CHAPTER - VII.

A STRATEGY OF EXPORT-LED GROWTH: VIABILITY AND IMPLICATIONS FOR ELECTRONICS INDUSTRY.

The decade 1970s witnessed considerable shift within the premises of India's industrialisation strategy. While till the mid-sixties, there had been an explicit bias within the strategy towards substitution of imports, the period thereafter was characterised by the gradual decline in primacy of economic planning, the successive moves for de-control and liberalisation, and finally, by the adoption of a set of policies or schemes by government that sought to make the economy progressively "outward-looking".¹

The policy-changes at the macro level had its bearing on sectoral growth strategy as well. Though the process of import substitution in electronics industry had remained largely incomplete,² and though the actual progress within the country with regard to technology-development and upgradation was far from being satisfactory, yet, during


²cf. Chapter III (pp. 77 - 88) in the present study.
the 1970s, the idea of an export-led growth strategy for electronics industry was found to be gaining increasing acceptance at different sections within the policy-making level. This changing attitude of the government was reflected in the recommendations of all the official committees, that surveyed the field of electronics in late-1970s. Important among these committees were the Menon Committee on Electronics Exports (1978), the Sondhi Committee (1979) and the Tandon Committee (1980).³

The essential features of the suggested new strategy can be summed up as follows:

(i) major thrust in the export-field as an essential part of the overall growth strategy;

(ii) enhancing export incentives;

(iii) allowing free expansion of the private sector in the interest of exports; and

(iv) open-door policy with regard to investment by multinational corporations, technology-import, and also, with regard to import of capital equipments and intermediate goods from outside.

In the present chapter, at first, attempts will be made to delineate the implicit assumptions within the arguments in favour of export-led growth strategy in electronics industry; then, the actual experience in India with regard to electronics exports will be analysed to examine the validity of the said assumptions. Finally, the chapter shall focus on the trends in electronics industry at international level and their implications for export-led growth in electronics.

7.1. Premises of the Arguments in favour of export-led growth.

Within the advocacy of export-led growth strategy for electronics industry - as became popular in late 1970s - two distinct but interrelated sets of arguments can be discerned. The first of these arguments sought to justify the approach in terms of the comparative advantage theory. It was being asserted that, given the labour-intensive nature of manufacturing in different sectors within electronics industry, India enjoyed considerable 'comparative advantage' in terms of cheap labour rates within the country; as such, undertaking of assembly-oriented manufacture for export would lead to substantial foreign exchange gains, employment, and increase in production. This line of argument, which led to the setting up of Santacruz Electronics Export
Processing Zone in 1973, received impetus because of (i) a spurt in international sub-contracting arrangements in electronics industry, particularly, in late-1960s and early seventies, (ii) the increasing trend among transnational corporations to relocate the labour-intensive stages of manufacture in electronics industry from "classical locations in OECD regions to new production sites in the Third World" (primarily to take advantage of cheap labour) and (iii) the success achieved by a handful of less developed countries in South East Asia and in some other parts of the world from their labour-intensive manufacture for exports based upon open-door policy to transnational corporations.

4 The idea of setting up an export-processing zone in India can be said to have originated out of the discussions in the National Conference on Electronics (organised at Bombay on 24 - 28 March, 1970, by the Government of India). Arguments were placed in the conference, inter alia, for emphasizing export-promotion of labour-intensive electronic equipments and for liberal induction of technology from outside. Even, it was suggested that, in view of the low labour rates prevailing and plenty of manpower, foreign manufacturers should be "attracted" through the necessary measures "to set up feeder plants in India". See Perspective Report on Electronics in India, op. cit., p. 24

The essence of the second line of argument in favour of export-led growth strategy was that: pursuance of the export-led growth strategy would contribute significantly to the long-term growth of electronics industry through technological fall-out, efficiency gains, cost reduction, and related benefits (achievable through the undertaking of volume production). While the first set of prescriptions implicitly had emphasized linking the growth strategy of the industry to the global pattern of industrial relocation by multinational enterprises, this second line of arguments placed particular emphasis on such factors as (i) provision of adequate export incentives, (ii) dismantling of all industrial controls to allow free expansion of the private sector, and (iii) liberal and duty-free imports of technology, capital equipments and intermediate goods from outside.

Seen together, the arguments in favour of export-led growth strategy for electronics industry seemed to have been implicitly dependent on certain important assumptions. These were as follows:

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6 This was the line taken, in an explicit way, by the Committee on Electronics Exports (Menon Committee, 1978) and by the Review Committee on Electronics (Sondhu Committee, 1979).

(i) The labour-intensity of manufacture in different segments of the electronics industry would remain unchanged in the foreseeable future, and, therefore, the developing countries like India would continue to enjoy the 'comparative advantage' of cheap labour vis-à-vis their developed counterparts. In other words, there would be no change in the factors that dictated or motivated transnational corporations in the 1960s and early-1970s to resort to large scale industrial relocation to LDCs (enabling the latters to enhance their export earnings).

(ii) Secondly, the success in attracting transnational corporations to undertake production for exports or in making the domestic industry export oriented would be, largely, a function of 'incentives' consisting of subsidies, concessions, procedural simplifications and 'liberalisations'. Therefore, India could also reap lucrative gains, if adequate 'incentives' were arranged.

(iii) Thirdly, the cost of the 'incentives' mentioned in (ii) above would only be transitory in nature and in the long run the net gains (i.e., benefits minus cost) could be substantial.
(iv) Finally, the overall success in an export-led growth strategy would be determined by domestic policy-changes (and not by such exogenous variables as, the changing strategy of transnational corporations, recessionary trends in the international markets, and barriers to entry created by protectionist measures).

In order to examine the validity of the above assumptions, it is necessary to have a review of the actual trends of growth of electronics exports from India and, particularly, to analyse the experience with regard to Santacruz Electronics Export Processing Zone.

7.2 Growth of Electronics Exports from India.

Table 7.A summarises the growth of electronics exports from India during the 1970s. As may be seen from the table, total value of electronics exports from India increased considerably over the decade of seventies. While in 1970-71, electronics exports were of the order of Rs. 3 crores, in 1980, the total value of exports rose to a level of Rs.41'8 crores. Nevertheless, this growth in the value of exports must be placed in the proper context.
### TABLE 7.A: ELECTRONICS EXPORTS FROM INDIA.

<table>
<thead>
<tr>
<th>Year</th>
<th>Exports from the domestic tariff area.</th>
<th>Exports from Free Trade Zones (a)</th>
<th>Total Electronics Exports (col.2 + col. 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970-71</td>
<td>3'0</td>
<td>-</td>
<td>3'0</td>
</tr>
<tr>
<td>1971-72</td>
<td>n.a</td>
<td>-</td>
<td>n.a</td>
</tr>
<tr>
<td>1972-73</td>
<td>5'9</td>
<td>-</td>
<td>5'9</td>
</tr>
<tr>
<td>1973-74</td>
<td>7'5</td>
<td>-</td>
<td>7'5</td>
</tr>
<tr>
<td>1974-75</td>
<td>9'3</td>
<td>-</td>
<td>9'3</td>
</tr>
<tr>
<td>1975</td>
<td>18'2</td>
<td>0'8</td>
<td>19'0</td>
</tr>
<tr>
<td>1976</td>
<td>24'0</td>
<td>3'0</td>
<td>27'0</td>
</tr>
<tr>
<td>1977</td>
<td>32'8</td>
<td>4'1</td>
<td>36'9</td>
</tr>
<tr>
<td>1978</td>
<td>32'0</td>
<td>7'6</td>
<td>39'6</td>
</tr>
<tr>
<td>1979</td>
<td>35'1</td>
<td>11'5</td>
<td>46'6</td>
</tr>
<tr>
<td>1980</td>
<td>25'3</td>
<td>16'5</td>
<td>41'8</td>
</tr>
</tbody>
</table>

**Notes:**
- na - indicates Not Available.

(a) figures in col. 3 indicate exports from SEEPZ, KFTZ and bonded factories in the domestic tariff area.

(-) indicates Nil.

