DYNAMICS OF CONSUMER DEMAND IN INDIA

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ABSTRACT

A steel demand model consisting of 15 economic subsectors was formulated by the authors [1] to dynamically estimate the steel demand from GNP per capita. Attempt is now being made to develop a more general consumer demand model specific to India, which, among other things, takes into consideration inflation as caused by increase in money supply to finance development plans of the country, remittances from expatriate workers, foreign loans, and wage increase to increase in production ratio. Existing model has been further modified by giving due weightage to the effect of income distribution among low, middle and high income groups of population on the dynamics of demand. Attempt has also been made to study the sensitivity of the economy, and hence the consumer demand, to changes in the saving to consumption ratio. The positive effect of increase in saving on capital formation on the one side, and negative effect of decrease in demand on the other side, has been discussed.

System Dynamics technique was used by the authors [1] for long term projection of steel demand in India. An Indian National economy model consisting of population sector, economy sector, consumption sector, capital sector, government sector and steel demand sector was formulated. Steel demand in the country was generated on dynamic basis by considering the amount of steel needed, individually, in 15 economic subsectors, 9 consumption subsectors and seven government expenditure subsectors. As a first attempt, the model was developed on the basis of constant prices prevalent in the base year and steel consumption was related to GNP per capita and agriculture production. On validation, the model was found to give reasonably accurate steel demand projections. This encouraged the authors to consider modifying the model to make it suitable for projecting consumer demands of different items in India.

Being a planned economy with built in government controls on means of production and distribution Indian economy follows a somewhat different dynamics than that of the western economies. Moreover consumer demand in India is quite sensitive to the in earning levels of low, middle and high income groups of population. Hence the model deserved a separate formulation specific to India. Other important influence on consumer demand meriting consideration is inflation.

Again the planning process in India has succeeded in increasing saving from 6.82% in 1951 to 19.54% in 1980 [2] with a view to increase the growth rate. The growth rate in economy has, however, not followed the expected increase despite increased savings. Increase in savings, while helping in increase in the availability of funds for capital investment, depresses the demand as consumption is reduced to make way for higher quantum of saving. Thus whereas the capital employed increases, there is a fall in output to capital ratio caused by depression in demand. In the Indian situation available studies [3] have shown that top 1% of the total population has 9% share in GNP. 36% of GNP goes to top 10% of population only
whereas top 20% corner 53% of the GNP. Lowest 50% have only
20% GNP available to them. Thus both saving and consumption &
hence demand wise, it is only the high income group consisting
of not more than the top 1/3 of population, which is more
important.

THE MODEL

As main aim of the present model is to study the effect
of income distribution, inflation and saving on the economy and
hence demand, population growth is considered through a one
level model. The population is divided in rural and urban groups
as per the available census records. Economy is modelled with
capital investment in Primary, Secondary and Tertiary subsectors
as levels. Income generated is distributed in 6 population sub-
groups representing low, middle and high income groups in rural
and urban sectors. Saving generated from these income groups
is feedback to the economy subsectors through policy allocation
criteria. Inflation index is dynamically calculated to update
the capital employed in various subsectors of economy. Figure
1 shows the causal loop diagram of the model and figure 2 shows
the model block diagram.

INCOME DISTRIBUTION

Radha Sinha et al [4] have divided the rural and urban
income groups in 3 nearly equal subgroups each called low,
middle and high income groups. 33% of the population getting
lowest share of GNP forms the LIG in each of the rural and
urban population groups. Similarly 34% of the rural and urban
populations placed in the higher income range than LIG are
called rural and urban MIG population groups respectively. The remaining top 33% form the HIG population groups in rural and urban sectors.

Based on the estimated distribution of 1967-68, value added in 16 economic subsectors among the six population subgroups [4] percentage distribution of primary, secondary and tertiary incomes has been derived as shown in Table-I. Assuming these proportions of income distribution as constant over time, income distribution among the six population subgroups has been estimated dynamically from the primary, secondary and tertiary subsectors of the economy model.

