CHAPTER I

STRATEGIES OF INDUSTRIALISATION
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The problem is that of initiating economic growth in an overpopulated, small less developed country. This problem arises out of the failure of primary exports to act as growth propellants. Increasing population pressure and limited natural resources when faced with stagnant export earnings leave only two alternatives. They are, first, a deliberate policy of government initiated industrialisation; second, emigration. Emigration, however, is not feasible due to the political restrictions of the recipient countries. A deliberate policy of industrialisation does not assume the neglect of agriculture. It only advocates emphasis on industry as the sector into which government demand is injected rather than agriculture.

Case for Industrialisation

The strongest argument for industrialisation stems from the nature of demand for industry and for agriculture. The demand for manufactures is income elastic, by virtue of Engel's law. In the case of agriculture and primary products the demand is relatively inelastic. Further, the responses to increasing


demand differ in agriculture and in industry. These differences are determined by technological considerations and market structure which characterise industry and agriculture.

The technological differences between agriculture and industry are such as to allow for economies-of-scale in industry. Any process where it is possible to introduce standardisation and mechanisation results in increasing returns. This reduces the need for continual managerial judgement and allows for greater controllability. The scope for introduction of such processes is limited in agriculture. Agriculture is characterised by random elements such as the vagaries of weather, differences in soil etc. which make it difficult to control. Thus, "expansion of industrial demand, opens up economies-of-scale inducing an immediate growth of real income without necessarily raising industrial prices. Increases in agricultural demand on the other hand, runs quickly into diminishing returns. Its impact effect is not primarily an increase in income, but its redistribution through better terms of trade for agriculture."

Increasing returns lead to the growth of oligopoly in industry, while agriculture is characterised by competitive conditions. The differences in market structure of agriculture and of industry is again reflected in their responses to demand. Industrial output expands to meet increased demand through the introduction of new techniques or the assimilation of unused innovations. This is because oligopolist industry not only have greater financial capacity to invest in research, but

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increasing profits through innovation is not eroded by competition. But agriculture in the short run is unable to respond in a similar manner. The existence of competition precludes the existence of unused innovations at current prices so that increases in demand can be met only by increases in price.

The conditions stated above are responsible for the early setting of diminishing returns in agriculture. Agriculture as a basis for economic development is a much more slow process. The main constraint to agricultural growth is the supply inelasticity of an adverse man/land ratio. The constraint to industrial development on the other hand, emanates from demand factors. The supply inelasticities in agriculture can be surmounted through the application of new techniques and the removal of surplus labour which is contingent to industrial development (e.g. fertilisers etc.). The problem is further accentuated when we consider the distribution of income in agriculture. Increase in prices of agricultural goods leads only to increased rents. The increased income of landowners often fails to create a diversified market for manufactures. Rather there may be an increase in the marginal propensity to import, transmitting growth forces abroad. This point we shall consider later.

Reasons for Lack of Industrialisation

The failure of the market to industrialise in response to population pressure is consequently due to weak demand impulses. In this study we shall concentrate on the demand
factors as it is reflected in market conditions. The crux of the problem is in the size of the market. It is a reemphasis of the dictum that inducement to invest is limited by the size of the market. At this point an examination of the forces which determine market size becomes essential.

Market Size

Market size is determined by a) population size and density; b) income distribution; c) geographical size.

Most less developed countries (LDCs) are characterised by large population size and density. But in terms of market size the population size has to be seen in conjunction with per capita income and patterns of income distribution. Per capita incomes in LDCs range from $120 in India to $80 in Bangladesh. In comparison, the per capita income in developed countries range from $6,200 in U.S.A. to $4,350 in Australia. Ironically increasing population pressure in LDCs operates to reduce income levels and not increase market size. Population density assumes additional significance to market size in its impact on distribution costs. In countries where population is scattered (i.e. not grouped together in urban centres) transport costs are higher than in densely populated countries, thus adding to distribution costs. Improvement in transport facilities increases market size in countries where population is scattered, provided per capita incomes are high.