**Source:**
1. Government of India, Department of Electronics, *Annual Reports*, (for various years).
The first point to note is that the growth-rate of exports, as is reflected by Table 7.A appears to be somewhat high. A part of the reason for this lies in the initial low base. In fact, till 1979, India's share in total electronics exports was almost negligible. As against 25% contributed by USA, 23.7% by Japan, 9.4% by West Germany, 5.7%, 4.7% and 3.3% respectively by France, U.K., and Netherlands, and 2.8% and 2.5% by such developing countries as Korea and Singapore, India's contribution towards total world electronics exports was of the order of only 0.08% in 1979. Viewed from an

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other angle, exports till 1975, were only 5'0 per cent of the total electronics production in the Domestic Tariff Areas; by 1979, the figure increased marginally to 5'5 per cent, but it again declined to only 3'2 per cent in 1980.9

The smallness of the share of exports in total domestic production of electronic items would become clear, if the data were considered at a fairly detailed level of disaggregation. Table 7.B shows, for the year 1977, the data relating to production and exports of some major categories of electronic items:

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9 Value of production of electronic equipments and components in India (excluding the production in Santacruz Electronics Export Processing Zone) were as follows: Rs.364 crores in 1975; Rs.635 crores in 1979, and Rs.789'5 crores in 1980. For details regarding production in the seventies, see Chapter III (Table 3.A, p.52) in the present study.

Strictly speaking, the share of exports in total production might have been marginally higher than ones mentioned. This was because of the difference between the price-level in India and the same in the international market. However, as the base itself was very low, the impact of such price-difference (on the percentages shown) was unlikely to be a very significant one.

(cf. Table 3.B in the present chapter where production and exports of a few important categories of electronic items have shown in physical terms).
### TABLE 7.B

**PRODUCTION AND EXPORTS OF ELECTRONIC ITEMS IN 1976**


<table>
<thead>
<tr>
<th>Item/product group</th>
<th>Unit of measurement</th>
<th>Share of the item in total electronics exports</th>
<th>Production</th>
<th>Exports</th>
<th>Exports as % of production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1. Radio Receivers</td>
<td>Thousand nos.</td>
<td>134</td>
<td>3760</td>
<td>261</td>
<td>6.9 (8.5)</td>
</tr>
<tr>
<td>2. P.A. Systems</td>
<td>-do-</td>
<td>62</td>
<td>143</td>
<td>4.58</td>
<td>3.2 (1.9)</td>
</tr>
<tr>
<td>3. Tape Recorders</td>
<td>-do-</td>
<td>66</td>
<td>113</td>
<td>9.00</td>
<td>8.0 (-)</td>
</tr>
<tr>
<td>4. Record Players</td>
<td>-do-</td>
<td>33</td>
<td>129</td>
<td>0.77</td>
<td>0.6 (2.9)</td>
</tr>
<tr>
<td>5. Teleprinters</td>
<td>-do-</td>
<td>4</td>
<td>5.5</td>
<td>0.18</td>
<td>3.3 (2.4)</td>
</tr>
<tr>
<td>6. Telecommunication Equipments</td>
<td>Rs. Million</td>
<td>115</td>
<td>1239.0</td>
<td>37.77</td>
<td>3.0 (2.1)</td>
</tr>
<tr>
<td>7. Defence &amp; Aerospace</td>
<td>-do-</td>
<td>333</td>
<td>550.0</td>
<td>109.70</td>
<td>19.9 (9.9)</td>
</tr>
<tr>
<td>8. Calculators &amp; Computers etc.</td>
<td>-do-</td>
<td>26</td>
<td>170.0</td>
<td>8.7</td>
<td>5.1 (5.8)</td>
</tr>
<tr>
<td>9. Instruments and Process Control</td>
<td>-do-</td>
<td>27</td>
<td>855.0</td>
<td>8.8</td>
<td>1.0 (1.0)</td>
</tr>
<tr>
<td>10. Transistors</td>
<td>Million Nos.</td>
<td>016</td>
<td>65</td>
<td>4.4</td>
<td>6.7 (-)</td>
</tr>
<tr>
<td>11. Receiving Valves.</td>
<td>-do-</td>
<td>018</td>
<td>3.8</td>
<td>1.55</td>
<td>40.8 (-)</td>
</tr>
<tr>
<td>12. Others</td>
<td>Rs.Million</td>
<td>255</td>
<td>1255.8</td>
<td>83.9</td>
<td>6.7 (6.9)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td>1000</td>
<td>5045</td>
<td>328</td>
</tr>
</tbody>
</table>

### Notes
- Figures in brackets in column 6 indicate the ratios for the year 1976.
- (-) indicates negligible.

### Source
It is evident from Table 7.B that, till late-1970s, excepting the two categories viz., electronic equipments for aerospace & defence, and receiving valves, for the industry as a whole, exports constituted a very small percentage of the total electronics production in the domestic tariff area.

Two other points are also to be noted with regard to the overall trends in aggregate electronics exports:

Firstly, the largest contribution towards the growth of electronics exports came from the Santacruz Electronics Export Processing Zone (cf. Table 7.A). However, given the totally enclave character of SEEPZ's operation, the exports from the Zone are to be treated as a special case.

Secondly, within the Domestic Tariff Area (as may be seen from Table 2.B) a major part of the total exports was accounted for by the two categories: Telecommunication Equipments, and equipments for Aerospace & Defence. However, these two categories are also to be treated as special items. This is because,

(i) most of the exports under these two categories were being arranged "on a yearly and contractual basis", and hence, the markets

10Gulshan Rai, "Electronics Exports from India: Status, Composition and Destination", op. cit., p.291.
for telecommunication, aerospace and defence equipments had been quite unstable;

(ii) nearly the whole of the exports were from the three public sector units, viz., BEL, ECIL, and ITI.

Therefore, in order to obtain a clear picture of the growth-trend of electronic exports from India, it would be worthwhile to exclude from total exports both (i) the exports from Santacruz Electronics Export Processing Zone, and (ii) the exports of special items from domestic tariff area, where the market was unstable (i.e. telecommunication equipments and equipments for aerospace and defence). When the above-mentioned categories are excluded, rest of the electronics industry constitutes - (a) consumer electronics (b) industrial electronics including computer hardware (c) computer software, and (d) electronic components. The trends relating to export of these categories needs to be examined separately because of the following reasons:

(i) The above segments within electronics industry (particularly consumer electronic equipments, semiconductors among components and computer software) are known for their labour-intensive
character of manufacture. Therefore, they were capable of offering considerable "comparative advantage" to a less developed country like India.

(ii) In all the above segments, during the period under consideration, major part of the production was in the private sector.

(iii) While the advocates of export-led growth consider the liberal import of technology as an essential pre-condition for success in export sector, technology import was permitted rather freely in all the abovementioned segments in electronics industry.

However, the actual export-performance of the particular sectors in question was rather disappointing. Table 7.C may be considered in this connection:
(in Rs. Crores)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. GENERAL ITEMS FROM DTA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Electronic Components</td>
<td>3.00</td>
<td>4.11</td>
<td>5.49</td>
<td>6.40</td>
<td>7.11</td>
<td>6.76</td>
</tr>
<tr>
<td>(iii) Calculators, Computer parts, Control &amp; Instrumentation</td>
<td>5.37</td>
<td>3.72</td>
<td>1.75</td>
<td>1.75</td>
<td>3.06</td>
<td>2.88</td>
</tr>
<tr>
<td>(iv) Computer Software</td>
<td>0.85</td>
<td>2.00</td>
<td>2.50</td>
<td>3.00</td>
<td>3.50</td>
<td>3.00</td>
</tr>
<tr>
<td>Sub-total</td>
<td>16.55</td>
<td>16.75</td>
<td>17.99</td>
<td>18.13</td>
<td>16.96</td>
<td>16.86</td>
</tr>
</tbody>
</table>

| II. SPECIAL ITEMS FROM DTA        |      |      |      |      |      |      |
| (i) Communication Equipments      | 1.65 | 2.33 | 3.90 | 2.13 | 2.33 | 3.51 |
| (ii) Equipments for Aerospace & Defence | -   | 4.96 | 10.97| 11.69| 15.73| 4.95 |
| Sub-total (i+ii)                  | 1.65 | 7.29 | 14.87| 13.82| 18.06| 8.46 |

<table>
<thead>
<tr>
<th>III. EXPORTS FROM FREE- TRADE ZONES AND BONDED FACTORIES</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.80</td>
<td>3.00</td>
<td>4.00</td>
<td>7.60</td>
<td>11.50</td>
<td>16.50</td>
</tr>
<tr>
<td>TOTAL ELECTRONICS EXPORTS</td>
<td>19.00</td>
<td>27.00</td>
<td>36.90</td>
<td>39.60</td>
<td>46.60</td>
<td>41.80</td>
</tr>
</tbody>
</table>

Notes: * rounded up figures.

