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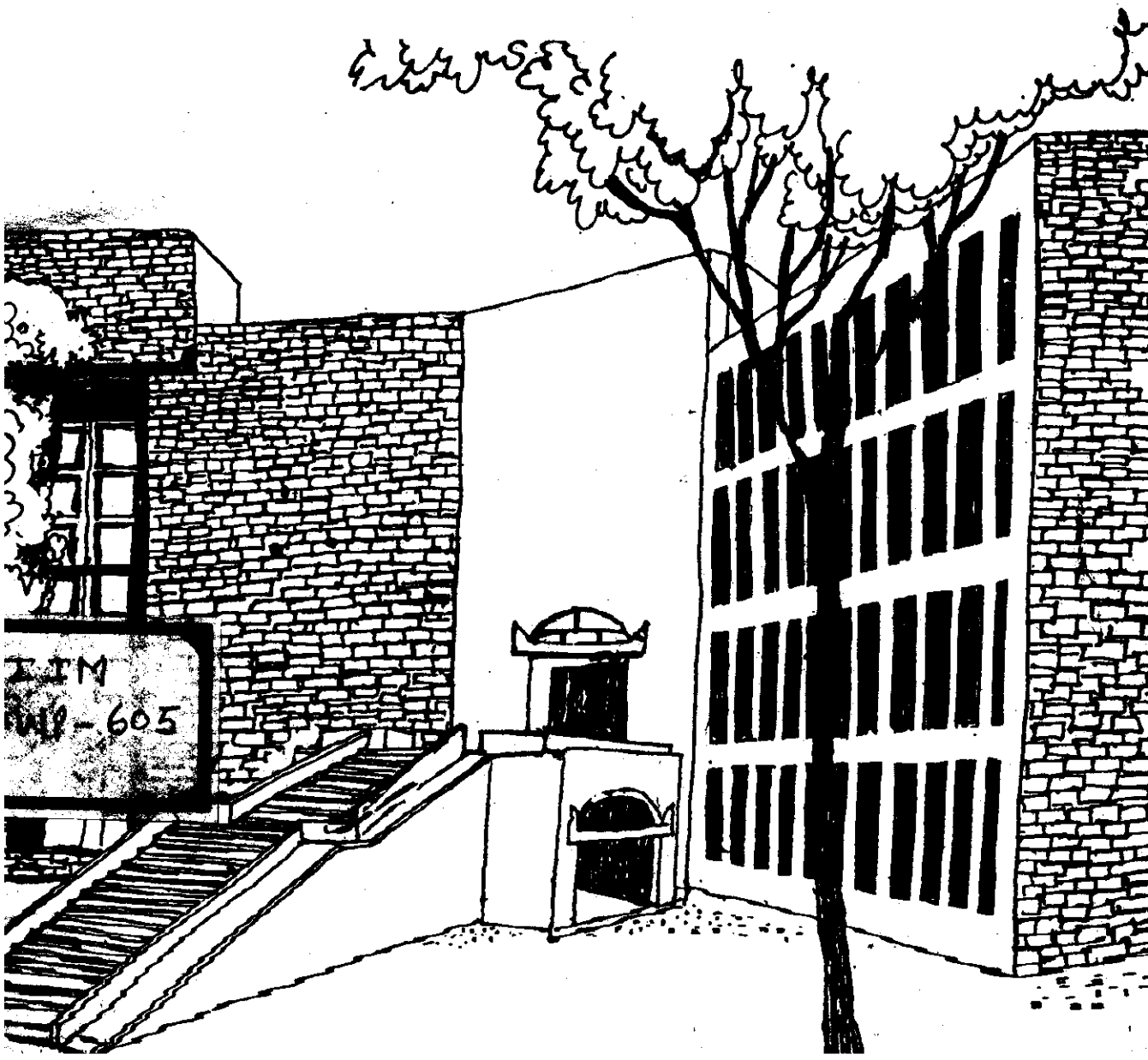

SOURCES OF ECONOMIC GROWTH IN INDIA IMPLIED BY THE SEVENTH FIVE YEAR PLAN 1985-90

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ABSTRACT

The two volumes of the 7th Plan released by the Government of India have provided a reasonably good empirical base to look into the implications and consistency of the Plan targets. In the present short paper, an attempt is made to check the overall consistency of the Plan targets through the celebrated 'Sources of Growth' approach. It is a novel experiment to integrate plan targets with the 'sources of growth' exercise. This study reveals glaring inconsistency in the target setting exercise in the 7th Plan - particularly in the primary sector. It also suggests that the strategy implied by the targets set in the Plan is substantially different from what is explictly proclaimed in the 7th Plan.