Further in LDCs the income distribution is very unequal. Studies on income-distribution patterns have shown that the top 20 (i.e., fifth quintile) receive 55.4 per cent of national income while the bottom 20 received only 7.8 per cent. The middle class received only 28.5 per cent of national income. There is a sharp polarisation in the income distribution with a very small middle class. According to Cannage, "an even significant feature is the marked drop from the top quintile to the fourth quintile. For the countries (LDCs) taken as a whole, there is a fall from the level of 50 per cent to 60 per cent to that of 16 per cent to 20 per cent. Thus the transition from the top category to those immediately below is not a gradual movement but a violent drop." Diagramatically the income distribution is shown below:

<table>
<thead>
<tr>
<th></th>
<th>Less Developed Countries</th>
<th>Developed Countries</th>
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<tbody>
<tr>
<td></td>
<td>India</td>
<td>Ceylon</td>
</tr>
<tr>
<td>Top 20</td>
<td>55.4</td>
<td>54.2</td>
</tr>
<tr>
<td>Fourth 20</td>
<td>15.0</td>
<td>14.4</td>
</tr>
<tr>
<td>Third 20</td>
<td>11.4</td>
<td>13.3</td>
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<tr>
<td>Second 20</td>
<td>8.2</td>
<td>9.3</td>
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<tr>
<td>Bottom 20</td>
<td>7.8</td>
<td>5.1</td>
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7 Ibid., p. 381.
distribution is a J-shaped curve in LDCs. In the case of
devolved countries the decline is gradual.

For small countries the geographical size adds to the
problem. Other conditions given, a larger country has a
larger quantity of natural resources and hence the capacity to
sustain a larger population size.

Impact of Market size

The impact of market size on inducement to invest has
two effects; i) is the primary motivating force in terms of
effective demand; ii) is the sustaining ability of the market as
it increases profitability through reductions in variable costs.
This is the operation of economies of scale.

The demand for manufactures is highly income-elastic.
This follows from consumption patterns as enunciated by Engels
law. At lower levels of income demand is for the basics i.e.,
food and not for manufactures, (the exception being clothing).
To start with, the low per capita income in LDCs (average
$ 178 in Asia) constitutes a market only for essential commodi-
ties. The demand for such commodities is income inelastic.

An unequal income distribution leads to the lack of a
homogeneous market for manufactures. The consumption pattern
of the rich is insufficient to provide a market. It is the
middle class which provides a market for standardised goods amenable to large-scale production. The per capita consumption of manufactured goods is as low as 11 in India and Pakistan. This is in marked contrast to per capita consumption of manufactures of 1,286 in U.S.A., 1,564 in U.K. and 1,060 in Australia. Thus a population of 50 million in terms of market size in an LDC would be only 2.5 million.

A producer confined to such a market will be a high cost producer standing no chance against cheaper imports. The inelastic demand results in a steeply sloping downward and low marginal revenue curve. Any price cut does not bring the middle class into the market, so that increased output does not increase revenue. The low level of the curve is reflective of low investment in manufacturing. This is also the cause for the oligopolistic nature of the market. Private investment based on expectation of higher rate of return on capital is not forthcoming. With an inelastic demand the demand curve for new capital (the marginal productivity of capital MPC) slopes steeply downward. Increases in saving result only in the lowering of interest rate and not in new investment. In a growing economy the MPC curve is continually


shifting outward maintaining a high rate of return and constant capital/output ratio. In the diagram the above explanation can be seen when capital increased from $X$ to $X'$ the rate of return falls from $R$ to $R'$. The shifting MPC is given by the dashed curve and is indicative of the growing opportunities for new investment as the market widens.

Profitability of an industry is also dependent on the enjoyment of economies-of-scale. This we consider as the sustaining ability of the market. Economies of scale can be divided into internal and external. The internal economies arise out of the technical constraint of minimum plant size and are built into the long-run cost curve. They accrue to the individual firm as output expands. In the case of external economies they arise outside the firm due to the interdependence

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Distinctions between the two have been given different nomenclatures by different authors e.g., static and dynamic external economies (Scitovsky), vertical and horizontal economies (Sato), linkages (Hirschman) etc. See P.K. Bardhan, "External Economies, Economic Development, and the Theory of Protection," reprinted in S.P. Singh, Underdevelopment and Developing Economies (New Delhi, 1978), p. 453.
of production and consumption functions, thus reducing the prices of inputs.

**Internal Economies of Scale**

Technology usually makes it necessary to build plants of large size. This causes production costs to fall as the scale of production increases. Traditional theory assumed a U-shaped cost curve. This was based on the assumption that after a certain scale economies of production were countered by diseconomies of managerial control. Recent theories and investigation show that the average cost curve is L-shaped. Such curves show that costs fall continuously as the scale of production increases and counter any diseconomies if they occur. The L-shape of the production cost curve is explained by the technical economies of large-scale production.