DTA is the abbreviation used for Domestic Tariff Area.

Source: (i) Government of India, Department of Electronics, *Annual Report* (for the relevant years).

(ii) Gulshan Rai (IPAG), op. cit., p. 284.
It may be observed from Table 7.C that, when exports from SEEPZ and exports of special items by public sector units are excluded, for the remaining categories, the value of exports was virtually stagnant over the period 1975 - 80 (cf. sub-total of category I). The value of exports as shown in Table 7.C were at current prices. In fact, if adjustments were made to discount (i) the inflationary rise in prices over the period, and (ii) the depreciation in the value of rupee, the picture would appear even more disappointing and even may exhibit negative growth of exports in case of general-category electronic items.

\[11\] In fact, the changes in exchange rate is an important factor, to which due weightage should be given while ascertaining the real growth of electronics exports. The value of rupee depreciated significantly throughout the 1970s. As was observed by S.K. Verghese:

An analysis of the year to year variations of the rupee rate indicates that on an average 6 to 7 per cent of the annual rate of growth of India's exports in rupee terms in 3 out of 6 years during 1971-72 to 1976-77, when our exports registered significant nominal growth rates, is attributable to the depreciation of the rupee.

7.3. **The Santa Cruz Electronics Export Processing Zone: A review of its Objectives and Performance.**

An export processing zone is usually created as an "enclave within a national customs territory". It provides in a packaged form all those facilities to investors which are often regarded as sine qua non for success in export-led growth strategy. For instance, it maintains an open-door policy towards multinational corporations, ensures minimum administrative or bureaucratic control in the day-to-day functioning of the operating firms, and allows liberal facilities for duty-free import of capital goods, and parts and components, and also for repatriation of profits by foreign firms. The main idea behind the setting up of such zones during the sixties and seventies in a large number of less-developed countries was to take advantage of the growing international sub-contracting in different industries (electronics being one among them), and particularly, to cash in on the increasing tendency among transnational firms to relocate the labour-intensive

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12 UNCTAD, *The Use of Free Zones as a Means of Diversifying and Expanding Exports of Manufactures from the Developing Countries*, (June, 1973) TD/8/C-2/125, p. 3.
stages of their manufacturing process to LDC sites in their search for a cheap and docile labour force.\textsuperscript{13} The countries offering such zones were expected to reap all the benefits that are often attributed to export-led industrialisation; that is, the zones would add significantly to the given countries' export-earnings, levels of employment and, thus, to their national income. There were also projections from several quarters about other fall-outs from the zones, like - technological upgradation (through "demonstration of new processes") and expansion of the industrial base of the countries in question.\textsuperscript{14}

Since, in their drive to increase electronics exports, many LDCs (like India) had been assigning increasing importance to export-processing zones, and since in the package of various measures constituting the strategy of


\textsuperscript{14}For instance, see Angus Hone, "Export Processing Zones: Gains at the Margin", Economic and Political Weekly, Vol. VI, No. 47, (November 20, 1971), p. 2346.
export-led industrialisation, export-processing zones have an important role, a review of the performance of such zones is likely to provide some broad idea about the degree of success that can be expected from export-led industrialisation in general. In what follows in this section, an attempt is made to assess the performance of the Santacruz Electronics Export Processing Zone in India.

**General Features of the Santacruz Electronics Export Processing Zone.**

The idea of setting up an export processing zone exclusively to boost electronics exports from the country was conceived of in early-1970s. In the year 1971-72, an Indian Electronics Delegation was sponsored jointly by Department of Electronics and Trade Development Authority to explore the manner in which India's share could be increased in the rapidly growing world trade for electronics. The Delegation recommended, among others, for the setting up of an export processing zone at Santacruz, Bombay for giving a special thrust to the export of electronics goods from the country.16

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The above recommendation was accepted by the Government of India and a resolution for setting up the Santacruz Electronics Export Processing Zone was adopted in December 1972. The operations of the Zone were intended to be confined to only electronics and for hundred percent exports. It was suggested that "the net value added should in no case be below 20% and, if possible, even 30% but the average could be around 50%. Both Indian and foreign companies were invited to operate from the zone. There were provisions to allow even 100 per cent foreign-owned subsidiaries in appropriate cases.

The Government constituted a SEEPZ Board to facilitate a single point clearance of applications for industrial licensing, capital goods imports, M.R.T.P, FERA etc. Further, a SEEPZ Authority was set up under the

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17For text of the Government of India Resolution (dated, New Delhi, the 23rd December, 1972), see Government of India, Report of the Review Committee on Electronics, op. cit., p. 150


chairmanship of the Secretary, Ministry of Commerce for reviewing the performance of the zone from time to time and for giving policy directions. The day-to-day administration of the zone was entrusted to a Development Commissioner "with the necessary complement of supporting staff and officers including an Assistant Collector of Customs.\textsuperscript{20} An analysis of the important concessions and of the facilities offered to units in SEEPZ reveals that, the incentives, from any angle, were comparable to those offered by reputed export-processing zones else where in the world.\textsuperscript{21}

The Santacruz Electronics Export Processing Zone became operational in 1973–74. Being located on a hundred acre plot of land leased from Maharashtra Industrial Development Corporation, the zone is fenced off with a security

\footnote{20}{Government of India, \textit{Report of the Review Committee on Electronics}, op. cit., p. 44.}

\footnote{21}{For details regarding the facilities and concessions, see Government of India, \textit{Report of the Review Committee on Electronics}, pp. 156 – 159 (Appendix B5). The figures and information cited by the Committee clearly showed that, the facilities and incentives offered within SEEPZ, except for some minor differences, were comparable with those provided in EPZs elsewhere in the world.}
system on entry and exit. Originally, it had a capacity to accommodate between 80 and 100 units and was expected to provide employment for about 15000 personnel.\textsuperscript{22}

Regarding exports, the initial expectation was that, by the middle of 1976, SEEPZ would have an export-capacity of about Rs. 22 crores worth of electronic goods, and by the end of the Fifth Five Year Plan the annual exports would reach Rs. 50 crores.\textsuperscript{23}


\textsuperscript{23}Ibid., p. 646.
Review of Performance.

Data on various aspects of operation and performance of SEEPZ were available for the years 1974-75 to 1981-82. An analysis of the data leads to certain important revelations. These are presented below:

(a) GROWTH OF EXPORTS AND EMPLOYMENT:

The Santacruz Electronics Export Processing Zone largely failed to fulfil its original objectives — both as regards the volume of exports and employment. Table 7.D shows the value of exports and the employment provided by the Zone:
<table>
<thead>
<tr>
<th>Year</th>
<th>No. of units in operation</th>
<th>Employment (Cumulative)</th>
<th>Annual Exports (in Rs. Crores)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974-75</td>
<td>5</td>
<td>150</td>
<td>0'05</td>
</tr>
<tr>
<td>1975-76</td>
<td>8</td>
<td>800</td>
<td>0'56</td>
</tr>
<tr>
<td>1976-77</td>
<td>18</td>
<td>1500</td>
<td>3'01</td>
</tr>
<tr>
<td>1977-78</td>
<td>23</td>
<td>1700</td>
<td>4'06</td>
</tr>
<tr>
<td>1978-79</td>
<td>27</td>
<td>1800</td>
<td>6'26</td>
</tr>
<tr>
<td>1979-80</td>
<td>33</td>
<td>2000</td>
<td>11'14</td>
</tr>
<tr>
<td>1980-81</td>
<td>37</td>
<td>2500</td>
<td>18'86</td>
</tr>
<tr>
<td>1981-82</td>
<td>39</td>
<td>3000</td>
<td>29'62</td>
</tr>
</tbody>
</table>

Source: Development Commissioner, Santacruz Electronics Export Processing Zone, "Materials for Administrative Review of the Present status of SEEPZ (as on 31st May, 1982)", (Bombay: 1982), mimeographed.
It is evident from Table 7.0 that till 31st March, 1982, the contributions from SEEPZ, either in terms of gross exports or employment, remained relatively insignificant. It was initially projected that the annual exports from SEEPZ by 1976 would be around Rs. 22 crores and the same would rise to a level of Rs. 50 crores by 1978-79. Against these projections, as may be seen from Table 7.0, the actual exports during 1976-77 and 1978-79 were around Rs. 3 crores and Rs. 6'26 crores respectively.