### TABLE-I

<table>
<thead>
<tr>
<th>Income Group</th>
<th>Rural Population</th>
<th>Urban Population</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LIG</td>
<td>MIG</td>
<td>HIG</td>
</tr>
<tr>
<td>Primary</td>
<td>10.68</td>
<td>14.77</td>
<td>69.70</td>
</tr>
<tr>
<td>Secondary</td>
<td>1.67</td>
<td>14.58</td>
<td>14.14</td>
</tr>
<tr>
<td>Tertiary</td>
<td>7.37</td>
<td>22.79</td>
<td>20.36</td>
</tr>
</tbody>
</table>

**ECONOMY SECTOR**

Economy has been modelled in the subsectors namely primary, secondary and tertiary each being represented by a level. The inrate is the capital input fed back from the savings through a policy input variable. Outrate is the depreciation considering the life of plant to be 25 years. To represent the capital at current prices the past value of the level is multiplied by inflation factor for the current year as calculated dynamically, before considering the inrates and outrates. Capital to output ratio for each subsector is calculated separately. In the primary subsector monsoon plays
a significant role in the capital output ratio variation in addition to electricity, irrigation and new technology. Change in consumption to generate required saving is another factor modifying the capital output ratio through the medium of demand regulated prices. Likewise energy availability and consumption level influence the capital output ratio of the secondary sector. Tertiary sector capital output ratio is also influenced by consumption.

Gross domestic product is obtained by adding the value added in the three economy subsectors whereas by using the ratios indicated in table I, GDP distribution for the six population subsectors is obtained. GDP is now taken to the money bank where the inflation factor is calculated considering the various inflationary influences.

INFLATION

Deficit financing has been considered to have major influence on inflation. Deficit financing is resorted to for filling the resources gap left by inadequate taxation. Deficit financing is also employed to generate funds where actual growth rate falls short of the target growth rate as proposed by Roy [8] and Brahmanand [9]. Remittances home by expatriate workers is the third inflation generating force. The fourth factor considered while calculating inflation is the growth of service (Tertiary) sector vis-a-vis the primary and secondary sectors, Chandra [7], Rao [8]. Foreign debt servicing is the next inflationary force which is of course opposed by foreign loans which represent the flow of capital goods and raw materials as proposed by Brahmanand [9] and Rao [9].

Money bank now consists of value added in the three subsectors of economy, plus the gap in export and import of goods, plus the deficit financing measured by resources gap and the shortage of targeted growth in the economy. To this is added the debt service, subtracting the foreign loans. The ratio of the net money in the money bank to the actual value added gives the inflation factor which has been used to modify the capital in economy sector to update the same for current prices.

SAVINGS

Taking 1961 prices as the base, a per capita income of Rs.240.00 was considered as the subsistence level by Rao [6] and Minhas [4]. In the base year yearly average per capita income of the various population groups in rupees is shown in table 2.

<table>
<thead>
<tr>
<th>Population Subgroup</th>
<th>LIG</th>
<th>MIG</th>
<th>MIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>98.67</td>
<td>206.86</td>
<td>507.00</td>
</tr>
<tr>
<td>Urban</td>
<td>153.00</td>
<td>304.00</td>
<td>1041.00</td>
</tr>
</tbody>
</table>

Per capita incomes in rupees calculated in 1990 at the base prices are shown in table 3, considering a saving of 25%. Figures in brackets show the incomes at current prices, using the calculated price index of 8.15.
Thus it is clear that LIG groups both in rural and urban sector are not able to contribute to savings and their consumption is below subsistence level and can consist of only the bare necessity of food. Again MIG group leaves some surplus for spending in manufactured goods. Even their purchasing capacity for manufactured goods may be eroded if inflation is more pronounced in the bare necessity group.

HIG is the only group capable of generating savings. It is clear that urban HIG is the target for increased saving through tax incentives and other fiscal measures by the government. Thus saving affects the purchasing capacity of this group which may influence the capital output ratios of the economy sector, as higher saving means less consumption by urban HIG group and hence decrease in demand.

CONSUMPTION SECTOR

The incomes of the six population group are now distributed to 9 consumption sectors to estimate the demand of the product in question as done in the steel demand model [2].

RESULTS AND CONCLUSIONS

The computer runs of the resulting model show that increase in savings depresses secondary sector immediately due to long gestation in the manufacturing sector. Economy rises after 3 years. But if the savings are increased considerably say to the extent of 60% there is a permanent decline in the economy. This decline affects the urban lower income group most drastically through decrease in their wages. Rural lower income group is not much affected by this. Consumption and hence demand is most influenced by the income of HIG group only. Inflation is likely to affect most the low income group.

It may be mentioned that more involved further studies are required to make the model useful. The present paper only succeeds in bringing to fore the peculiar problems of demand dynamics in the Indian context. For studying the effect of inflation on demand and also on economic growth sectoral inflation indices will have to be developed rather than a common inflation index calculated in this study. It is felt that failure of the economy to grow proportionately with the increase in savings ratio may also be due to excessive inflation in the capital goods area compared to the consumer goods area.
REFERENCES


8. 2 Ibid.


10. 2 Ibid.

11. 2 Ibid.


13. 1 Ibid.

14. 1 Ibid.