Production economies are those which result from a reduction in the physical quantity of labour, fixed capital, and inventory requirements for every further increase in output. Included among internal economies are also those associated with marketing economies, managerial, and transport economies. These are partly included in production costs and partly in selling costs. There is a third category of internal economies which has often been termed 'pecuniary' economies against the 'real' economies of the above categories. Such economies are associated with lower prices of factors rather than a decrease in the

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b) C.F. Pratten, *Economies of Scale in Manufacturing Industry* (Cambridge), p. 6. Pratten defines the L-shaped curve as the 'scale' curve.
quantities used. This is due to the advantage of discounts allowed for bulk purchases of inputs.

1) **Production Economies of Scale**

i. a) **Labour Economies.** These economies are achieved through increases in output. This may be due to several reasons. Large scale production allows for greater division of labour and specialisation enhancing the productivity of labour. In the case of small scale production such division of labour would result in underemployment. Increases in productivity is further possible with increasing mechanisation which goes with division of labour. Examples of such mechanisation is the assembly-line technique.

   An important element of this division of labour is the scope for acquiring skills through 'learning by doing'. The process itself being cumulative. This 'cumulative effect' is more obvious in the case of technical personnel. These are the Arrovian 'learning by doing' economies.

i. b) **Technical Economies of Fixed Capital.** These economies arise from a) specialisation and indivisibility of capital, b) set-up costs, c) initial fixed costs, d) technical volume/input relations, e) reserve capacity and inventory requirements. As output rises these indivisible costs are spread evenly over reducing the cost per unit.

   Specialisation of capital is similar to specialisation of labour. Both are related to greater mechanisation which is

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12 Ibid. (a), p. 129.
possible only with large-scale production. Indivisibility is a characteristic of modern mechanised techniques. Increasing returns to scale (with constant factor prices) can be explained by indivisibilities. It is because the firm cannot continue to reduce all inputs proportionately when output is reduced that long-run average cost is bound to rise with reduction in output.

Related to specialised machinery is the technical volume/input relations. For many types of equipment, especially in the process industry, initial and operating costs increase less rapidly. According to Pratten, "A typical example of such economies occurs in the construction of tanks, pressure vessels, sea tankers, which are commonly used in the oil industry. If the thickness of the walls of a tank are not affected by its size, then the cost of increasing capacity increases approximately in proportion to the surface area, while the capacity of the tank rises in proportion to its cubic capacity." }

1. c) **Selling or Marketing Economies.** These come under the economies of large-scale promotion through advertisements or special market arrangements. A very important economy is the control of market through vertically integrated process. This reduces the risk of uncertainty in selling.

1. d) **Managerial Economies.** Managerial economies are similar to labour economies in that large-scale production allow for
greater specialisation. A similar process to that of skill building is that of experience building. Large firms are also able to automate managerial functions through dictaphones, computers etc.

Traditionally economic theory sets a limit to economies of scale because of managerial diseconomies. These diseconomies arise because of the decentralisation of management in large-scale production. This results in loss of control at the top due to delays and distortions in information flows which affect quick decision-making. The operation of the diseconomies of scale is yet disputed. Empirical investigation however reaffirms the L-shaped cost curve.

1. e) Transport Costs. Transport costs are operative on internal economies of scale only when the industry uses its own transport. Transport costs then fall with an increase in the capacity-used and the size of the vehicle. Transport costs are related to the distance travelled and the nature of the product. If they are an important part of total unit cost component, then increase in distance cause a rise in transport cost. However, costs are not proportional to distance. They rise less rapidly with increases in distance. This is primarily because terminal costs and some other expenses are independent of the length of haul. Interrelated to the above is the pecuniary economies of lower transport costs with larger shipment. In products where transport elements are high increase in distance bring

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about diseconomies. But in certain products of high value, transfer costs constitute only a small element of total cost. That is, the elasticity of demand for transfer services is less in such products. Hufbauer has calculated that transport economies are usually a minor force in 'footloose' industries such as synthetics.