As regards employment, while the initial projection was that, the zone, when fully operational, would provide employment to about 15000 personnel; in reality, the actual employment within SEEPZ till 31.3.82 was no more than only 3000 personnel.

b. PATTERN OF INVESTMENTS AND OPERATION WITHIN SEEPZ

As export processing zones essentially are the devices through which the less-developed countries try to exploit transnational Corporations' strategy of globalisation of production for enhancing their own export earnings, the success or failure of an export processing zone can be explained in terms of the extent to which the transnational corporations could be attracted into the zone to set up
production facilities for export. However, the experience in SEEPZ had not been an encouraging one from this point of view. This would become clear, if the pattern of investments within the SEEPZ were considered. Available data shows that out of the 104 approvals awarded by the Government (for setting up units in the zone) till 31.3.1981, only 18 cases involved equal or majority foreign-participation in equity; among these only 14 units were actually operating as on 31.3.1981. Table 7.E shows the share of different categories of investors among total approvals and among the total number of units that were actually in operation:
<table>
<thead>
<tr>
<th>Category</th>
<th>No. of units</th>
<th>No. of units</th>
<th>Col. (3) as % of Col. (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EQUAL OR MAJORITY FOREIGN PARTICIPATION IN EQUITY</td>
<td>18</td>
<td>14</td>
<td>78%</td>
</tr>
<tr>
<td>II. MINORITY FOREIGN PARTICIPATION OR ONLY TECHNICAL/ MARKETING TIE-UP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Minority Foreign Participation in equity</td>
<td>21</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>(ii) Purely Technical/Marketing Tie-up</td>
<td>14</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Sub-total (i + ii)</td>
<td>35</td>
<td>11</td>
<td>31%</td>
</tr>
<tr>
<td>III. 100% INDIAN-OWNED UNITS WITH NO FOREIGN COLLABORATION</td>
<td>51</td>
<td>12</td>
<td>24%</td>
</tr>
<tr>
<td>GRAND TOTAL</td>
<td>104</td>
<td>37</td>
<td>36%</td>
</tr>
</tbody>
</table>

Note: This table shows the position as on 31.3.1981.

On 31.5.1982 (i.e. 14 month later) the position in SEEPZ was as follows: No. of units approved - 122; No. of cases where approval was subsequently cancelled/withdrawn - 61; No. of units actually in operation (on 31.3.82) - 39. Among these 39 units, 14 were having majority foreign participation in equity, 7 were having minority foreign participation, and 18 units were purely Indian-owned with or without any technical/marketing collaboration with foreign parties.

Source: Same as Table 7.D.
It may be observed from Table 7.E that, in about one-third of the total approved cases, proposals were for only minority foreign ownership or for technical/marketing tie-ups with foreign parties; in about half of the total approved cases, the proposals envisaged the setting up of purely Indian units with no foreign association of any sort. However, in the former case (Category II in the Table), only eleven units were actually in operation as on 31.3.1981; in the later case (Category III in the Table), the number of units in operation was only 12. The general lack of health of the Indian-owned units and their non-viability for EPZ purposes is reflected by Table 7.F which shows the contributions from different categories of operating units towards the zone's total exports and value Added.

As is evident from the table, while the 14 units with equal or majority foreign ownership accounted for 65% of the zone's total exports and 87% of the cumulative value-Added till 31st March, 1982, the predominantly Indian-owned units and 100% Indian-owned units (Category II & Category III in the Table), jointly contributed till that date only 33% of the zone's total exports and only 11% of the value-Added.
C. SIZE OF UNITS AND EXPORT-PERFORMANCE

An analysis of the data relating to performance by individual units reveals that, till 1981-82, only 8 operating units in SEEPZ could reach an export-capacity of Re. One crore per annum. Among these 8 units, 6 were either equally or predominantly foreign-owned, one unit had minority foreign-participation in equity, and only one unit was a 100% Indian-owned venture. Table 7.G shows (in pages) the size-distribution of different units in the zone (on the basis of value of exports during 1981-82) and the share of the major units among the total SEEPZ exports:
<table>
<thead>
<tr>
<th>Category</th>
<th>No. of Units</th>
<th>Value of EXPORTS</th>
<th>IMPORTS</th>
<th>VALUE ADDED *</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Units with EQUAL OR MAJORITY FOREIGN PARTICIPATION IN EQUITY</td>
<td>14</td>
<td>4755.62</td>
<td>3208.43</td>
<td>1547.19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(65)</td>
<td>(87)</td>
<td></td>
</tr>
<tr>
<td>II &amp; III. Units with MAJORITY OR 100% INDIAN OWNERSHIP</td>
<td>25</td>
<td>2464.76</td>
<td>2264.34</td>
<td>200.42</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(33)</td>
<td>(11)</td>
<td></td>
</tr>
<tr>
<td>IV. Units which withdrew from the Zone (till 31.3.1982)</td>
<td>6</td>
<td>135.61</td>
<td>97.41</td>
<td>38.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2)</td>
<td>(2)</td>
<td></td>
</tr>
<tr>
<td>TOTAL OF ALL UNITS</td>
<td>45</td>
<td>7355.99</td>
<td>5570.18</td>
<td>1785.81</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(100)</td>
<td>(100)</td>
<td></td>
</tr>
</tbody>
</table>

* Value Added in this table indicates excess of Exports over Imports.

Source: Same as Table 7(D).
TABLE 7.G : SIZE-DISTRIBUTION OF UNITS IN SEEPZ (AS ON 31.3.1982) ON THE BASIS OF VALUE OF EXPORTS

<table>
<thead>
<tr>
<th>Category</th>
<th>Size of Export during 1981-82</th>
<th>Number of operating units on 31.3.1982</th>
<th>EXPORTS (during 1981-82)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Majority Foreign Ownership</td>
<td>Minority Foreign Ownership</td>
</tr>
<tr>
<td>1</td>
<td>Major</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2. OTHERS</td>
<td>(medium, small and sick)</td>
<td>(7)</td>
<td>(4)</td>
</tr>
<tr>
<td></td>
<td>(a) Rs. 10 lakhs to Rs. 1 crore</td>
<td>(1)</td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td>(b) Export less than Rs. 10 lakhs</td>
<td>(-)</td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td>Sub-total (a+b+c)</td>
<td>8</td>
<td>6</td>
</tr>
</tbody>
</table>

TOTAL -
14 7 18 39 29.62 100%

Note: (1) No. of units pertaining to each sub-group (within Category "Others") have been put inside brackets in order to give clarity to the table.
(11) (-) indicates NIL.
Source: Same as Table 7.D.
From Table 7.G, it appears that, in 1981-82, the eight major units having an export capability of more than Rs. one crore accounted for as much as 80 per cent of the zone's total exports, while contribution from the other 31 units operating within the zone was confined to a mere 20 per cent of the total. Out of the total 39 units operating within the zone, 11 units exported less than Rs. 10 lakhs (each), and 4 units did not have any export at all. All these were indicative of the general lack of health for the units operating within the zone.

b. NET FOREIGN EXCHANGE EARNING THROUGH SEEPZ

Performance of the zone with regard to net foreign exchange earnings was also far from being satisfactory. While exports from SEEPZ represent its gross foreign exchange earnings, imports represent foreign exchange out-go. The excess of exports over imports reflect gross foreign exchange Value-Added. There are also other heads of foreign exchange drainage; the more important ones are as follows: (i) lumpsum payments to foreign collaborators for technology; (ii) royalty and technical fees remittances; (iii) dividend remittances where financial participation is involved; (iv) salary to foreign technicians; (v) payments for training of
Indian personnel abroad; (vi) expenditure in connection with business-promotion tours. The total foreign exchange expenditure under all the above heads also need be deducted from exports, if the net foreign exchange earnings through the SEEPZ are to be found out.