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I. INTRODUCTION:

The debate on the 7th Plan has largely centered around our ability to raise the required resources for investment as envisaged in the Plan. The growth target of 5 percent per annum is generally considered achievable particularly when we are known to save and invest about a quarter of our annual income. However, the targets for reduction of poverty and unemployment and the way of achieving them as envisaged in the 7th plan have raised some serious doubts. A careful examination of the consistency and implications of the resource allocation in relation to the growth targets in different sectors of the economy is needed to settle some of the issues. An enquiry into the future sources of growth in terms of labour, capital and total factor productivity growth envisaged in the 7th Plan can prove very useful for the purpose. In the present note, therefore, we attempt to derive the estimates of the sources of economic growth implied by the 7th Plan not only for the economy as a whole, but also for the three sectors, viz. the Primary, Secondary and Tertiary sectors.

II. GROWTH OF EMPLOYMENT AND CAPITAL, 1985-90:

The Planning Commission has explicitly mentioned the target rate of growth of employment by sectors in the economy during the 7th Plan period. The estimates of employment by broad sectors are presented in terms of standard person years. Employment is assumed to grow at the annual compound rate of 3.99 percent for the economy as a whole, 3.49 percent for the primary sector, 4.40 percent for the secondary sector, and 4.60 percent for the tertiary sector.[1] Compared to the assumed growth of population at the rate of 1.98 percent per annum during the same period, the target for employment growth is more than double. Considering the total investment of Rs.322,366 crores at 1984-85 prices and the additional employment to be generated, 1 standard person year of employment would, on an average, require Rs.79,873 of investment during the 7th Plan period.

On the other hand, the 7th Plan document, as usual avoids any explicit statement about the growth of capital stock in real terms although it fixes explicit targets for the investment at 1984-85 prices to be undertaken during the plan period. This is because, as of now, we do not have an official estimate of the stock of real capital existing in the Indian economy. It is possible, however, to derive the implicitly assumed growth rate of real capital stock from the targets fixed explicitly in the 7th Plan. It is interesting to note that, usually, the growth rate of income (G) is assumed constant over years

during the plan period though the investment rate (s) is assumed to increase over the same period. By implication, the capital-output ratio is also assumed to increase over the period. Thus, let us postulate:

$$K/Y = a + bt$$

and $$s = c + et$$

where K/Y is average capital output ratio and t is time. a, b, c and e are parameters.

$$\therefore \quad dK/dY = K/Y + b/G \qquad \ldots (1)$$

But $$G = s/(dK/dY) \qquad \ldots (2)$$

$$\therefore \quad G = \frac{c + et - b}{a + bt}$$

Thus, G becomes the function of time. If, however, G is assumed to remain constant over years during the planning horizon, $dG/dt = 0$ which implies that

$$b = e/G \qquad \ldots (3)$$

The target for G in the 7th Plan is 5 percent per annum. Since the investment rate (s) is assumed to increase from 24.5 percent in 1984-85 to 25.9 percent in 1989-90, the target for e is about 0.0028. The

implicitly assumed target for b is, thus, 0.056 which compares very well with the regression estimate of b (= 0.053) made by Bakul Dholakia (1983) on the basis of his estimates of the average capital-output ratio for the period 1948-49 to 1980-81. If, at all, the average capital-output ratio is assumed to rise faster during the 7th Plan than in the past.

In order to determine the implicitly assumed growth rate of real stock of capital over the years 1985-90. We require to derive first the average capital-output ratios assumed in the initial year, i.e. 1984-85. This can be easily derived on the basis of equations (1) and (2) above. Thus, $K/Y = (s-b)/G$ ... (4). Replacing the target values for s, b and G, we get the values of 3.78 and 4.06 as the implicitly assumed average capital-output ratios in the years 1984-85 and 1989-90 respecitively. Applying these values to the income estimates, we get the implied growth rate of real capital stock at 6.51 percent per annum for the economy as a whole. Applying the same methodology with appropriate modification[2] at the sectoral level, we can obtain the implicitly assumed annual growth rates of real capital stock in the primary, secondary and tertiary sectors respectively at 8.25 percent, 6.18 percent, and 6.18 percent.