11) **External economies**

External economies through improvements in the market environment influence the shifting of cost curves. To reach an optimum size, not only the individual units have to be large but the area of operation must be sufficiently large. The benefits of a large market accrue to individual industrial unit as external economies. Hence, it is agreed that external economies means service (and disservices) rendered free (without compensation) by one producer to another. It is also agreed that external economies are a cause for divergence between private profit and social benefit. The failure of the market mechanism to reflect these external economies has been the 'idée maîtresse' of development studies.

One of the most important external economy is the training of labour in a non-slave society. External economies are

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16 Ibid., p. 23.


19 Ibid.
considerably reduced if labourers pay for their own training by accepting a wage less than their marginal productivity. This is not foreseeable in underdeveloped countries where with high costs of labour training there is no guarantee that workers will stay on with the original industry. Such training is in the nature of an unsecured loan. The existence of cheap training facilities requires the existence of a large market for the skill in question. In a situation where no infant can learn without teaching others, results in a divergence between social benefit and private costs. Although not a good investment for an individual firm it is the best investment for the government. Lack of skilled labour in less developed countries is a special case of lack of external economies.

External economies also arise out of the complementarity of different industries. They have been termed as 'vertical' external economies, or 'linkages'. Such vertical economies occur when the expansion of one industry A affects the profitability of another industry B. The mechanisms can be categorised as; "i) in an industry that produces a factor used in industry A, ii) in an industry whose product is complementary in use to the product of industry A, iii) in an industry whose product is a substitute for a factor used in industry A, or iv) in an industry whose product is consumed by persons whose incomes are raised by the expansion of industry A." The limited availability of

21 Scitovsky, n. 12, p. 305.
domestic capital is another manifestation of lack of external economies in LDCs. Linkages allow for reductions in transport costs, availability of public utilities etc., i.e., reductions in costs of services which arise from market concentration. By a coordinated programme of investment unused resources are brought into employment leading to further economies. This has been the basis for the strategies of balanced industrialisation of Rosenstein-Rodan, Nurkse et al.

The operation of economies of scale can now be translated into the cost structure of an industry. Costs can be broken into: 1) processing costs and 2) distribution costs. Processing costs with a given production function depend on the scale of output and factor prices. Distribution costs depend on transport costs and the spatial density of demand.

Thus, the locus of modern industry is determined by markets with high income and price elasticity of demand. Developed countries with a large domestic market are able to reap the advantages of economies of scale and produce manufactured goods at much cheaper costs. Higher transport costs added to the initial advantage of developed countries in market-oriented manufactures. This advantage is also the basis for further product development and research due to accumulated production volume. Both processing and distribution costs


23 Guha, n. 3, p. 147.

24 Posner has suggested that technology = f (total past production volume). Hufbauer, n. 17, p. 27.
were in favour of the advanced countries. Recent developments in transport technology have diminished their advantage in export of manufactures. Combined with increases in factor prices, especially of wages, and the knowledge of local markets allow for an advantage to producers in LDCs. This is subject to the government subsidisation of the learning process and possibility of domestic expansion of demand.

**Supply Limitations**

The supply limitations, especially of capital and skilled labour, are often cited as the cause for underdevelopment. For example, the thesis of the 'vicious circle of poverty' emphasises the resource constraint. In such cases economic development would be only the removal of supply bottlenecks. However, it is our contention that supply limitations are relative to demand.

**Supply of Capital**

In a less developed country availability of capital is determined by opportunities to invest. As stated earlier, shortage of capital and of investment opportunities is due to the non-operation of external economies. The 'scarcity of capital' argument has two loopholes to it.

First, if savings are a function of per capita income as given by Family Budget studies, then the low rate of capital accumulation and average propensity to save can be explained by low per capita incomes. This is however in contradiction to income distribution patterns. As noted earlier LDCs have a more accentuated skewed income distribution. The rich by virtue of the family budget studies should have a higher average
propensity to save. In LDCs, however, the rich spend it on conspicuous consumption. The surplus instead of being invested is frittered away. Explanations then for low savings is the lack of incentive to save as determined by market size.

Second, is the possibility of international capital flows to compensate for insufficient domestic savings. Such capital flows are in response to higher profitability and higher interest rates. There is however, no evidence of higher profits or interest rates in LDCs. The inadequacy of capital flows reaffirms our hypothesis.

Supply of Skilled Labour

Acquisition of skills is a process of industrialisation subject to economies of scale. Without a market for the skill in question the supply is naturally limited. As explained earlier both the incentive and capacity to invest in labour training are low in LDCs. The shortage of skilled labour can be supplemented through imports of skilled labour. This is an expensive proposition. A simpler method would be through government sponsored training institutions.