The nonavailability of detailed data relating to foreign exchange expenditure under the various heads mentioned in the above paragraph poses a serious problem in the matter of calculations of net foreign exchange earnings. Nevertheless, in Table 7.H, an attempt has been made to present a crude estimate of the net foreign exchange earnings from SEEPZ. This has been done on the basis of two alternative probabilities. In the first case, it is assumed that the foreign exchange expenditure for purposes other than imports were approximately 5 per cent of the gross export earnings; in the second case, these are assumed as equivalent to 10 per cent of the gross exports from the zone. Though the methodology appears to be an extremely crude one, yet from Table 7.H, it is possible to have some broad idea about the net foreign exchange earnings:
### Table 7.1: Estimated Net Foreign Exchange Earnings through SEEPZ (During 1974-82)

<table>
<thead>
<tr>
<th>Year</th>
<th>Exports</th>
<th>Imports</th>
<th>Excess of Exports over Imports</th>
<th>&quot;Other&quot; Foreign Exchange Expenditure at assumed rate of 5% on Exports</th>
<th>&quot;Other&quot; Foreign Exchange Expenditure at assumed rate of 10% on Exports</th>
<th>Net Foreign Exchange Earnings</th>
<th>CASE - I</th>
<th>CASE - II</th>
</tr>
</thead>
<tbody>
<tr>
<td>1974-75</td>
<td>0.05</td>
<td>0.19</td>
<td>(-) 0.14</td>
<td>0.00</td>
<td>0.00</td>
<td>(-) 0.14</td>
<td>(-) 0.14</td>
<td>(-) 0.14</td>
</tr>
<tr>
<td>1975-76</td>
<td>0.56</td>
<td>1.13</td>
<td>(-) 0.57</td>
<td>0.03</td>
<td>0.06</td>
<td>(-) 0.60</td>
<td>(-) 0.63</td>
<td>(-) 0.63</td>
</tr>
<tr>
<td>1976-77</td>
<td>3.01</td>
<td>3.35</td>
<td>(-) 0.34</td>
<td>0.15</td>
<td>0.30</td>
<td>(-) 0.49</td>
<td>(-) 0.64</td>
<td>(-) 0.64</td>
</tr>
<tr>
<td>1977-78</td>
<td>4.06</td>
<td>2.38</td>
<td>1.68</td>
<td>0.20</td>
<td>0.41</td>
<td>1.43</td>
<td>1.27</td>
<td></td>
</tr>
<tr>
<td>1978-79</td>
<td>6.26</td>
<td>3.82</td>
<td>2.44</td>
<td>0.31</td>
<td>0.63</td>
<td>2.13</td>
<td>1.81</td>
<td></td>
</tr>
<tr>
<td>1979-80</td>
<td>11.14</td>
<td>8.92</td>
<td>2.22</td>
<td>0.56</td>
<td>1.11</td>
<td>1.66</td>
<td>1.11</td>
<td></td>
</tr>
<tr>
<td>1980-81</td>
<td>18.86</td>
<td>13.05</td>
<td>5.81</td>
<td>0.94</td>
<td>1.89</td>
<td>4.87</td>
<td>3.92</td>
<td></td>
</tr>
<tr>
<td>1981-82</td>
<td>29.62</td>
<td>22.86</td>
<td>6.76</td>
<td>1.48</td>
<td>2.96</td>
<td>5.28</td>
<td>3.80</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>73.56</strong></td>
<td><strong>55.70</strong></td>
<td><strong>17.86</strong></td>
<td><strong>3.68</strong></td>
<td><strong>7.36</strong></td>
<td><strong>14.18</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: For Col. 2 & Col. 3 - Same as Table 7.D.
As may be observed from Table 7.1, SEEPZ’s gross foreign exchange earnings (through export) during the period 1974 - 82 was Rs. 73.56 crores. During this period, total foreign exchange expenditure due to imports, was Rs. 55.70 crores. Now, when "other" foreign exchange expenditure is assumed as equivalent to 5 per cent of total exports, it appears that, the cumulative net foreign exchange earnings in SEEPZ during 1974 - 82 was only around Rs. 14 crores. If an allowance of 10 per cent of gross exports were made to take care of "other" foreign exchange expenditure, the cumulative net foreign exchange earnings would appear to have been around Rs. 10 crores during the said eight-years period.

C. COSTS OF PROMOTION OF SEEPZ AND NET GAINS

Nevertheless, the costs of promotion and maintenance of SEEPZ had been considerable. This would become clear from Table 7.1 which shows the total government expenditure (till 31st March, 1982) for setting up and maintenance of the Santacruz Electronics Export Processing Zone. In the table, the revenues earned by the Government through servicing charges etc. from zone units have been deducted from gross expenditure in order to find out the net expenditure on the zone.
### TABLE 7. I : EXPENDITURE OF THE CENTRAL GOVERNMENT ON SEEPZ (TILL 31.3.82)

( in Rs. Crores )

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Expenditure on the Zone (Capital Expenditure + Revenue Exp.)</th>
<th>Income from the Zone (a)</th>
<th>NET EXPENDITURE during the year (Col.2 minus Col.3)</th>
<th>Cumulative Net Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973-74</td>
<td>0.338</td>
<td>-</td>
<td>0.338</td>
<td>0.338</td>
</tr>
<tr>
<td>1974-75</td>
<td>1.860</td>
<td>-</td>
<td>1.860</td>
<td>2.198</td>
</tr>
<tr>
<td>1975-76</td>
<td>0.188</td>
<td>0.054</td>
<td>0.134</td>
<td>2.332</td>
</tr>
<tr>
<td>1976-77</td>
<td>0.592</td>
<td>0.099</td>
<td>0.493</td>
<td>2.825</td>
</tr>
<tr>
<td>1977-78</td>
<td>0.180</td>
<td>0.126</td>
<td>0.054</td>
<td>2.879</td>
</tr>
<tr>
<td>1978-79</td>
<td>0.467</td>
<td>0.146</td>
<td>0.321</td>
<td>3.200</td>
</tr>
<tr>
<td>1979-80</td>
<td>0.960</td>
<td>0.249</td>
<td>0.711</td>
<td>3.911</td>
</tr>
<tr>
<td>1980-81</td>
<td>1.497</td>
<td>0.301</td>
<td>1.196</td>
<td>5.107</td>
</tr>
<tr>
<td>1981-82</td>
<td>0.983</td>
<td>0.345</td>
<td>0.638</td>
<td>5.745</td>
</tr>
</tbody>
</table>

**TOTAL TILL 31.3.1982** 7.065 1.320 5.745 -

**Note**: (a) Income from the Zone refers to Lease Rent, Factory Rent and Servicing Charges etc. collected from units in the Zone.

**Source**: Same as Table 7.D.
It may be observed from Table 7.I, that, till 31.3.1982, the gross expenditure (inclusive of both capital expenditure and revenue expenditure) on SEEPZ amounted to Rs. 7'065 crores. This was nearly 10 per cent of total exports from SEEPZ till that date. The revenue earned by the Government from the zone units till 31.3.1982 was Rs. 1'32 crores. Thus, the cumulative net expenditure on SEEPZ till 31st March, 1982, was Rs. 5'745 crores.

As has been shown earlier in Table 7.I., the cumulative net foreign exchange earnings in SEEPZ (till 31.3.1982) could be between Rs. 10 crores and Rs. 14 crores.

Thus, let alone the opportunity costs of resources diverted to the zone, even the direct costs (as percentage of net foreign exchange earnings) thrown by SEEPZ upon the national exchequer were prohibitively high.

7.4. **Export-oriented manufacturing in electronics Industry: Review of trends.**

The slow growth of electronics exports from India and the disappointing performance of the Santacruz Electronics Export Processing Zone were investigated by the Memon Committee on Electronics Exports (1978), the Sondhi Committee (1979) and the Tandon Committee (1980). All these Committees prescribed, as corrective measures, for further
liberalisation of policies concerning industrial approvals, MRTP clearances and foreign collaborations, and for strengthening of the different export-incentives available to domestic and foreign firms.

