

Consistency of Second Five Year Plan (1980-85) and the Foreign Sector

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A Plan is not a prediction or just a mere forecast. A plan is rather primarily policy oriented. A Plan enumerates a number of objectives and provides for various investment magnitudes to realize the avowed objectives. Targets are set to realize these objectives. The second five year plan of Bangladesh also spells out a number of objectives. These objectives will be realized only when various sets and quantitative targets are found to be consistent.

Now that the draft on Second Five Year Plan (1980-85) has been completed, it is presumed that its consistency with respect to various aspects was checked. Although a number of aspects of its consistency are to be checked, this paper attempts to check the consistency of the plan in respect of growth rate and capital output ratio as well as for the entire economy where both marginal propensity to consume and marginal propensity to import are utilized as parameters, and in respect of the foreign sector.

The first is fairly simple and is done by using the following relationship:-

$$\frac{d \text{ GDP}}{\text{GDP}} = \frac{d \text{ K}}{d \text{ O}} \quad \text{or}$$

$$\frac{d \text{ GDP}}{\text{GDP}} = \frac{d \text{ O}}{d \text{ K}} \times \frac{I}{\text{GDP}}$$

Where GDP = Gross Domestic Product
d means change, I = Investment
d K = Change in capital accumulation.
d O = Change in output

Assuming incremental capital output ratio as 2.86 for overall economy, the growth rate comes approximately to 7.1 percent.

Introducing the foreign sector the test has been conducted in terms of the following relationship:-

$$\frac{dY}{Y} = \frac{1}{m} \times \frac{(dE+DF+dR)}{Y}$$

where m = marginal propensity to import. E= Export. F = Foreign Aid R= Reserve. Y = Gross domestic product. Substituting the figures in the above relationship, we get

$$\frac{1}{.1023} \frac{(483 + 648.3 + 1076)}{17976.93}$$

or $\frac{1}{.1023} \frac{2207.3}{17976.93}$

or $\frac{1}{.1023} .1227$

or 1.2002 or 15% annually.

If values are put in terms of bench mark year and terminal year difference, the growth rate works out at 15% annually. If difference/the bench between year and an average of five years is taken the growth rate is slightly lower but still gives 13% much higher than the stipulated growth rate of 7.1%. This is shownbelow:-

Alternative:

$$\frac{1}{.1023} \frac{(290 + 648.3 + 670)}{17976.93}$$

or $\frac{1}{.1023} \times .089465$

or $\frac{1}{.1023} \times .089465$ or 874536 or 13% annually

It appears that the growth rate is inconsistent when foreign sector's contribution is accounted to meet the overall growth rate.

Generally planning is a policy oriented exercise and hence the aim is to achieve stipulated growth rate which differs from forecast or prediction or projection. When the attempt is to achieve a targeted growth rate which in this case is 7.1 percent the numerator in the equation is to go down. This implies that either the export earning or foreign aid or reserves or all the three together have to go down. Whereas export is autonomously given and reserves are given as residual Foreign aid become crucial/ in achieving the targeted rate of growth.

The capacity to import has to go up which impels increase in the induced elements in the numerator in the equation. This means less foreign aid and more export earnings.

Structural components such as capital output ratio, investment elasticity, and initial proportion of GDP which is invested in fixed capital assets respectively high, low and low. Attempts should be made to remove the rigidity in the export sector. Foreign aid alders are subject to pursuation hence can be manipulated rather relatively easily.

Secondly, a consistency test for the entire economy may be done by utilizing the following relationship:

$$\frac{dY}{Y} = \frac{(1)}{1+B+M} \frac{(dA + dX)}{Y}$$

Where B = Marginal propensity to consume and M = Marginal propensity to import
 dA = Change in autonomous expenditure and dX = change in export earnings.

Putting the values, we get

Alternative I.

$$\frac{1}{(1 + .88 + .10)} \frac{(20010 + 290)}{17976.93}$$

$$\text{or } \frac{1}{1 + .88 + .10} \frac{20300}{17976.93}$$

$$\text{or } \frac{1}{1.98} \frac{20300}{17976.93}$$

$$\text{or } \frac{1}{1.98} \times 1.129225$$

or .570316

9.4% Annually.

It appears that the growth rate works out to be 9.4% annually.

Alternative II.

$$\frac{1}{(1 + .88 + .10)} \frac{(14810 + 290)}{17976.93}$$

$$\text{or } \frac{1}{(1 + .88 + .10)} (14810 \div 5)$$

$$\text{or } \frac{1}{1.98} + \frac{2962 + 290}{17976.93}$$

$$\text{or } \frac{1}{1.98} + \frac{(3252)}{17976.93}$$

$$\text{or } \frac{1}{1.98} \times 0.180899$$

9.1363%

In alternative II parameters were kept as they were before only autonomous elements have been taken on annual basis so as get a point estimate. Hence Investment in the Public sector was averaged by dividing by 5. This also works a growth rate of 9.1 percent.

These tests suggest that we could reduce the autonomous elements to a lower figure. In fact since domestic saving is low and foreign aid always suffers from uncertainty a lower volume of investment financed by domestic saving could be made in order to get a growth rate of 7 percent.