From the above analysis, it is clear the cause of the failure of LDCs to industrialise is the small size of the market. Thus, for any strategy of industrialisation the first line of attack would be the market problem.

25 Examples of high level of surplus is that of RM China where calculations place it at 36 per cent of National Income.
Measures to Widen the Market

First, the creation of a middle class. This can be done by i) a deliberate policy of income-distribution; ii) the encouragement of labour-intensive manufactures resulting in a shift in income-accruals from rent to wages; iii) creation of large bureaucracies, standing armies, universities etc.

Second, protection of domestic market through tariffs and subsidies. These are deliberate policy measures to satisfy the demands of the indigenous industrialists.

Third, the development of industries with strong linkage effects. Under this come government investment in transport, power and other infrastructural facilities. Also included are the heavy and basic industries which are transport-intensive, based on local materials they can counter the cheaper imported manufactures.

Fourth, a coordination of investments along the Balanced-Growth lines. Such coordination would benefit from external economies of interdependence.

These four measures are directed towards widening of the domestic market. They have been subsumed under the heading of import-substitution (I-S) strategy. The success of an import-substitution strategy is dependent on i) the domestic availability of resources and ii) the geographical expansibility of domestic markets. These two points become clear in relation to the characteristics of industries discussed earlier. Namely, the possibility of domestic industries benefiting from economies-of-scale over time.

26 Guha, n. 3.
A country endowed with rich natural resources is more advantageously positioned vis-à-vis a country with limited natural resources, although both are less developed. For the elasticity of natural resources enables a smoother absorption of increasing pressure of demand without the need for imports. Under conditions of stagnant external earnings domestic resource availability provides a greater assurance of the success of I-S policies. The utilisation of the natural resources is however subject to the availability of skilled labour and capital.

The second condition is more complex. Geographic market is understood to be the area defined by political boundaries. While geographical expansibility is understood to be the maximum area that can be covered by a plant with reductions in transport costs. In a large country such expansibility is dependent on transport costs. For, "Industries distributing to relatively scattered markets find they can now serve them just as well from a greater distance and concentrate their operations in fewer, larger and more efficient processing units each with a larger market area. Correspondingly, industries collecting materials from relatively scattered sources, now find it possible to concentrate processing operations in fewer, larger and more efficient units each with a larger supply area." The same may be applicable to international trade where reductions in

27 For example see, K.N. Raj, A.K. Sen, "Alternative Patterns of Growth under Conditions of Stagnant Export Earnings", Oxford Economic Papers (London), vol. 13, 1961. In this paper, the underlying assumption is of a large country well endowed with natural resources.

transport costs enabled countries like Belgium to enjoy the benefits of economies of scale only in manufactures for export. But the advantage of domestic expansion of markets over imports is the low transfer costs and lack of barriers to entry. Moreover, the credo of I-S strategy is autarkic pattern of growth.

Low transport costs alone do not suffice to ensure the geographic expansion of markets. The spatial density of demand spread over a larger area is dependent on two other conditions, viz. 1) population size and density; 2) income distribution; the other two measures of market size. The actual mechanism of demand expansion is through the Demonstration Effect. In densely populated countries the influence on taste patterns is more easily emulated than in areas of scattered population. Such a trend was discernible in the U.S.A. during its period of industrialisation. Both population and manufacturing activity spread even over the country the expansion related to each major innovation in transport facilities, the most significant being the railways. But studies by Little, Scitovsky and Scott have shown that I-S policies in seven developing countries ran up against limits to domestic expansion. Industry expanded faster than domestic demand leading to unutilised capacity.


b) The acceptance that I-S strategy is feasible only in large countries, see Raj and Son, n. 27, "We assume that the country in question is big enough to allow normal economies of large scale production".
The combination of domestic resource availability and low transport costs allows for the development of industries with strong linkage effects generating external economies termed as the machinery-steel-iron complex, justifying temporary protection. The traditional infant industry argument for protection being reintroduced.

But such options are closed to a small economy. The alternative is to circumvent the domestic market through export of manufactures. Given the twin constraints of market size and limited natural resources, the option is through a strategy of export-promotion i.e., industrialisation as determined by comparative advantage. Such a strategy would eventually lead to the growth of the domestic market.