However, while formulating their recommendations none of the above Committees did undertake any indepth examination of the direct and indirect costs of the proposed liberalisations and incentives, the distortions that they might introduce within the growth-process. Secondly, they also failed to explain why, despite the several liberalisation measures carried out during the 1970s, and despite the formulation and operation of the different export-incentive schemes, electronic exports from India failed to grow as per expectations. In particular, within the analysis presented by the above-mentioned official Committees, the various exogenous factors that had vital bearing on the growth of electronics exports were not given due attention.

While endogenous factors like the pattern and pace of growth of an economy and the direction of government policies are no less important, in the present section we shall focus primarily on the exogenous set of factors that has, so far, decisively influenced the success of the export-led growth strategy. The exercise would not only provide a significant part of the explanations for the past failures, but would also make it possible to assess the overall viability of the export-led growth strategy. To begin with, while in
the 1970s, the strategy of "outward-looking industrialisation" was increasingly gaining acceptance among a number of less-developed countries, till late seventies export-oriented manufacturing in electronics industry was heavily concentrated geographically "in a handful of countries in South East Asia and a few locations in the Caribbean and on the border of Northern Mexico". However, with regard to the nature of manufacturing activities in these countries, particularly the following two features were noticeable:

(1) In all the cases, manufacturing for exports was restricted predominantly to the assembly of consumer electronics products and to the assembly of electronic components, (particularly, semiconductors devices). The dependence on imported components, naturally, was high.

(2) Secondly, the dependence on foreign-investment was also high. In other words, electronics manufacturing in all these countries was "largely subordinated to the requirements of the 'world-wide sourcing' strategies of multinational firms in their search for low-cost production sites and a docile female labour force."

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Now, if it is assembed for the time being that a developing country (like India) — which has been a late-comer into the arena of 'outward looking industrialisation' has no other alternative but to adopt the above framework of 'dependence', it means, the success of such a country in achieving the same order of export-growth as South Korea, Taiwan, Singapore or Hongkong is to be determined largely, by the following factors:

(i) the pattern and pace of growth of the world-demand for the given product categories (i.e. consumer electronics and semiconductors) and the extent to which the major consuming countries would allow within their territories entry of goods from LDCs in general, and from the given country in particular.

(ii) the extent to which a late entrant to the process would, by offering comparable economic and other incentives, be able to attract transnational enterprises to undertake export-oriented manufacture within its territory; and finally,

(iii) the nature and direction of technological advance in developed countries.

Let us now examine, how far, from the above points of view, the actual situation in electronics industry since mid-1970s — has been favourable to a country like India (that was to be a relatively late entrant to the markets of electronics exports).
7.4(a). The market Question: Export means sales outside the country; therefore, for exports to grow, sales-outlets are needed. Two questions thus naturally arise: Selling to whom? and how much can be sold? The magnitude of the problems can be better understood if the following facts are considered:

(i) More than three-fourth of the world-market for electronic equipments and components was concentrated in the developed countries. 27

(ii) The developed countries, as a group, were also the major producers and exporters in electronics industry.

Naturally, therefore, the major portion of the world-trade in electronics remained restricted among developed countries themselves, with LDCs as a group playing largely a peripheral role. 28 Further, within the LDC group, the major portion of the electronics exports was accounted for by a very limited group of countries located mostly in South-East Asia. 29

27 For details regarding pattern of World consumption of Electronic equipments and components, see "Report of the Committee on Electronics Exports", op. cit., pp.253 - 254.


29 Ibid., p. 293 (Table 11).
In the above context, any major drive by a particular LDC could have become successful, if any of the following things had happened:

(1) the developed countries allowed the LDCs to penetrate in a bigger way into their own markets, though this could have meant substantially reducing their own share in world trade in particular items;

(2) if the LDC in question had succeeded in snatching away a bigger share (than before) of the incremental LDC exports to developed country markets;

(3) if the growth rate of total world demand for electronic items had been so high that the country in question could easily increase its volume of exports without substantially affecting other countries' interest and, thereby, without having to face any resistance from others.

The real situation in electronics industry that was noticeable particularly since mid-1970s did not allow 'optimism' on any of the above grounds. To start with, the world-market for electronics, that experienced a boom during the 1960s and in early-1970s, gradually began to show signs of recession from mid-1970 onwards. Within the general situation at least three features were noticeable:
(i) The market in developed countries for consumer electronics items (the category of equipments for which the LDCs enjoyed their comparative advantage) was more or less saturated, and the replacement demand in this category was generally in nature of demand for new technological/ product innovations. Given the fact that new technological innovations were the near-monopoly of a handful of transnational corporations or developed-country-based conglomerates, making any major breakthrough in the export-market by a new LDC was possible only if it undertook the role of a sub-contractor to the developed-country based TNCs. But even the scope for sub-contracting considerably diminished after mid 1970s because of technological advances and because of gradual decline in the labour-intensity of manufacture. 30

(ii) While the world-market for the given categories of electronic goods was either stagnant or was

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shrinking over time, there was a spurt on the supply side. Many new LDCs, having been inspired by the experience of Korea, Taiwan, Singapore and Hongkong, started seeking their entry into the world market;³¹ in such a situation, competition among LDCs — not only for capturing sales-outlets, but also for attracting the transnational giants to undertake production for exports within their respective territories — was bound to grow fierce over time. Against this overall back-drop, where many aspiring LDCs were simultaneously trying to venture into the export-market, the prospects for a country like India (which itself was to be a new entrant) of capturing a sizeable share of total LDC exports were relatively poor. Even a nominal increase in the share of the given country among total LDC exports must have called for costs (both direct and indirect) of a magnitude that was bound to raise questions about the net gains from enlarged exports.

(iii) Finally, penetration inside the developed country markets increasingly became difficult for LDCs.

Struck by the successive oil price hikes since early 1970s and under pressure of industrial recession, the developed countries started resorting to protectionist policies; and 'barriers' were increasingly being erected against entries from LDCs. All these meant that, for a 'latecomer' to the process of export-led growth having a size and population as giant as that of India, a repetition of the Korean-type growth experience was an extremely difficult proposition. The East-Asian miracle (particularly of Korea, Taiwan, Singapore and Hongkong) occurred at a time when the world export market, as a whole, was experiencing a boom. As Nayyar observed in 1983: "This prolonged buoyancy has now come to an end in a world economy characterised by stagflation; economic growth in the industrialised countries has slowed down, almost to a half while protectionism is on the increase". 

And, how much India needed to have exported, if electronics exports were to play as effective a role in the economy as that of South Korea? While no definite

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33 Ibid., p. PE23.
answer to this question is possible, a hypothetical situation may be simulated to situate the problem in the proper context. In 1980, Korea produced $3,300 million worth of electronic equipments and components, of which nearly 70 percent was exported.\textsuperscript{34} In that year, the total population of that country was nearly 38.4 millions, and the per capita electronics exports on this basis was worth $60.16. Now, if this ratio is applied to India, it means in 1980 with a population of around 673 million in mid-1980 India should have exported electronic equipments and components worth $40485 millions. Further, as per 'comparative advantage' principle, most of these exports should have constituted consumer electronics items and semiconductors. The total world-consumption of these items (i.e. consumer electronics and semiconductors) in 1980, however, was projected as only worth $34268 millions.\textsuperscript{35}

The above estimates, however crude they may be, only shows the near-impossibility of a repetition of the

\textsuperscript{34}Dieter Ernst, "Automation Employment and Third World: Case of Electronics Industry", op. cit., p. 1214.