The estimates of real capital stock for the Indian economy by sectors made by Bakul Dholakia (1983) for the period 1948-49 and 1980-81 reveal that the annual growth rate of real capital stock for the past 30 years was at a level of about 5.9 percent. However, from the

fifties to the sixties and from sixties to the seventies, the growth rate of real capital stock in India has displayed constant rate of deceleration. The implicitly assumed growth rate of 6.51 percent for the real capital stock during the 7th Plan period is, thus, on a higher side but within plausible range. Similarly, the implicitly assumed growth rates of real capital stock in the secondary and tertiary sectors are also within the plausible range in relation to the past experience. In fact, in the secondary sector the envisaged growth rate during the 7th Plan is somewhat lower than our past achievement. However, the envisaged growth rate of 8.25 percent in the real capital stock in the primary sector appears to be a highly implausible figure compared to our past performance. In this sector, the growth rate has hardly exceeded 4.7 percent per annum during any sub-period in the past. Of late, even if it is rising it is not likely to touch the envisaged figure of 8.25 percent.

III. RELATIVE INCOME SHARES:

Once we have the target growth rates of labour and capital, we need some broad estimates of the relative shares of labour and capital in order to derive the envisaged sources of economic growth during the plan period. Once again, we face the situation where no official estimates are available for the functional distribution of income between labour and capital. However, CSO publishes on a regular basis (see for instance, CSO, 1984) the estimates of income-shares by broad sectors. These

Estimates are available by share of wages and salaries, interest, rent, profits and mixed income of self-employed. We can get broad idea about the possible range of relative shares of labour and capital from these estimates which would be sufficient for our purpose at hand. Table 1 presents the annual growth rates of income, labour and capital and three alternative sets of our estimates (conjectures) for the relative shares of labour and capital during the 7th Plan period. As can be seen from the table, the range of the relative shares of labour and capital considered by us is wide enough to cover almost all realistic possibilities for the Indian economy.

IV. SOURCES OF ECONOMIC GROWTH, 1985-90:

The well known neoclassical growth equation provides the basic theoretical framework for estimating the sources of economic growth in terms of labour, capital and 'residual' or what is known as the total factor productivity growth. Table 2 provides three alternative sets of estimates of the sources of economic growth in India by sectors for the 7th Plan period. The three alternative sets of sources of growth correspond to the three alternative sets of relative shares of labour and capital considered by us in absence of the official estimates. As it can be readily observed from the table, the three alternative sets of the estimates for sources of growth do not substantially differ from one another. In fact, the estimate for the 'residual' is remarkably insensitive to the different sets of relative shares of labour and capital in all the three sectors.

These estimates, therefore, can be considered reliable at least for their dimensions of relative magnitudes.

Table 2 clearly indicates that the 7th Plan envisages achieving the growth target of 5 percent by heavily relying on factor supplies rather than improvements in factor productivity. The relative contribution of 'residual' is envisaged to be hardly 14 percent while the contribution of factor supplies would be around 86 percent in the future growth. Labour alone is expected to contribute more than 50 percent of the target growth during 1985-90. When we consider our past experience in this regard,[3] we find that 'residual' or total factor productivity growth accounted for nearly one third of the total growth in the income. Growth of factor supplies was important, but not so overwhelming as is considered by the 7th Plan. The implied sources of growth in the 7th Plan targets clearly bring out the emphasis of the strategy for the plan. Contrary to what is proclaimed in the Plan, the aspects of productivity gains and improvements in technology appear to be seriously neglected. Inspite of all eye-opening findings on sources of economic growth in Indiaas well as other countries[4] emphasising the role and contribution of total factor productivity growth, the Planning Commission still seems to be believing in the traditional theory about the growth of factor supplies determining the growth of output. Using L.C. Gupta's (1983) terminology, we can say that the 7th Plan puts only 14 percent weight on the '80 percent factor' and 86 percent weight on the '20 percent factor'.

If we take a more relistic view, however, it is most likely that the contribution of the residual in absolute term may turn out to be around 1 percentage point as in the past instead of 0.7 as implicitly presumed in the plan. If, therefore, employment and real capital stock grow during 1985-90 at the envisaged rates of 4 percent and 6.5 percent respectively, the overall growth would easily surpass the target of 5 percent per annum during the plan period. But there are serious doubts about realization of the envisaged growth of factor supplies. A closer look at the implicitly assumed sources of economic growth at the sectoral level (Table 2) would only confirm our doubts.

