.2 | -1.3 | 0.3 | 0.2 |
| 11 | 0.4 | 0.4 | 0.1 | 0.4 | 4.2 | 0.2 | 0.3 | 0.3 | -1.0 | 0.6 | 0.7 |
| 12 | 0.4 | 0.4 | 0.4 | 0.4 | 3.6 | 0.4 | 0.0 | -0.1 | -1.2 | 0.4 | 0.3 |
| 13 | 0.1 | 0.1 | 0.1 | 0.1 | 1.1 | 0.1 | 0.0 | 0.0 | -0.4 | 0.1 | 0.1 |
| 14 | 0.6 | 0.4 | 0.7 | 0.5 | 3.2 | 0.6 | -0.2 | -0.4 | -1.4 | 0.3 | -0.1 |
| 15 | 0.3 | 0.2 | 0.5 | 0.3 | 2.6 | 0.4 | -0.2 | -0.3 | -1.1 | 0.0 | -0.1 |
| 16 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 |
| 17 | 0.8 | 0.7 | 0.8 | 0.7 | 3.6 | 0.7 | -0.0 | -0.1 | -1.7 | 0.7 | 0.5 |
| 18 | 0.0 | -0.0 | 0.1 | 0.1 | 3.0 | 0.1 | -0.1 | -0.1 | -0.8 | 0.0 | -0.0 |
| 19 | 0.6 | 0.4 | 0.7 | 0.5 | 3.2 | 0.6 | -0.2 | -0.4 | -1.4 | 0.3 | -0.0 |
| 20 | 0.6 | 0.4 | 0.7 | 0.5 | 3.3 | 0.6 | -0.2 | -0.4 | -1.4 | 0.3 | -0.1 |
| 21 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | -0.0 | -0.1 | 0.0 | 0.0 |
| 22 | 0.2 | 0.2 | 0.1 | 0.2 | 2.0 | 0.1 | 0.1 | 0.1 | -0.5 | 0.3 | 0.3 |
| 23 | 0.3 | 0.2 | 0.5 | 0.3 | 2.7 | 0.4 | -0.2 | -0.3 | -1.2 | 0.0 | -0.1 |
| 24 | 0.6 | 0.5 | 0.7 | 0.5 | 3.2 | 0.5 | -0.0 | -0.1 | -1.4 | 0.5 | 0.3 |
| 25 | 0.6 | 0.5 | 0.4 | 0.5 | 3.4 | 0.4 | 0.2 | 0.1 | -1.2 | 0.7 | 0.6 |
| 26 | 0.1 | 0.1 | 0.1 | 0.1 | 0.7 | 0.1 | 0.0 | 0.0 | -0.2 | 0.1 | 0.1 |
| 27 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.0 | -0.1 | 0.0 | 0.0 |
| 28 | 0.1 | 0.1 | 0.0 | 0.1 | 0.6 | 0.0 | 0.0 | 0.0 | -0.2 | 0.1 | 0.1 |
| 29 | 0.1 | 0.2 | 0.1 | 0.1 | 2.2 | 0.1 | 0.1 | 0.1 | -0.6 | 0.2 | 0.2 |
| 30 | 0.3 | 0.3 | 0.4 | 0.3 | 3.2 | 0.3 | -0.0 | -0.1 | -1.1 | 0.2 | 0.1 |
| 31 | 0.3 | 0.3 | 0.4 | 0.3 | 3.2 | 0.3 | -0.0 | -0.2 | -1.1 | 0.2 | 0.1 |
| 32 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | -0.0 | 0.0 | 0.0 |
| 33 | 0.1 | 0.0 | 0.1 | 0.0 | 0.7 | 0.0 | 0.0 | -0.0 | -0.2 | 0.0 | 0.0 |
| 34 | 0.4 | 0.3 | 0.4 | 0.3 | 2.9 | 0.3 | 0.0 | -0.0 | -1.0 | 0.4 | 0.3 |
| 35 | 0.3 | 0.3 | 0.4 | 0.3 | 3.2 | 0.3 | -0.1 | -0.2 | -1.1 | 0.2 | 0.1 |
| 36 | -0.1 | 0.2 | -0.3 | -0.0 | 2.7 | -0.2 | 0.3 | 0.5 | -0.2 | 0.3 | 0.7 |
| 37 | 0.1 | 0.1 | 0.0 | 0.1 | 1.0 | 0.0 | 0.1 | 0.1 | -0.3 | 0.2 | 0.2 |
| 38 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | -0.0 | 0.0 | 0.0 |