The consistency test for the entire economy may also be carried out in terms of savings and investment; because the growth rate of the economy depends as much on investment as on savings. There are two aspects of saving safely, Government saving and private savings. The following relationship can be utilized to check consistency in the growth rate in terms of savings.

$$\frac{d \text{ GDP}}{\text{GDP}} = \frac{d \text{ O}}{d \text{ K}} \times \frac{\text{SP} + \text{SG} + \text{F}}{\text{GDP}}$$

Where SP = Private saving, SG = Government Saving, F = Foreign Investment.
Putting the values we get,

$$\frac{d \text{ Y}}{\text{Y}} = \frac{1}{2.86} \times \frac{(5160 + 6555 + 13880)}{17976.93}$$

$$\text{or } \frac{1}{2.86} \times \frac{(25,595)}{17976.93}$$

$$\text{or } \frac{1}{2.86} \times 1.429769$$

= 0.497821 or 8.5 % annually.

It appears that the growth rate is higher than that was envisaged in the Plan. This implies that the numerator in the equation can be reduced further. In fact we can probably decrease foreign Investment and adopt policies to augment private saving and can ensure the growth rate of 7 percent.

A note on two gaps in the second five year plan.

There is no projection of income from base to year during SFYP, There are GDP for 79-80 given at Tk. 17976.93 crore and terminal 1984-85 GDP as TK 25450.73 crore. We may compute GDP in the intervening years From the phasing of development outlay for these years applying capital output ratio. Projected new GDP series is given by GDP

Y ₀	=	80-81	=	18732.17
	=	81-82	=	19748.6
		82-83	=	21077.62
		83-84	=	22791.25
Y _t		84-85	=	24977.41

Since all development outlay is not investment in the calculation of above series, a prorated deduction of non-investment has been done and it is found that the new projected terminal year GDP is however lower by Tk. 473 crore.

This new series will be utilized now for calculating domestic resource and foreign exchange gaps by the following formula:-

$$K(Y_t - Y_0) - S_0 - s(Y_t - Y_0) = M_0 + m(Y_t - Y_0) - X_0(1+h)^t$$

- where
- K = Capital output ratio
 - Y_t = GDP in the t * year
 - Y₀ = GDP in the bench mark year
 - S₀ = Saving in the bench mark year
 - S = marginal propensity to save
 - M₀ = Imports in the bench mark year (Values)
 - m = marginal propensity to import.
 - X₀ = Export in the bench mark year (Values)
 - h = Annual rate of growth of exports
 - l = Planning time period.

Calculated values of two gaps are as follows: -

$$K(Y_t - Y_0) - S_s(Y_t - Y_0) = M_0 + m(Y_t - Y_0) - X_0(1+h)^t$$

$$\text{or } 2.86(24977.41 - 17976.93) - 612.12(Y_t - Y_0) = 3924 + 25(Y_t - Y_0) - 1234(1 + 0.069)^5$$

$$\text{or } 2.86(7000.48) - 612 \cdot 5152.52 = 23979.53 - 7570.91$$

$$\text{or } 20021.37 - 5764.53 = 23979.53 - 7570.91$$

$$\text{or } 14,256.84 = 16408.62$$

It appears that the foreign exchange resource gap is larger than the domestic reserve gap. The rate of growth of import has been larger than the corresponding export growth and GDP.

Total saving calculated showed wide difference with the resources to be generated during SFYP. Total resource generated show an equivalent of Tk. 11715 crore where as calculated resources as done above shows Tk.5764.53 corer based on initial savings of Tk. 612 corer for 1979-80 (given in the first chapter of the plan).

Though there is no reason for ex-ante equilibrium between domestic saving gap and foreign exchange gap; in the ex post sense these two must be equal. It appears that the gap shown in the SFYP. seems to have been worked out on the basis of absolute values. Marginal saving or Marginal propensity to Import have no where been mentioned except for additional taxes suggested to be imposed on agricultural income. It may be that the tax rates have been calculated without Progressive rate for marginal income.

Additional taxation will be around 20% of the additional income generated which could be made higher. Unless progressive rates are allowed on marginal income will add to inflation provided private sector does not mobilize saving from marginal income at higher rate.

On the other hand, the growth of imports has been shown at a much higher rate than the rate of growth of export this shows foreign exchange gap to be larger than the projected inflow of foreign aid.

One remedy seems after reading Ramon A, sub that reimbursement of Taka cost by foreign currency by donor is one of the way, of meeting domestic savings gaps over foreign exchange gap.

Since the foreign exchange gap is larger than the domestic resource gap the following savings constraint model is applicable to calculate the net capital inflow.

The Structure of the model is as follows.

$$\begin{aligned}
 (1) \quad Y_t^* &= Y_0(1+r^*)^t \\
 (2) \quad I_t^* &= \phi r^* Y_t^* \\
 (3) \quad S_t^* &= S_0 + S_1^* Y_t^* \\
 (4) \quad X_t &= X_0(1+C)^t \\
 (5) \quad M, \text{ or } M_t^* &= (\phi_r^* - S_1^*) Y_t^* - S_0 \\
 (6) \quad F_t &= +(\phi_r^* - S_1^*) Y_t^* - S_0 \\
 (7) \quad C_t &= (1-S_1^*) Y_t^* - S_0
 \end{aligned}$$

The Solution of F_t is given by the following formal derived the equations (Reduced)

$$(8) \quad F_t^* = (\phi_t Y_0) r^{*2} + Y_0(\phi - S_1 t^*) r^* (S_1^* Y_0 + S_0)$$

(Meaning of Symbols)

Y_t^* = Planned gross national product at target year of the plan.

I_t^* = Planned investment at the target year of the plan.

S_t^* = Planned growing at the target year of the plan.

X_t = B x Export at the target year of the plan

Mtr M_t = Planned import at the target year of the plan.

F_t = Balance of payment on current account target year of the plan.

C_t = consumption at the target year of the plan.

ϕ = capital output ratio of plan

r = planned ratio & growth