The profiles of sources of growth in the secondary as well as the tertiary sectors, as implied by the 7th Plan, appear to be quite plausible. The one in the primary sector, however, not only goes against our own historical record, but also defies the common sense and clearly contradicts the very objective of Planning. As the table reveals, the 7th Plan anticipates in the primary sector a substantial deterioration in the level of factor productivities representing one or more of the following : (i) technological retrogression, (ii) increased inefficiency in resources use (iii) dogration in the quality of resources used, (iv) deteriorated management practices, and (v) dis-*economies of scale in the primary sector. The basic objec-* tive of development planning, on the other hand, is to achieve precisely contrary outcomes. Our past performance in the agricultural sector, moreover, reveals that total factor productivity in agriculture had grown even during

the pre-green revolution period of 1948-68 and had contributed about 30 percent of the total growth in the sector. (See, Bakul Dholakia, 1974). After 1968, in fact, growth of output in agriculture has experienced acceleration on account of technological progress. Negative growth of factor productivities in agriculture is, therefore, simply unbelievable particularly during 1985-90. The 7th Plan exercise of setting targets of growth rates in output, capital stock and employment in the primary sector appears to be totally inconsistent and ad hoc. Since the model underlying the plan is based on interlinkages among different sectors of the economy, inconsistency of growth targets in the primary sector is most likely to affect the calculations in the other sectors also.

V. CONCLUDING REMARKS:

In the present note we have attempted to estimate the sources of economic growth in India for the period 1985-90 as implied by the targets of growth and investment rate explicitly laid down in the 7th Plan. These estimates are in sharp contrast to the proclaimed plan priority to productivity improvements. At the sectoral level, the 7th Plan seems to be envisaging substantially deteriorating factor productivities in agriculture. This is not only absurd but also implies grave inconsistencies in the whole exercise of target setting in the 7th Plan.

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NOTES

1 The primary sector includes agriculture and allied activities. The secondary sector includes mining and quarrying, manufacturing, construction and electricity and power. The tertiary sector includes the rest of the sectors like, trade, transport, services etc.

2 The modification is required to obtain the corresponding aggregate for as at the sectoral level. It can be obtained $s\ I_j/Y_j = s\ (I_j/I)\ (Y/Y_j)$.

(where I and Y represent Investment and Income and j stands for sector)

Target/estimates for all the three terms on the Right-Hand-Side are available from the plan document. The rest of the methodology remains more or less the same.

3 See Bakul Dholakia (1974 and 1980)

4 Apart from the studies on India by Bakul Dholakia (1974 and 1980), a number of studies on the USA and other advanced western countries have been made by Denison. See, for instance, Denison (1967 and 1985) and Denison and Chung (1976).

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TABLE 1 : IMPLIED ANNUAL GROWTH RATES OF REAL INCOME, EMPLOYMENT AND REAL CAPITAL STOCK IN THE 7th PLAN AND ALTERNATIVE ESTIMATES OF RELATIVE INCOME SHARES, 1985-90

(in percent)

Sectors	Annual Compound Growth in			Estimates of Relative Shares of Labour and Capital					
	Real Income	Employment	Real Capital Stock	Alternative I		Alternative II		Alternative III	
				Labour	Capital	Labour	Capital	Labour	Capital
1. Total	5.00	3.99	6.51	67	25	64	27	70	23
2. Primary	2.50	3.49	8.25	60	30	57	32	63	28
3. Secondary	6.45	4.40	6.18	64	33	61	35	67	31
4. Tertiary	6.29	4.60	6.18	76	14	73	16	79	12

Source: 7th Five Year Plan and Estimates based on CSO (1984).

TABLE 2 : IMPLIED SOURCES OF ECONOMIC GROWTH IN INDIA BY SECTORS AS PER 7th PLAN, 1985-90

(in percent)

Sectors	Annual Growth of Real Income	Alternative Sets of Estimates of Sources of Growth								
		Alternative I			Alternative II			Alternative III		
		Labour	Capital	Residual	Labour	Capital	Residual	Labour	Capital	Residual
Total	5.00 (100.00)	2.67 (53.40)	1.63 (32.60)	0.70 (14.00)	2.55 (51.00)	1.76 (35.20)	0.69 (13.80)	2.79 (55.80)	1.50 (30.00)	0.71 (14.20)
Primary	2.50 (100.00)	2.09 (83.60)	2.48 (99.20)	-2.07 (-82.80)	1.99 (79.60)	2.64 (105.60)	-2.13 (-85.20)	2.20 (88.00)	2.31 (92.40)	-2.01 (-80.40)
Secondary	6.45 (100.00)	2.82 (43.72)	2.04 (31.63)	1.59 (24.65)	2.68 (41.55)	2.16 (33.49)	1.61 (24.96)	2.95 (45.74)	1.92 (29.77)	1.58 (24.49)
Tertiary	6.29 (100.00)	3.50 (55.64)	0.86 (13.67)	1.93 (30.69)	3.36 (53.42)	0.99 (15.74)	1.94 (30.84)	3.63 (57.71)	0.74 (11.76)	1.92 (30.53)

Note: (1) Figures in the brackets represent relative contribution to the Growth of Real Income.

(2) Alternatives I, II and III correspond to the three alternative sets of estimates of relative factor shares presented in Table 1.

Source: Table 1