South-east Asian growth miracle in case of India, regardless of whatever efforts the Indian planners do put forward in future in the same direction. In fact, the question of market-constraints, albeit in a broader context was examined at length by William R. Cline (1982) and Deepak Nayyar (1983). Both researchers came ultimately to the conclusion that any attempt to generalise the model of the East Asian "gang of four" (i.e. Hong Kong, Korea, Singapore and Taiwan) on the part of other LDCs would mean penetration by them into the rich countries' markets of such an order that would almost certainly provoke widespread protectionist response from the latter ruling out the implementation of such a strategy. As Cline did put it:

"Elevator salesman must attach a warning label that their product is safe only if not overloaded by too many passengers at one time; advocates of the East Asian export model would do well to attach a similar caveat to their prescription. More broadly, development planners adopting the increasingly popular strategy of export-led growth must take into account the probable


37 William R. Cline, op.cit., p. 81.
capacity of the international market to absorb the resulting increases in exports from their own and like-minded developing countries". 38

7.4(b). Transnational Strategy. Inspite of the overall limits set by the absorptive capacity of the world-market and the growing competition among aspiring LDCs, as delineated in section 7.2(b) above, it might well have been possible for a few LDCs to considerably enhance their electronics exports during 1970s. However, as noted earlier, a close examination of the cases reveals that, the breakthroughs achieved by the given countries were intimately linked with their success in attracting transnational corporations (based in USA, Japan and Western Europe) to undertake 'manufacture-for-export' within their respective territories. It is the realisation of these realities in the context of export-led growth strategy that, in fact, had motivated advocates of 'outward looking industrialisation' to prescribe for India an increasingly liberal set of policies with regard to foreign investment, and adoption of an welcoming gesture to transnational firms. However, in most cases the prescriptions tended to ignore three important issues, namely, (i) the complexities of transnational strategy and the Non-economic factors that enter into the

38 Ibid., p. 89.
calculation of TNCs in their choice of sites, (ii) the 'net gains' to be derived from export-led growth, particularly when export-incentives are 'costly'; and (iii) the supply-side bottlenecks, as there are limits to international relocation of manufacturing by transnational firms. Each of these issues call for some detailed examination.

To begin with, all the three official committees (viz. the Menon Committee, the Sondhi Committee and the Tandon Committee) that recommended in late 1970s vigorous drive for promotion of electronics exports and suggested framing of suitable policies and 'incentives' for gaining the favour of large international firms, had the implicit assumption that success in attracting giant TNCs in the field is largely a function of economic incentives and domestic policy-changes. However, this assumption was found as rather simplistic. For, in late seventies, most LDCs trying to raise their electronics exports had

almost similar acts of economic "incentives" for transnational firms; yet, international relocation of production remained heavily concentrated within only a few of the geographical locations. While a complete listing of all the influencing factors would be rather difficult, nevertheless, some tentative conclusions can be drawn mainly from past observations.

One important factor, to which considerable weight-age is given within the TNCs' relocation strategy, has been identified as the geographical proximity of the country offering the assembly-base to the particular TNC's home-country. Geographical proximity to home-base not only provides ease of control, but also has a vital bearing on the cost of end-products (for, international sub-contracting or relocation of production generally means importing by the TNC-affiliate, to the host LDC, parts and components from its home-base followed by their assembly there after which the assembled equipments/components are re-exported to the TNC's home country or some other country within the TNC's global network). Thus, at least initially, "US industry transferred production foremost to Western Europe and to countries 'south of the border', West

European companies transferred production to regions of Europe such as Greece, Portugal, South Italy; Japanese industry relocated mainly to South Korea and Taiwan.41

However, geographical proximity or close commercial links do not explain all. For, the massive advance in the field of transport and communication and particularly in information technology has considerably reduced the disadvantage arising out of geographical distance between the TNCs' home bases and the off-shore production sites. "It is now technically feasible for multinational firms to establish integrated systems of transborder data flows, due to convergence between information, communication and control technology. This has opened up new possibilities for multinational corporations to install captive worldwide information networks, through which headquarters' management can link together production facilities located around the world as if they were divisions within one factory".42


Two major non-economic factors which can still claim to be the ones having substantial influence on the choice of locations by transnational firms (as between low-wage countries) are: political stability in the country in question, and the docility of labour force. The first implies that the risks of nationalisation or confiscation of assets are reduced to a minimum. On the other hand, a docile labour-force reduces the possibility of industrial disputes, enables firms to 'discipline' workers, and allows a cut back in employment during recessions. In this context, it can be easily understood why countries like Hongkong, Taiwan, South Korea, Singapore, Malaysia, and even Brazil became attractive locations for TNCs to undertake export-oriented manufacture. As Nayyar observed: "They provide not only the political stability but also a strict control over trade unions, frequently through internal repression. In addition, the political dependence of the small East Asian countries gives transnational firms considerable leverage over government policies, and this is used to promote their own interests".  

43 Deepak Nayyar, "International Relocation of Production and Industrialisation in LDCs", op. cit., p. PE21.
It is the above-mentioned non-economic reasons that also partly explain why the Santacruz Electronics Export Processing Zone in India, in spite of offering 'incentives' comparable to similar such zones elsewhere, failed to attract the giant transnational corporations in electronics industry.

Nevertheless, it may be argued that the disincentives placed by non-economic realities can be successfully countered by an LDC, if it provides adequate compensation to the investing TNCs in the form of 'higher' economic incentives. In fact, the demand for increasingly higher economic incentives is bound to arise because of the following reasons:

(i) The first phase of massive expansion of international relocation of production arrangements in electronics industry was over by mid-1970s. The period since then has observed a marked decline in the number of new investments in the offshore locations by electronics TNCs.\(^{44}\) The reasons for this slowing-down of the process of redeployment of manufacturing activities, "North" to the

\(^{44}\text{Dieter Ernst, "Automation, Employment and Third World : Case of Electronics Industry", op. cit., p.1219.}\)
'South' lie partly in the saturation of the consumer electronics market in developed countries and partly in the direction of technological advance leading to situations where the labour-intensity of manufacture of electronic equipments/components has been fast on the decline. In this second phase, the largest TNCs in electronics, based on U.S., Japan and Western Europe have adopted an extremely cautious and selective approach in the matter of selection of sites for the offshore production and it seems quite unlikely that they could be motivated much by the strength of economic incentives alone. Within these changed parameters, a latecomer LDC (like India) to the process of export-led growth has either (i) to pursue the middle-sized firms in the developed countries (that have not yet gone transnational in a big way) to set up assembly-plants within its territory with guaranteed buy-back of whole or major part of the production, or (ii) to take advantage of the new possibilities of hierarchisation of different countries in electronics industry. In both cases (if the possibilities actually do materialise) economic incentives offered by aspiring LDCs would have to be

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'higher' in comparison with those offered by many LDCs in the first phase of relocation of manufacturing activities from North to the South.

(ii) Secondly, in a situation where the process of redeployment of manufacturing has considerably slowed down (since mid-1970s) and where there has been increasing competition among aspiring LDCs not only over a share in slowly growing markets but also over the relocation of production, a given LDC (like India) would have to offer sufficiently higher economic incentives to outbid others. But such a move on the part of a given LDC is likely to lead other competing LDCs to follow the suit; this may soon create pressure on the given LDC to effect another round of upward revision in the incentive structure.

(iii) Further as the locations in South Asia (including those in India) and in Africa suffer considerable international disadvantage because of geographical distance and other non-economic reasons, need also arises, from this point of view, to offer adequate subsidies/incentives to investing TNCs from developed nations.
All the above-mentioned points, obviously, raise questions about 'net gains' from export-led growth; for, incentives are not without their costs. While the benefits from export-oriented manufacture in electronics industry continue to remain largely restricted to (i) the creation of some avenues of employment for low-skill, low-paid and primarily female labour force (which remains vulnerable to drastic lay-off by the TNC management in case of market recession), and (ii) to the increasing of the foreign exchange earnings through export (on the basis of heavy dependence on foreign investment and high import-contents) analysis of past experience and the emerging technological trends suggest that, such 'gross' gains can be achieved only at tremendous costs to the economy. As studies have shown, through the creation of a 'superficial' industrial structure that is integrated more closely with the operating-TNCs' respective global hierarchical structure of skill and production (rather than with the exporting country's own economic framework), the strategy of export-led growth, left to itself, can neither become a vehicle for any effective transfer of technology, nor can lead to the upgradation of local skill or innovative capacity. 46

On the costs side, one has to consider not only the direct or opportunity cost of diverting resources to the export sector, but also the indirect cost in terms of growing 'dependence' on foreign technology in general, and TNCs in particular. In order to understand the implications of this dependence, it would be helpful if the emerging technological trends are briefly delineated.

7.4(c). Labour intensity of manufacture in electronics industry and the emerging technological trends:

From the point of view of 'comparative advantage,' the biggest advantage enjoyed by the less-developed countries (like India) is the widespread unemployment within these countries and the resultant cheap labour rates vis-a-vis the developed countries of the world. The easy availability of particularly semi-skilled and unskilled labourers at cheaper rates has been, in fact, the biggest motivating factor to the developed-country-based TNCs to relocate the labour-intensive portion of their manufacturing process to LDCs in the name of export-oriented manufacture within the latter's territory. For instance, in case of consumer electronics and other labour-intensive electronic
equipments, the practice that grew widely popular among the developed-country-based TNCs was to export to the LDC locations (from their home countries) complete parts and components, which after being assembled there, were imported back to their home countries or were sent directly to other countries for sale. "In case of semiconductors, until very recently, processed wafers used to be sent by plane from the US to an offshore location in the Far East for cutting and assembly, and then sent back again to the US for final testing and burn-in."47

The relocation of labour-intensive stages of manufacture of the above sort often took two different forms: sometimes it was in the shape of international subcontracting, i.e., the TNCs got the processing or assembly works performed through domestic firms in LDCs who worked as sub-contractors to the developed-country-based firms; in other cases, the giant TNCs set up their wholly owned subsidiaries or joint-venture projects in the offshore locations which were vertically integrated with the TNCs' global production networks. In both cases, of course,

the ultimate objective of TNCs was to exploit, through
globalisation of production, the cheap labour-rates
prevalent in LDCs. These practices among TNCs, that
experienced phenomenal expansion in the sixties and in
early-1970s enabled a select group of LDCs in South-East
Asia and in some other parts of the world to increase
their manufactured exports quite significantly.

However, the relocation of manufacturing to LDC
sites had considerably slowed down particularly since
mid-1970s. Part of the reason for this slow down lies
in the saturation of the consumer electronics market in
developed countries. But even in case of semiconductors,
where the market was still growing, the slow-down was
noticeable.

This abovementioned emerging situation in elec­
tronics industry can be explained only in terms of the

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48 See UNCTAD, "The use of free zones as a means
of expanding and diversifying exports of manufactures
from developing countries" (TD/B/C.2/125); and UNCTAD,
"Electronics in Developing Countries : Issues in trans­
fer and development of technology, (TD/B/C.6/34) United

49 Dieter Ernst, "Automation, Employment and
Third World : Case of Electronics Industry", op. cit.,
p. 1219.
direction of technological advance in the developed countries, the declining labour-intensity of manufacture of electronic items and the increasing application of automation techniques not only in the earlier stages of manufacturing process, like device design, wafer fabrication etc., but also in the later stages of assembly and final testing.50 Within the nature and direction of technological change in advanced countries, certain important trends are clearly discernible: First, the use of integrated circuits (ICs) in place of discrete components has led to progressive and very fast reduction in the number of individual components that are required to make an electronics equipment. The latter, in turn, has meant that, the amount of labour which go on to make an electronics product has also progressively declined. Meanwhile, because of technological advance in developed countries, the density per IC chip has been continuously on the increase. While in 1970, the component functions integrated on a single semiconductor chip was around 1000, by 1980, it was possible to forecast integration up to one-million component-functions within the next few years. This provides a broad idea about the extent to which the labour-intensity of manufacture has declined over the decade of seventies. Secondly, the labour-intensity of manufacture has also declined because of automation.

50 For details regarding the technology trends in electronics industry, see Appendix-I to the present study.
Particularly in case of semiconductors, the introduction of new technologies to automate chip assembly has led to severe curtailment of the direct labour cost in manufacture. But at the same time, there has been dramatic upsurge in capital intensity of manufacture. In semiconductor sub-sector within electronics industry, for instance, with every rise in density/complexity per IC chip, the costs of design and equipment have exploded. Some idea about the sky-rocketing capital costs of IC manufacture can be obtained from the following calculations:

"Currently, the industry rule-of-thumb is that the design cost per gate is about $100; since state-of-the-art chips normally have as many as 10,000 gates, the design cost for each device approximates $1 million. With available process technologies, it may well be possible to make chips with one million gates within a few years: design costs for such devices will be extraordinarily high. An integrated circuit with a density of one million gates would require more than 150 man-years and at least ten calendar years to develop." 51

In fact, since early-1970s, the potentialities for (i) marginalisation of direct labour-cost among total costs of manufacture, and (ii) deployment of automation techniques all along the manufacturing process in electronics industry had increased so much so that, from about the mid-1970s, the Japanese firms virtually stopped seeking cheap labour offshore.\(^{52}\) Such a clear trend however, was not discernible as regards the U.S. and West-European TNCs. But evidences suggest that the relocation of labour-intensive manufacturing to LDC locations has definitely slowed down.\(^{53}\) Reasons for failure of SEEPZ in India in attracting giant TNCs from developed countries in a big way lie partly in this phenomenon.

Within the emerging technological situation in electronics industry (about which our knowledge is still very much limited), certain important trends can be


(i) The tremendous advance in the sphere of information technology suggests that, in the foreseeable future, automation will constitute the core issue in assembly-strategies of transnational firms. It also seems that, application of automation techniques will not only remain confined within advanced countries' territories. In fact, giant TNCs, for a variety of reasons, are likely to introduce automation even in their assembly-plants in offshore LDC locations.

(ii) The rising capital intensity of electronics manufacture and the diversion of huge funds to research and development have, in turn, meant that the TNCs are under tremendous pressure not only to seek access to markets all over the world but also to intensify global search for low-cost factors of production. On the one hand, electronics TNCs would try increasingly to spread the excessive cost burden of research and development by penetrating or at least retaining markets

54 The information furnished here are based on Dieter Ernst, "Automation, Employment and Third World: Case of Electronics Industry", (op.cit., pp. 1213-1223) which deals in detail with the emerging technological situation in Electronics Industry on a global context.
all over the world; on the other hand, the availability of particularly skilled manpower, engineers and R & D personnel in LDCs at relatively cheaper rates would induce TNCs to extend their international production net work to the more advanced LDCs. Nevertheless, as for semiconductor manufacture, the trends since mid-1970s indicate that the bulk of the international investment of TNCs would occur within OECD regions.

(iii) For reasons stated earlier, the industrial investment by TNCs in less developed countries would continue to expand; but this expansion would take place rather slowly and in a very selective manner. Signs are already discernible of a new "hierarchisation" among different types of Third World locations. While the classical offshore locations in South-East Asia are increasingly being used by TNCs, for more capital-intensive and integrated production activities, in the new locations in the Phillipines, Thailand, Indonesia, the Caribbean Basin, China, and Sri Lanka, TNCs' operation is found restricted to the mere assembly of mature components and in some cases to final testing.
"Interestingly, both types of offshore sites have been characterised by rapidly increasing levels of automation."  

(iv) Thus, on the one hand the urge to vertically integrate an increasingly hierarchial global production network and, on the other, increasingly tough technological protectionism among giant transnational corporations are, in turn, forcing these corporations to rely on stricter control on offshore production facilities than was the case ever before. But this, in turn, means that the integration of these subsidiaries with the host LDC's own economic or industrial structure would continue to remain weak.

(v) Finally, as capital-intensity of manufacture and potentialities for automation increases, as marginalisation of the worker within the manufacturing process proceeds further, and also, as TNC headquarters' control on offshore affiliates intensifies, "the positive development effects to be reaped by developing countries in terms of employment generation, skill information, forward and

55 Ibid., p. 1219.
backward inter-industrial integration and technological spin offs might become even smaller and less viable than they are today.  

The trends, as cited in the above paragraphs, are tentative and sketchy. Nevertheless, they raise questions about the viability as well as on the desirability of the export-led growth strategy in electronics industry for a developing country like India. At least, many of the traditional arguments in favour of export-led growth strategy, that prescribe for open-door policy to multinational firms, need be evaluated afresh in the light of the emerging situation in electronics industry in general, and international relocation of manufacturing, in particular.

56 Ibid., p. 1222.